National Clinical Guideline Centre

Draft

Low back pain and sciatica

Low back pain and sciatica: management of non-specific low back pain and sciatica

NICE guideline <number>

Appendices H

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Draft for consultation

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Royal College of Physicians

The Royal College of Surgeons of England

RCGP Royal College of General Practitioners

Royal College of Nursing

NICE accredited

Disclaimer
Healthcare professionals are expected to take NICE clinical guidelines fully into account when exercising their clinical judgement. However, the guidance does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of each patient, in consultation with the patient and, where appropriate, their guardian or carer.

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Appendix H: Clinical evidence tables

H.1 Clinical examination

None.

H.2 Risk assessment tools and stratification

Study	APELDOORN 2012B trial: Apeldoorn 2012[12,13]
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=156)
Countries and setting	Conducted in Netherlands; Setting: private physical therapy clinics in Amsterdam and surrounding rural areas (<50 km radius)
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain as the primary complaint, with or without associated leg pain, age between 18-65 years, current episode longer than 6 weeks and ability to read and write Dutch
Exclusion criteria	Known or specific low back pain (e.g cauda equina compression, fractures), severe radiculopathy, spondylolisthesis (grade 2 or more), serious co-morbidity 9e.g metastases, AIDS)psychopathology, lumbar spinal surgery in the previous year, more than 1 low back operation, pregnancy,, inability to attend 6 or more regular physical therapy appointments, moderate complaints about 1 or more items of the UDI-6 or inability to demonstrate any low back pain symptoms during mechanical examination

Recruitment/selection of patients	patients were recruited by physical therapists from 21 private physical therapy clinics in Amsterdam and surrounding rural areas (<50 km radius)
Age, gender and ethnicity	Age - Mean (SD): 43.2 (11.7) in classification group and 42.0 (10.9) in the usual care group. Gender (M:F): 67:89. Ethnicity:
Further population details	
Extra comments	Baseline Pain (NRS) was 6.0 (1.7) in the classification group and 6.2 (1.8) in the usual care group. Baseline Function (ODI) was 18.1 (11.5) in the classification group and 21.9 (14.5) in the usual care group. Baseline PCS score of the SF-36 was 43.7 (8.3) in the classification group and 40.2 (8.7) in the usual care group. Baseline MCS score of the SF-36 was 52.3 (8.5) in the classification group and 51.1 (10.6) in the usual care group.
Indirectness of population	No indirectness
Interventions	(n=74) Intervention 1: Risk assessment tools + treatment - Delitto/Childs/Flynn/Hancock/O'Sullivan. Patients assigned to the classification group were treated according to their primary classification category i.e direction specific exercises, spinal manipulation or stabilisation exercise for a minimum of 4 weeks. After this period, the physical therapist was allowed to exchange treatment strategy according to the current low back pain Dutch guidelines.. Duration 1 year. Concurrent medication/care: 8.1 % in the classification group were taking medication for low back pain whereas 14.6% were taking medication in the usual care group Further details: 1. Validated and non-validated risk tools: Not applicable / Not stated / Unclear (n=82) Intervention 2: Unstratified treatment et – Unstratified treatment. Patients assigned to usual physical therapy care received individually tailored treatment according to the current low back pain Dutch guidelines.. Duration 1 year. Concurrent medication/care: 8.1 % in the classification group were taking medication for low back pain whereas 14.6% were taking medication in the usual care group Further details: 1. Validated and non-validated risk tools:
Funding	Academic or government funding (The Netherlands Organisation for Health Research and Development grant funds were received to support this work)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CLASSIFICATION GROUP versus USUAL THERAPY GROUP

Protocol outcome 1: Quality of life at ≤ 4 months
- Actual outcome: SF-36-Physical Component Score (PCS) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-Physical Component Score (MCS) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at ≤ 4 months

- Actual outcome: NRS,0-10 at 8 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - 1 year - Actual outcome: NRS,0-10 at 52 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at ≤ 4 months - Actual outcome: ODI,0-10 at 8 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at >4 months - 1 year - Actual outcome: ODI,0-10 at 52 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at ≤ 4 months - Actual outcome: NRS (>30 % improvement from baseline) at 8 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: ODI (>30 % improvement from baseline) at 8 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Responder criteria at >4 months - 1 year - Actual outcome: NRS (>30 % improvement from baseline) at 52 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: ODI (>30 % improvement from baseline) at 52 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months - 1 year; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - 1 year; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - 1 year; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity at >4 months - 1 year; Adverse events (mortality) at >4 months - 1 year; Adverse events (mortality) at ≤ 4 months

Study	**Beneciuk 2013[29,29]**
Study type	Prospective cohort study
Number of participants	146 patients enrolled and provided baseline information.
Country and setting	USA
Funding	Brooks health system, primary author supported by the National institute of health T32 neuromuscular plasticity research training fellowship grant.
Duration of study	6 months

Baseline characteristics	Age, mean (SD): 41.1 (13.5), female: 61%, symptom location: low back pain only 33.6%, low back pain and buttock/thigh 49.3%, low back pain and lower leg 17.1%, symptom duration: acute (<90 days) 51%, chronic (≥90 days) 49%.
Patient characteristics	Inclusion criteria Adults between the ages of 18 and 65 years seeking physical therapy for low back pain (defined as having symptoms at T12 or lower, including radiating pain into the buttocks and lower extremity), able to read and speak the English language. Exclusion criteria: Presence of systemic involvement related to metastatic or visceral disease, recent spinal fracture, osteoporosis, or pregnancy.
Risk assessment tool	Fear avoidance beliefs questionnaire (FABQ) physical activity scale: 4 item scale (0-24) and FABQ work scale: 7 item scale (0-42). Higher levels indicating higher levels of fear avoidance beliefs. Pain catastrophizing scale: 13 item questionnaire (potential range of scores 0-52) higher scores indicating higher levels of pain catastrophizing. Eleven-item version of the tempa scale kinesophobia: used to measure degree of fear on movement and injury or re-injury in individuals with low back pain (potential scores ranging 11-44), with higher scores indicating greater fear on movement and injury or re-injury due to pain. Nine-item patient health questionnaire: used to assess degree to which depressive symptoms have on a patient with low back pain (scores range from 0-27), high scores indicate elevated depressive symptoms. STarT Back: overall score (0-9)determined by summing all positive responses STarT Back: psychosocial subscale score (0-5) based on bothersomeness, fear, catastophizing, anxiety and depression. High risk ≥4: high levels of psychosocial prognostic factors are present with or without physical factors present, Medium risk >3: physical and psychosocial factors are present but not a high levels of psychosocial factors, Low risk 0-3: few prognostic factors are present.
Target condition	Predicting 6 months follow-up pain intensity using the numeric pain rating scale (0-10) Predicting 6 months follow-up disability scores using the Roland Morris disability questionnaire (0-24)
Results:	

Adjusted % R2 (MVA adjusting for all the other psychological tools, demographic and low back pain variables, and psychological measures)	Pain (NRS) FABQ physical activity scale: 17.6 FABQ physical work scale: 18.9 Pain catastrophizing scale: 17.1 Tampa scale of kinesiophobia (11-iten version): 17.8 Patient health questionnaire (9-items): 18.6 STarT Back screening tool overall score (0-9): 17.7 STarT Back screening tool psychological score (0-5): 8.2 Disability (RMDQ) FABQ physical activity scale: 39.6 FABQ physical work scale: 41.4 Pain catastrophizing scale: 41.2 Tampa scale of kinesiophobia (11-iten version): 40.4 Patient health questionnaire: 41.2 STarT Back screening tool overall score: 42.3 STarT Back screening tool psychological score: 44.3
General limitations (according to PROBAST)	Limited outcome data reported (R^2 only adjusted for other tools/covariates); high rate of missing data with analyses indicating significant differences between completers an non-completers

Study	**Beneciuk 2014[29,30]**
Study type	Prospective cohort study
Number of participants	123
Country and setting	USA
Funding	Brooks health system, main author funded by national institutes of health T32 neuromuscular plasticity
Duration of study	6 months
Baseline characteristics	Age [mean (SD)] 42.6 (13.1); female 61%, symptom duration-chronic (91days or more) 45.5%
Patient characteristics	Inclusion criteria Adults between the ages of 18 and 65 years seeking physical therapy for low back pain (defined as having symptoms at

	T12 or lower, including radiating pain into the buttocks and lower extremity), able to read and speak the English language. Exclusion criteria: Presence of systemic involvement related to metastatic or visceral disease, recent spinal fracture, osteoporosis, or pregnancy.
Risk assessment tool	STarT Back: change in overall score (0-9) determined by summing all positive responses at baseline and at 4-weeks and determining whether participants were improved (STarT Back Screening Tool (SBT) categorization changed from medium to low, high to low, or high to medium risk), stable (SBT categorization remained low or medium risk), or worsened (SBT categorization changed from low to medium, low to high, medium to high, or remained high risk). Thresholds for each category as follows: High risk ≥4: high levels of psychosocial prognostic factors are present with or without physical factors present, Medium risk >3: physical and psychosocial factors are present but not a high levels of psychosocial factors, Low risk 0-3: few prognostic factors are present.
Target condition	6 months outcome for numeric pain rating scale and Oswestry disability score
Results: R2 (adjusted for demographics, low back pain symptom duration and variation in initial STarT Back categorisation)	 Pain: 16.8% Disability: 46.3%
General limitations (according to PROBAST)	Limited outcome data reported (R^2 only adjusted for other tools/covariates); high rate of missing data with analyses indicating significant differences between completers an non-completers

Study	**Beneciuk 2015[31]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=109)
Countries and setting	Conducted in USA; Setting: Outpatient clinic setting.
Line of therapy	Not applicable
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosis by a physician.

Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	1. Between the ages of 18 and 65 years and seeking physical therapy for low back pain (defined as having symptoms at T12 or lower, including radiating pain into the buttocks and lower extremity) and 2. ability to read and speak the English language.
Exclusion criteria	1. the presence of systemic involvement related to metastatic or visceral disease, 2. recent spinal fracture, 3. osteoporosis, or 4. pregnancy.
Recruitment/selection of patients	Consecutive recruitment.
Age, gender and ethnicity	Age - Mean (SD): 46.2(12.2). Gender (M:F): 45/64. Ethnicity: Caucasian - 83; Black or African American - 20; Other - 6.
Further population details	
Extra comments	Baseline details, Stratified care: NPRS, mean(SD):4.8(1.9); ODI, mean(SD) - 32.8(15.0). Standard care: NPRS, mean(SD) - 4.9(2.1); ODI, mean (SD) - 34.7 (15.0)..
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=70) Intervention 1: Risk assessment tools + treatment - STarT Back. SBT was self-administered by all patients at intake and 4 weeks later; however only physical therapists (PT) in the stratified care group were educated on SBT scoring methods Patients were not randomised to different treatment groups. Therapists (PT) in the stratified care group were instructed to provide treatment for patients with using the knowledge and skills leant into subsequent management strategies for their patients with low back pain. Specifically clinicians were asked to utilise SBT categorisation to guide initial treatment decision-making Low risk group. Minimal physical therapy intervention approach (1-2 sessions per week) and adherence to the APTA Orthopaedic Section CPG's. Medium risk group Increased physical therapy intervention approach (2-3 sessions per week) and adherence to the APTA Orthopaedic Section CPG's. High risk group Increased physical therapy intervention approach (2-3 sessions per week) and adherence to the APTA Orthopaedic Section CPG's and psychologically-informed practice principles.. Duration 4 weeks. Concurrent medication/care: None reported. Further details: 1. Validated and non-validated risk tools: (n=39) Intervention 2: unstratified treatment - unstratified treatment. PT in the standard care group were instructed to provide treatment for patients with low back pain as they normally would have if not participating in this study. Duration 4 weeks. Concurrent medication/care: None reported. Further details: 1. Validated and non-validated risk tools:
Funding	Academic or government funding (Funded by the 2012 Brooks Rehabilitation Collaborative Grant.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STarT Back versus UNSTRATIFIED TREATMENT

Protocol outcome 1: Pain severity (VAS/NRS) at up to 4 months
- Actual outcome: Numerical pain rating scale- STRATIFIED-Low risk at 4 weeks; Group 1: mean -0.8 No units. (SD 1.2); n=15, Group 2: mean -0.9 No units. (SD 1.7); n=14; Numerical Pain Rating Scale 0 - 10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Numerical pain rating scale-OVERALL-patients rated their current pain intensity as well as their best and worst levels of pain intensity over the previous 24 hours. These 3 pain ratings were averaged and used as NPRS variable) at 4 weeks; Group 1: mean -1.4 (SD 1.3); n=67, Group 2: mean -0.7 (SD 1.7); n=33; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Numerical pain rating scale-STRATIFIED- Medium risk at 4 weeks; Group 1: mean -1.7 (SD 1.9); n=31, Group 2: mean -0.2 (SD 1.7); n=12; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Numerical pain rating scale- STRATIFIED-High risk at 4 weeks; Group 1: mean -1.5 (SD 1.5); n=21, Group 2: mean -0.9 (SD 1.9); n=7; NPRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at up to 4 months
- Actual outcome: Oswestry Disability Index-OVERALL at 4 weeks; Group 1: mean 13.2 % (SD 10.7); n=67, Group 2: mean 4.4 % (SD 11.6); n=33; Oswestry Disability Index 0 - 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index-STRATIFIED-Low Risk at 4 weeks; Group 1: mean -10.4 (SD 9.8); n=15, Group 2: mean -6.1 (SD 8.8); n=14; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index-STRATIFIED-Medium Risk at 4 weeks; Group 1: mean -12.3 (SD 7.9); n=31, Group 2: mean -0.8 (SD 11.9); n=12; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index-STRATIFIED-High Risk at 4 weeks; Group 1: mean -16.7 (SD 14.3); n=21, Group 2: mean -6.8 (SD 17.8); n=7; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Responder criteria at up to 4 months
- Actual outcome: Responder criteria (% age of patients with >30% improvement in pain) at 4 weeks; Group 1: 41/67, Group 2: 11/33; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Responder criteria (patients with >30% improvement in function) at 4 weeks; Group 1: 41/67, Group 2: 11/33; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Function (disability scores) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Responder criteria at >4 months; Adverse events (morbidity) at up to 4 months; Adverse events (morbidity at >4 months; Adverse events (mortality) at >4 months; Adverse events (mortality) at up to 4 months

Study	**Childs 2004** [84,85]
Study type	Prospective cohort study
Number of studies (number of participants	1 (n = 131)
Country and setting	USA; 2 academic medical centres and smaller outpatient practice settings, mostly within the US Air Force
Funding	Supported by a grant from the Foundation for Physical Therapy, Inc. and Wilford Hall Medical Center Commander's Intramural Research Funding Program
Duration of study	6 months
Baseline characteristics	Mean age (SD) 33.9 years (10.9). Gender: 42% Female. Median duration of current episode 27 days. Proportion of those taking medication for low back pain = 84%. History of low back pain = 67.9%. Mean (SD) Oswestry Disability Questionnaire (ODI) score = 41.2 (10.4). Mean (SD) Pain score = 5.8 (1.6)
Patient characteristics	Recruitment: Participants recruited as part of a RCT evaluating manipulation plus exercise versus exercise alone for low back pain. Inclusion criteria Consecutive patients aged 18-60 years who were referred to physical therapy with low back pain as the primary symptom, with or without referral in the lower extremity, and an Oswestry Disability Questionnaire (ODI) score of at least 30%. Exclusion criteria Red flags for a spinal condition (e.g. tumour, compression fracture, or infection), those who had signs consistent with nerve root compression (positive straight leg increase < 45 degrees or diminished reflexes, sensation, or lower extremity strength), pregnancy, previous surgery to the lumbar spine or buttock. Final chronicity at end of study (6-months):

	Manipulation group: 36.5% of participants were taking medication for back pain during previous week, 11.5% were currently seeking treatment for back pain, and 9.6% had missed work in the previous 6-weeks due to back pain Exercise group: 60% of participants were taking medication for back pain during previous week, 42.5% were currently seeking treatment for back pain, and 25% had missed work in the previous 6-weeks due to back pain.
Risk assessment tool	Spinal manipulation clinical prediction rule: Contains 5 criteria to indicate a positive outcome; < 16 days duration of current episode of low back pain; no symptoms distal to the knee; score < 19 on the FABQ work subscale; ≥ 1 hypomobile segment in the lumbar spine; ≥ 1 hip with > 35 degrees of internal rotation range of motion. A physical therapist blinded to treatment condition, the rule's criteria and patient's outcome assessed the patient according to the criteria. After completion of the study, an examiner who was blinded to patient's treatment assignment determined the patient's outcome from the tool by using the results of the baseline examination. A threshold of ≥4 criteria was used to identify a positive outcome and < 3 criteria used to identify a negative outcome, based on Flynn et al. (2002).
Target condition	Success at 1-week (as assessed by ODI score; success classified as at least 50% improvement).
Results: Optimal likelihood ratio	Success (manipulation group): cut-off ≥4 criteria Positive likelihood ratio (95% CI) = 13.2 (3.4 – 52.1) No improvement (manipulation group): cut-off < 3 criteria Negative likelihood ratio (95% CI) = 0.10 (0.03 – 0.41)
General limitations (according to PROBAST)	Limitations around sample size, participant flow, and analysis. Raw data not reported for consideration of number of outcome events. Unclear final attrition numbers with respect of outcome analysis. No formal calibration and discrimination statistics reported (LR only). Outcome time frame too short for an important effect to be visible.

Study	**Childs 2005** [84,86]
Study type	Prospective cohort study
Number of studies (number of participants	1 (n = 131)
Country and setting	USA; 13 physical therapists at 8 clinics located in a variety of healthcare settings
Funding	Supported by a grant from the Foundation for Physical Therapy, Inc. and Wilford Hall Medical Center Commander's Intramural Research Funding Program

Duration of study	4 week follow-up
Baseline characteristics	Mean age (SD) 33.9 years (10.9). Gender: 42% Female. Median duration of current episode 27 days. Proportion of those taking medication for low back pain = 84%.
Patient characteristics	Recruitment: Participants recruited as part of a RCT evaluating manipulation plus exercise versus exercise alone for low back pain (with or without lower extremity symptoms) Inclusion criteria Consecutive patients aged 18-60 years who were referred to physical therapy with low back pain as the primary symptom, with or without referral in the lower extremity, and an Oswestry Disability Questionnaire (ODI) score of at least 30%. Exclusion criteria History of cancer, rheumatoid arthritis, spinal fracture, osteoporosis, positive neurologic signs (positive straight leg raise or altered reflexes, or strength)
Risk assessment tool	Functional Rating Index (FRI) 10 items: 9 represent domains covered in Oswestry and/or neck disability index. 7 items are represented in the neck disability index, 8 represented in Oswestry. One additional item was included on the frequency of pain. Oswestry Disability Questionnaire (ODI)
Target condition	Global rating of change: 15 point rating scale that ranged from -7 to 7. -7="a very great deal worse", 0="about the same", 7="a very great deal better". Ratings were made independently by treating therapist and patient and the mean score used. A mean score of ≥3 were considered to have improved, a score of >-3 to <3 was considered to stable, a score of ≤-3 was considered to have worsened. Responsiveness was characterised by calculating the area under the receiver operating characteristic curve to assess each tool's ability to distinguish patients who had improved and those who had not based on global rating of change score results.

Results: Optimal likelihood ratio	Functional Rating Index (FRI) AUC 0.93 (95% CI: 0.89, 0.98) Oswestry Disability Questionnaire (ODI) AUC 0.93 (95% CI: 0.88, 0.98)
General limitations (according to PROBAST)	Unclear if therapists were blinded to predictors before estimating global rating change, unclear if there was attrition or how this was dealt with, only AUC reported

Study	**Dagfinrud 2013** [105,105]
Study type	Prospective cohort study
Number of studies (number of participants	1 (n = 76; subgroup of participants with low back pain)
Country and setting	Norway
Funding	None stated

Duration of study	8 weeks
Baseline characteristics	Mean age (SD) 45.3 years (14.5). Gender: 60.5% Female. Chronicity (%): acute 26.7%; sub-acute 24%; chronic (3-12 months) 10.7%; chronic (>1 year) 38.7%. Mean (SD) self-reported pain (0-10, 10 = worst) = 6.15 (3.66); Mean (SD) ODI (100 = worst) = 35.9 (16.5).Clinicians' prognostic assessment (% classified as good prognosis) = 61%. Mean ÖMSPQ (SD) = 84.2 (29.8).
Patient characteristics	Inclusion criteria Patients aged ≥ 18 years with low back pain seeing the manual therapist directly, without referral from a general practitioner Exclusion criteria Treated for low back pain during a period of 4 weeks before enrolment; pregnancy; not understanding Norwegian language; abuse of drugs or alcohol Final outcome/event rate at end of study: not reported
Risk assessment tool	Örebro Musculoskeletal Pain Questionnaire: Contains 25 items in which 21 (items 5-25) are included in the final score. Scored items assess pain, previous sick leave, anxiety and depression, activity limitations, coping, work characteristics/satisfaction, fear avoidance beliefs, and patient's expectations to improve. Items are summed, providing a total ranging between 0-210, with higher scores indicating a higher risk of a poor outcomes. In this study, scores were categorised into 3 groups; low risk (score <90), moderate risk (score 90-105) and high risk for prolonged disability (score > 105; thresholds based on Linton & Hallden, 1998).
Target condition	Functional improvement (change score of ODI > 10; ODI on a scale of 0-100, with high scores representing poor outcome).
Results: Sensitivity and specificity Other measures as agreed with the GDG: Optimal likelihood ratio Area under the curve (95% CI)	ÖMSPQ Functional status (change score > 10): cut-off 105 Sensitivity 78%; specificity 21%; -LR 1.01, +LR 0.95 AUC (95% CI) 0.58 (0.42-0.73) Functional status (continuous outcome): ÖMSPQ as continuous predictor, controlling for age, gender, baseline ODI

	Beta (adjusted, 95%) 0.19 (0.002, 0.08), p value = 0.002, $R^2\Delta$ 0.15
General limitations (according to PROBAST)	Concerns around outcome reporting. Final event rates unable to be assessed due to failure to report raw data. Therefore also unclear if attrition taken into account in analysis.

Study	Fritz 2003 trial: Fritz 2003[145,146]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=78)
Countries and setting	Conducted in USA; Setting: study conducted at 5 Employee Health Services outpatients clinics at the University of Pittsburgh Medical Center (UPMC)
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with work-related low back pain of less than 3 weeks duration and of sufficient severity to necessitate modification of work duties were identified by the occupational medicine physician
Exclusion criteria	Patients were excluded from the study if they did not require any work modifications, had a history of surgery to the lumbosacral region, were pregnant or had any potentially serious conditions e.g. tumour, infection, fracture etc. Individuals with sciatica or a history of low back pain were included in the study
Recruitment/selection of patients	Enrollment period was August 1997 through to August 1999. Eligible patients meeting inclusion criteria were referred to a research assistant who obtained relevant data
Age, gender and ethnicity	Age - Mean (SD): 37.4 +/-10.4. Gender (M: F): 48:30. Ethnicity:
Further population details	
Extra comments	Baseline ODI values for the Guideline Group was 42.8 (16.1) and 42.9 (15.7) in the classification group. Baseline SF-36 PCS values for the Guideline Group was 29.5 (7.7) and 29.7 (8.0) in the classification group. Baseline SF-36 MCS values for the Guideline Group was 53.5 (9.8) and 51.4(8.6) in the classification group.
Indirectness of population	No indirectness
Interventions	(n=41) Intervention 1: Risk assessment tools + treatment - Delitto/Childs/Flynn/Hancock/O'Sullivan. Subjects assigned to the classification based group were examined by the treating physical therapist and placed into one of 4 treatment classifications on the basis of their signs and symptoms. The treatment received was specific to the classification assignment of the subject. The subjects in the classification group were re-evaluated at the beginning of each therapy session. The reevaluation consisted of lumbar range of motion and special tests required for classification. If the patients signs and symptoms changed, resulting in a new classification, the treatment was altered to match the new classification. Interventions included joint mobilisation, manipulation techniques, spinal active range of motion exercises, lumbar extension exercises, trunk strengthening and mechanical or auto-traction. Duration 1 year.

	Concurrent medication/care: Not stated Further details: 1. Validated and non-validated risk tools: Not applicable / Not stated / Unclear (n=37) Intervention 2: Unstratified treatment et – Unstratified treatment. Subjects assigned to the guideline-based group received treatments based on the recommendations of clinical practice guidelines including low stress aerobic exercise (treadmill walking or stationary cycling) and general muscle reconditioning exercises after 2 weeks. Subjects also received advice to remain as active as possible within the limits of their pain. They were reminded that most persons with low back pain return to full work capacity. Duration 1 year. Concurrent medication/care: Not stated Further details: 1. Validated and non-validated risk tools:
Funding	Academic or government funding (Funded by the Clinical Research Grant from the foundation of Physical therapy)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CLASSIFICATION GROUP versus GUIDELINE GROUP

Protocol outcome 1: Quality of life at ≤ 4 months
- Actual outcome: SF-36-Physical component Score (PCS) at 4 weeks; Group 1: mean 36.8 (SD 32); n=41, Group 2: mean 43 (SD 35); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-Mental component Score (PCS) at 4 weeks; Group 1: mean 50.6 (SD 32); n=41, Group 2: mean 52.2 (SD 35); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome: SF-36-Physical component Score (PCS) at 1 year; Group 1: mean 40.7 (SD 34); n=41, Group 2: mean 45 (SD 35); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-Mental component Score (PCS) at 1 year; Group 1: mean 51.3 (SD 34); n=41, Group 2: mean 50.8 (SD 35); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at ≤ 4 months
- Actual outcome: ODI at 4 weeks; Group 1: mean 32.4 (SD 32); n=41, Group 2: mean 21.4 (SD 38); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at >4 months - 1 year
- Actual outcome: ODI at 1 year; Group 1: mean 25.8 (SD 35); n=41, Group 2: mean 17.4 (SD 39); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months
- Actual outcome: Number of therapy appointments during 1 year period at 4 weeks; Group 1: mean 5.7 (SD 3.6); n=41, Group 2: mean 5.4 (SD 3.1); n=37; Risk of bias:

Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - 1 year - Actual outcome: Number of therapy appointments during initial 4 weeks at 1 year; Group 1: mean 6.7 (SD 5.5); n=41, Group 2: mean 6.2 (SD 4.2); n=37; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at ≤ 4 months; Pain severity (VAS/NRS) at >4 months - 1 year; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - 1 year; Responder criteria at ≤ 4 months; Responder criteria at >4 months - 1 year; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity at >4 months - 1 year); Adverse events (mortality) at >4 months - 1 year; Adverse events (mortality) at ≤ 4 months

Study	**Gabel 2011** [158,158]
Study type	Two-phase prospective cohort study (development and validation)
Number of participants	n = 106 validation
Country and setting	Australia, multi-centre: 7 physiotherapy outpatient clinics in 3 states
Funding	None stated
Duration of study	6 months
Baseline characteristics	Mean age (SD, range) 39 (9, 18-58). Gender: 43% Female. Mean duration (SD): 4.1 weeks (8.1). Multi-area: 14%. Chronicity (%, mean duration in weeks, SD): acute 79%, 1.1 (0.5); sub-acute 13%, 8.0 (1.9); chronic 8%, 25.5 (14.5).
Patient characteristics	Inclusion criteria Consecutive patients with acute/sub-acute low back pain, workers' compensation and medical practitioner referral Exclusion criteria Pregnancy, red flag signs, <18 years and English comprehension difficulty. Final chronicity at end of study: 6% chronic (patients with exacerbated pre-existing low back pain, symptoms present >12 weeks) 94% acute/sub-acute
Risk assessment tool	Original Örebro Musculoskeletal Pain questionnaire: 25 items assessing 5 proposed constructs: function, pain, psychological, fear avoidance and miscellaneous. Derived from

	the acute low back pain screening questionnaire (ALBPSQ). Cut-off ranges in ÖMSPQ are used to indicate low (90-100) and high (105-119) risk of prolonged recovery from low back pain. Only 66/106 participants returned responses to this tool Modified version: Örebro Musculoskeletal Screening Questionnaire: Four critical characteristics of the original ÖMSPQ were retained in the ÖMSPQ, question number and order, scoring format and total score. All 21 ALBPSQ items included with one being renamed and 4 additional activities of daily living (ADL) combined with the physical function questions. This broadened application and improved respondent comprehension.	
Target condition	Functional status, problem severity, absenteeism, long-term absenteeism and recovery time. The spine functional index (SFI) and numeric rating scale (NRS) were repeated every 2 weeks until discharged or study completion. SFI enables direct comparison between the spine, upper and lower limbs: ≤10% recovered vs. ≥10% not recovered. The NRS is an 11-point global status measure (0=no problem, 10=maximum): ≤1 recovered vs. ≥1 not recovered. Two assessors, a physiotherapist and occupational therapist, were blinded to the baseline screening scores which ensured independent collection of outcome data.	
Results: Sensitivity and specificity supplied by author but not enough raw data to calculate 2x2 tables. Optimal likelihood ratio Area under the curve (95% CI)	**Modified ÖMSPQ** <u>Functional status (recovered <10%)</u>: cut-off 101 Sensitivity 72%; specificity 96.4%; LR -20.16 AUC (95% CI) 0.12 (0.78-0.99) <u>Functional status (not recovered ≥10%)</u>: cut-off 112 Sensitivity 85.7%; specificity 88%; LR 7.14 AUC (95% CI) 0.88 (0.78-0.99) <u>Problem severity (recovered ≤1)</u>: cut-off 101 Sensitivity 72%; specificity 96.4%; LR -20.16 AUC (95% CI) 0.15 (0.72-0.97) <u>Problem severity (not recovered >1)</u>: cut-off 112 Sensitivity 82.1%; specificity 84%; LR 5.13 AUC (95% CI) 0.85 (0.72-0.97)	**Original ÖMSPQ** <u>Functional status (recovered <10%)</u>: cut-off 100 Sensitivity 68%; specificity 96.4%; LR -19.04 AUC (95% CI) 0.12 (0.77-0.99) <u>Functional status (not recovered ≥10%)</u>: cut-off 113 Sensitivity 85.7%; specificity 88%; LR 7.14 AUC (95% CI) 0.88 (0.78-0.99) <u>Problem severity (recovered ≤1)</u>: cut-off 100 Sensitivity 68%; specificity 96.4%; LR -19.04 AUC (95% CI) 0.16 (0.71-0.97) <u>Problem severity (not recovered >1)</u>: cut-off 113 Sensitivity 82.1%; specificity 84%; LR 5.13 AUC (95% CI) 0.84 (0.71-0.97)

General limitations	Not all participants were entered into analysis. Large number of non-responders to original ÖMSPQ. Little information provided on loss to follow-up and no raw numbers provided on participant outcome (numbers recovered, numbers with pain etc).

Study	**Heneweer 2007** [216,216]
Study type	Prospective cohort study
Number of studies (number of participants	1 (n = 56)
Country and setting	Netherlands; primary care
Funding	No funding received
Duration of study	12 weeks
Baseline characteristics	Mean age (SD): recovered 40.8 (9.2) years; non-recovered 43.1 (9.1) years. Gender: recovered 35%% Female; non-recovered 44% female. Mean duration of current complaint: < 4 weeks: recovered 64.5%; non-recovered 36% 4-6 weeks: recovered 29%; non-recovered 24% 7-12 weeks: recovered 6.5%; non-recovered 40%
Patient characteristics	Inclusion criteria Medical referral based on non-specific low back pain preceded by a pain free period of at least 3 months in which no physical therapist was seem. Aged between 21-60 years with sufficient knowledge of Dutch to complete the questionnaire. Exclusion criteria: Back complaints with a (suspected) specific cause (e.g. trauma, tumour, rheumatoid arthritis etc), pregnancy, or coexisting major medical disease.
Risk assessment tool	The Dutch translation of the Acute Low Back Pain Screening Questionnaire (ALBPSQ) A self-administered screening assessment based on variables that have been suggested as risk factors. (no further detail provided in the paper)
Target condition	Visual analogue scale of pain (horizontal 0-100mm), Quebec Back Pain Disability Scale (QBPDQ) and overall recovery at 12 weeks based on a questionnaire.

Results: Area under the curve (SE)	**ALBPSQ – total score for recovery** AUC 0.641 (0.074)
General limitations (according to PROBAST)	Unclear if outcome interpreted without knowledge of assessment tool status. Pain and function outcomes not reported. No clear description of the tool and handling of attrition.

Study	**Hill 2008[219]**
Study type	Prospective cohort study (validation study of STarT Back)
Number of participants	N=131 patients (development sample) N=500 patients enrolled and provided baseline information (the external validation sample).
Country and setting	UK
Funding	Arthritis Research Campaign UK, and the North Staffordshire Primary Care Research Consortium
Duration of study	6 months
Baseline characteristics	Age, mean (SD): 45 (9.7), female: 59%, symptom location: referred leg pain 61%, symptom duration: acute (<1 month) 17%, 1-6 months 34%, 7 months -3 years 25%, >3 years 22%. RMDQ means (SD): 9.1 (5.9)
Patient characteristics	Inclusion criteria Adults recruited to an ongoing prospective cohort study of primary care patients with low back pain Exclusion criteria: Not reported
Risk assessment tool	STarT Back: overall score (0-9)determined by summing all positive responses Appropriate cut-off scores were determined in this study, as this was the validation study. These were: STarT Back: psychosocial subscale score (0-5) based on bothersomeness, fear, catastophizing, anxiety and depression. High risk ≥4: high levels of psychosocial prognostic factors are present with or without physical factors present, Medium risk >3: physical and psychosocial factors are present but not a high levels of psychosocial factors, Low risk 0-3: few prognostic factors are present.
Target condition	Predicting 6 months follow-up disability scores using the Roland Morris disability questionnaire (0-24)

Results: Data to be included in our review analysis will be taken from the larger N=500 external validation sample. 6 months data.	**Development sample – AUC (95% CI)** Disability (RMDQ ≥7) for overall STarT Back tool scores: 0.92 (0.88–0.97) Disability (RMDQ ≥7) for psychosocial subscale of STarT Back tool scores: 0.90 (0.85–0.93) Fear TSK ≥ 41 for overall STarT Back tool scores: 0.79 (0.71–0.87) Fear TSK ≥ 41 for psychosocial subscale of STarT Back tool scores: 0.81 (0.74–0.99) Depression PHQ-2 = 2 for overall STarT Back tool scores: 0.74 (0.65–0.82) Depression PHQ-2 = 2 for psychosocial subscale of STarT Back tool scores: 0.76 (0.68–0.84) **External validation sample (N=500) – AUC (95% CI)** Disability (RMDQ ≥7) for overall STarT Back tool scores: 0.90 (0.88–0.93) Fear TSK ≥ 41 for overall STarT Back tool scores: 0.79 (0.75– 0.83) **External validation sample (N=500) – Sensitivity/specificity for low vs. medium/high risk** Disability (RMDQ ≥7) for overall STarT Back tool scores: 80.1 / 65.4 (N=58/74 in high risk group had poor outcome at 6 months)
General limitations (according to PROBAST)	Overall given low risk of bias. Validation study well conducted and took into account possible non-modifiable confounder variables, such as age, gender and episode duration (explored by subgroup analyses).

Study (subsidiary papers)	HILL 2011A trial: Hill 2011[219,220] (Whitehurst 2012[566,567])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=851)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients were included if they were greater than 18 years if age, could speak and understand English, had back pain of any duration with or without associated radiculopathy
Exclusion criteria	Patients with serious disorders, serious illness or co-morbidity were excluded. Those who had spinal surgery in the past 6 months, who were pregnant, were receiving back treatments (except primary care) and those who were unable/willing to attend were also excluded
Recruitment/selection of patients	In 10 GP practices within the Keele General Practice Research Partnership, adults who had consulted their doctor about back pain during June 2007 to November 2008 were identified through weekly searches of electronic patients records for morbidity codes for back pain
Age, gender and ethnicity	Age - Mean (SD): 50.2 (15.1) in the STarT Back Group and 49.1 (14.3) in the Control Group. Gender (M:F): 500:351. Ethnicity:
Further population details	
Extra comments	Baseline RMDQ for the STarT Back Group was 9.8(5.6) and 9.7(5.8) in the Control Group. Baseline Back Pain Intensity for the STarT Back Group was 5.3(2.2) and 5.2(2.2) in the Control Group. Baseline HADS anxiety subscale for the STarT Back Group was 7.4(4.1) and 5.2(2.9) in the Control Group. Baseline HADS depression subscale for the STarT Back Group was 5.8(4.1) and 6.0(4.1) in the Control Group
Indirectness of population	No indirectness
Interventions	(n=568) Intervention 1: Risk assessment tools + treatment - STarT Back. During baseline clinical assessment and treatment session, decisions about referral were made by the use of the STarT Back Screening tool classification. The 30-min assessment and initial treatment were delivered according to an agreed protocol, with advice focusing on promotion of appropriate levels of activity including return to word and a pamphlet about local exercise venues and

	self-help group Patients were also shown a 15 minute educational video entitled Get Back Active.. Duration 1 year. Concurrent medication/care: None reported Further details: 1. Validated and non-validated risk tools: Comments: Randomisation was in a 2:1 ratio to enable future secondary analysis of targeted treatment mechanisms. (n=283) Intervention 2: Unstratified treatment et – Un-`stratified treatment. During baseline clinical assessment and treatment session, decisions about referral were made on the basis of physiotherapists clinical judgment without knowledge of a participants STarT Back tool classification. Participants received a 30 min physiotherapy assessment and initial treatment including advice and exercises, with the option of onward. Duration 1 year. Concurrent medication/care: None reported Further details: 1. Validated and non-validated risk tools: Not applicable / Not stated / Unclear
Funding	Study funded by industry (Arthritis UK funded study (grant number 17741))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: START BACK GROUP versus CONTROL GROUP

Protocol outcome 1: Quality of life at ≤ 4 months
- Actual outcome: SF-12 physical component at 4 months; Group 1: mean -7.5 (SD 13); n=568, Group 2: mean -5.2 (SD 13.3); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component at 4 months; Group 1: mean -2.1 (SD 11.3); n=568, Group 2: mean -2.1 (SD 11); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 physical component Low Risk at 4 months; Group 1: mean -3.2 (SD 9.6); n=148, Group 2: mean -1.8 (SD 9.7); n=73; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 physical component Medium Risk at 4 months; Group 1: mean -9.1 (SD 11.7); n=263, Group 2: mean -6.4 (SD 10.7); n=131; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 physical component High Risk at 4 months; Group 1: mean -8.9 (SD 15.1); n=157, Group 2: mean -6.4 (SD 15.8); n=79; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component Low Risk at 4 months; Group 1: mean 0.5 (SD 12.4); n=148, Group 2: mean -1 (SD 10.2); n=73; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component Medium Risk at 4 months; Group 1: mean -1.5 (SD 10.4); n=263, Group 2: mean 1.1 (SD 12); n=131; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component High Risk at 4 months; Group 1: mean -5.5 (SD 12.5); n=157, Group 2: mean -4.8 (SD 14.3); n=79; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ5D Low Risk at 4 months; Group 1: mean 0.799 (SD 0.21); n=148, Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ5D Medium Risk at 4 months; Group 1: mean 0.702 (SD 0.28); n=263, Group 2: mean 0.674 (SD 0.28); n=131; Risk of bias: Very high; Indirectness of

outcome: No indirectness
- Actual outcome: EQ5D High Risk at 4 months; Group 1: mean 0.585 (SD 0.35); n=157, Group 2: mean 0.474 (SD 0.38); n=79; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome: SF-12 physical component at 12 months; Group 1: mean -7.5 (SD 11.3); n=568, Group 2: mean -5.2 (SD 10.9); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component at 12 months; Group 1: mean -1.7 (SD 13); n=568, Group 2: mean -1.2 (SD 13.4); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 physical component Low Risk at 12 months; Group 1: mean -4 (SD 9.7); n=148, Group 2: mean -2.4 (SD 10.1); n=73; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 physical component Medium Risk at 12 months; Group 1: mean -8.8 (SD 11.5); n=263, Group 2: mean -5.7 (SD 11.7); n=131; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 physical component High Risk at 12 months; Group 1: mean -8.6 (SD 12.2); n=157, Group 2: mean -6.8 (SD 13.1); n=79; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component Low Risk at 12 months; Group 1: mean 1.3 (SD 10.7); n=148, Group 2: mean -0.4 (SD 9.9); n=73; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component Medium Risk at 12 months; Group 1: mean -1.2 (SD 12.3); n=263, Group 2: mean -0.1 (SD 12.7); n=131; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 mental component High Risk at 12 months; Group 1: mean -5.5 (SD 13.8); n=157, Group 2: mean -3.6 (SD 13.8); n=79; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ5D Low Risk at 1 year; Group 1: mean 0.787 (SD 0.2); n=148, Group 2: mean 0.773 (SD 0.24); n=73; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ5D Medium Risk at 1 year; Group 1: mean 0.687 (SD 0.32); n=263, Group 2: mean 0.635 (SD 0.31); n=131; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ5D High Risk at 1 year; Group 1: mean 0.541 (SD 0.37); n=157, Group 2: mean 0.458 (SD 0.38); n=79; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at ≤ 4 months
- Actual outcome: Pain Intensity at 4 months; Group 1: mean 3.2 (SD 2.5); n=568, Group 2: mean 2.6 (SD 2.4); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain Intensity Low Risk at 4 months; Group 1: mean 1.7 (SD 2.2); n=148, Group 2: mean 1.5 (SD 2.1); n=73; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain Intensity Medium Risk at 4 months; Group 1: mean 3.5 (SD 2.6); n=263, Group 2: mean 2.8 (SD 2.1); n=131; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain Intensity High Risk at 4 months; Group 1: mean 4.2 (SD 2.3); n=157, Group 2: mean 3.4 (SD 2.9); n=79; VAS pain 0-10 Top=High is poor outcome;

Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - 1 year
- Actual outcome: Pain Intensity at 12 months; Group 1: mean 3 (SD 2.8); n=568, Group 2: mean 2.8 (SD 2.6); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain Intensity Low Risk at 12 months; Group 1: mean 1.7 (SD 2.3); n=148, Group 2: mean 1.7 (SD 2.4); n=73; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain Intensity Medium Risk at 12 months; Group 1: mean 3.3 (SD 2.6); n=263, Group 2: mean 3 (SD 2.8); n=131; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain Intensity High Risk at 12 months; Group 1: mean 3.7 (SD 2.7); n=157, Group 2: mean 3.6 (SD 3.2); n=79; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months
- Actual outcome: HAD'S anxiety subscale at 4 months; Group 1: mean 1.7 (SD 3.6); n=568, Group 2: mean 1.2 (SD 4); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD'S depression subscale at 4 months; Group 1: mean 1.7 (SD 3.7); n=568, Group 2: mean 1.1 (SD 3.3); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD'S depression subscale at 12 months; Group 1: mean 1.4 (SD 4.1); n=568, Group 2: mean 0.9 (SD 4); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS anxiety subscale Low Risk at 4 months; Group 1: mean 0.6 (SD 3.3); n=148, Group 2: mean 0.9 (SD 3.5); n=73; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS anxiety subscale Medium Risk at 4 months; Group 1: mean 1.7 (SD 3.8); n=263, Group 2: mean 0.8 (SD 3.7); n=131; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS anxiety subscale High Risk at 4 months; Group 1: mean 2.8 (SD 4.3); n=157, Group 2: mean 2.2 (SD 4.5); n=79; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS depression subscale Low Risk at 4 months; Group 1: mean 0.3 (SD 3.2); n=148, Group 2: mean 0.2 (SD 3.3); n=73; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS depression subscale Medium Risk at 4 months; Group 1: mean 1.7 (SD 3.6); n=263, Group 2: mean 1.2 (SD 3.5); n=131; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS depression subscale High Risk at 4 months; Group 1: mean 3 (SD 4.3); n=157, Group 2: mean 1.9 (SD 3.8); n=79; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - 1 year
- Actual outcome: HADS anxiety subscale at 12 months; Group 1: mean 1.3 (SD 3.9); n=568, Group 2: mean 1 (SD 4.4); n=283; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HADS anxiety subscale Low Risk at 12 months; Group 1: mean 0.5 (SD 3.2); n=148, Group 2: mean 0.8 (SD 4); n=73; HADS 0-21 Top=High is poor

	outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: HADS anxiety subscale Medium Risk at 12 months; Group 1: mean 1.3 (SD 4.2); n=263, Group 2: mean 0.6 (SD 4.2); n=131; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: HADS anxiety subscale High Risk at 12 months; Group 1: mean 2.1 (SD 4.5); n=157, Group 2: mean 1.7 (SD 5); n=79; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: HADS depression subscale Low Risk at 12 months; Group 1: mean 0.2 (SD 3.3); n=148, Group 2: mean 0.2 (SD 3.5); n=73; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: HADS depression subscale Medium Risk at 12 months; Group 1: mean 1.3 (SD 3.7); n=263, Group 2: mean 1 (SD 3.8); n=131; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: HADS depression subscale High Risk at 12 months; Group 1: mean 2.7 (SD 4.7); n=157, Group 2: mean 1.5 (SD 4.5); n=79; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Function (disability scores) at ≤ 4 months - Actual outcome: RMDQ at 4 months; Group 1: mean 4.7 (SD 5.9); n=568, Group 2: mean 3 (SD 5.9); n=283; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RMDQ Low Risk at 4 months; Group 1: mean 1.6 (SD 4.4); n=148, Group 2: mean 0.8 (SD 4.3); n=73; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RMDQ Medium Risk at 4 months; Group 1: mean 5.3 (SD 6); n=263, Group 2: mean 3.4 (SD 6.1); n=131; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RMDQ High Risk at 4 months; Group 1: mean 6.8 (SD 6.9); n=157, Group 2: mean 4.4 (SD 6.1); n=79; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Function (disability scores) at >4 months - 1 year - Actual outcome: RMDQ at 12 months; Group 1: mean 4.3 (SD 6.4); n=568, Group 2: mean 3.3 (SD 6.2); n=283; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RMDQ Low Risk at 12 months; Group 1: mean 1.6 (SD 4.5); n=148, Group 2: mean 1.2 (SD 4.8); n=73; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RMDQ Medium Risk at 12 months; Group 1: mean 4.9 (SD 5.9); n=263, Group 2: mean 3.6 (SD 6.3); n=131; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RMDQ High Risk at 12 months; Group 1: mean 5.9 (SD 7.2); n=157, Group 2: mean 4.8 (SD 6.3); n=79; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - 1 year; Responder criteria at ≤ 4 months; Responder criteria at >4 months - 1 year; Adverse events (morbidity) at ≤ 4 months; Adverse

events (morbidity at >4 months - 1 year; Adverse events (mortality) at >4 months - 1 year; Adverse events (mortality) at ≤ 4 months	

Study	IMPaCT Back trial: Foster 2014[138,139]
Study type	Prospective cohort study
Number of studies (number of participants)	2 (n=922)
Countries and setting	Conducted in United Kingdom; Setting: 64 family physicians from 5 practices in a single healthcare region in Cheshire, UK
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 6 month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged 18 or over consulting with non-specific low back pain of any episode duration, with or without associated leg pain identified using a standardized set of diagnostic Read codes Read codes are standard terminology system used in general practice
Exclusion criteria	not stated
Recruitment/selection of patients	Practices were initially approached by members of the Primary Care Research Network in the West Midlands in the UK and recruited after an initial meeting with the research team at which the study was discussed. Each practice identified consecutive adults patients consulting their physician during a usual care phase (phase 1: 6 month recruitment in 2008) and a stratified care phase (phase 3: 12 month recruitment in 2008-2009)
Age, gender and ethnicity	Age - Mean (SD): 53.0 (15.0) in phase 1 and 54.1 (14.8) in phase 3. Gender (M:F): 166:202 (phase 1) and 224:330. Ethnicity:
Further population details	
Extra comments	Baseline RMDQ score in phase 1 population=8.7(5.9) and 8.4(5.7) in phase 2 population. Baseline pain (NRS) score in phase 1 population=5.3(2.4) and 5.0(2.6) in phase 2 population. For 6 months, each GP practice were treated according to usual care (phase 1). During a 3 month period (phase 2), a stratified care using quality improvement program was introduced to implement the risk took in consultation and to provide training to clinician and physical therapists to stratify patients correctly with the tool and provide risk matched treatment. A NEW cohort of patients was recruited during a 12 month period (phase 3) to assess the impact of stratified care
Indirectness of population	No indirectness
Interventions	(n=554) Intervention 1: Risk assessment tools + treatment - STarT Back. Stratified care phase (phase 3: 12 month recruitment of a new cohort of patients in 2008-2009)to assess the impact of stratified care using identical processes in phase 1.physician engagement in stratified care was evaluated by the extent with which the physician exited a

	computer template pop-up for STarT Back tool before completing it. The computer pop-up included a screen prompting physician to complete the tool in real time and provided a risk group-matched treatment recommendation. Duration 6 months. Concurrent medication/care: None stated Further details: 1. Validated and non-validated risk tools: Not applicable / Not stated / Unclear (n=368) Intervention 2: Unstratified treatment et – Unstratified treatment. 6 month period (phase 1) in which GP management involved assessment, advice, medication, sickness certification and referral for investigations or further treatment as appropriate (to community physical therapy or secondary care specialists). Duration 6 months. Concurrent medication/care: None stated Further details: 1. Validated and non-validated risk tools: Not applicable / Not stated / Unclear
Funding	Academic or government funding (study funded by the Health Foundation(grant code 346/4540) with support from NIHR)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STarT Back GROUP versus USUAL CARE GROUP

Protocol outcome 1: Quality of life at >4 months - 1 year
- Actual outcome: SF-12 Physical Component Score (PCS) at 6 months; Group 1: mean 3.9 (SD 16.3); n=554, Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Physical Component Score (PCS)-Low Risk at 6 months; Group 1: mean 2.6 (SD 16.5); n=214, Group 2: mean 2.2 (SD 15.2); n=136; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Physical Component Score (PCS)-Medium Risk at 6 months; Group 1: mean 4 (SD 11.9); n=232, Group 2: mean 5.7 (SD 13.9); n=151; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Physical Component Score (PCS)-High Risk at 6 months; Group 1: mean 6.1 (SD 14.8); n=108, Group 2: mean 2.3 (SD 13.1); n=81; SF-12 0-100 Top=High is good outcome; Risk of bias:; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at ≤ 4 months
- Actual outcome: SF-12 Mental Component Score (MCS) at 6 months; Group 1: mean 2.1 (SD 13.7); n=554, Group 2: mean 1.9 (SD 14.3); n=368; SF-12 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain (NRS) at 6 months; Group 1: mean -1.9 (SD 3.2); n=554, Group 2: mean -1.7 (SD 2.8); n=368; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Mental Component Score (MCS)-Medium Risk at 6 months; Group 1: mean 2 (SD 12.8); n=232, Group 2: mean 1.2 (SD 13.8); n=151; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Mental Component Score (MCS)-High Risk at 6 months; Group 1: mean 6.4 (SD 11.7); n=108, Group 2: mean 4.8 (SD 17.4); n=81; SF-12 0-100 Top=High is good outcome; Risk of bias:; Indirectness of outcome: No indirectness

- Actual outcome: SF-12 Mental Component Score (MCS)-Low Risk at 6 months; Group 1: mean 0.2 (SD 14.4); n=214, Group 2: mean 1.1 (SD 13.4); n=136; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain (NRS)-Low Risk at 6 months; Group 1: mean -0.8 (SD 3); n=214, Group 2: mean -1 (SD 2.9); n=136; Risk of bias:; Indirectness of outcome: No indirectness
- Actual outcome: Pain (NRS)-Medium Risk at 6 months; Group 1: mean -2.4 (SD 3.1); n=232, Group 2: mean -2.3 (SD 3); n=151; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain (NRS)-High Risk at 6 months; Group 1: mean -2.9 (SD 3.3); n=108, Group 2: mean -1.9 (SD 2.6); n=81; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months
- Actual outcome: HAD (Anxiety) at 6 months; Group 1: mean -1.2 (SD 4.7); n=554, Group 2: mean -1 (SD 4.4); n=368; HAD's 0-21 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Depression) at 6 months; Group 1: mean -1.4 (SD 3.7); n=554, Group 2: mean -1 (SD 4); n=368; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Anxiety)-Low Risk at 6 months; Group 1: mean -0.6 (SD 4.2); n=214, Group 2: mean -0.7 (SD 4.1); n=136; HAD-ANXIETY 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Anxiety)-Medium Risk at 6 months; Group 1: mean -1 (SD 4); n=232, Group 2: mean -0.38 (SD 3.7); n=151; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Anxiety)-High Risk at 6 months; Group 1: mean -2.7 (SD 4.3); n=108, Group 2: mean -2.1 (SD 5.5); n=81; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Depression)-Low Risk at 6 months; Group 1: mean -0.6 (SD 3.8); n=214, Group 2: mean -0.4 (SD 4.1); n=136; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Depression)-Medium Risk at 6 months; Group 1: mean -1.4 (SD 3.3); n=232, Group 2: mean -1.4 (SD 3.3); n=151; Risk of bias:; Indirectness of outcome: No indirectness
- Actual outcome: HAD (Depression)-High Risk at 6 months; Group 1: mean -2.7 (SD 3.6); n=108, Group 2: mean -1.2 (SD 4.3); n=81; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at ≤ 4 months
- Actual outcome: RMDQ at 6 months; Group 1: mean -2.7 (SD 5.5); n=554, Group 2: mean -2.2 (SD 6); n=368; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: RMDQ Low Risk at 6 months; Group 1: mean -0.9 (SD 4.5); n=214, Group 2: mean -0.9 (SD 5.8); n=136; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: RMDQ Medium Risk at 6 months; Group 1: mean -3.5 (SD 6); n=151, Group 2: mean -3.4 (SD 6.3); n=232; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: RMDQ High Risk at 6 months; Group 1: mean -4.8 (SD 6.8); n=81, Group 2: mean -2.3 (SD 5.8); n=108; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Pain severity (VAS/NRS) at >4 months - 1 year; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - 1 year; Function (disability scores) at >4 months - 1 year; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - 1 year; Responder criteria at ≤ 4 months; Responder criteria at >4 months - 1 year; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity at >4 months - 1 year; Adverse events (mortality) at >4 months - 1 year; Adverse events (mortality) at ≤ 4 months

Study	**Jellema 2007** [251,252]
Study type	Prospective cohort study
Number of studies (number of participants	1 (n = 314)
Country and setting	Netherlands; primary care
Funding	Supported by a grant from The Netherlands Organisation for Health Research and Development
Duration of study	1 year
Baseline characteristics	Mean age (SD) 42.7 years (11.6). Gender: 47.5% Female. Mean duration of current episode (range): 12 days (6-21). Proportion of those in employment (81.5%) who had taken sick leave due to back pain = 38.2%. Frequency of back pain episodes in the last year; 1 or 2 episodes 59.6%; 3 or more episodes 19.1%. Mean (SD) pain intensity during the day on a scale of 0-10 4.9 (2.0)
Patient characteristics	Recruitment: Participants recruited as part of a cluster-RCT evaluating an intervention aimed at psychosocial prognostic factors (e.g. fear avoidance beliefs, distress, and 'pain catastrophising') versus usual care from GP. The trial demonstrated no relevant or significant difference between the intervention and control group on any outcome measure during 1 year follow-up. Inclusion criteria Consecutive patients aged 18-65 years who presented to their GP (max. 10 participants/GP) for a new episode of low back pain (duration < 12 weeks) or an exacerbation of mild symptoms. Non-specific low back pain as main complaint. Sufficient knowledge of Dutch language. Exclusion criteria Pregnancy, low back pain caused by specific pathological conditions, low back pain currently treated by another healthcare professional

	Final chronicity at end of study: At 1-year, 37.6% (112/298) of participants showed an unfavourable outcome	
Risk assessment tool	Örebro Musculoskeletal Pain questionnaire: Contains 25 items in which 21 (items 5-25) are included in the final score. Scored items assess pain, previous sick leave, anxiety and depression, activity limitations, coping, work characteristics/satisfaction, fear avoidance beliefs, and patient's expectations to improve. Items are summed, providing a total ranging between 0-210, with higher scores indicating a higher risk of poor outcome. In this study, scores were categorised into 3 groups; low risk (score <90), moderate risk (score 90-105) and high risk for prolonged disability (score > 105; thresholds based on Linton, 2002). Low back pain perception scale: His scale (0-5) contains a total of 5 items with yes/no responses; score is derived by totalling number of 'yes' responses. Higher scores indicate greater risk. The 5 items are; worrying, coping, limitations due to low back pain, expectation regarding pain relief, pain interference.	
Target condition	Recovery at 1-year (self-reported): patients rated their recovery on a 7-point Likert scale (very much improved, much improved, slightly improved, no change, slightly worse, much worse, very much worse. A score of at least 'much improved' was identified as the threshold indicating a minimally important change, based on Ostelo 2005. An unfavourable course of low back pain was defined as a score of 'slightly improved' or worse, at 2 or more follow-up measurements.	
Results: Sensitivity and specificity Optimal likelihood ratio Area under the curve (95% CI)	ÖMSPQ Recovery: cut-off ≥90 Sensitivity 52%; specificity 66% AUC (95% CI) 0.61 (0.54-0.68) Recovery: cut-off ≥105 Sensitivity 28%; specificity 89% AUC (95% CI) 0.61 (0.54-0.68) Recovery: cut-off ≥68	Low back pain perception scale Recovery: cut-off ≥2 Sensitivity 80%; specificity 27% AUC (95% CI) 0.59 (0.52-0.66) Recovery: cut-off ≥4 Sensitivity 30%; specificity 81% AUC (95% CI) 0.59 (0.52-0.66) Calibration

	Sensitivity 79%; specificity 26% AUC (95% CI) 0.61 (0.54-0.67) Recovery: cut-off ≥99 Sensitivity 35%; specificity 81% AUC (95% CI) 0.61 (0.54-0.67) Calibration Intercept (95% CI) -0.03 (-0.06 - -0.00) and slope (95% CI) 1.09 (1.01 – 1.17)	Intercept (95% CI) 0.02 (0.02 - 0.03) and slope (95% CI) 0.95 (0.93 – 0.97)
General limitations (according to PROBAST)	Unclear where thresholds taken from or whether they were pre-specified (other than 90 and 105).	

Study	**Maher 2009[337,338]**
Study type	Prospective cohort study
Number of participants	n = 230 (97 Norwegian cohort and 133 Australasian cohort)
Country and setting	Norway and Australasia, primary care setting
Funding	Not stated
Duration of study	12 months follow-up
Baseline characteristics	Norway and Australasian cohort respectively Age [mean (SD)] 38.7 (9.7) and 43.3 (12.1) years, females 56% and 43%, duration of low back pain 1-3 weeks and 6-12 weeks.
Patient characteristics	Inclusion criteria Australasian: Participants in an RCT of exercise and advice for sub-acute non-specific low back pain (duration 6weeks to 3 months). Norwegian: People aged 18-60 years recruited from primary health care when consulting a doctor or chiropractor for their first time owing to acute low back pain of <3 weeks, working population. Exclusion criteria People not working i.e. retired, on sick leave, unemployed, students. Patients with red flags, pregnancy, previous

	professional care for low back pain.
Risk assessment tool	Örebro questionnaire: 25 items assessing pain location, work absence due to pain, pain duration, pain intensity, control over pain, frequency of pain episodes in past 3 months, functional ability, mood, perceptions of work, patients estimate of prognosis and fear avoidance. Total score of 0-210, high scores indicating increased risk of poor outcome.
Target condition	Outcome at 6 months, measured using pain numeric rating scale (0-10) and Roland Morris disability questionnaire (0-24). No cut-offs identified.
Results: Adjusted R^2	 Pain Short term (4/6 weeks): 7% Medium term (3 months): 9.1% Long term (12 months): 4.2% Disability Short term (4/6 weeks): 10.9% Medium term (3 months): 11.2% Long term (12 months): 12.7%
General limitations (according to PROBAST)	Concerns around outcome reporting and participant flow. Outcome thresholds presumed not pre-specified as not reported. Unclear if outcome interpreted without knowledge of clinical prediction rule status. Unclear reporting of attrition and final participant numbers with respect to experiencing the outcomes.

Study	**Morso 2013** [390,391]
Study type	Prospective cohort
Number of participants	UK primary care n =845 / Danish primary care n = 322
Country and setting	Denmark and England
Funding	Region of Southern Denmark ad University of Southern Denmark
Duration of study	3 months
Baseline characteristics	Median age (IQR): Danish cohort 50 (41-59) / UK cohort 46 (39-53). Female: Danish 57.8% / UK 58.8% Baseline STarT Back group stratification: Danish low: 37.5%, medium 39.3%, high 23.2%. UK low 53.7%, medium

	34.5%, high 10.5%	
Patient characteristics	Danish primary care cohort – prospectively recruited from general medical practices and physiotherapy clinics. Inclusion criteria: people 18-65 with non-specific low back pain identified either by specific diagnostic coding recorded in GP electronic patient records, or by physiotherapists using criteria contained in the European guidelines for non-specific low back pain in primary care. UK primary care cohort – recruited from the BrBack Study a prospective cohort of consecutive patients who consulted with low back pain in 8 GP practiced in England.	
Risk assessment tool	STarT Back (no description given in study)	
Target condition	Roland Morris disability questionnaire (RMDQ) score (0-100 scale) or 30 points or more at 3 months. Low back pain as being 'severe' 8-10 on a 10 point numeric pain scale. 3 month time point chosen as shown to be important time point for clinical course of low back pain, marking the end of rapid improvement and onset of persistent pain. Poor outcome at 3 months (RMDQ ≥30 points): Danish cohort 151/322 (47%) / UK cohort 304/845 (36%)	
Results: Area under the curve (95% CI)	<u>Danish primary care cohort</u> RMDQ >30 on a 0-100 scale at 3 months: 0.71 (0.66 to 0.77) NRS 8-10 on a 0-10 scale at 3 months: 0.79 (0.68 to 0.89) Proportions of patients within STarT Back tool subgroup with poor clinical outcome on activity limitation: Low: 24% Med: 57% High: 64%	<u>UK primary care cohort</u> RMDQ >30 on a 0-100 scale at 3 months: 0.81 (0.78 to 0.84) NRS 8-10 on a 0-10 scale at 3 months: 0.81 (0.78 to 0.84) Proportions of patients within STarT Back tool subgroup with poor clinical outcome on activity limitation: Low: 17% Med: 54% High: 78%
General limitations (according to PROBAST)	No clear exclusion criteria reported. Unclear if all predictors used similar in both cohorts as no STarT Back description offered. Unclear if outcome interpreted without knowledge of risk tool stratification.	

Study	Morso 2014[390,392]
Study type	Prospective cohort (secondary care)/ retrospective cohort (primary care)
Number of participants	Secondary care N=960; primary care N=172
Country and setting	Denmark, primary and secondary setting
Funding	Not stated
Duration of study	6 months
Baseline characteristics	Secondary care cohort Age [mean (SD)] 52 (14.1); female 54.3%; duration of low back pain ≤3 months 20%, >3 months 80% Primary care cohort Age [mean (SD)] 52 (15.2); female 57&; duration of low back pain ≤3 months 66%, >3 months 44%
Patient characteristics	Inclusion criteria Low back pain patients, inclusion criteria for secondary care was full electronic completion of the STarT Back questionnaire at baseline.
Risk assessment tool	STarT Back (no description given in study)
Target condition	Outcome at 6 months follow-up for Roland Morris disability questionnaire and numeric pain rating scale
Results: Area under the curve (95% CI)	Secondary care RMDQ >30 on a 0-100 scale at 6 months: 0.69 (0.66 to 0.73) NRS 8-10 on a 0-10 scale at 6 months: 0.72 (0.68 to 0.77) Primary care RMDQ >30 on a 0-100 scale at 6 months: 0.73 (0.64 to 0.82) NRS 8-10 on a 0-10 scale at 6 months: 0.66 (0.46 to 0.85)
General limitations (according to PROBAST)	Only AUC data reported; high rate of missing data for the primary care cohort and no information provided as to how missing data on the tool was managed; primary care cohort was retrospective and unclear if risk tool scores were assessed without knowledge of outcome data; unclear if risk tool accounts for differences in health across sample

Study	Newell 2015A{NEWELL2015A}

Study type	Prospective cohort study
Number of participants	749 patients enrolled and provided baseline information.
Country and setting	UK
Funding	Not reported
Duration of study	14, 30, and 90 days
Baseline characteristics	Age, mean (SD): 47.8 (13.9); female: 57%; symptom location: low back pain with leg pain above knee 33.0%, low back pain with leg pain below knee 12.4%; symptom duration: ≤3 months 53%, >3 months 47%. Pain, VAS 0-10: 6.4 (SD 2.0).
Patient characteristics	Inclusion criteria Adults aged >16 years presenting to one of the chiropractic clinics with non-specific low back pain and diagnosed as amenable to chiropractic care; completed routine pre-examination forms (including the Bournemouth Questionnaire). Exclusion criteria: Did not have low back pain, did not complete questionnaires online, or not considered amenable to chiropractic care.
Risk assessment tool	NOTE: participating clinicians provided usual chiropractic care (routinely including advice and reassurance, spinal manipulation, soft tissue modalities, and provision of exercise where applicable) throughout the course of the study. STarT Back: overall score (0-9)determined by summing all positive responses STarT Back: psychosocial subscale score (0-5) based on bothersomeness, fear, catastophizing, anxiety and depression. High risk ≥4: high levels of psychosocial prognostic factors are present with or without physical factors present, Medium risk >3: physical and psychosocial factors are present but not a high levels of psychosocial factors, Low risk 0-3: few prognostic factors are present.
Target condition	Predicting 90 days follow-up pain intensity using the PGIC scale (Patient's Global Impression of Change), score 1-7 (1 = worse than ever, 7= very much improved). Improvement defined as PGIC response of better or much better (score ≥6). PGIC asks 'how would you describe your pain/complaint now, compared to how you were when you completed the questionnaire before your first visit to this clinic?

Results: Area under the curve (95% CI)	**<u>Pain (PGIC) - AUC</u>** At 14 days: 0.53 (0.48 to 0.58) At 30 days: 0.57 (0.51 to 0.63) At 90 days: 0.55 (0.47 to 0.63) NOTE: the study also reports the Nagelkerke R2 value, but this is not a standard logistic regression measure used (it is a pseudo-R^2 measure), and so has not been reported as an outcome in this review.
General limitations (according to PROBAST)	Low risk of bias. Possible bias in selection due to broad inclusion and exclusion criteria.

Study	**Page 2015{PAGE2015}**
Study type	Prospective cohort study
Number of participants	53 volunteer patients enrolled and provided baseline information.
Country and setting	Canada
Funding	Not reported
Duration of study	2, 4, 6, and 12 months
Baseline characteristics	Age 44.1 (SD 13.3), duration of symptoms: 130.7 (SD 112.0) months. Drop-outs (cumulative): n=4 at 2 months, n=6 at 4 months, n=7 at 6 months, and n=6 at 12 months
Patient characteristics	Inclusion criteria Adults aged 16-80 years with non-specific chronic low back pain, able to read and understand French. Non-specific low back pain defined as pain located between the 12^{th} rib and the inferior gluteal fold for which no specific source of pain could be identified. Chronic defined as pain present >12 weeks and included both constant and recurrent patterns of pain. Exclusion criteria: low back pain of specific origin, spine surgery or trauma, scoliosis, neurological disease, uncontrolled HT, pregnancy,

	recent lumbar cortisone injection, under medications known to impair physical effort and pain perception, active lower body injury and/or severe, pain irradiating below the knee.
Risk assessment tool	NOTE: participants were instructed to perform, in randomised sequences, isometric trunk muscle endurance tasks, each p[receded by a maximal isometric voluntary contraction in the same position. STarT Back: overall score (0-9)determined by summing all positive responses STarT Back: psychosocial subscale score (0-5) based on bothersomeness, fear, catastophizing, anxiety and depression. High risk ≥4: high levels of psychosocial prognostic factors are present with or without physical factors present, Medium risk >3: physical and psychosocial factors are present but not a high levels of psychosocial factors, Low risk 0-3: few prognostic factors are present.
Target condition	Predicting 6 and 12 months Disability (ODI ≥24%) and Pain (NRS ≥37%) and fear of movement (TSK ≥41).
Results: Area under the curve (95% CI)	**ROC, AUC (95% CI)** Predictor at 6 months of Disability (ODI ≥24%): (0.69-1.0) Predictor at 12 months of Disability (ODI ≥24%): 0.82 (0.61-1.0) Predictor at 6 months of Pain (NRS ≥37%): 0.73 (0.58-0.86) Predictor at 12 months of Pain (NRS ≥37%): 0.71 (0.54-0.88) Predictor at 6 months of Fear of movement (TSK ≥41): 0.79 (0.56-1.0) Predictor at 12 months of Disability (TSK ≥41): data not reported **Sensitivity/specificity – cut-off ≥4 (discriminate between low and medium/high risk groups of persistent disabling low back pain** Pain and disability: range sensitivity = 42.9 to 75.0; specificity = 72.1 to 78.1 Exact data reported in a graph so unable to use for this review LR+ = ≤2.96 LR- = ≥0.35 NOTE: TSK = Tampa Scale for Kinesiophobia (measures fear of movement)
General limitations (according to PROBAST)	High risk of bias. Outcome assessors unclear if blinded, possible selection bias due to broad inclusion and exclusion criteria, some drop-outs (11%).

Study	Vibe fersum 2013[546,547]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=94)
Countries and setting	Conducted in Norway; Setting: Norwegian town; patients recruited from private physiotherapy outpatient practices, GPs and an outpatient spine clinic in the local teaching hospital.
Line of therapy	1st line
Duration of study	Follow-up (post intervention): 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica: low back pain only
Subgroup analysis within study	Not applicable
Inclusion criteria	localized back pain with mechanical behaviour to pain
Exclusion criteria	continuous sick leave for >4 months - 1 year; acute exacerbation of low back pain at time of testing; specific low back pain diagnosis (ie radicular pain, spondylolisthesis etc); lower limb surgery in last 3 months; lumbar spine surgery; pregnancy; psychiatric disorders, widespread constant non-specific pain disorder; active rheumatologic disease, progressive neurological disease, serious cardiac or other internal medical conditions; malignant diseases, acute trauma, infections or acute vascular catastrophes.
Recruitment/selection of patients	Direct referral from PT,GP and spine clinics, as well as via advertisements.
Age, gender and ethnicity	Age - Range of means: 42.9 in MT-EX and 41.0 in CB-CFT. Gender (M:F): 46:48. Ethnicity:
Further population details	
Extra comments	Baseline ODI in MT-EX Group was 24.0 (18.0) and 21.3 (7.5) in the CB-CFT group. Baseline Pain VAS I in MT-EX Group was 5.3(1.9) and 4.9 (2.0) in the CB-CFT group
Indirectness of population	No indirectness
Interventions	(n=59) Intervention 1: Risk assessment tools + treatment - Delitto/Childs/Flynn/Hancock/O'Sullivan. Classification based cognitive functional therapy (CB-CFT) as described by O'Sullivan. Targeted intervention based on detailed assessment, aimed to change their individual cognitive, movement and lifestyle behaviours considered by the therapist to be provocative and so contributing to their disorder. CB-FT consisted of 4 components: 1) cognitive component 2)specific movement exercises 3) targeted functional integration of activities in their daily life and 4) a physical activity program tailored to the movement classification. Duration 12 weeks. Concurrent medication/care: Multidimensional intervention and full physical examination first given to help broadly classify each patient based on his or her pain provocative postures and movement behaviours, lifestyle and cognitive behaviours. Further details: 1. Validated and non-validated risk tools:

	(n=62) Intervention 2: Unstratified treatment et – Unstratified treatment. Best practice manual therapy practice with interventions including joint mobilisations or manipulation techniques applied to the spine or pelvis. In addition, patients were given home exercise program. Duration 12 weeks. Concurrent medication/care: Multidimensional intervention and full physical examination first given to help broadly classify each patient based on his or her pain provocative postures and movement behaviours, lifestyle and cognitive behaviours. Further details: 1. Validated and non-validated risk tools:
Funding	Academic or government funding (No financial conflict of interest)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DELITTO/CHILDS/FLYNN/HANCOCK/O'SULLIVAN versus UNSTRATIFIED TREATMENT Protocol outcome 1: Pain severity (VAS/NRS) at ≤ 4 months - Actual outcome: Pain at 12 weeks; Group 1: mean 3.8 (SD 1.9); n=43, Group 2: mean 1.7 (SD 1.7); n=51; PINRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - 1 year - Actual outcome: Pain at 1 year; Group 1: mean 3.8 (SD 2.1); n=43, Group 2: mean 2.3 (SD 2); n=51; PINRS O-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at ≤ 4 months - Actual outcome: ODI at 12 weeks; Group 1: mean 18.5 (SD 8.1); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - 1 year - Actual outcome: ODI at 1 year; Group 1: mean 19.7 (SD 11.7); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Quality of life at >4 months - 1 year; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - 1 year; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - 1 year; Responder criteria at ≤ 4 months; Responder criteria at >4 months - 1 year; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity at >4 months - 1 year; Adverse events (mortality) at >4 months - 1 year; Adverse events (mortality) at ≤ 4 months

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Study	**Von Korff 2014[551,552]**

Study type	Prospective cohort	
Number of participants	n =521	
Country and setting	USA	
Funding	Grant from Janssen Pharmaceuticals Inc.	
Duration of study	4 months	
Baseline characteristics	Age (years) 47.8 (12.8). 59.9% female. 73.4% non-Hispanic white. Baseline pain status: 40.8% acute, 41.1% intermediate, 18% chronic. Mean number of days with back pain in last 6 months 66.1 (64.2)	
Patient characteristics	Inclusion criteria Adults aged 18 to 64 years who live in greater Seattle area, made a primary care back pain visit and had no back pain visits in the prior year. Exclusion criteria Prior lumbar spine surgery, pregnancy, Parkinson disease or multiple sclerosis diagnosis within the prior 3 years, cancer diagnosis (other than non-melanoma skin cancer) within the prior year, not continuously enrolled in Group Health for the previous 2 years.	
Risk assessment tool	Chronic Pain Risk Item Set: modified to give 3 0-10 ratings of back pain intensity and 3 0-10 ratings of back pain-related activity interference. Pain health questionnaire-15 was used to assess pain in other locations and depressive symptoms assessed using Pain health questionnaire-8. Paper also reports on a modified STarT Back tool but this is not validated and is therefore does not meet protocol inclusion criteria.	
Target condition	Chronic pain grades II-IV back pain at 4 months follow-up.	
Results:	Predicted probabilities of an unfavourable back pain outcome of:	
	≥30% with Chronic Pain Risk Item Set	≥50% with Chronic Pain Risk Item Set
Sensitivity	72.2%	46.2%
Specificity	70.4%	90.4%
PPV	52.8%	68.9%
NPV	84.6%	75.5%
Area under the curve (95% CI)	0.79 (0.75 to 0.83)	0.79 (0.75 to 0.83)

General limitations (according to PROBAST)	Unclear if outcome information determined without knowledge of predictor status.

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Study	**Williams 2014** [571,575]
Study type	Prospective cohort (external validation) study
Number of participants	n = 937 validation sample only for this review
Country and setting	Australia
Funding	Using data from an RCT funded by GlaxoSmithKline
Duration of study	12 weeks
Baseline characteristics	Mean age (SD): 44.5 (16). Gender: 46% female. 0 predictors present 68 participants 1 predictor present 348 participants 2 predictors present 419 participants 3 predictors present 114 participants
Patient characteristics	Consecutive subset of participants enrolled in the paracetamol for low back pain (PACE) study (an RCT investigating the effectiveness of paracetamol for acute low back pain). Patients recruited by primary care clinicians (GP, pharmacist or physiotherapist) in Sydney. For the validation study all participants from the PACE cohort that had past the final follow-up time point (12 weeks) at the time of analysis were included. Inclusion criteria: people with a primary complaint of low back pain less than 6 weeks in duration, with or without leg pain, with at least moderate intensity pain during the preceding 24hours and who were pain free for at least one month before the onset of the current low back pain episode. Exclusion criteria: suspected of having a serious spinal pathology, were taking regular recommended doses of an analgesic, were pregnant or planning pregnancy during the treatment period (4 weeks), or had a contraindication to paracetamol)
Risk assessment tool	Hancock CPR (clinical prediction rule): Baseline pain (≤7/10 on numeric rating scale), duration of current symptoms (≤5 days), number of previous episodes of low back pain (≤1). Status on the prediction rule determined by calculating the number of predictors of recovery present. Participants were grouped into one of 4 strata representing their status on the prediction rule (0, 1, 2, or 3 features positive). No weighting of predictors was performed (based on development study where weighting of features didn't add

	predictive value and simplicity was preferred for usability).
Target condition	Sustained recovery from low back pain: defined as a score of 0 or 1 out of 10 on a numerical pain rating scale for 7 consecutive days. Participants recorded pain scores daily in a pain diary until recovered or until the maximum of 12 weeks. Outcome data recorded by researcher blind to prediction tool status or transcribed directly by the participant onto an online database.
Results: Calibration Discrimination Positive likelihood ratio Negative likelihood ratio Area under the curve	Calibration For predicting % recovered at 12 weeks 0 predictors present: 74.7% predicted vs. 68.1% observed 1 predictors present: 87.7% predicted vs. 78.2% observed 2 predictors present: 97.2% predicted vs. 84.7% observed 3 predictors present: 99.9% predicted vs. 91.1% observed No calibration statistics reported but author's state @ 4 and 12 weeks predicted and actual rates of recovery were less well calibrated with observed rates being typically about 10% less than predicted rates. Discrimination Likelihood ratios (95% CI) for recovery @ 12 weeks 0 predictors present: 0.48 (0.29-0.79) 1 predictors present: 0.77 (0.65-0.96) 2 predictors present: 1.21 (0.98-1.51) 3 predictors present: 2.43 (1.26-4.71) c-index value: 0.60 (0.56-0.64)
General limitations	No raw data provided on number of participants experiencing outcome (sustained recovery). No attrition information provided. No formal statistical test to assess calibration.

H.3 Imaging

Study	BOLD project (Back Pain Outcomes using Longitudinal Data) trial: Jarvik 2015[248]

Study type	Prospective cohort study
Number of studies (number of participants)	(n=5239)
Countries and setting	Conducted in USA; Setting: Patients presenting to primary or urgent care at 3 integrated health care systems: Harvard Vanguard, Henry Ford Health System and Kaiser Permanente Northern California
Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients of 65 years of age or older presenting to primary or urgent care for a new episode of care for low back pain, defined as no prior visits for low back pain within the previous 6 months (primary care visit for back pain based on ICD9 code)
Exclusion criteria	Health care encounter for back pain within 6 months, previously contacted for registry participation, prior lumbar spine surgery, developmental spine deformities, inflammatory spondyloarthropathy, spinal malignancy or infection, history of cancer within past 5 years excluding non-melanomatous skin cancer, history of HIV within past 5 years, no telephone, planning on leaving Health System within the next, unable to understand English, severe mental impairment that would interfere with answering questions
Age, gender and ethnicity	Age - Mean (SD): RX group: control group 74.3 (7.0); imaging group 74.3 (6.9); MRI group: control group 73.2 (6.6); imaging group 72.8 (6.0). Gender (M:F): RX group: control group 418:756; imaging group 405:769; MRI group: control group 121:228; imaging group 120:229. Ethnicity: RX cohort: Black (15% control group, 14% imaging group); Asian (4.86% control group, 4.4% imaging group); White (73% control group, 75% imaging group); Mixed (6.6% control group, 6.7 imaging group); Hispanic (5.6% control group, 6.2% imaging group); MRI cohort: Black (19% control group, 18% imaging group); Asian (2.9% control group, 3.2% imaging group); White (73% control group, 73% imaging group); Mixed (4.9% control group, 6.0 imaging group); Hispanic (5.8% control group, 4.9% imaging group)
Further population details	1. Chronicity: Acute pain (Patients presenting to primary or urgent care for a new episode of care for low back pain, defined as no prior visits for low back pain within the previous 6 months).
Extra comments	Patients 65 years old or older. Baseline characteristics, see extra comments.. X-ray group: baseline characteristics, mean (SD) for control and intervention groups respectively: RMDQ 10.3 (6.3), 10.5 (6); Brief Pain Inventory (BPI) interference 3.56 (2.5), 3.66 (2.4); EuroQuol 5D Index 0.73 (0.18), 0.74 (0.17); EuroQuol 5D VAS 73.3 (19), 72.7 (18); Back pain NRS 5.32 (2.7), 5.42 (2.7); Leg pain NRS 3.64 (3.3), 3.66 (3.3); prior imaging n (%) 61 (5.2), 57 (4.9). MRI group: baseline characteristics, mean (SD) for control and intervention groups respectively: RMDQ 12.5 (6.3), 12.4 (5.8); BPI interference 4.34 (2.5), 4.47 (2.4); EuroQuol 5D Index 0.67 (0.20), 0.69 (0.18); EuroQuol 5D VAS 69.1 (20),

	70.5 (18); Back pain NRS 5.94 (2.7), 5.89 (2.7); Leg pain NRS 5.13 (3.3), 5.00 (3.2); prior imaging n (%) 48 (14), 49 (14).
Indirectness of population	No indirectness
Interventions	(n=349) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. Early MRI or CT (within 6 weeks of their index visit). Duration 1 year follow-up. Concurrent medication/care: Not stated (n=1174) Intervention 2: Imaging for low back pain - MRI, CT or X-ray. X-ray (within 6 weeks of index visit). Duration 1 year follow-up. Concurrent medication/care: Not stated Comments: Some patients assigned to the early radiograph group could also have received early MRI/CT, but only if the imaging occurred after their X-ray (n=349) Intervention 3: No imaging. No imaging within 6 weeks of index visit. Duration 1 year follow-up. Concurrent medication/care: Not stated Comments: Controls were propensity matched to MRI or CT Imaging group patients (n=1174) Intervention 4: No imaging. No imaging within 6 weeks of index visit. Duration 1 year follow-up. Concurrent medication/care: Not stated
Funding	Academic or government funding (Agency for Healthcare Research and Quality (AHRQ), NIH Intramural Research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MRI OR CT (WITHIN 6 WEEKS OF INDEX VISIT) versus NO IMAGING (WITHIN 6 WEEKS OF INDEX VISIT; MATCHED CONTROL FOR MRI/CT GROUP)

Protocol outcome 1: Quality of life at ≤4 months
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D Index at 3 months; Group 1: mean 0.72 (SD 0.19); n=349, Group 2: mean 0.71 (SD 0.2); n=349; EuroQuol 5D Index 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D visual analogue scale (VAS) at 3 months; Group 1: mean 69.1 (SD 19.5); n=349, Group 2: mean 67.6 (SD 20.4); n=349; EuroQuol 5D Visual Analogue Scale (VAS) 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D Index at 12 months; Group 1: mean 0.74 (SD 0.19); n=349, Group 2: mean 0.72 (SD 0.2); n=349; EuroQuol 5D Index 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D visual analogue scale (VAS) at 12 months; Group 1: mean 71.6 (SD 19.3); n=349, Group 2: mean 67.3 (SD 19.4); n=349; EuroQuol 5D Visual Analogue Scale (VAS) 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity at ≤4 months
- Actual outcome for low back pain with/without sciatica: Brief Pain Inventory Interference scale at 3 months; Group 1: mean 3.68 (SD 2.58); n=349, Group 2: mean 3.7

(SD 2.57); n=349; Brief Pain Inventory Interference 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Back Pain Numerical Rating Scale (NRS) at 3 months; Group 1: mean 4.24 (SD 2.78); n=349, Group 2: mean 4.52 (SD 2.84); n=349; Back Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Leg Pain Numerical Rating Scale (NRS) at 3 months; Group 1: mean 3.77 (SD 2.96); n=349, Group 2: mean 4.12 (SD 3.07); n=349; Leg Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Brief Pain Inventory Interference scale at 12 months; Group 1: mean 3.36 (SD 2.66); n=349, Group 2: mean 3.46 (SD 2.66); n=349; Brief Pain Inventory Interference 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Back Pain Numerical Rating Scale (NRS) at 12 months; Group 1: mean 4.01 (SD 2.76); n=349, Group 2: mean 4.22 (SD 2.83); n=349; Back Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Leg Pain Numerical Rating Scale (NRS) at 12 months; Group 1: mean 3.77 (SD 3.06); n=349, Group 2: mean 4 (SD 3.04); n=349; Leg Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function at ≤4 months
- Actual outcome for low back pain with/without sciatica: Roland Morris Disability Questionnaire (RMDQ) at 3 months; Group 1: mean 11.6 (SD 6.51); n=349, Group 2: mean 11.5 (SD 6.82); n=349; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Function at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Roland Morris Disability Questionnaire (RMDQ) at 12 months; Group 1: mean 9.81 (SD 6.99); n=349, Group 2: mean 10.5 (SD 7.2); n=349; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: X-RAY (WITHIN 6 WEEKS OF INDEX VISIT) versus NO IMAGING (WITHIN 6 WEEKS OF INDEX VISIT; MATCHED CONTROLS FOR X-ray GROUP)

Protocol outcome 1: Quality of life at ≤4 months
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D Index at 3 months; Group 1: mean 0.76 (SD 0.17); n=1174, Group 2: mean 0.76 (SD 0.18); n=1174; EuroQuol 5D Index 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D visual analogue scale (VAS) at 3 months; Group 1: mean 72.3 (SD 18.1); n=1174, Group 2: mean 71.9 (SD 19.2); n=1174; EuroQuol 5D Visual Analogue Scale (VAS) 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D Index at 12 months; Group 1: mean 0.78 (SD 0.17); n=1174, Group 2: mean 0.77 (SD 0.18); n=1174; EuroQuol 5D Index 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: EuroQuol 5D visual analogue scale (VAS) at 12 months; Group 1: mean 73.2 (SD 18.6); n=1174, Group 2: mean 72.7 (SD 18.8); n=1174; EuroQuol 5D Visual Analogue Score (VAS) 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

	Protocol outcome 3: Pain severity at ≤4 months - Actual outcome for low back pain with/without sciatica: Brief Pain Inventory Interference scale at 3 months; Group 1: mean 2.99 (SD 2.37); n=1174, Group 2: mean 2.99 (SD 2.5); n=1174; Brief Pain Inventory (BPI) Interference 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Back Pain Numerical Rating Scale (NRS) at 3 months; Group 1: mean 3.83 (SD 2.6); n=1174, Group 2: mean 3.87 (SD 2.73); n=1174; Back Pain Numerical Scale Rating (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Leg Pain Numerical Rating Scale (NRS) at 3 months; Group 1: mean 2.96 (SD 2.88); n=1174, Group 2: mean 3.23 (SD 2.95); n=1174; Leg Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Brief Pain Inventory Interference scale at 12 months; Group 1: mean 2.72 (SD 2.42); n=1174, Group 2: mean 2.83 (SD 2.53); n=1174; Brief Pain Inventory (BPI) Interference 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Back Pain Numerical Rating Scale (NRS) at 12 months; Group 1: mean 3.55 (SD 2.62); n=1174, Group 2: mean 3.71 (SD 2.73); n=1174; Back Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Leg Pain Numerical Rating Scale (NRS) at 12 months; Group 1: mean 2.83 (SD 2.77); n=1174, Group 2: mean 3.06 (SD 2.93); n=1174; Leg Pain Numerical Rating Scale (NRS) 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function at <4 months - Actual outcome for low back pain with/without sciatica: Roland Morris Disability Questionnaire (RMDQ) at 3 months; Group 1: mean 9.54 (SD 6.41); n=1174, Group 2: mean 9.54 (SD 6.64); n=1174; Roland Morris Disability Questionnaire (RMDQ) 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Roland Morris Disability Questionnaire (RMDQ) at 12 months; Group 1: mean 8.54 (SD 6.56); n=1174, Group 2: mean 8.74 (SD 6.95); n=1174; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year; Healthcare utilisation at ≤4 months; Healthcare utilisation at >4 months - 1 year

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Study	**Deyo 1987[111]**
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	(n=101)
Countries and setting	Conducted in USA; Setting: walk-in clinic of a public hospital

Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: evaluation by resident physicians with faculty supervision
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Stratified then randomised: number of prior episodes (none vs more than one) and work status (employed vs unemployed); randomisation was performed separately for each stratum
Inclusion criteria	Patients with very low probability of underlying systemic disease presenting to the walk-in clinic of a public hospital with a chief complaint of low back pain
Exclusion criteria	Clinical findings that should prompt early radiography among patients with low back pain (including age > 50 years, temperature > 38.7°C, significant trauma, neuromotor deficits, unexplained weight loss, alcohol or parenteral drug abuse, history of cancer, use of corticosteroids); patients for whom roentgenograms were relatively or absolutely contraindicated (lumbar spine films within the past 6 months, pregnant women, women with inadequate contraception, patients with probable urinary tract disease); patients with pain demarcated above T12; those seeking compensation; those planning to move out of town; those inaccessible by phone
Recruitment/selection of patients	consecutive patients presenting to the walk-in clinic of a public hospital with a chief complaint of low back pain
Age, gender and ethnicity	Age - Mean (SD): X-ray group 34.3 y, education group 32.5 y. Gender (M:F): 53/48. Ethnicity: Hispanic, Other
Further population details	1. Chronicity: Not applicable / Not stated / Unclear
Extra comments	Baseline characteristics, mean for intervention and control groups respectively: SIP score 20.1, 17.5; SIP Physical dimension score 16.5, 16.4; SIP Psychosocial dimension score 23.6, 18.6. Baseline characteristics, number (%) for intervention and control groups respectively: prior back surgery 1 (2), 1 (2); prior X-ray 14 (33), 12 (24).. Though all patients with neuromotor deficits were to be escluded, 3 subjects were randomised who had equivocal or minor neuromotor deficits (mild weakness of great toe elevation or difficulty walking on toes). All these deficits were resolved after 3 weeks of follow-up.
Indirectness of population	Serious indirectness: X-ray group is compared to education al intervention (different from usual care)
Interventions	(n=49) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. Lumbar spine roentgenogram at index visit. Duration 3 months follow-up. Concurrent medication/care: All participants were also randomised to receive either 2 days or 7 days bed rest, but this didn't affect the outcomes. Comments: 88% of the X-ray group went on to reveive X-ray (n=52) Intervention 2: No imaging. No imaging (Roentgenograms only if unimproved after 3 weeks of conservative therapy), plus educational intervention: explanation by research assistant of low back pain and its causes, an illustration of the spine and its associated structures, an actual spine radiograph. The following points were

	emphasized: the yield of useful findings is very small; many of the structures that give rise to pain are not visible on roentgenogram; gonadal irritation is substantial; film would be obtained if necessary in 3 weeks. This instruction required 5 minutes or less.. Duration 3 months follow-up. Concurrent medication/care: All participants were also randomised to receive either 2 days or 7 days bed rest, but this didn't affect the outcomes. Comments: 12 (29%) people in the control group went on to receive X-ray
Funding	Other (The work was supported by grant 7090 from the Robert Wood Johnson Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: X-RAY versus NO IMAGING Protocol outcome 1: Pain severity at ≤4 months - Actual outcome for low back pain with/without sciatica: Self-rated improvement of pain at 3 months; Mean 2.6 X-ray group, 2.6 Education group 6 points ordinal scale 0-6 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function at ≤4 months - Actual outcome for low back pain with/without sciatica: Functional status assessed by Sickness Impact Profile (SIP) score at 3 months; Mean 12.3 X-ray group; 10.3 Education group SIP score 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Functional status assessed by Sickness Impact Profile (SIP) score - Physical dimension score at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Functional status assessed by Sickness Impact Profile (SIP) score - Psychosocial dimension score at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation at ≤4 months - Actual outcome for low back pain with/without sciatica: Sought care elsewhere at 3 months; Proportion; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Received any spine films at 3 months; Proportion; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Hospitalised at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Total physician visits at 3 months; Mean 1.07 X-ray group; 0.42 Education group; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Quality of life at >4 months - 1 year; Pain severity at >4 months - 1 year; Function at >4 months - 1 year; Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year; Healthcare utilisation at >4 months - 1 year

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Study	Djais 2005[116]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	(n=101)
Countries and setting	Conducted in Indonesia; Setting: Outpatient Department of Rheumatology, Dr Saiful Anwar General Hospital, Malang, Indonesia
Line of therapy	Adjunctive to current care
Duration of study	Intervention + follow-up: 5 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Evaluation by physicians
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	First episode of low back pain: patients with acute low back pain (duration < 3 months) on the day of randomisation. Recurrent low back pain: patients with pain on the day of randomisation and no pain in the previous 6 months.
Exclusion criteria	Patients < 20 or > 55 years of age, history of malignancy, unexplained weight loss or fever, taking oral steroids, had a hisotry of tuberculosis, intravenous drug use, symptoms or signs of cauda equina lesion, low back pain for more than 3 months, lumbar spine X-ray in the preceding 12 months, pregnant or unable to give informed written consent
Recruitment/selection of patients	"Simple random sampling"
Age, gender and ethnicity	Age - Median (IQR): 40 (33-45) years. Gender (M:F): 56/45. Ethnicity: Not stated
Further population details	1. Chronicity: Acute pain (Patients with acute low back pain (duration < 3 months, first episode of low back pain) or recurrent low back pain (pain at recruitment, no pain in the previous 6 months)).
Extra comments	Baseline characteristics, median (quartile 1, 3) for intervention and control groups respectively: RMDQ 9 (6, 12), 9.5 (8, 13); VAS pain score 6 (4, 7), 6 (5,7); EQ-5D 0.63 (0.30, 0.77), 0.64 (0.24, 0.74).
Indirectness of population	No indirectness
Interventions	(n=51) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. Lumbar spine X-ray at baseline interview. Duration 3 weeks follow-up. Concurrent medication/care: Usual care (n=50) Intervention 2: No imaging. Usual care without lumbar spine radiography. Duration 3 weeks follow-up. Concurrent medication/care: Usual care Comments: Some people in the control group (number not given) went on to receive X-ray as findings on radiography are reported for both treatment groups
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: X-RAY versus NO IMAGING Protocol outcome 1: Quality of life at ≤4 months - Actual outcome for low back pain with/without sciatica: Health-related quality of life (EQ-5D) at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity at ≤4 months - Actual outcome for low back pain with/without sciatica: Pain (VAS pain score) at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function at ≤4 months - Actual outcome for low back pain with/without sciatica: Functional disability (RMDQ) at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months - 1 year; Pain severity at >4 months - 1 year; Function at >4 months - 1 year; Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year; Healthcare utilisation at ≤4 months; Healthcare utilisation at >4 months - 1 year

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Study (subsidiary papers)	**Kendrick 2001[272] (Kendrick 2001[271])**
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	(n=RCT: 421; cohort: 55)
Countries and setting	Conducted in United Kingdom; Setting: 52 general practices
Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): 9 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Assessed by general practitioner
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with low back pain on the day of randomisation and for at least the preceding 6 week for the first episode of low back pain. Patients with recurrent low back pain were included if they had pain on the day of randomisation and for at least 6 weeks in the preceding 6 months
Exclusion criteria	Patients outside the age range specified for simple backache in the guideline of the Clinical Standards Advisory Group

	and the Royal College of General Practicioners (under 20 or over 55), chronic back pain (persistent pain for more than 6 months), X-ray of lumbar spine within the preceding year, unexplained weight loss or fever, taking oral steroids, history of malignancy, tuberculosis, injecting drug use, HIV positive, symptoms or signs of a cauda equina lesion, pregnant or planning a pregnancy, unable to given a written consent
Recruitment/selection of patients	Patients identified by searches of computerised medical records
Age, gender and ethnicity	Age - Median (IQR): RCT: intervention group 39 (31-45); control group 39 (31-46). Cohort: intervention group 38 (Q1 33.25, Q3 47); control group 39 (Q1 31, Q3 46). Gender (M:F): Intervention group 90/120; Control group 84/127. Ethnicity: RCT: white 415/421, other 7/421; cohort: white 52/55, other 3/55
Further population details	1. Chronicity: Acute pain (Patients were included if they had low back pain on the day of randomisation and for at least the preceding 6 week for the first episode of low back pain; patients with recurrent low back pain were included if they had pain on the day of randomisation and for at least 6 weeks in the preceding 6 months. Patients were excluded if they had chronic back pain (persistent pain for more than 6 months).).
Extra comments	Baseline characteristics, see extra comments.. Baseline characteristics, median (quartile 1, 3) for intervention (n=210) and control groups (n=211) respectively: RMDQ 7 (4-11.25), 8 (4-12); Pain score 2 (1-2), 2 (1-2); EuroQUol score 0.69 (0.62-0.76) [6 missing values], 0.69 (0.62-0.76) [14 missing values]. Baseline characteristics, n (%) for intervention (n=210) and control groups (n=211) respectively: hospital admission 0, 0; outpatient attendance 2 (1), 0; 1 visit to doctor 104 (50), 95 (45); 2 visits to doctor 62 (30), 62 (30); 3 visits to doctor 27 (13), 31 (15); 4 visits to doctor 17 (8), 23 (11); taken prescribed drugs 135 (64), 146 (69); taken over the counter drugs 135 (64), 154 (73); physiotherapy 54 (27) [9 missing values], 64 (31) [6 missing values]; osteopathy 22 (11) [9 missing values], 14 (7) [6 missing values]; chiropractic 6 (3) [9 missing values], 6 (3) [6 missing values]; acupuncture 5 (3) [9 missing values], 7 (3) [6 missing values].
Indirectness of population	No indirectness
Interventions	(n=210) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. Radiograph of lumbar spine (patients were given a card to attend for a radiograph of the lumbar spine at the local hospital). Duration 9 months follow-up. Concurrent medication/care: Usual care Comments: 171 (88%) people of the intervention group went on to receive X-ray (n=211) Intervention 2: No imaging. No imaging (the doctor was able to request X-ray if they considered clinically necessary at any time). Duration 9 months follow-up. Concurrent medication/care: Usual care Comments: 25 (13%) people in the control group went on to receive X-ray (n=32) Intervention 3: Imaging for low back pain - MRI, CT or X-ray. X-ray. Duration 9 months follow-up. Concurrent medication/care: Not stated

	(n=23) Intervention 4: No imaging. No X-ray. Duration 9 months follow-up. Concurrent medication/care: Not stated
Funding	Academic or government funding (NHS Research and Development Health Technology Assessment Programme)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: X-RAY versus NO X-ray

Protocol outcome 1: Quality of life at ≤4 months
- Actual outcome for low back pain with/without sciatica: EuroQoL at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: EuroQoL at 9 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity at ≤4 months
- Actual outcome for low back pain with/without sciatica: VAS pain at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: VAS pain at 9 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function at ≤4 months
- Actual outcome for low back pain with/without sciatica: RMDQ at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Function at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: RMDQ at 9 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 7: Healthcare utilisation at ≤4 months
- Actual outcome for low back pain with/without sciatica: Hospital admission at 3 months; Group 1: 0/199, Group 2: 0/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Outpatient attendance at 3 months; Group 1: 6/199, Group 2: 7/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Visited doctor at 3 months; Group 1: 106/199, Group 2: 60/203; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Taken prescribed drug at 3 months; Group 1: 63/199, Group 2: 59/203; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Taken over the counter drug at 3 months; Group 1: 68/199, Group 2: 67/203; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Physiotherapy at 3 months; Group 1: 67/199, Group 2: 59/203; Risk of bias: High; Indirectness of outcome: No

indirectness
- Actual outcome for low back pain with/without sciatica: Osteopathy at 3 months; Group 1: 7/199, Group 2: 9/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Chiropractic at 3 months; Group 1: 4/199, Group 2: 6/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Acupuncture at 3 months; Group 1: 3/199, Group 2: 7/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Equipment (back support) at 3 months; Group 1: 4/199, Group 2: 8/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Day-case treatment at 3 months; Group 1: 0/199, Group 2: 0/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Aromatherapy at 3 months; Group 1: 4/199, Group 2: 3/203; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Other (social services, reflexology, massage) at 3 months; Group 1: 7/199, Group 2: 6/203; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 8: Healthcare utilisation at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Hospital admission at 9 months; Group 1: 2/195, Group 2: 0/199; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Outpatient attendance at 9 months; Group 1: 18/195, Group 2: 12/199; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Visited doctor at 9 months; Group 1: 42/195, Group 2: 47/199; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Taken prescribed drug at 9 months; Group 1: 56/195, Group 2: 49/199; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Taken over the counter drug at 9 months; Group 1: 69/195, Group 2: 57/199; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Physiotherapy at 9 months; Group 1: 31/195, Group 2: 27/199; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Osteopathy at 9 months; Group 1: 6/195, Group 2: 7/199; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Chiropractic at 9 months; Group 1: 6/195, Group 2: 5/199; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Acupuncture at 9 months; Group 1: 1/195, Group 2: 2/199; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Equipment (back support) at 3-9 months; Group 1: 11/195, Group 2: 12/199; Risk of bias: Very high;

Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Day-case treatment at 3-9 months; Group 1: 1/1951, Group 2: 0/199; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Aromatherapy at 3-9 months; Group 1: 5/195, Group 2: 1/199; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Social services at 3-9 months; Group 1: 3/195, Group 2: 0/199; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COHORT: X-RAY (PATIENT PREFERENCE GROUP) versus COHORT: NO X-ray (PATIENT PREFERENCE GROUP) Protocol outcome 1: Quality of life at ≤4 months - Actual outcome for low back pain with/without sciatica: Cohort: EuroQoL at 3 months; Other: median; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Cohort: EuroQoL at 9 months; Other: median EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity at ≤4 months - Actual outcome for low back pain with/without sciatica: Cohort: Vas pain at 3 months; Other: median VAS pain scale 0-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Cohort: Vas pain at 9 months; Other: median VAS pain score 0-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function at ≤4 months - Actual outcome for low back pain with/without sciatica: Cohort: RMDQ at 3 months; Other: median RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Function at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Cohort: RMDQ at 9 months; Other: median RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder

	criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year

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Study (subsidiary papers)	**Kerry 2000[275] (Kerry 2002[276])**
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	(n=153)
Countries and setting	Conducted in United Kingdom; Setting: GP practices
Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Assessment by physician
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged 16/64 years of age who consulted with low back pain. Patients who refused to take part in the randomised trial or patients whom the GP did not wish to randomise were invited to take part in the observational study.
Exclusion criteria	Patients who had consulted with low back pain in the previous 4 weeks, who were pregnant, or who were suffering from influenza-like illness
Recruitment/selection of patients	RCT: consecutive patients
Age, gender and ethnicity	Age - Mean (SD): RCT: Imaging group 43.3 (12.4) y, Control group 43.9 (12.0) y. Cohort: Imaging group 44.6 (10.0), Control group 41.1 (11.8). Gender (M:F): RCT: 71/70; cohort: 196/231. Ethnicity: Not stated
Further population details	1. Chronicity: Not applicable / Not stated / Unclear (RCT: length of episode of low back pain at baseline, n (%) for imaging (n=65) and control (n=76) group respectively: < 1 week 14 (22), 22 (30); 1 to <8 weeks 27 (42), 36 (49); 8 weeks to < 6 months 3 (5), 4 (5); 6 months or over 20 (31), 12 (16). Cohort: length of episode of low back pain at baseline, n (%) for imaging (n=95) and control group (n=332) respectively: < 1 week 15 (17), 105 (33); 1 to <8 weeks 29 (32), 119 (37); 8 weeks to < 6 months 18 (20), 34 (11); 6 months or over 28 (31), 62 (19).).
Extra comments	Baseline characteristics, see extra comments.. Baseline characteristics for the RCT arm, mean (SD) for intervention (n=65) and control (n=76) groups respectively: SF-36 physical functioning (n=133) 66 (24), 57 (28); SF-36 physical role (n=132) 40 (43), 34 (40); SF-36 bodily pain (n=140) 38 (21), 36 (20); SF-36 general Health (n=134) 68 (21), 65 (23); SF-36 vitality (n=139) 48 (21), 45 (23); SF-36 social functioning (n=140) 66 (26), 63 (25); SF-36 Emotional role (n=132) 66 (43), 64 (42); SF-36 mental health (n=138) 68 (18), 66 (17); EuroQuol subjective scale (n=138) 67 (18), 62 (20); HADS Depression Score 5.0 (3.3), 5.4 (3.9); Anxiety score 7.4 (4.6), 8.2 (4.6); RMDQ (n=141) 10.2 (5.5), 10.9 (5.3). Baseline

	characteristics for the RCT arm, n (%) for intervention (n=69) and control (n=71) groups respectively: consultations for back pain in last year 19 (28), 17 (24); consultations for pain in last 4 weeks 13 (19), 10 (14); lumbar spine X-ray in the past 5 years 5 (7), 10 (14); referral to other health professionals at recruitment 15 (22), 14 (20). Baseline characteristics for the observational arm, mean (SD) for intervention (n=95) and control (n=332) groups respectively: SF-36 physical functioning (n=414) 60 (24), 63 (27); SF-36 physical role (n=400) 31 (36), 46 (43); SF-36 bodily pain (n=423) 41 (22), 45 (26); SF-36 general Health (n=407) 71 (17), 70 (20); SF-36 vitality (n=420) 47 (19), 51 (22); SF-36 social functioning (n=423) 63 (25), 67 (27); SF-36 Emotional role (n=395) 64 (45), 71 (41); SF-36 mental health (n=417) 70 (17), 69 (19); EuroQuol subjective scale (n=418) 66 (18), 63 (21); HADS Depression Score (n=413) 4.8 (3.2), 5.0 (3.9); Anxiety score (n=416) 7.5 (4.0), 7.1 (4.3); RMDQ (n=427) 10.9 (5.5), 10.8 (5.4). Baseline characteristics for the observational arm, n (%) for intervention (n=91) and control (n=316) groups respectively: consultations for back pain in last year (n=405) 32 (35), 73 (23); consultations for pain in last 4 weeks (n=405) 10 (11), 46 (15); lumbar spine X-ray in the past 5 years (n=406) 4 (4), 29 (9); referral to other health professionals at recruitment (n=406) 24 (26), 49 (16).
Indirectness of population	No indirectness
Interventions	(n=73) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. Lumbar spine radiography (referral on the day of randomisation). Duration 1 year follow-up. Concurrent medication/care: Not stated Comments: RCT: 70 people in the X-ray group (n=73) went on to receive X-ray. (n=80) Intervention 2: No imaging. No imaging (could be referred to X-ray at a later consultation if the doctor thought it appropriate). Duration 1 year follow-up. Concurrent medication/care: Not stated Comments: 4 people in the control group (n=80) went on to receive X-ray (n=95) Intervention 3: Imaging for low back pain - MRI, CT or X-ray. Lumbar spine radiography referral. Duration 1 year follow-up. Concurrent medication/care: Not stated (n=332) Intervention 4: Imaging for low back pain - MRI, CT or X-ray. No imaging. Duration 1 year follow-up. Concurrent medication/care: Not stated Comments: 45/316 (14%) in the observation group were referred for X-ray in the 12 months after recruitment
Funding	Academic or government funding (NHS REsearch & DEvelopment Health Technology Assessment (HTA) programme)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: X-RAY (RCT) versus NO IMAGING (RCT)

Protocol outcome 1: Quality of life at ≤4 months
- Actual outcome for low back pain with/without sciatica: SF-36 physical functioning at 6 weeks; Group 1: mean 67 (SD 22.4); n=56, Group 2: mean 65 (SD 24.2); n=65; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 physical role at 6 weeks; Group 1: mean 41 (SD 44.5); n=55, Group 2: mean 45 (SD 40); n=64; SF-36 0-

100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 bodily pain at 6 weeks; Group 1: mean 49 (SD 22.6); n=57, Group 2: mean 49 (SD 24.6); n=67; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 general health at 6 weeks; Group 1: mean 69 (SD 22.2); n=55, Group 2: mean 67 (SD 24.2); n=65; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 vitality at 6 weeks; Group 1: mean 54 (SD 15.1); n=57, Group 2: mean 46 (SD 24.4); n=66; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 social functioning at 6 weeks; Group 1: mean 72 (SD 22.6); n=57, Group 2: mean 67 (SD 32.7); n=67; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 Emotional role at 6 weeks; Group 1: mean 75 (SD 36.7); n=54, Group 2: mean 65 (SD 40); n=64; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 mental health at 6 weeks; Group 1: mean 74 (SD 15); n=57, Group 2: mean 65 (SD 16.2); n=66; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: EuroQuol VAS at 6 weeks; Group 1: mean 74 (SD 22.6); n=57, Group 2: mean 67 (SD 24); n=64; EuroQuol subjective scale 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: SF-36 physical functioning at 1 year; Group 1: mean 75 (SD 20.3); n=46, Group 2: mean 73 (SD 21.6); n=52; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 physical role at 1 year; Group 1: mean 66 (SD 39.8); n=44, Group 2: mean 67 (SD 36.4); n=53; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 bodily pain at 1 year; Group 1: mean 63 (SD 27.1); n=46, Group 2: mean 63 (SD 22); n=54; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 general health at 1 year; Group 1: mean 68 (SD 20.1); n=45, Group 2: mean 67 (SD 21.8); n=53; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 vitality at 1 year; Group 1: mean 57 (SD 20.3); n=46, Group 2: mean 52 (SD 21.6); n=52; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 social functioning at 1 year; Group 1: mean 81 (SD 27.1); n=46, Group 2: mean 79 (SD 29.9); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 Emotional role at 1 year; Group 1: mean 82 (SD 33.1); n=44, Group 2: mean 78 (SD 36.4); n=53; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36 mental health at 1 year; Group 1: mean 77 (SD 13.6); n=46, Group 2: mean 70 (SD 14.4); n=52; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: EuroQuol VAS at 1 year; Group 1: mean 74 (SD 20.3); n=46, Group 2: mean 76 (SD 14.7); n=54; Euroquol subjective scale 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function at ≤4 months
- Actual outcome for low back pain with/without sciatica: RMDQ at 6 weeks; Group 1: mean 5.9 (SD 5.4); n=59, Group 2: mean 6.9 (SD 6.5); n=67; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: RMDQ at 1 year; Group 1: mean 4.5 (SD 5.4); n=46, Group 2: mean 4.3 (SD 5.3); n=57; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Psychological distress at ≤4 months
- Actual outcome for low back pain with/without sciatica: HADS Depression Score at 6 weeks; Group 1: mean 4.7 (SD 3); n=57, Group 2: mean 5.1 (SD 4); n=65; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: HADS Anxiety Score at 6 weeks; Group 1: mean 6.8 (SD 3.8); n=57, Group 2: mean 7.7 (SD 4.8); n=65; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Psychological distress at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: HADS Depression Score at 1 year; Group 1: mean 3.8 (SD 3.4); n=46, Group 2: mean 4.1 (SD 3.7); n=56; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: HADS Anxiety Score at 1 year; Group 1: mean 6.3 (SD 4.1); n=46, Group 2: mean 6.7 (SD 4.4); n=53; HADS 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 7: Healthcare utilisation at ≤4 months
- Actual outcome for low back pain with/without sciatica: Subsequent consultation for back pain at 6 weeks; Group 1: 23/69, Group 2: 26/71; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Referral to physiotherapist or other health professional at 6 weeks; Group 1: 22/69, Group 2: 20/71; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 8: Healthcare utilisation at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Subsequent consultation for back pain at 6 weeks - 1 year; Group 1: 22/69, Group 2: 28/71; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Referral to physiotherapist or other health professional at 6 weeks - 1 year; Group 1: 31/69, Group 2: 33/71; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: X-RAY (COHORT) versus NO IMAGING (COHORT)

Protocol outcome 1: Quality of life at ≤4 months
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 physical functioning at 6 weeks; Group 1: mean 63 (SD 24.9); n=69, Group 2: mean 71 (SD 32.6);

n=265; SF-36 physical functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 physical role at 6 weeks; Group 1: mean 46 (SD 41.8); n=70, Group 2: mean 54 (SD 48.3); n=259; SF-36 physical role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 bodily pain at 6 weeks; Group 1: mean 49 (SD 25.6); n=73, Group 2: mean 56 (SD 33.1); n=274; SF-36 bodily pain 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 general health at 6 weeks; Group 1: mean 69 (SD 16.6); n=69, Group 2: mean 68 (SD 16.2); n=263; SF-36 general health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 vitality at 6 weeks; Group 1: mean 54 (SD 17.1); n=73, Group 2: mean 52 (SD 16.5); n=273; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 social functioning at 6 weeks; Group 1: mean 69 (SD 25.8); n=74, Group 2: mean 74 (SD 33.1); n=274; SF-36 social functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 Emotional role at 6 weeks; Group 1: mean 70 (SD 41.8); n=70, Group 2: mean 67 (SD 48.6); n=262; SF-36 Emotional role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 mental health at 6 weeks; Group 1: mean 71 (SD 17.1); n=73, Group 2: mean 68 (SD 16.4); n=270; SF-36 mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: EuroQuol VAS at 6 weeks; Group 1: mean 70 (SD 17.1); n=73, Group 2: mean 72 (SD 16.4); n=270; EuroQuol subjective scale 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 physical functioning at 1 year; Group 1: mean 70 (SD 23.2); n=60, Group 2: mean 74 (SD 31); n=240; SF-36 physical functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 physical role at 1 year; Group 1: mean 61 (SD 38.4); n=59, Group 2: mean 69 (SD 46.3); n=238; SF-36 physical role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 bodily pain at 1 year; Group 1: mean 58 (SD 23.8); n=63, Group 2: mean 65 (SD 31.7); n=252; SF-36 bodily pain 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 general health at 1 year; Group 1: mean 67 (SD 22.8); n=58, Group 2: mean 68 (SD 15.6); n=244; SF-36 general health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 vitality at 1 year; Group 1: mean 53 (SD 23.6); n=62, Group 2: mean 56 (SD 15.8); n=250; SF-36 vitality 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 social functioning at 1 year; Group 1: mean 77 (SD 23.8); n=63, Group 2: mean 81 (SD 15.9); n=252; SF-36 social functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 Emotional role at 1 year; Group 1: mean 79 (SD 38.1); n=58, Group 2: mean 78 (SD 30.5); n=233; SF-36 Emotional role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: SF-36 mental health at 1 year; Group 1: mean 71 (SD 15.7); n=62, Group 2: mean 71 (SD 15.8); n=249; SF-36 mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Cohort: EuroQuol subjective scale at 1 year; Group 1: mean 72 (SD 15.7); n=62, Group 2: mean 75 (SD 15.8);

n=250; EuroQuol subjective scale 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function at ≤4 months - Actual outcome for low back pain with/without sciatica: Cohort: RMDQ at 6 weeks; Group 1: mean 6.7 (SD 5.2); n=76, Group 2: mean 5.4 (SD 5); n=276; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Cohort: RMDQ at 1 year; Group 1: mean 5.6 (SD 4.8); n=63, Group 2: mean 4.2 (SD 4.8); n=254; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Psychological distress at ≤4 months - Actual outcome for low back pain with/without sciatica: Cohort: HADS Depression Score at 6 weeks; Group 1: mean 4.2 (SD 3.4); n=72, Group 2: mean 4.5 (SD 4.9); n=269; HADS Depression 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Cohort: HADS Anxiety Score at 6 weeks; Group 1: mean 7.2 (SD 3.4); n=71, Group 2: mean 7.3 (SD 4.9); n=269; HADS Anxiety 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Psychological distress at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Cohort: HADS Depression Score at 1 year; Group 1: mean 3.7 (SD 3.2); n=62, Group 2: mean 4.1 (SD 4.7); n=248; HADS Depression Score 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Cohort: HADS Anxiety Score at 1 year; Group 1: mean 6.3 (SD 3.9); n=61, Group 2: mean 6.5 (SD 4.7); n=248; HADS Anxiety Score 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Healthcare utilisation at ≤4 months - Actual outcome for low back pain with/without sciatica: Cohort: Subsequent consultation for back pain at 6 weeks; Group 1: 38/91, Group 2: 92/313; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Cohort: Referral to physiotherapist or other health professional at 6 weeks; Group 1: 40/91, Group 2: 73/313; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Healthcare utilisation at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Cohort: Subsequent consultation for back pain at 6 weeks - 1 year; Group 1: 40/91, Group 2: 89/313; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Cohort: Referral to physiotherapist or other health professional at 6 weeks - 1 year; Group 1: 53/91, Group 2: 117/313; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity at ≤4 months; Pain severity at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year

Study (subsidiary papers)	Scottish Back trial: Gilbert 2004[167] (Gilbert 2004[166], Gillan 2001[170])
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	(n=782)
Countries and setting	Conducted in United Kingdom; Setting: 4 major Scottish teaching hospitals and district general hospitals
Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): 24 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Assessed by physicians
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	New patients presenting with symptomatic lumbar spine disorder (low back pain and/or sciatica) for whom there was clinical uncertainty about the need for imaging
Exclusion criteria	Patients requiring immediate referral for imaging (such as those for whom surgical intervention was judged necessary; those with red flags), patients who had had imaging (MRI or CT) in the previous 12 months, patients for whom there was no need to consider imaging (eg those discharged to primary care), patients with pain of non-spinal origin
Age, gender and ethnicity	Age - Mean (range): Early imaging: 43.9 (16-82) y; Delayed selective imaging: 42.8 (14-82) y. Gender (M:F): 383:399 (0.96). Ethnicity: Not stated
Further population details	1. Chronicity: Not applicable / Not stated / Unclear (Duration of current episode of low back pain at baseline, n(%) for imaging and control group respectively: < 3 mo 83 (21.1, 56 (14.4); 3-12 mo 158 (40.2), 167 (42.9), > 12 mo 149 (37.9), 163 (41.9); Not known 3 (0.8), 3 (0.8)
Extra comments	Baseline characteristics for intervention and control group respectively, n (%): previous lumbar spine X-ray yes 343 (87.3), 331 (85.1), no 47 (12), 52 (13.4); not known 3 (0.8), 6 (1.5); physiotherapy 253 (64.4), 271 (69.7); osteopathy 87 (22.1), 89 (22.9); other 64 (16.3), 87 (22.4).
Indirectness of population	Serious indirectness: Includes young people aged <16 years old
Interventions	(n=393) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. MRI or CT. Duration 24 months follow-up. Concurrent medication/care: Not stated Comments: 353 (90%) of the imaging group went on to receive imaging (n=389) Intervention 2: No imaging. Use restricted to patients in whom a clear clinical need subsequently developed. Duration 24 months follow-up. Concurrent medication/care: Not stated Comments: 115 (30%) people in the control group went on to receive imaging

Funding	Funding not stated (Unclear reference to grant proposal)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MRI OR CT "EARLY IMAGING" versus NO IMAGING "DELAYED, SELECTIVE IMAGING"

Protocol outcome 1: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Health status EQ-5D at 24 months; Group 1: mean 0.599 (SD 0.313); n=357, Group 2: mean 0.539 (SD 0.35); n=335; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 physical functioning at 24 months; Group 1: mean 56.4 (SD 28.5); n=357, Group 2: mean 52.8 (SD 29.9); n=335; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 social functioning at 24 months; Group 1: mean 66.4 (SD 28.9); n=357, Group 2: mean 61.8 (SD 30); n=335; EQ-5D 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 mental health at 24 months; Group 1: mean 64.3 (SD 20.06); n=357, Group 2: mean 62.9 (SD 22.1); n=335; EQ-5D 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 vitality at 24 months; Group 1: mean 46.2 (SD 22.2); n=357, Group 2: mean 42.7 (SD 23.9); n=335; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 bodily pain at 24 months; Group 1: mean 47.8 (SD 25.3); n=357, Group 2: mean 43.2 (SD 26.8); n=335; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 general health perception at 24 months; Group 1: mean 55.3 (SD 23.7); n=393, Group 2: mean 53.6 (SD 25.2); n=389; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 role-physical functioning at 24 months; Group 1: mean 44 (SD 44.2); n=357, Group 2: mean 38.2 (SD 43.2); n=335; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36 role-emotional functioning at 24 months; Group 1: mean 61.7 (SD 44.9); n=393, Group 2: mean 55.8 (SD 45.2); n=389; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Health status SF-36role reported health transition at 24 months; Group 1: mean 51.7 (SD 25.3); n=357, Group 2: mean 49.8 (SD 24); n=335; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: ALBP score at 24 months; Group 1: mean 31.6 (SD 19); n=357, Group 2: mean 35.8 (SD 20.8); n=335; Aberdeen Low Back Pain Score 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Imaging at least once during first 24 months at 24 months; Group 1: 353/393, Group 2: 115/389; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: MRI imaging during first 24 months at 24 months; Group 1: 324/393, Group 2: 95/389; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: CT imaging during first 24 months at 24 months; Group 1: 29/393, Group 2: 20/389; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Weeks to first imaging at 24 months; Risk of bias: Very high; Indirectness of outcome: No indirectness

	- Actual outcome for low back pain with/without sciatica: Outpatient consultation at 24 months; Group 1: 328/393, Group 2: 264/389; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Physiotherapy at 24 months; Group 1: 248/393, Group 2: 233/389; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Admission to hospital at 24 months; Group 1: 31/393, Group 2: 26/389; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Surgery at 24 months; Group 1: 27/393, Group 2: 20/389; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Injection at 24 months; Group 1: 70/393, Group 2: 76/389; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Primary care physician consultation at 24 months; Group 1: 261/393, Group 2: 244/389; Risk of bias: Very high; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Pain severity at ≤4 months; Pain severity at >4 months - 1 year; Function at ≤4 months; Function at >4 months - 1 year; Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year; Healthcare utilisation at ≤4 months

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Study (subsidiary papers)	**Washington workers' compensation Disability Risk Identification Study (D-RISC) trial: Graves 2012[180] (Graves 2014[181])**
Study type	Prospective cohort study
Number of studies (number of participants)	(n=1226 (Graves 2012); 1770 (Graves 2014))
Countries and setting	Conducted in USA; Setting: Washington State Labor and Industries workers'compensation administrative claims
Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Washington State Labor and Industries workers'compensation administrative claims
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable: mild or major sprain/strain vs radiculopathy
Inclusion criteria	Adults (older than 18 years of age) with an accepted claim, with at least 4 missed workdays due to injury, and no hospitalisation following the injury

Exclusion criteria	Workers who did not file a claim within 2 months after injury, workers with absent reflexes (knee or ankle), bladder complaints, motor abnormalities (sensory loss or muscle weakness)
Age, gender and ethnicity	Age - Other: Low back pain only group, n (%) for intervention and control groups respectively: < 24 yr 8 (6.6), 83 (10); 25-34 yr 30 (24.8), 211 (25.3); 35-44 yr 40 (33.1), 250 (30); 45-54 yr 33 (27.3), 199 (23.9); > 55 10 (8.3), 91 (10.9). Radiculopathy group, n (%) for intervention and control groups respectively: < 24 yr 5 (4.7), 14 (8.5); 25-34 yr 22 (20.6), 29 (17.7); 35-44 yr 37 (34.6), 47 (28.7); 45-54 yr 30 (28), 55 (33.5); > 55 13 (12.1), 19 (11.6). Low back pain with or without sciatica group, n (%) for intervention and control groups respectively: < 24 yr 24 (7.1), 166 (11.6); 25-34 yr 75 (22.3), 384 (26.8); 35-44 yr 117 (34.8), 419(29.2); 45-54 yr 89 (26.5), 319 (22.2); > 55 31 (9.2), 146 (10.2).. Gender (M:F): Low back pain only group 639/316; Radiculopathy group 173/98; low back pain with or without sciatica group 1211/568. Ethnicity: Hispanic, Non-hispanic white, Non-hispanic non-white
Further population details	1. Chronicity: Not applicable / Not stated / Unclear
Extra comments	Baseline characteristics, see extra comments.. Graves 2012 - Baseline characteristics low back pain only, n (%) for intervention (n=121) and control (n=834) groups respectively: RMDQ low (0-6) 7 (5.8), 271 (32.5); moderate (7-12) 20 (16.5), 199 (23.9); high (13-18) 42 (34.7), 223 (26.7); very high (19-24) 52 (43), 141 (16.9); Pain intensity low (0-3) 18 (14.9), 269 (32.3); mild pain (4-6) 47 (38.8), 314 (37.6), moderate/high (7-10) 56 (46.3), 251 (30.1); SF-36v2 Role-physical score 2 SD below population mean 79 (65.3), 197 (23.6); 1-2 SD below population mean 31 (25.6), 192 (23); 1 SD below population mean 9 (7.4), 192 (23); at or above population mean 2 (1.7), 253 (30.3); SF-36v2 Physical functioning score 2 SD below population mean 63 (52.1), 161 (19.3); 1-2 SD below population mean 32 (26.4), 181 (21.7); 1 SD below population mean 21 (17.4), 216 (25.9); at or above population mean 5 (4.1), 276 (33.1); Type of first medical visit primary care 61 (50.4), 385 (46.2); Occupational medicine 4 (3.3), 27 (3.2); chiropractor 22 (18.2), 257 (30.8); surgeon 7 (5.8), 17 (2); emergency department or clinic 23 (19), 132 (15.8); other 4 (3.3), 16 (1.9). Baseline characteristics sciatica, n (%) for intervention (n=107) and control (n=164) groups respectively: RMDQ low (0-6) 2 (1.9), 19 (11.6); moderate (7-12) 13 (12.1), 40 (24.4); high (13-18) 33 (30.8), 51 (31.1); very high (19-24) 59 (55.1), 54 (32.9); Pain intensity low (0-3) 5 (4.7), 30 (18.3); mild pain (4-6) 34 (31.8), 62 (37.8), moderate/high (7-10) 68 (63.6), 72 (43.9); SF-36v2 Role-physical score 2 SD below population mean 77 (72.0), 73 (44.5); 1-2 SD below population mean 24 (22.4), 43 (26.2); 1 SD below population mean 5 (4.7), 27 (16.5); at or above population mean 1 (0.9), 21 (12.8); SF-36v2 Physical functioning score 2 SD below population mean 73 (68.2), 75 (45.7); 1-2 SD below population mean 17 (15.9), 35 (21.3); 1 SD below population mean 12 (11.2), 34 (20.7); at or above population mean 5 (4.7), 20 (12.2); Type of first medical visit primary care 53 (49.5), 61 (37.2); Occupational medicine 5 (4.7), 3 (1.8); chiropractor 24 (22.4), 68 (41.5); surgeon 2 (1.9), 1 (0.6); emergency department or clinic 22 (20.6), 27 (16.5); other 1 (0.9), 4 (2.4). Graves 2014: Baseline characteristics low back pain and/or sciatica group, n (%) for intervention (n=336) and control (n=1434) groups respectively: Type of first medical visit, primary care 164 (48.8), 622 (43.4); Occupational medicine 17 (5.1), 39 (2.7); chiropractor 66 (19.6), 474 (33.1); surgeon 11 (3.3), 25 (1.7); emergency department or clinic 71 (21.1), 250 (17.4); other 7 (2.1), 24 (1.7).
Indirectness of population	No indirectness: workers population

Interventions	(n=121) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. MRI within 6 weeks of injury. Duration 1 year follow-up. Concurrent medication/care: Not stated (n=834) Intervention 2: No imaging. No imaging/MRI after 6 weeks of injury. Duration 1 year follow-up. Concurrent medication/care: Not stated (n=107) Intervention 3: Imaging for sciatica - MRI. MRI within 6 weeks of injury. Duration 1 year follow-up. Concurrent medication/care: Not stated (n=164) Intervention 4: No imaging. No imaging/deferred imaging. Duration 1 year follow-up. Concurrent medication/care: Not stated (n=336) Intervention 5: Imaging for low back pain - MRI, CT or X-ray. MRI within 6 weeks. Duration 1 year follow-up. Concurrent medication/care: Not stated (n=1434) Intervention 6: No imaging. No imaging/MRI after 6 weeks. Duration 1 year follow-up. Concurrent medication/care: A small percentage (1.4%) of workers who did not receive an early MRI received early CT imaging
Funding	Academic or government funding (Centre for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), Agency for Healthcare Research and Quality (AHRQ))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MRI (WITHIN 6 WEEKS OF INJURY, MILD OR MAJOR SPRAIN/STRAIN GROUP) versus NO IMAGING/DEFERRED IMAGING (MILD OR MAJOR SPRAIN/STRAIN GROUP)

Protocol outcome 1: Quality of life at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: SF-36v2 Role-Physical score at 1 year; Group 1: mean 38.3 (SD 13.1); n=121, Group 2: mean 46 (SD 11.5); n=834; SF36v2 Role-Physical Score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: SF-36v2 Physical Functioning score at 1 year; Group 1: mean 37 (SD 12.6); n=121, Group 2: mean 44.7 (SD 12.1); n=834; SF36v2 Physical functioning score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Pain intensity in the last week at 1 year; Group 1: mean 5 (SD 2.7); n=121, Group 2: mean 4.1 (SD 5.3); n=834; Graded Chronic Pain Scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Roland Morris Disability score (RMDQ) at 1 year; Group 1: mean 12 (SD 7.1); n=121, Group 2: mean 7.4 (SD

6.8); n=834; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MRI (WITHIN 6 WEEKS OF INJURY, RADICULOPATHY GROUP) versus NO IMAGING/DEFERRED IMAGING (RADICULOPATHY GROUP)

Protocol outcome 1: Quality of life at >4 months - 1 year
- Actual outcome for sciatica: SF-36v2 Role-Physical score at 1 year; Group 1: mean 35.8 (SD 11.8); n=107, Group 2: mean 41.2 (SD 12.6); n=164; SF36v2 Role-Physical score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for sciatica: SF-36v2 Physical Functioning score at 1 year; Group 1: mean 33 (SD 11.7); n=107, Group 2: mean 38 (SD 12.6); n=164; SF36v2 Physical Functioning score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity at >4 months - 1 year
- Actual outcome for Sciatica: Pain intensity in the last week at 1 year; Group 1: mean 5.6 (SD 2.6); n=107, Group 2: mean 4.8 (SD 2.8); n=164; Graded Chronic Pain Scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function at >4 months - 1 year
- Actual outcome for sciatica: Roland Morris Disability score (RMDQ) at 1 year; Group 1: mean 13.8 (SD 6.8); n=107, Group 2: mean 11.5 (SD 7.4); n=164; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MRI (WITHIN 6 WEEKS, low back pain WITH/WITHOUT SCIATICA) versus NO IMAGING/DEFERRED IMAGING (low back pain WITH/WITHOUT SCIATICA)

Protocol outcome 1: Healthcare utilisation at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: MRI at 1 year; Group 1: 336/336, Group 2: 255/1434; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: CT at 1 year; Group 1: 18/336, Group 2: 44/1434; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Radiograph at 1 year; Group 1: 102/336, Group 2: 260/1434; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Injection at 1 year; Group 1: 137/336, Group 2: 99/1434; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Surgery at 1 year; Group 1: 67/336, Group 2: 36/1434; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Number of visits at chiropractic at 1 year; Group 1: mean 14.7 (SD 28.1); n=336, Group 2: mean 13.9 (SD 24.2); n=1434; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Number of visits at physical therapy or occupational therapy at 1 year; Group 1: mean 18.4 (SD 19.9); n=336,

Group 2: mean 6.8 (SD 13.8); n=1434; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Number of visits at outpatient services at 1 year; Group 1: mean 12.2 (SD 8); n=336, Group 2: mean 4.3 (SD 6.1); n=1434; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Pain severity at ≤4 months; Function at ≤4 months; Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year; Healthcare utilisation at ≤4 months

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Study	**Webster 2014[557]**
Study type	Retrospective cohort study
Number of studies (number of participants)	(n=3022)
Countries and setting	Conducted in USA; Setting: Data extracted from a nationally representative United States workers' compensation administrative data source (representing approximately 10% of the private market)
Line of therapy	Adjunctive to current care
Duration of study	Follow-up (post intervention): data extracted for a 2-years period from the date of low back pain onset
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Workers' compensation administrative data source, low back pain claims, International Classification of Diseases - Ninth revision diagnostic codes assigned to services
Stratum	Low back pain with/without sciatica
Subgroup analysis within study	Not applicable: No MRI = no MRI during the 2-year study period. Early MRI = MRI within first 30 days. Timely MRI = MRI starting at 42 days post-onset through 180 days. More severe and less severe subgroups based on International Classification of Diseases, Ninth revision codes
Inclusion criteria	At least 1 day compensated lost time and at least 1 year of job tenure
Exclusion criteria	Complex cases (those with red flags conditions, non-low back pain diagnoses, or multiple injuries) and cases with a low back pain claim within the prior year, those with MRI that fell outside the specified periods (31-41 days post-onset, after 180 d post-onset)
Recruitment/selection of patients	All accepted low back pain claims filed between January 1, 2006 and December 31, 2006 from a nationally representative United States workers' compensation administrative data source
Age, gender and ethnicity	Age - Mean (range): No MRI less severe 40.7 (40.1-41.3); No MRI more severe 41.9 (40.6-43.1); Timely MRI less severe 39.9 (38.5-41.3); Timely MRI more severe 42.8 (41.4-44.2); Early MRI less severe 42.1 (41.2-43.0); Early MRI more severe 42.4 (41.4-43.5). Gender (M:F): No MRI less severe 1067:479; No MRI more severe 182:89; Timely MRI less

	severe 141:73; Timely MRI more severe 129:80; Early MRI less severe 345:113; Early MRI more severe 252:72. Ethnicity: not stated
Further population details	1. Chronicity: Not applicable / Not stated / Unclear
Indirectness of population	No indirectness: workers population
Interventions	(n=782) Intervention 1: Imaging for low back pain - MRI, CT or X-ray. Early MRI (within the first 30 days post-onset). Duration 2 year-period follow-up. Concurrent medication/care: Not stated (n=423) Intervention 2: Deferred imaging. Timely MRI (starting at 41 days post-onset through 180 days, after a trial of conservative care). Duration 2 years period follow-up. Concurrent medication/care: Not stated (n=1817) Intervention 3: No imaging. No MRI during the 2 years study period. Duration 2 years period follow-up. Concurrent medication/care: Not stated
Funding	Study funded by industry (Liberty Mutual Research Institute for Safety; "the parent company, Liberty Mutual Insurance, had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review or approval of the manuscript; and decision to submit the manuscript for publication")

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EARLY MRI (WITHIN 30 DAYS POST-ONSET) versus TIMELY MRI (41-180 DAYS POST-ONSET)

Protocol outcome 1: Healthcare utilisation at ≤4 months
- Actual outcome for low back pain with/without sciatica: Injections (including injections of epidural space, facet and sacroiliac joints, and trigger points) at 3 months; Group 1: 270/782, Group 2: 112/423; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Nerve testing EMG/NCV (electromyography/nerve conduction velocity) at 3 months; Group 1: 82/782, Group 2: 33/423; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Advanced imaging (myelography, discography, CT scans, bone scans and repeat MRIs) at 3 months; Group 1: 63/782, Group 2: 26/423; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Surgery (including lumbar discectomy, laminectomy, and fusions) at 3 months; Group 1: 70/782, Group 2: 13/423; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation at >4 months - 1 year
- Actual outcome for low back pain with/without sciatica: Injections (including injections of epidural space, facet and sacroiliac joints, and trigger points) at 6 months; Group 1: 329/728, Group 2: 153/423; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Nerve testing EMG/NCV (electromyography/nerve conduction velocity) at 6 months; Group 1: 53/782, Group 2: 113/423; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for low back pain with/without sciatica: Advanced imaging (myelography, discography, CT scans, bone scans and repeat MRIs) at 6 months; Group 1:

121/782, Group 2: 49/423; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Surgery (including lumbar discectomy, laminectomy, and fusions) at 6 months; Group 1: 113/782, Group 2: 24/423; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EARLY MRI (WITHIN 30 DAYS POST-ONSET) versus NO MRI (2-YEAR STUDY PERIOD) Protocol outcome 1: Healthcare utilisation at ≤4 months - Actual outcome for low back pain with/without sciatica: Injections (including injections of epidural space, facet and sacroiliac joints, and trigger points) at 3 months; Group 1: 270/782, Group 2: 22/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Nerve testing EMG/NCV (electromyography/nerve conduction velocity) at 3 months; Group 1: 82/782, Group 2: 19/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Advanced imaging (myelography, discography, CT scans, bone scans and repeat MRIs) at 3 months; Group 1: 63/782, Group 2: 10/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Surgery (including lumbar discectomy, laminectomy, and fusions) at 3 months; Group 1: 70/782, Group 2: 5/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation at >4 months - 1 year - Actual outcome for low back pain with/without sciatica: Injections (including injections of epidural space, facet and sacroiliac joints, and trigger points) at 6 months; Group 1: 329/782, Group 2: 32/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Nerve testing EMG/NCV (electromyography/nerve conduction velocity) at 6 months; Group 1: 113/782, Group 2: 50/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Advanced imaging (myelography, discography, CT scans, bone scans and repeat MRIs) at 6 months; Group 1: 121/782, Group 2: 13/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for low back pain with/without sciatica: Surgery (including lumbar discectomy, laminectomy, and fusions) at 6 months; Group 1: 113/782, Group 2: 10/1817; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Quality of life at >4 months - 1 year; Pain severity at ≤4 months; Pain severity at >4 months - 1 year; Function at ≤4 months; Function at >4 months - 1 year; Psychological distress at ≤4 months; Psychological distress at >4 months - 1 year; Responder criteria (pain) at ≤4 months; Responder criteria (pain) at >4 months - 1 year; Responder criteria (function) at ≤4 months; Responder criteria (function) at >4 months - 1 year; Adverse events (morbidity) at ≤4 months; Adverse events (morbidity) at >4 months - 1 year

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H.4 Self-management

Study	**Bentsen 1997[32]**

Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=74)
Countries and setting	Conducted in Sweden; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self report and physical examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Women born in 1933 with chronic low back pain (>30 days duration, or daily within previous 12 months)
Exclusion criteria	Presence of herniated disc, fracture of spine, somatic disease or mental illness that might interfere with training
Recruitment/selection of patients	Selected from health survey as having chronic low back pain
Age, gender and ethnicity	Age - Range: All 57 years old. Gender (M:F): 100% female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>30 days duration, or daily within previous 12 months).
Extra comments	Baseline disability scores: exercise at fitness centre: 5.25, self-management (home exercise): 3.25, p=0.0366
Indirectness of population	No indirectness
Interventions	(n=41) Intervention 1: Individual Biomechanical exercise - Core stability. Dynamic strength back exercises. Duration 3 months. Concurrent medication/care: Not stated (n=33) Intervention 2: Self-management - Unsupervised exercise. Home training programme. Duration 3 months. Concurrent medication/care: Not stated
Funding	Other (AMF-trygghetsforsakring, Stockholm, Sweden)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus CORE STABILITY

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Subjective disability index from VAS scores at 3 months (end of randomised period) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	**Brandt 2015[46]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=13)
Countries and setting	Conducted in USA
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Being an active duty helicopter aircrew member with > 4 weeks of self-reported low back pain (such as, non acute low back pain as defined by the Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society) who was currently flying > 1 hour/week.
Exclusion criteria	1) history of low back pain attributable to a traumatic event; 2) history of pre-existing low back pain prior to exposure to the helicopter work environment; 3) chronic lower extremity radicular symptoms below the knee; 4) chiropractic manipulation therapy, physical therapy, or acupuncture within the prior 4 week; 5) current medical restriction from performing flying duties; 6) currently pregnant.
Recruitment/selection of patients	Helicopter aircrew members who responded to an electronic solicitation for volunteers for a study investigating the effect of exercises in helicopter aircrew members experiencing low back pain
Age, gender and ethnicity	Age - Median (range): 30 (25-45). Gender (M:F): All males. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (At least 4 weeks of low back pain).
Extra comments	Baseline values, mean (SD) for all participants: NRS daily score 3.5(1.2); NRS flight 3.8(1.3); MODI 9.2(7.5). Subjects were active AirForce helicopter aircrew members of the Pacific Air Forces (Washington, US) and US AirForces in Europe, during the period July 2012-September 2013
Indirectness of population	No indirectness
Interventions	(n=6) Intervention 1: Self-management - Unsupervised exercise. A set of 5 core strengthening exercises chosen by the

Study	Brandt 2015[46]
	physical therapist member of the group. 1) supine with bilateral upper extremity and lower extremity lifts: subjects sat in the supine position with their arms extended perpendicular to their torso and they raise their legs to a 45 degrees angle with the ground. 2) supine curl-up: subjects start in the supine position with their knees bent at 90 degrees angle and they lift their head, neck, and shoulders off the ground while extending their arms perpendicular to their torso. 3) quadrupled with alternate upper extremity and lower extremity lift: subjects start on their hands and knee/lower legs and one arm is extended parallel to the ground in front of their body while the opposite leg is extended straight out parallel to the ground behind their body. 4) horizontal side support: subjects start lying on their side with their weight supported by the elbow, forearm, hand, and dependent foot and their non-supporting hand is placed on their upper hip; they hold their body in a straight line by not allowing their torso, hips or legs to sag towards the ground. 5) prone with bilateral upper extremity and lower extremity lift: subjects start in the prone position with their arms extended parallel to the ground in front of their body and lift their head, arms and legs at least 6'' off the ground; ideally their upper chest and lower thighs do not touch the ground as well. Exercises were chosen because they activate the transverse abdominis and multifidus muscles, key spinal stabilisers. One set of 12 repetitions of each of the 5 exercises was performed any 4 days in a week for 12 weeks. Intervention thus consisted of 48 exercise sessions performed during a 3 months period. Subjects were mailed an exercise DVD with the 5 core strengthening exercises. Duration 3 months. Concurrent medication/care: Not stated. Comments: 3 subjects (1 in intervention group and 2 in control group) were taking medications; reported medications included acetaminophen, celecoxib, esomeprazole, ibuprofen, levothyroxine, losartan, simvastatin. (n=7) Intervention 2: Usual care. Continuation of the subjects' pre-study exercise regimen. Duration 3 months. Concurrent medication/care: Not stated. Comments: 3 subjects (1 in intervention group and 2 in control group) were taking medications; reported medications included acetaminophen, celecoxib, esomeprazole, ibuprofen, levothyroxine, losartan, simvastatin.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus USUAL CARE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: MODI at 12 weeks; Other: ; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cherkin 1996[79]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=294)
Countries and setting	Conducted in USA; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention = one-off + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	20-69 years; visiting the clinic for "back pain", "low back pain", "hip pain" or "sciatica"
Exclusion criteria	Not a low back problem; previous back surgery; systemic or visceral disease; osteoporosis or corticosteroid therapy; pregnancy; cancer (other than skin); unexplained weight loss, vertebral fracture or dislocation; progressive or severe neurological signs; permanent disability or involvement in litigation; inability to speak English; severe or disabling coexisting problems (including substance abuse)
Recruitment/selection of patients	Recruited in suburban primary care clinic
Age, gender and ethnicity	Age - Mean (SD): 42.7 years (SD not stated). Gender (M:F): 149:137. Ethnicity: 90% White
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline scores (mean) for self-management, advice and UC groups, respectively - Bothersomeness past 24 hours: 7.3, 7.5, 7.3; Roland Disability score: 14.3, 13.6, 13.5
Indirectness of population	No indirectness
Interventions	(n=97) Intervention 1: Usual care. No extra intervention. Duration 1 year. Concurrent medication/care: Not stated (n=102) Intervention 2: Self-management - Self-management programmes (including education, advice and reassurance). Booklet: "Back in Action: A guide to understanding your low back pain and learning what you can do about it": emphasises return to normal activities as quickly as possible and increasing exercises e.g. walking, swimming and riding stationary bicycle. Duration One-off. Concurrent medication/care: Not stated (n=95) Intervention 3: Self-management - Self-management programmes (including education, advice and reassurance). Booklet: "Back in Action: A guide to understanding your low back pain and learning what you can do about it": emphasises return to normal activities as quickly as possible and increasing exercises e.g. walking,

Study	Cherkin 1996[79]
	swimming and riding stationary bicycle plus nurse advice, reassurance, emphasising key points from the booklet, helping patient set exercise goals. Duration One-off teaching session (8-30 minutes) + phone call 1-3 days later. Concurrent medication/care: Not stated
Funding	Academic or government funding (Agency for Health Care Policy and Research (The Back Pain Outcome Assessment Team) and the Northwest Health Services Research and Development Field Program, Seattle Veterans Affairs Medical Center)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) - BOOKLET versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Bothersomeness at 1 week; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Disability Score at 1 week; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Any healthcare visits for low back pain in months 6-12 at 1 year; Group 1: 17/93, Group 2: 20/88; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) - BOOKLET + NURSE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Bothersomeness at 1 week; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Disability score at 1 week; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Any healthcare visits for low back pain in months 6-12 at 1 year; Group 1: 18/87, Group 2: 20/88; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at

Study	Cherkin 1996[79]
	Define

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Study	Cherkin 1998[78]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=321)
Countries and setting	Conducted in USA; Setting: Primary care clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 1 month; follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History and examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 20 to 64 years of age presenting with low back pain that had persisted for 7 days post-presentation
Exclusion criteria	Mild or no pain 7 days post-presentation, history of back surgery, sciatica, systemic or visceral causes of pain, osteoporosis, vertebral fracture or dislocation, severe neurological signs, spondylolisthesis, coagulation disorder, severe concurrent illness
Recruitment/selection of patients	Patients recruited between November 1993 and September 1995
Age, gender and ethnicity	Age - Mean (SD): 40.7 (10.7) years. Gender (M:F): 166:155. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<6 weeks duration).
Extra comments	Baseline scores (mean, SD) for self-management and McKenzie groups, respectively - Roland Disability score: 11.7±5.4, 12.1±5.5. Duration of pain <6 weeks - 78%, prior physiotherapy for low back pain - 33%, prior chiropractic for low back pain - 32%
Indirectness of population	No indirectness
Interventions	(n=133) Intervention 1: Individual Biomechanical exercise - McKenzie. Patients classified according to McKenzie approach and therapy designed accordingly with nine sessions delivered over one month. All therapists trained by McKenzie Institute faculty. Patients also received a McKenzie "treat your own back book" and lumbar support. Duration 1 month. Concurrent medication/care: Taking medication for low back pain - 84%, taking narcotic analgesics for low back pain - 15% (n=66) Intervention 2: Self-management - Self-management programmes (including education, advice and

Study	Cherkin 1998[78]
	reassurance). Educational booklet discussing causes of back pain, prognosis, appropriate use of imaging studies and activities for promoting recovery and preventing recurrences. Duration 1 month. Concurrent medication/care: Taking medication for low back pain - 77%, taking narcotic analgesics for low back pain - 8%
Funding	Academic or government funding (Grant from Agency for Health Care Research and Policy)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus MCKENZIE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability score at 12 weeks; Group 1: mean 4.3 (SD 4.86); n=63, Group 2: mean 4.1 (SD 4.97); n=117; Roland Disability 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Cherkin 2001[80]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=262)
Countries and setting	Conducted in USA; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 10 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged 20 to 70 years visiting a primary care physician for low back pain
Exclusion criteria	Symptoms of sciatica, acupuncture or massage for low back pain within the past year, back care from a specialist or CAM provider, severe clotting disorders or anticoagulant therapy, cardiac pacemakers, underlying systemic or visceral disease, pregnancy, involvement with litigation or compensation claims for back pain, inability to speak English, severe or progressive neurological deficits, lumbar surgery within the past 3 years, recent vertebral fracture, serious

Study	Cherkin 2001[80]
	comorbid conditions and bothersomeness of back pain rated less than 4/10
Recruitment/selection of patients	Patients visiting a primary care physician for low back pain
Age, gender and ethnicity	Age - Mean (SD): 44.9 (11.5) years. Gender (M:F): 110:152. Ethnicity: 84% White
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline bothersomeness 6.2 (0-10 scale); Roland Disability Scale score 12.2 (0-23 scale)
Indirectness of population	No indirectness
Interventions	(n=78) Intervention 1: Manual therapy - Massage. Massage therapy protocol consisted of soft tissue therapies including Swedish, deep-tissue, neuromuscular and trigger point techniques. 'Energy techniques' that do not involve physical contact e.g. Reiki were specifically prohibited. Acupressure and shiatsu were prohibited because of similarities with acupuncture. Treatment delivered by 12 therapists with at least 3 years of experience. 10 sessions were scheduled. Duration 10 weeks. Concurrent medication/care: Not stated (n=94) Intervention 2: Acupuncture. Traditional Chinese Medical (TCM) acupuncture protocol, permitting basic TCM needling techniques, electrical stimulation and manual manipulation of the needles, indirect moxibustion, infrared heat, cupping and exercise recommendations. Decisions about the number and location of needles were left to the provider. Treatment provided by 7 acupuncturists with at least 3 years' experience. Ten sessions provided. Duration 10 weeks. Concurrent medication/care: Not stated (n=90) Intervention 3: Self-management - Self-management programmes (including education, advice and reassurance). Participants received high-quality educational materials including the back book and two professionally produced videotapes on self-management of back pain and specific exercises. These materials provided techniques for controlling and preventing pain, improving quality of life, and suggestions for coping with the emotional and interpersonal problems often accompanying chronic illness. Duration 10 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Group Health Cooperative, The Group Health Foundation, Seattle, Wash, and the John E. Fetzer Institute, Kalamazoo, Mich, and the Agency for Healthcare Research and Quality, Rockville Md)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus MASSAGE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 10 weeks; Group 1: mean 8.8 (SD 6.5); n=83, Group 2: mean 6.3 (SD 5.4);

Study	Cherkin 2001[80]
	n=77; Roland Disability Scale 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 1 year; Group 1: mean 6.4 (SD 6); n=83, Group 2: mean 6.8 (SD 5.8); n=76; Roland Disability Scale 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Provider visits at 1 year; Group 1: mean 1.5 (SD 4); n=83, Group 2: mean 1 (SD 2.1); n=76; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Low back pain medication fills at 1 year; Group 1: mean 4 (SD 8.6); n=83, Group 2: mean 2.5 (SD 3.6); n=76; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Costs of services (1998 $) at 1 year; Group 1: mean 200 US $ (SD 45); n=83, Group 2: mean 139 US $ (SD 25); n=76; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus ACUPUNCTURE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 10 weeks; Group 1: mean 8.8 (SD 6.5); n=83, Group 2: mean 7.9 (SD 6.7); n=89; Roland Disability Scale 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 1 year; Group 1: mean 6.4 (SD 6); n=83, Group 2: mean 8 (SD 6.8); n=90; Roland Disability Scale 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Provider visits at 1 year; Group 1: mean 1.5 (SD 4); n=83, Group 2: mean 1.9 (SD 3.7); n=90; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Low back pain medication fills at 1 year; Group 1: mean 4 (SD 8.6); n=83, Group 2: mean 4.4 (SD 8.9); n=90; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Costs of services (1998 $) at 1 year; Group 1: mean 200 US $ (SD 45); n=83, Group 2: mean 252 US $ (SD 46); n=90; Risk of bias: High; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Gilbert 1985[168]

Study	Gilbert 1985[168]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=262)
Countries and setting	Conducted in Canada; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention median 12 days + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	low back pain; >18 years; +/- radiation down leg; free of low back pain at least 30 days before current episode
Exclusion criteria	Abnormal sensation, motor power or reflexes, pain due to fracture, spondylolisthesis, spinal infection, disease of hip or pelvis, gastrointestinal disease, 1ry or 2ry tumour of spinal column, vertebral fracture, Paget's disease or rheumatoid disease; pregnancy
Recruitment/selection of patients	Presenting to family physicians
Age, gender and ethnicity	Age - Range of means: 40.0 (14.9) to 41.7 (13.3) years. Gender (M:F): 128:124. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline McGill Pain Scale total for self-management plus bed rest, self-management, bed rest and usual care groups, respectively: 23.0 (7.4), 22.7 (6.7), 25.2 (8.6), 25.1 (6.9)
Indirectness of population	No indirectness
Interventions	(n=66) Intervention 1: Self-management - Advice to bed rest. Bed rest. Duration 4 days. Concurrent medication/care: Allowed minor (muscle relaxants or <8 aspirins/day) or major (NSAID or >8 aspirins/day) analgesics (n=66) Intervention 2: Usual care. Allowed minor (muscle relaxants or <8 aspirins/day) or major (NSAID or >8 aspirins/day) analgesics. Duration Median 12 days. Concurrent medication/care: Not stated (n=62) Intervention 3: Self-management - Self-management programmes (including education, advice and reassurance). 20 minute slide tape presentation about the back and its care, given a 2-page summary; isometric flexion exercises taught, given a form with written and pictorial directions; instructed to repeat exercise at home 3 times a day. Duration Median 12 days. Concurrent medication/care: Allowed minor (muscle relaxants or <8 aspirins/day) or major (NSAID or >8 aspirins/day) analgesics

Study	Gilbert 1985[168]
	(n=68) Intervention 4: Self-management - Self-management programmes (including education, advice and reassurance). Bed rest + 20 minute slide tape presentation about the back and its care, given a 2-page summary; isometric flexion exercises taught, given a form with written and pictorial directions; instructed to repeat exercise at home 3 times a day. Duration Median 12 days. Concurrent medication/care: Allowed minor (muscle relaxants or <8 aspirins/day) or major (NSAID or >8 aspirins/day) analgesics
Funding	Academic or government funding (Ontario Ministry of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO BED REST versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 12 weeks; Group 1: 44/57, Group 2: 43/60; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 1 year; Group 1: 32/53, Group 2: 35/54; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION AND HOME EXERCISE) versus ADVICE TO BED REST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 12 weeks; Group 1: 46/62, Group 2: 44/57; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 1 year; Group 1: 34/59, Group 2: 32/53; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION AND HOME EXERCISE) versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 12 weeks; Group 1: 46/62, Group 2: 43/60; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 1 year; Group 1: 34/59, Group 2: 35/54; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Gilbert 1985[168]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION AND HOME EXERCISE) PLUS BED REST versus ADVICE TO BED REST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 12 weeks; Group 1: 47/63, Group 2: 44/57; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 1 year; Group 1: 37/60, Group 2: 32/53; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION AND HOME EXERCISE) PLUS BED REST versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 12 weeks; Group 1: 47/63, Group 2: 43/60; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 1 year; Group 1: 37/60, Group 2: 35/54; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION AND HOME EXERCISE) PLUS BED REST versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION AND HOME EXERCISE) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 12 weeks; Group 1: 47/63, Group 2: 46/62; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: McGill/Melzack Pain Questionnaire (no pain) at 1 year; Group 1: 37/60, Group 2: 34/59; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Haas 2005[188]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=109)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6 weeks; follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	African American or White seniors; age 60 or over; chronic low back pain (3 months or longer); ability to read and write English
Exclusion criteria	Dementia, significant heart or respiratory illness; serious blood disorders; participation in another intensive health promotion programme within last year; unwillingness to be randomised
Recruitment/selection of patients	Advertisement in local and senior newspapers, in senior email newsletters and listservs, local community centres and businesses; meeting seniors at health fairs, lectures to the public and organisational meetings, help of trusted professionals in the community
Age, gender and ethnicity	Age - Mean (SD): 77.2 (7.7) years. Gender (M:F): 17:92. Ethnicity: 85.3% White; 14.7% African American
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Chronic >3 months).
Extra comments	Baseline scores (mean SD) for self-management and wait list control groups respectively - pain: 48.3 (25.7), 49.2 (22.4); disability: 44.4 (28.7), 39.8 (24.5); general health: 56.3 (22.4), 53.6 (22.8); emotional wellbeing: 67.6 (20.1), 69.2 (16.4); energy fatigue: 43.3 (26.3), 44.5 (27.5)
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Chronic Disease Self-Management Program (CDSMP): community-based workshop taught by trained lay people; each weekly class 2.5 hours; taught from structured protocol: general principles of chronic conditions; self-management principles; symptoms; care-seeking options; community resources; exercise; relaxation; nutrition; medication and side-effects; skills building; learning from others; sharing with others; goal setting; action plans; feedback; problem-solving; strategies for managing pain and physical limitations while reducing fear and worry. Duration 6 weeks. Concurrent medication/care: Not stated

Study	Haas 2005[188]
	(n=49) Intervention 2: Usual care - Waiting-list. Waiting list. Duration 6 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (Health Resources and Services Administration, US Department of Health and Human Services)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus WAITING-LIST Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-36 energy domain at 6 months; Group 1: mean 4.3 (SD 23.2); n=42, Group 2: mean -1.6 (SD 23.4); n=38; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 well-being domain at 6 months; Group 1: mean 6 (SD 19.1); n=42, Group 2: mean -2.5 (SD 18.1); n=39; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 general health domain at 6 months; Group 1: mean -1.2 (SD 18.3); n=42, Group 2: mean 3.2 (SD 13.1); n=39; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Low back pain (modified Von Korff scale) at 6 months; Group 1: mean -7.7 (SD 26); n=54, Group 2: mean -6.7 (SD 23.6); n=47; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Disability (modified Von Korff scale) at 6 months; Group 1: mean -12.2 (SD 30.1); n=54, Group 2: mean -4.2 (SD 27.7); n=47; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Visited MD at 6 months; Group 1: 8/53, Group 2: 4/47; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Hagen 2000[190]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=457)

Study	Hagen 2000[190]
Countries and setting	Conducted in Norway
Line of therapy	Unclear
Duration of study	Intervention time: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-60 years; sick leave 8 to 12 weeks because of an International Classification of Primary Care diagnosis: L02 (back pain), L03 (low back pain), L14 (leg and thigh pain), L84 (back pain without sciatica).
Exclusion criteria	Pregnancy; recent low back trauma; cauda equina symptoms; cancer; osteoporosis; ongoing low back pain treatment by another specialist.
Age, gender and ethnicity	Age - Mean (SD): 40.9 (10.0). Gender (M:F): 52% male/48% female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Sick leave 8-12 weeks due to low back pain).
Extra comments	No relevant outcomes so no baseline scores
Indirectness of population	No indirectness
Interventions	(n=237) Intervention 1: Self-management - Advice to stay active. Modification of Indahl's light mobilisation program. 1 visit of 2.5-3 hours. Patients examined at the spine clinic by a physician (specialist in physical medicine and rehabilitation) and physiotherapist. Patients were informed about the good prognosis and the importance of remaining active to avoid development of muscle dysfunction. They were encouraged to take daily walks. All the patients were advised and instructed individually by the physiotherapist on how to train and stretch at home. They received advice on how to manage the back pain and how to resume normal activities. Duration 12 months. Concurrent medication/care: Not stated (n=220) Intervention 2: Usual care. Patients not examined at the spine clinic, but treated with primary health care. They had at least 1 visit to a general practitioner because is required to obtain sick leave. The kind of treatments and number of visits was not registered. Duration 12 months. Concurrent medication/care: Not stated
Funding	Academic or government funding
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation

Study	Hagen 2000[190]
	(prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Hazard 2000[207]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=489)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention = one-off sent booklet; follow up at 6 months
Method of assessment of guideline condition	Unclear method of assessment/diagnosis: People filing back-related First Report of Injury
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	People filing back-related First Report of Injury; Vermont; July 1996 to June 1997
Exclusion criteria	People who could not be contacted within 11 days of injury
Recruitment/selection of patients	Self-reported occupational injury
Age, gender and ethnicity	Age - Mean (SD): Pamphlet: 38.3 (9.2); no pamphlet: 37.0 (9.4) years. Gender (M:F): 274:176. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Occupational injury in last 11 days).
Extra comments	No baseline data reported
Indirectness of population	Serious indirectness: Self-reported occupational injury - no mention of physician examination
Interventions	(n=244) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Pamphlet: Good news about back pain. Duration One-off. Concurrent medication/care: Not stated (n=245) Intervention 2: Usual care. No pamphlet. Duration 6 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Institute on Disability and Rehabilitation Research)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus USUAL CARE	

Study	Hazard 2000[207]
Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Disability (number not working) at 6 months; Group 1: 14/217, Group 2: 12/202; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Hemmila 2002[213]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=132)
Countries and setting	Conducted in Finland
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-retired people with back pain and no contraindications to manual therapies.
Exclusion criteria	Patients with back pain <7 weeks were excluded from the analysis because of small numbers and uneven distribution not suitable for a pre-planned subgroup analysis.
Age, gender and ethnicity	Age - Other: Not stated. Gender (M:F): Not stated. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline ODI scores (mean SD) for combined manual therapy, mobilisation and self-management groups, respectively: 18.1 (7.7), 23.7 (11.6), 19.4 (9.5). No therapies were allowed for 1 month before the study
Indirectness of population	--
Interventions	(n=35) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Patients were taught to rhythmically bend their back in 3 planes whenever otherwise idle, thereby avoiding static postures as much as possible. Autostretching exercises were also available. Each patient received a booklet along with individual guidance to ensure correct performance. . Duration 6 weeks. Concurrent

Study	Hemmila 2002[213]
	medication/care: Not stated (n=34) Intervention 2: Manual therapy - Manual therapy (combination of techniques). Manual, thermal and electrotherapies according to the Finnish routine. . Duration 6 weeks. Concurrent medication/care: Massage, specific mobilizations, and manual (nut not manipulations with impulse) were allowed. Individual auto-stretching exercises were added when appropriate. (n=45) Intervention 3: Manual therapy - Mobilisation. Bone setting administered by 4 folk healers: the bone setters were free to choose their own methods, which generally resembled chiropractic or osteopathy. The most popular method roughly resembles the sacral push method for evaluating sacroiliac joint mobility. It is used to mobilise sacroiliac joints as well as spinal vertebrae from the lumbar to cervical region. . Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Other (Finnish Slot Machine Association)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus MANUAL THERAPY (COMBINATION OF TECHNIQUES)

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Improvement of Oswestry Disability Score at 3 months; Group 1: mean 2.9 (SD 8.73); n=35, Group 2: mean 4 (SD 7.61); n=33; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Improvement of Oswestry Disability Score at 12 months; Group 1: mean 2.2 (SD 9.71); n=32, Group 2: mean 4.4 (SD 8.88); n=32; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Healthcare utilisation (visits to healthcare centres) at 12 months; Group 1: mean 0.5 (SD 1.1); n=32, Group 2: mean 0.2 (SD 0.5); n=32; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus MOBILISATION

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Improvement of Oswestry Disability Score at 3 months; Group 1: mean 2.9 (SD 8.73); n=32, Group 2: mean 5.1 (SD 10.72); n=43; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Improvement of Oswestry Disability Score at 12 months; Group 1: mean 2.2 (SD 9.71); n=32, Group 2:

Study	Hemmila 2002[213]
mean 8.4 (SD 10.53); n=44; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Healthcare utilisation (visits to healthcare centres) at 12 months; Group 1: mean 0.5 (SD 1.1); n=32, Group 2: mean 0.4 (SD 0.7); n=44; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Hernandez-reif 2001[218]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=24)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 5 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	low back pain at least 6 months
Exclusion criteria	Fractured vertebra, herniated/degenerated disks, previous surgery for back pain (laminectomy or fusion), sciatic nerve involvement; legal action pending e.g. women's compensation
Recruitment/selection of patients	Referred by primary physician
Age, gender and ethnicity	Age - Mean (SD): 39.6 (15.2) years. Gender (M:F): 11:13. Ethnicity: 67% Caucasian, 8% Hispanic, 17% African American, 8% Asian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months duration).
Extra comments	Baseline McGill Pain Questionnaire (0-33 scale): Massage group: 16.5 (8.2); self-management: 16.7 (7.5)
Indirectness of population	No indirectness
Interventions	(n=12) Intervention 1: Massage. Two 30 minute massage therapy sessions per week for 5 weeks. Duration 5 weeks.

Study	Hernandez-reif 2001[218]
	Concurrent medication/care: Not stated (n=12) Intervention 2: Self-management - Unsupervised exercise. Instructed on progressive muscle relaxation exercises tensing and relaxing large muscle groups starting with feet and progressing to calves, thighs, hands, arms, back and face; asked to conduct these 30-minute sessions at home twice a week for 5 weeks. Duration 5 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (NIMH Senior Research Scientist Award and NIMH Research Grant; Johnson and Johnson)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus MASSAGE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 5 weeks; Group 1: mean 6.4 (SD 6.5); n=12, Group 2: mean 4.1 (SD 4.9); n=12; McGill Pain Questionnaire 0-33 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Irvine 2015[244]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=597)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 4 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Screening process about back pain history
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18 to 65 years of age living in the United States, be employed for at least half time (typical for employees to receive health benefits), retired, or a family member of an employee at one of the four companies, have experienced low

Study	Irvine 2015[244]
	back pain within the past 3 months, not be experiencing back pain so intense it interfered with everyday life, have no history of medical care for back pain, not participating in a monitored exercise program for back pain, have a working email address, respond to online video demonstrating that they had access to a computer that could play video on the Internet, cleared of medical risk using screening process
Exclusion criteria	Not stated - assumption - does not demonstrate characteristics in inclusion criteria
Recruitment/selection of patients	Promoted by four companies (trucking, manufacturing, technology, and a corporate headquarters) via in-house communication channels
Age, gender and ethnicity	Age - Range: 18-65 years. Gender (M:F): 40%/60%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear ('within' last 3 months).
Extra comments	No relevant outcomes so no baseline data
Indirectness of population	No indirectness
Interventions	(n=199) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). FitBack multiple-visit online program that provides adults with low back pain education and behavioural strategies to manage current pain and prevent future pain episodes. Self-tailored cognitive-behavioural approach. Designed to allow users control over the cognitive and behavioural strategies they use to impact their low back pain and to develop and support users' self-efficacy. Received 8 weekly reminder emails to log on FitBack. Unlimited access to 30 brief (1-4 minute) videos, which used gain-framed messaging delivered by an animated whiteboard-style coach. Duration 4 months. Concurrent medication/care: None stated (n=199) Intervention 2: Self-management - Self-management programmes (including education, advice and reassurance). Received 8 weekly reminder emails to access 6 website links included in the email. Websites provided a choice of popular, educational, and medically oriented online resources.. Duration 4 months. Concurrent medication/care: None given (n=199) Intervention 3: Usual care. Only received emails as requests to complete the assessments. Duration 4 months. Concurrent medication/care: None given
Funding	Study funded by industry (Small Business Innovation Research grant)
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2008[224])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=579)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 weeks to 5 months; follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Presentation in primary care with low back pain >3 month previously (recurrent or chronic pain); currently scoring 4 or more on Roland Disability Scale; current pain >3 weeks
Exclusion criteria	Previous experience of Alexander technique; <18 or >65 years; clinical indicators of serious spinal disease; current nerve root pain; previous spinal surgery; pending litigation; history of psychosis or major alcohol misuse; perceived inability to walk 100m
Recruitment/selection of patients	64 general practices
Age, gender and ethnicity	Age - Mean (SD): Exercise 46 (10), no exercise 47 (11) years. Gender (M:F): 177:402. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Presentation >3 months previously. Recurrent or chronic).
Extra comments	Baseline Von Korff scale: exercise 4.6 (1.8); no exercise 4.7 (1.8)
Indirectness of population	No indirectness
Interventions	(n=72) Intervention 1: Usual care. Usual care (no further details). Duration 1 year. Concurrent medication/care: Not stated (n=75) Intervention 2: Massage. Therapeutic massage 6 sessions, 1 a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Not stated (n=73) Intervention 3: Postural therapies - Alexander technique. Alexander technique, 6 sessions: 2 a week for 2 weeks, then 1 a week for 2 weeks. Duration 4 weeks. Concurrent medication/care: Not stated (n=73) Intervention 4: Postural therapies - Alexander technique. Alexander technique, 24 lessons: 2 a week for 6

Study (subsidiary papers)	Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2008[224])
	weeks, 1 a week for 6 weeks, 1 fortnightly for 8 weeks, 1 revision lesson at 7 months and 1 at 9 months. Duration 9 months. Concurrent medication/care: Not stated (n=72) Intervention 5: Self-management - Unsupervised exercise. Doctor prescription of exercise and up to 3 sessions of behavioural counselling with practice nurse. Duration 1 year. Concurrent medication/care: Not stated (n=72) Intervention 6: Massage + exercise prescription - Massage + home exercise prescription. Therapeutic massage 6 sessions, 1 a week for 6 weeks + Doctor prescription of exercise and up to 3 sessions of behavioural counselling with practice nurse. Duration 1 year. Concurrent medication/care: Not stated (n=71) Intervention 7: Postural therapy + exercise prescription - Alexander technique + home exercise prescription. Therapeutic massage 6 sessions, 1 a week for 6 weeks + Doctor prescription of exercise and up to 3 sessions of behavioural counselling with practice nurse. Duration 1 year. Concurrent medication/care: Not stated (n=71) Intervention 8: Postural therapy + exercise prescription - Alexander technique + home exercise prescription. Alexander technique, 24 lessons: 2 a week for 6 weeks, 1 a week for 6 weeks, 1 fortnightly for 8 weeks, 1 revision lesson at 7 months and 1 at 9 months + Doctor prescription of exercise and up to 3 sessions of behavioural counselling with practice nurse. Duration 1 year. Concurrent medication/care: Not stated
Funding	Academic or government funding (Medical Research Council)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; MD -2.08 (95%CI -10.6 to 6.4) SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; MD 0.72 (95%CI -7.38 to 8.81) SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; MD -1.65 (95%CI -3.62 to 0.31) Roland Disability Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus MASSAGE

Study (subsidiary papers)	Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2008[224])

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 0.72 (SD 29.5); n=51, Group 2: mean -2.11 (SD 29.7); n=64; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean -2.08 (SD 31); n=51, Group 2: mean -1.45 (SD 31); n=64; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff at 1 year; Group 1: mean -0.31 (SD 3.37); n=51, Group 2: mean 0.29 (SD 3.48); n=64; Van Korff 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean -1.65 (SD 7.16); n=51, Group 2: mean -0.45 (SD 7.53); n=64; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus ALEXANDER TECHNIQUE (6 LESSONS)

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean -2.08 (SD 31); n=51, Group 2: mean 2.04 (SD 29.6); n=58; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 0.72 (SD 29.5); n=51, Group 2: mean 4.1 (SD 28.7); n=58; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff at 1 year; Group 1: mean -0.31 (SD 3.38); n=51, Group 2: mean -0.44 (SD 3.31); n=58; Van Korff 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean -1.65 (SD 7.16); n=51, Group 2: mean -1.44 (SD 7.36); n=58; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus ALEXANDER TECHNIQUE (24 LESSONS)

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 0.72 (SD 29.5); n=51, Group 2: mean 3.74 (SD 29); n=61; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2008[224])
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean -2.08 (SD 31); n=51, Group 2: mean 11.83 (SD 30.2); n=61; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Von Korff at 1 year; Group 1: mean -0.31 (SD 3.38); n=51, Group 2: mean -1.32 (SD 3.36); n=61; Von Korff 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean -1.65 (SD 7.16); n=51, Group 2: mean -4.14 (SD 7.45); n=61; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Lorig 2002[331]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=580)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	At least 1 outpatient visit for back pain in last year; no red flag symptoms; access to computer/email; living in US
Exclusion criteria	Back pain >90 continuous days; major activity intolerance; planned back surgery; disability payments for back pain; unable to understand/write English; pregnant; back pain due to systemic disease; severe comorbid condition that limited functional ability; terminal illness
Recruitment/selection of patients	Recruited for workplaces, via public service announcements and Web banners
Age, gender and ethnicity	Age - Range of means: Treatment 46, control 45 years. Gender (M:F): 357:223. Ethnicity: Not stated

Study	Lorig 2002[331]
Further population details	1. Chronicity of pain: Not stated / Unclear (Excluded if continuous pain for >90 days).
Extra comments	Baseline scores (mean SD) for self-management and UC groups, respectively - disability: 10.18 (5.15), 9.53 (4.88); physician visits: 2.46 (4.62), 1.93 (3.03); chiropractor visits: 3.7 (8.9), 3.71 (8.17); physical therapist visits: 3.31 (6.8), 2.91 (7.72); hospital days: 0.25 (1.45), 0.07 (0.569)
Indirectness of population	No indirectness
Interventions	(n=296) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Email discussion group, Back Pain Helpbook and video modelling life with pain (not specific exercises). Duration 1 year. Concurrent medication/care: Not stated (n=284) Intervention 2: Usual care. Subscription to non-health magazine. Duration 1 year. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Institutes of Health, Bethesda Md)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus USUAL CARE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability at 1 year; Group 1: mean -2.77 (SD 4.68); n=190, Group 2: mean -1.51 (SD 4.97); n=231; Roland Morris Disability 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Physician visits for back at 1 year; Group 1: mean -1.54 (SD 4.16); n=190, Group 2: mean -0.65 (SD 3.47); n=231; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Chiropractor visits for back at 1 year; Group 1: mean -1.32 (SD 11.3); n=190, Group 2: mean -0.797 (SD 9.19); n=231; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Physical therapist visits for back at 1 year; Group 1: mean -1.99 (SD 6.46); n=190, Group 2: mean -1.31 (SD 9); n=231; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Hospital days at 1 year; Group 1: mean -0.198 (SD 1.47); n=190, Group 2: mean 0.04 (SD 0.898); n=231; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Malmivaara 1995[340]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=186)
Countries and setting	Conducted in Finland; Setting: Unclear - Home-based
Line of therapy	Unclear
Duration of study	Intervention time: 2 days
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients who presented with low back pain as their main symptom at the city's occupational health care centres. Patients with acute low back or exacerbations of chronic pain lasting less than three weeks. Patients with pain radiating below the knee
Exclusion criteria	Presence of at least one neurologic deficit or a positive Lasegue's sign of 60 degrees or less). Pregnant patients, history of cancer, a fracture of the lumbar spine, or urinary tract disease
Recruitment/selection of patients	Employees of the city of Helsinki, Finland, except those working in public transport or the electricity-supply services. Patients presented at the city's occupational healthcare centres.
Age, gender and ethnicity	Age - Mean (range): 39.1-41.1. Gender (M:F): 33%/67%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Acute low back or exacerbations of chronic pain lasting less than three weeks).
Extra comments	Baseline characteristics (mean): ODI - Bed rest group 34.6, Exercise group 33.8, Control group 32.0; health related QoL - bed rest group 0.86, exercise group 0.86, control group 0.85
Indirectness of population	No indirectness
Interventions	(n=67) Intervention 1: Self-management - Advice to bed rest. Instructed to take two days of complete bed-rest, with only essential walking allowed. They were advised about suitable resting positions and were given an illustration of a patient lying supine with the knees supported in a flexed position (the semi-Fowler position). Those in the bed-rest group were advised to resume routine activities as tolerated only after two days of complete rest. Duration 2 days. Concurrent medication/care: None given (n=52) Intervention 2: Self-management - Unsupervised exercise. Those in the exercise group received individual instruction from a physiotherapist in one session, as well as written recommendations for back-extension and lateral

Study	Malmivaara 1995[340]
	bending movements to be done at home every other hour during the day until the pain subsided. These movements were to be done 10 times in each direction, but slowly, to avoid aggravating the pain. Duration 2 days. Concurrent medication/care: Instructed to avoid bed rest and advised to continue their routines as actively as possible within the limits permitted by their back pain. (n=67) Intervention 3: Usual care. Patients were told to avoid bed rest and advised to continue their routines as actively as possible within the limits permitted by their back pain. Duration 2 days. Concurrent medication/care: None given
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO BED REST versus USUAL CARE Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: ODI at 12 weeks; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus USUAL CARE Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: ODI at 12 weeks; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Paatelma 2008[420] (Kilpikoski 2009[279])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=134)
Countries and setting	Conducted in Finland; Setting: Workplaces
Line of therapy	Unclear
Duration of study	Intervention + follow up: Mean 6 treatments but frequency not stated; follow up to 1 year

Study (subsidiary papers)	Paatelma 2008[420] (Kilpikoski 2009[279])
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18 to 65 years; employed; current non-specific low back pain (acute or chronic; first episode or recurrent) with or without radiating pain to one or both lower legs.
Exclusion criteria	Pregnancy; low back surgery within last 2 months; "red flags" indicating serious spinal pathology.
Recruitment/selection of patients	Recruited from 4 occupational health centres
Age, gender and ethnicity	Age - Mean (SD): Mean 44 years in each group (SDs 9, 10 and 15 in the three groups). Gender (M:F): 87:47. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed
Extra comments	Baseline median (IQR) low back pain (VAS mm): McKenzie 32 (20, 42), advice to remain active 37 (21, 50); leg pain (VAS mm): McKenzie 16 (0, 30), advice 16 (0, 30); Roland Morris: McKenzie 9 (4, 6), advice 8 (4, 1)
Indirectness of population	No indirectness
Interventions	(n=52) Intervention 1: Individual Biomechanical exercise - McKenzie. Exercises repeated several times a day (10 to 15 repetitions every 1 to 2 hours) supplemented by therapist over-pressure or mobilisation or both. Duration Mean 6 sessions, frequency not stated. Concurrent medication/care: Not stated (n=37) Intervention 2: Self-management - Advice to stay active. Advice to avoid bed rest and continue normal activity including exercise as much as possible; 2-page back booklet. Duration Single session. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO STAY ACTIVE versus MCKENZIE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Leg pain (VAS) at 3 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness
- Actual outcome: Low back pain (VAS) at 3 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Leg pain (VAS) at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness
- Actual outcome: Low back pain (VAS) at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Paatelma 2008[420] (Kilpikoski 2009[279])
Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 3 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Questionnaire at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Pengel 2007[428]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=260)
Countries and setting	Conducted in Australia, New Zealand; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-80 years; nonspecific low back pain at least 6 weeks and no longer than 12 weeks. Did NOT exclude participants receiving low back pain treatment apart from spinal surgery, osteoarthritis, spondylitis, spondylosis, spondylolisthesis, disc protrusion, herniation or prolapse or spinal stenosis
Exclusion criteria	Spinal surgery in last 12 months, pregnancy, nerve root compromise, confirmed or suspected serious spinal abnormality (e.g. infection, fracture, cauda equina), contraindications to exercise, poor comprehension of English language
Recruitment/selection of patients	Direct referral to trial by healthcare professional (n=1), invitations to patients on hospital waiting lists for physiotherapy treatments of low back pain (m=73) and advertisements in newspapers (n=185)
Age, gender and ethnicity	Age - Mean (SD): 49.9 (15.8) years. Gender (M:F): 52%/48%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (6-12 weeks).
Extra comments	Baseline characteristics: Pain - 5.5 (2.1) sham exercise plus advice, 5.3 (1.7) sham exercise plus sham advice; RMDQ - 8.2 (4.4) sham exercise plus advice, 8.1 (5.6) sham exercise plus sham advice. Other outcomes and 2 other arms

Study	Pengel 2007[428]
	extracted in combination (MBR) review
Indirectness of population	No indirectness
Interventions	(n=63) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Advice sessions were based on the program by Indahl and colleagues and aimed to encourage a graded return to normal activities. The physiotherapist explained the benign nature of low back pain, addressed any unhelpful beliefs about back pain, and emphasised that being overly careful and avoiding light activity would delay recovery. Duration 6 weeks. Concurrent medication/care: Sham exercise - the control for the exercise intervention consisted of sham pulsed ultrasonography (5 minutes) and sham pulsed short-wave diathermy (20 minutes). (n=68) Intervention 2: Placebo/Sham. During sham advice sessions, participants were given the opportunity to talk about their low back pain and any other problems. The physiotherapist responded in a warm and empathic manner, displaying genuine interest in the participant, but did not give advice about the low back pain. Participants were told that the trial included active and placebo physiotherapy treatments and they would receive 2 treatments, but they were not told whether the interventions they received were active sham. Duration 6 weeks. Concurrent medication/care: Sham exercise - the control for the exercise intervention consisted of sham pulsed ultrasonography (5 minutes) and sham pulsed short-wave diathermy (20 minutes).
Funding	Study funded by industry (National Health and Medical Research Council of Australia Project grant and the Australian Low Back Pain Trial Committee)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus PLACEBO/SHAM ADVICE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Roland-Morris Disability Questionnaire at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Rantonen 2012[440]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=126)
Countries and setting	Conducted in Finland; Setting: Occupational health department
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Under age 57, low back pain symptoms "potentially hampering work" and at least one of the following criteria: 1. low back pain lasting 2 weeks or more in the past 12 months; 2. Radiating low back pain at the time of responding to the questionnaire; 3. Recurrent low back pain (two or more episodes irrespective of their duration during the past 12 months); 4. Self-reported work absence because of low back pain during the past 12 months. In addition, they had to report low back pain intensity of 35 mm or more on a 100 mm visual analogue scale (VAS) during the past week.
Exclusion criteria	Retirement, pregnancy, presence of acute nerve root entrapment, suspicion of malignancy, recent fracture, severe osteoporosis or other specific diseases preventing participation in the follow-up.
Recruitment/selection of patients	All employees in a forestry company were invited to respond to a postal questionnaire on low back pain and back-related physical impairment. Based on the responses, the employees were divided into three main categories: 'no' low back (LB) symptoms, 'some' LB symptoms and 'LB symptoms potentially hampering work'. The present study included employees with LB symptoms potentially hampering work.
Age, gender and ethnicity	Age - Mean (range): 44.5 years. Gender (M:F): 68%/32%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (Episode lasting 2 weeks or more in last 12 months or 2 or more episodes irrespective of duration in last 12 months).
Extra comments	Baseline characteristics: VAS - 39 (24) progressive back specific exercises (DBC) group, 34 (25) self-care advice group; ODI - 17 (12) progressive back specific exercises (DBC) group, 16 (11) self-care advice group; HRQoL score (15D) - 0.8884 progressive back specific exercises (DBC) group, 0.8932 self-advice group
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Self-management - Unsupervised exercise. Progressive back specific exercises (DBC) - A graded activity program was carried out in a physiotherapy outpatient clinic. It consisted of a 1 hour session twice or three times a week, over a period of 12 weeks, supervised by a specially trained physiotherapist. The treatment included

Study	Rantonen 2012[440]
	exercises targeted at the trunk muscles using specific equipment together with stretching and relaxation. The physiotherapists emphasised the 'good prognosis' for low back pain during the treatment sessions and the subjects were instructed in performing LB exercises at home. The importance of home exercises was emphasised during the exercises. Duration 12 weeks. Concurrent medication/care: All subjects had access to occupational health care as usual during the study period. (n=40) Intervention 2: Self-management - Self-management programmes (including education, advice and reassurance). Self-care advice by an occupational physician based on the Back Book - during the visit to the OP, the findings of the clinical examination were explained to the subject. The employee was given a copy of the Back Book and the OP explained the contents of the booklet, emphasising the benign nature of and good prognosis for low back pain. The Back Book focuses on patients' beliefs and pain management and encourages staying active in spite of low back pain. The booklet also offers practical advice for patients suffering from an acute or subacute low back pain episode. Implemented self-care advice as a low-cost control intervention. Duration 12 weeks. Concurrent medication/care: All subjects had access to occupational health care as usual during the study period.
Funding	Study funded by industry (Centenary Foundation of Kymi Corporation, Yrjo Jahnsson Foundation, Juho Vainio Foundation and Finnish Cultural Foundation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) - BB ADVICE versus UNSUPERVISED EXERCISE (HOME EXERCISE) + BIOMECHANICAL

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: 15D at 3 months; Group 1: mean 0.89 (SD 0.07); n=40, Group 2: mean 0.9 (SD 0.07); n=43; 15D- HRQofL 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: 15D at 12 months; Group 1: mean 0.88 (SD 0.08); n=40, Group 2: mean 0.9 (SD 0.08); n=43; 15D - HRQofL 0-1 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS at 3 months; Group 1: mean 35 mm (SD 28); n=40, Group 2: mean 31 mm (SD 20); n=43; VAS scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome: VAS at 12 months; Group 1: mean 39 mm (SD 26); n=40, Group 2: mean 29 mm (SD 21); n=43; VAS scale 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Study	Rantonen 2012[440]
Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome: ODI at 3 months; Group 1: mean 16 % (SD 10); n=40, Group 2: mean 14 % (SD 11); n=43; ODI scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: ODI at 12 months; Group 1: mean 14 % (SD 13); n=40, Group 2: mean 12 % (SD 10); n=43; ODI scale 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Reilly 1989[444]
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Primary diagnosis of 'chronic lumbosacral strain', medical evaluation by attending physician to be 'medically able' to take part to the study
Exclusion criteria	Not stated
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - --: Not stated. Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline pain not stated. Groups were evenly matched by age, sex, months in pain, exercise experience and previous number of back surgical procedures before random assignment to experimental or control group.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Mixed exercise - Biomechanical + aerobic. A specialist monitored and worked with the subject

Study	Reilly 1989[444]
	individually, 4 times a week for 6 months (total 96 sessions) performing a predesigned exercise programme (flexibility strength and aerobic). Duration 6 months. Concurrent medication/care: Not stated (n=20) Intervention 2: Self-management - Unsupervised exercise. Unsupervised, participants were given a predesigned exercise programme (flexibility, strength and aerobic), to be done 4 times a week for 6 months. Duration 6 months. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus BIOMECHANICAL + AEROBIC Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: VAS at 6 months; Group 1: mean 80 (SD 13.9); n=20, Group 2: mean 33.5 (SD 11.3); n=20; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Number of pain relapses requiring medical attention at 6 months at 6 months; Group 1: mean 3.05 (SD 1.9); n=20, Group 2: mean 0.25 (SD 0.4); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Roland 1989[451]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=936)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention = booklet; follow up to 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable

Study	Roland 1989[451]
Inclusion criteria	Patients aged 16-64 years presenting with low back pain to five group practices (two in Cambridge, three in London) in the year from September 1985. Patients were only included if back pain was the main reason for the consultation, but the pain could be acute or chronic. Low back pain was defined as pain in an area bounded by the lowest palpable ribs, the buttock creases, and the posterior axillary lines
Exclusion criteria	Patients who were pregnant, who had influenza like illnesses, who were known to be illiterate or who moved from their practice during the study year were excluded from the analysis
Recruitment/selection of patients	5 group practices
Age, gender and ethnicity	Age - Mean (SD): 38 years. Gender (M:F): Not stated. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (Acute or chronic).
Extra comments	Baseline scores not reported
Indirectness of population	No indirectness
Interventions	(n=483) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). A 21-page booklet called the Back book, was written for patients with back pain. It contained information on the basic anatomy and biomechanics of the back, advice on the management of acute episodes of back pain, advice on long-term prevention, descriptions of five exercises, and suggestions on when to seek medical advice.. Duration One-off given booklet. Concurrent medication/care: The general practitioner's management of the patient's back problem was not constrained in any way apart from the randomised booklet. (n=453) Intervention 2: Usual care. Not stated. Duration Ongoing. Concurrent medication/care: Not stated
Funding	Academic or government funding (East Anglian regional health authority and the Health Education Council)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus USUAL CARE Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Consultation for back pain at 1 year; Group 1: 172/483, Group 2: 191/453; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Hospitalisation at 1 year; Group 1: 11/483, Group 2: 19/453; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study (subsidiary papers)	Sherman 2005[472] (Horng 2006[226])
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=101)
Countries and setting	Conducted in USA; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 12 weeks + follow up to 26 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 20 and 64 years of age, visited a primary care provider for treatment of back pain 3 to 15 months before the study
Exclusion criteria	Complicated back pain (e.g. sciatica, previous back surgery, diagnosed spinal stenosis), potentially attributable to specific underlying diseases or conditions (e.g. pregnancy, metastatic cancer, spondylolisthesis, fractured bones, dislocated joints), or minimal pain (rating of <3 on the bothersomeness scale of 0-10)
Recruitment/selection of patients	Participants recruited between June and December 2003 by letters from primary care provider and following advertisements in the media
Age, gender and ethnicity	Age - Mean (SD): 44 (13) years. Gender (M:F): 34:67. Ethnicity: 80% white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (3-15 months).
Extra comments	Mean symptom bothersomeness in last week: yoga: 5.4 (1.5); exercise: 5.7 (1.9); book: 5.4 (1.9); mean Roland Disability Score: yoga: 8.1 (4.5); exercise: 9.0 (4.1); book: 8.0 (4.0); % of patients using medication in previous week: yoga: 58, exercise: 57, book: 50
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Group mind-body exercise - Group Yoga. Viniyoga therapy protocol deigned by an instructor and a senior teacher of viniyoga. Each class included a question and answer period and guided deep relaxation. Most postures were not held but were repeated. Classes 75 minutes duration, once weekly. Participants also received hand-outs and audio CDs. Duration 12 weeks. Concurrent medication/care: Patients retained access to all medical care provided by their insurance plan (n=35) Intervention 2: Mixed exercise - Biomechanical + aerobic. Programme consisting of aerobic exercises and strengthening exercises followed by stretches as part of 75 minute classes once weekly for 12 weeks. Duration 12 weeks. Concurrent medication/care: Patients retained access to all medical care provided by their insurance plan

Study (subsidiary papers)	Sherman 2005[472] (Horng 2006[226])
	(n=30) Intervention 3: Self-management - Advice to stay active. Participants were sent a copy of "the back book". . Duration 12 weeks. Concurrent medication/care: Patients retained access to all medical care provided by their insurance plan
Funding	Academic or government funding (National Centre for Complementary and Alternative Medicine, National Institute of Arthritis)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO STAY ACTIVE versus GROUP YOGA

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Medication use in previous week at 6 months; Group 1: 17/29, Group 2: 7/34; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Positive response (improvement of at least 50% in RMDQ) at 12 weeks; Group 1: 9/30, Group 2: 25/36; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO STAY ACTIVE versus BIOMECHANICAL + AEROBIC

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Medication use in previous week at 6 months; Group 1: 17/29, Group 2: 16/32; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Sherman 2005[472] (Horng 2006[226])
Protocol outcome 3: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Positive response (improvement of at least 50% in RMDQ) at 12 weeks; Group 1: 9/30, Group 2: 15/30; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Adverse events (morbidity) at Define

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Study	Shirado 2010[476]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=201)
Countries and setting	Conducted in Japan; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 8 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 20-64 years; consulted orthopaedic surgeon with nonspecific low back pain >3 months duration; able to give consent; no minimum pain intensity; no sciatica; no neurological deficit; straight leg raising >70 degrees, negative femoral nerve stretch test, no superficial sensory deficit, muscle strength >4/5 in manual testing
Exclusion criteria	low back pain due to tumours, infections, fractures; previous back surgery; severe osteoporosis, psychiatric disorders (e.g. depression); liver or renal dysfunction; pregnancy; medication for cardiac failure; CVA or MI in last 6 months
Recruitment/selection of patients	Orthopaedic surgeons in 92 clinics and hospitals throughout Japan
Age, gender and ethnicity	Age - Mean (range): 42.2 (20-64) years. Gender (M:F): 89:112. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 3 months duration).
Extra comments	Baseline pain/disability not stated
Indirectness of population	No indirectness
Interventions	(n=103) Intervention 1: Self-management - Unsupervised exercise. Brochure on therapeutic exercise and body mechanics; medical professionals gave practical lecture (15-30 minutes) of the exercise (trunk muscle strengthening

Study	Shirado 2010[476]
	and stretching) to participants; patients visited offices at least once or twice a week; staff encouraged the patients to perform the exercise as much as possible. Duration 8 weeks. Concurrent medication/care: Not stated (n=98) Intervention 2: Non-steroidal anti-inflammatory drugs - Diclofenac. Diclofenac sodium (25mg x 3) or loxoprofen sodium (60mg x 3) or zaltoprofen (80mg x 3); with medication for preventing gastrointestinal adverse reaction. Duration 8 weeks. Concurrent medication/care: No other medication allowed
Funding	Academic or government funding (Japanese Clinical Orthopaedic Association (JOA))
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus DICLOFENAC Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Japan Low Back Pain Evaluation Questionnaire at 8 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 8 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Disability (Roland Morris Disability Questionnaire) at 8 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Sparkes 2012[497]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=62)
Countries and setting	Conducted in United Kingdom; Setting: Spinal pain clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention = one-off + follow up: booklet group 17.2 (10.1) days; control: 24.6 (13.2) days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination

Study	Sparkes 2012[497]
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age >18 years; low back pain, with or without referral to lower limbs; referred to spinal pain clinic by GP
Exclusion criteria	Serious spinal disease e.g. tumour, fracture or cauda equina syndrome, nerve root pain, history of drug or alcohol abuse, psychiatric illness, inability to read, write or understand English
Recruitment/selection of patients	Convenience sample
Age, gender and ethnicity	Age - Mean (range): Booklet: 51.72 (22-83); control: 51.75 (18-79) years. Gender (M:F): 24:33. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline pain VAS: booklet: 5.55 (2.9); control: 4.96 (2.3); RMDQ: booklet: 8.5 (5.2), control: 6.9 (4.7)
Indirectness of population	No indirectness
Interventions	(n=33) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). The Back Book (promotes staying active). Duration One-off. Concurrent medication/care: Not stated (n=29) Intervention 2: Usual care - Waiting-list. No extra intervention; on waiting list for spinal pain clinic. Duration Mean 24.6 (13.2) days. Concurrent medication/care: Not stated
Funding	Academic or government funding (The Chartered Society of Physiotherapy Research Funding Committee)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at Around 21 days; Group 1: mean 4.22 Not stated (SD 3.2); n=29, Group 2: mean 3.74 Not stated (SD 2.6); n=28; VAS Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at Around 21 days; Group 1: mean 8.3 Not stated (SD 5.4); n=29, Group 2: mean 6.5 Not stated (SD 4.6); n=28; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Torstensen 1998[522]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=141)
Countries and setting	Conducted in Norway; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 months + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain with or without leg pain, age 20-65 years, born in Norway, employment, completion of other treatment types, no preference towards the treatment types
Exclusion criteria	Prolapse with neurological signs and symptoms requiring surgery, spondylolisthesis, hip arthrosis, previous back surgery, suspicion of malignancy, known rheumatic joint disease, pain in areas other than the lower back and other somatic or psychological dysfunction making it difficult to follow the treatment program.
Recruitment/selection of patients	Social security offices: people who had been sick-listed 8-52 weeks with ICPC codes L02, L03, L84 and L86
Age, gender and ethnicity	Age - Mean (SD): Exercise group 42.1 (11.2), unsupervised exercise group 39.9 (11.4) years. Gender (M:F): 68:73. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline (0-100 scale) low back pain: exercise: 53.1 (21.3); unsupervised exercise: 55.0 (21.0); baseline leg pain: 24.9 (21.3) and 28.7 (28.8); baseline Oswestry low back pain Disability Questionnaire: 51.7 (10.7) and 50.0 (11.9)
Indirectness of population	No indirectness
Interventions	(n=71) Intervention 1: Group biomechanical exercise - Core stabilization. Exercise equipment: wall pulleys, lateral pulley, angle bench, multipurpose bench, incline board, wall bar, deloading frame, dumbbells, and bar bells. Patients received 36 treatments lasting 1 hour each, 3 times a week for 12 weeks. Duration 12 weeks. Concurrent medication/care: Not stated (n=70) Intervention 2: Self-management - Unsupervised exercise. Patients asked to walk for 1 hour 3 times a week for 12 weeks. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Ministry of health and social affairs- Norwegian national budget and Foundation of

Study	Torstensen 1998[522]
	education and research in physiotherapy, Norway)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: UNSUPERVISED EXERCISE versus CORE STABILIZATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: low back pain VAS at 12 weeks; Group 1: mean 50.4 mm (SD 27.2); n=57, Group 2: mean 37.2 mm (SD 25.3); n=59; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: low back pain VAS at 1 year; Group 1: mean 50 mm (SD 28); n=57, Group 2: mean 40.5 mm (SD 24.4); n=59; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Leg pain VAS at 12 weeks; Group 1: mean 35.2 mm (SD 33.9); n=57, Group 2: mean 18.8 mm (SD 24.9); n=59; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Leg pain VAS at 1 year; Group 1: mean 35.7 mm (SD 33.8); n=57, Group 2: mean 21.2 mm (SD 21.7); n=59; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Low Back Pain Disability Questionnaire at 12 weeks; Group 1: mean 52.7 (SD 16.6); n=57, Group 2: mean 46.2 (SD 13.1); n=59; Oswestry Low Back Pain Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Low Back Pain Disability Questionnaire at 1 year; Group 1: mean 50.6 (SD 16.6); n=57, Group 2: mean 44.1 (SD 13.79); n=59; Oswestry Low Back Pain Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Back to work at 1 year; Group 1: 40/70, Group 2: 41/69; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Costs of treatment + cost of sick leave at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Vroomen 1999[555]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=183)
Countries and setting	Conducted in Netherlands; Setting: Secondary care
Line of therapy	Unclear

Study	Vroomen 1999[555]
Duration of study	Intervention + follow up: Intervention 2 weeks; follow up to 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination and magnetic resonance imaging (MRI) of the lumbar spine
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients who presented with back pain radiating into one leg below the gluteal fold; intensity of pain was sufficient to justify two weeks of bed rest as therapy. Patients had to have sciatica (as indicated by at least two of the following symptoms and signs: radicular pain distribution; increased leg pain on coughing, sneezing, or straining; decreased muscle strength; sensory loss; reflex loss; or a positive straight-leg–raising test).
Exclusion criteria	Patients were excluded if they had previously undergone spinal surgery, were pregnant, had pending workers' compensation claims, were unavailable for follow-up (i.e., planned to move), or had severe coexisting illnesses. They could not have an indication for immediate surgical intervention (morphine-dependent intractable pain, a rapidly progressing paresis of short duration, or a cauda equina syndrome).
Recruitment/selection of patients	Neurology department of Maastricht University Hospital.
Age, gender and ethnicity	Age - Mean (SD): Bed rest: 44±12; control: 48±12 years. Gender (M:F): 102:81. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Median duration of pain 16 days; 33% had previous episodes).
Extra comments	Score on visual-analogue (0-100) scales: Chief symptom: Bed rest: 85±16; control: 87±16; Pain in the leg: bed rest: 62±22; control: 68±21 (p=0.03); Pain in the back: bed rest: 49±30; control: 45±33. Score on McGill Pain Questionnaire (0-63): bed rest: 19±10; control: 20±11; Score on revised Roland Disability Scale (0-23): bed rest: 5.5±3.9; control: 5.2±3.8; Score on Oswestry Low Back Pain Questionnaire (0-50): bed rest: 27±10; control: 29±8
Indirectness of population	No indirectness
Interventions	(n=92) Intervention 1: Self-management - Advice to bed rest. The patients in the bed-rest group were instructed to stay in the supine or lateral recumbent position with one pillow under the head for two weeks. They were permitted to get out of bed to use the toilet and to bathe. Duration 2 weeks. Concurrent medication/care: The patients were allowed to take acetaminophen (1000 mg three times a day) for pain, supplemented by codeine (10 to 40 mg six times a day) or naproxen (500 mg three times a day) when necessary. Temazepam (10 mg once daily) was prescribed for insomnia. Patients were asked to record any other treatments they used for radicular symptoms, although these were discouraged. (n=91) Intervention 2: Usual care. The patients in the control group were instructed to be up and about whenever possible but to avoid straining the back or provoking pain. They were allowed to go to work, but bed rest was not

Study	Vroomen 1999[555]
	prohibited. Duration 2 weeks. Concurrent medication/care: The patients were allowed to take acetaminophen (1000 mg three times a day) for pain, supplemented by codeine (10 to 40 mg six times a day) or naproxen (500 mg three times a day) when necessary. Temazepam (10 mg once daily) was prescribed for insomnia. Patients were asked to record any other treatments they used for radicular symptoms, although these were discouraged.
Funding	Academic or government funding (Maastricht University and Maastricht University Hospital)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO BED REST versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS back pain at 12 weeks; Group 1: mean 19 (SD 25); n=85, Group 2: mean 22 (SD 27); n=84; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: VAS leg pain at 12 weeks; Group 1: mean 16 (SD 26); n=85, Group 2: mean 14 (SD 24); n=84; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: McGill Pain Questionnaire at 12 weeks; Group 1: mean 8 (SD 9); n=85, Group 2: mean 7 (SD 8); n=84; McGill Pain Questionnaire 0-63 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Revised Roland Disability Scale at 12 weeks; Group 1: mean 15.2 (SD 7); n=85, Group 2: mean 15.7 (SD 7); n=84; Revised Roland Disability Scale 0-23 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Low Back Pain Questionnaire at 12 weeks; Group 1: mean 11 (SD 10); n=85, Group 2: mean 11 (SD 11); n=84; Oswestry Low Back Pain Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Wiesel 1980[569]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	3 (n=200)
Countries and setting	Conducted in USA; Setting: Army Hospital
Line of therapy	Unclear
Duration of study	Intervention time: 14 days

Study	Wiesel 1980[569]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Basic combat trainees; male; age 17-34 years; no previous back problem; non-radiating pain; neurological and straight leg raising normal; normal lumbosacral x-ray
Exclusion criteria	X-ray abnormality e.g. spina bifida
Recruitment/selection of patients	Assessed by 1 of 4 physicians
Age, gender and ethnicity	Age - Mean (range): 23 (17-34) years. Gender (M:F): All male. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (No further details).
Extra comments	Baseline pain for each individual classified as "10 points"
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Self-management - Advice to bed rest. Bedrest in hospital until pain abated and no palpable muscle spasm and full range of motion. Duration Up to 14 days. Concurrent medication/care: One acetaminophen tablet twice daily (n=40) Intervention 2: Self-management - Advice to stay active. Kept ambulatory but without physical exercise. Duration Up to 14 days. Concurrent medication/care: One acetaminophen tablet twice daily
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO BED REST versus ADVICE TO STAY ACTIVE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Mean number of days before return to full activity at 14 days; Group 1: mean 6.57 days (SD 1.45); n=40, Group 2: mean 11.8 days (SD 0.76); n=40; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Wilkinson 1995[570]

Study	Wilkinson 1995[570]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=42)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 48 hours + follow up to day 28
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	16-60 years who presented with acute low back pain; less than seven days' duration, free from back pain for the 28 days before the present episode. Acute low back pain was defined as pain in the area bounded by the lowest palpable ribs superiorly, the posterior axillary lines laterally, and gluteal folds inferiorly; the pain could radiate down one or both legs.
Exclusion criteria	Conditions that excluded subjects from recruitment were: non-musculoskeletal pain, previous bed rest for more than 24 hours in the present episode, urinary tract infection, viral illness, pyrexia, illiteracy, anticoagulant or steroid therapy, medical contraindications to bed rest, major spinal pathology, inflammatory joint disease and active cancer
Recruitment/selection of patients	7 practices in the West Midlands
Age, gender and ethnicity	Age - Range of means: Bed rest: 35.2 years and control 41.2 years. Gender (M:F): 25:17. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<7 days duration).
Extra comments	Disability scores were greater in the bed rest group on recruitment (Oswestry index Mean (SD) score Bed rest group: 54.2 [16.8] vs. control: 44.3 [12.7], p<0.05; Roland-Morris index Mean (SD) score 13.9 [5.4] vs. 11.0 [11.0], p<0.05). . Baseline differences were largely caused by some subjects with pain of less than 24 hours' duration being unable to complete the disability questionnaires. However, when those who had pain of less than 24 hours' duration were excluded (four in the bed rest group and five in the control group), the pain scores of the two groups (Oswestry index question one) were similar, as were the disability scores of the two groups (Oswestry 49.8 [16.3] vs. 42.9 [10.2]; Roland-Morris 12.9 [5.6] vs. 10.6 [3.8]).
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Self-management - Advice to bed rest. 48 hours' strict bed rest. Duration 48 hours. Concurrent medication/care: All subjects received ibuprofen or, if this was contraindicated, co-proxamol for analgesia. Subjects did not receive physiotherapy during the trial, and other treatments, including self-remedies and physical therapies (apart from local application of heat), were discouraged.

Study	Wilkinson 1995[570]
	(n=22) Intervention 2: Self-management - Advice to stay active. Encouraged to remain mobile and to have no daytime rest (defined as between 09.00 hours and 21.00 hours). Duration 48 hours. Concurrent medication/care: All subjects received ibuprofen or, if this was contraindicated, co-proxamol for analgesia. Subjects did not receive physiotherapy during the trial, and other treatments, including self-remedies and physical therapies (apart from local application of heat), were discouraged.
Funding	Academic or government funding (Royal College of General Practitioners scientific foundation research grant)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ADVICE TO BED REST versus ADVICE TO STAY ACTIVE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index at Day 28; Group 1: mean 22.9 (SD 21.6); n=14, Group 2: mean 19.2 (SD 15.3); n=20; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Index at Day 28; Group 1: mean 5.9 (SD 5.6); n=14, Group 2: mean 3.2 (SD 4); n=20; Roland Morris Disability Index 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Zhang 2014[585]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=54)
Countries and setting	Conducted in China; Setting: university students
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	aged 18–30 years and have low back pain (with or without radiating pain to the lower extremity) of less than or equal

Study	Zhang 2014[585]
	to 3 months duration
Exclusion criteria	VAS pain score >8, previous participation in a health education programme, previous spinal surgery; acute infection, progressive neurological deficit, structural anomaly, severe instability, severe cardiovascular or metabolic disease.
Recruitment/selection of patients	not reported
Age, gender and ethnicity	Age - Mean (SD): 22.5 (2.5) approx. Gender (M:F): 34/20. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Less than or equal to 3 months duration).
Extra comments	Pain (VAS 0-10): self = 5.59 (SD 1.53) and UC = 5.78 (SD 1.19). ODI (0-100): self = 42.78 (SD 9.32) and UC = 45.19 (SD 11.4). SF-36 physical (0-100): self = 57.28 (20.62) and UC = 50.23 (22.78). SF-36 mental (0-100): self = 83.76 (14.11) and UC = 80.83 (15.19).
Indirectness of population	No indirectness
Interventions	(n=27) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Education sessions once a week for 12 weeks. Sessions included a lecture (30 min) followed by discussion (10 min), and information was delivered by videos, computer presentations and instruction leaflets. Content included active management and postural hygiene, such as avoiding risk factors for back problems, safe lifting practices at home and work, and correct postures for decreasing back muscle tension and spinal load.. Duration 12 weeks. Concurrent medication/care: All patients performed lumbar strengthening exercises three times a week (40 min each session) for 12 weeks, focusing on trunk flexor and extensor muscles. Exercise programmes were led by registered physical therapists. Each session included: (i) 5-min warm-up; (ii) 15-min trunk flexor strength exercises, including straight leg raises and sit-ups with foot fixation; (iii) 15-min trunk extensor strength exercises, including prone trunk extensions; (iv) 5-min cool-down. (n=27) Intervention 2: Usual care. All patients performed lumbar strengthening exercises three times a week (40 min each session) for 12 weeks, focusing on trunk flexor and extensor muscles. Exercise programmes were led by registered physical therapists. Each session included: (i) 5-min warm-up; (ii) 15-min trunk flexor strength exercises, including straight leg raises and sit-ups with foot fixation; (iii) 15-min trunk extensor strength exercises, including prone trunk extensions; (iv) 5-min cool-down.. Duration 12 weeks. Concurrent medication/care: n/a as UC
Funding	Academic or government funding (Ministry of Education and Shanghai University)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up

Study	Zhang 2014[585]
- Actual outcome: Mental component (0-100) at 12 weeks; Group 1: mean 89.84 (SD 11.93); n=25, Group 2: mean 82.35 (SD 14.11); n=24; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Physical component (0-100) at 12 weeks; Group 1: mean 90.92 (SD 13.02); n=25, Group 2: mean 63.68 (SD 23.87); n=24; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS 0-10) at 12 weeks; Group 1: mean 2.02 (SD 1.46); n=25, Group 2: mean 2.71 (SD 1.98); n=24; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: ODI (0-100) at 12 weeks; Group 1: mean 14.27 (SD 7.11); n=25, Group 2: mean 17.84 (SD 9.48); n=24; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.4.1 Combined interventions – self-management adjunct

Study	Adamczyk 2009[1]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Poland; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention time: Duration of intervention not stated
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Females with low back pain, age 25-55 years, who received physiotherapy in the Rehabilitation Unit of the local government Primary Health Care facility in Bodzentyn

Study	Adamczyk 2009[1]
Exclusion criteria	Not stated
Recruitment/selection of patients	Received physiotherapy in the Rehabilitation Unit of the local government Primary Health Care facility in Bodzentyn
Age, gender and ethnicity	Age - Range: 25-55 years. Gender (M:F): All female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Duration of pain not stated).
Extra comments	Baseline scores (mean) for combined (physical (taping) + exercise + self-management) and combined (electrotherapy + exercise) groups, respectively - pain VAS: 8.5, 9.17
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. In the experimental group, the customised programme of physiotherapy involved post-isometric relaxation of muscles (PIR) and active mobilisations as well as rolling mobilisation using the Kibler Fold Of Kinesiology Taping techniques, muscle and ligament applications were used. Additionally, the patients exercised every day according to the principles developed by R Maigne. Moreover, customised programmes of self-therapy were used that included self-relaxation of excessively tense muscles, stretching positions and crouches. When the pain had been alleviated, the patients performed exercises to strengthen weak muscles. Patients with lumbar hyperlordosis exercised abdominal and gluteal muscles, while those with lumbar dyslordosis performed exercises to strengthen hip and back flexors. The number of exercise repetitions was gradually increased (2-3 series of 15 repetitions) and a period of rest was recommended after each series. . Duration Not stated. Concurrent medication/care: Not stated (n=30) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. The therapeutic programme in the control group included physical procedures (two electrotherapy procedures for a period of two weeks: ionophoresis, galvanization and low frequency alternating current, TENS and interferential currents). Exercises were performed for 30 minutes in groups or individually. The programme included exercises stretching dorsal muscles, hip flexors and ischiotibial muscle as well as exercises to strengthen the abdomen, back, buttocks and thigh abductors and exercises for visual-muscular coordination combined with respiratory exercises. Duration Not stated. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PHYSICAL (TAPING), EXERCISE + SELF-MANAGEMENT versus COMBINED NON-INVASIVE INTERVENTIONS: ELECTROTHERAPY + EXERCISE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at End of treatment (duration not stated); Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Adamczyk 2009[1]
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Alayat 2014[3]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=72)
Countries and setting	Conducted in Saudi Arabia
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 4 weeks + 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: pre-diagnosed in Al-Noor Hospital
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Male patients with a history of chronic low back pain for at least 1 year, age between 20 and 50 years. Patients with a previous history of low back pain episodes and radiographic findings positive for mild pathology were allowed to participate
Exclusion criteria	Patients with a history of spinal surgery, degenerative disc disease, disc herniation, spine fracture, spondylosis, spinal stenosis, neurological deficits, abnormal laboratory findings and systemic and psychiatric illnesses
Recruitment/selection of patients	Referred to the study from the orthopedic department and recruited from the rehabilitation department of Al-Noor Hospital, Makkah, Saudi Arabia
Age, gender and ethnicity	Age - Mean (SD): 32.81 (4.48). Gender (M:F): 72/72 males. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (At least 1 year duration).
Extra comments	Baseline characteristics for HILT+EX, PLACEBO HILT + EX, HILT ONLY groups, mean (SD): VAS 8.36(0.95), 8.21(1.1), 8.35(0.88); RDQ 15.46(1.17), 15.63(1.56), 15.4(1.19); MODQ 34.11(3.14), 34.5(2.93), 35.55(3.62)
Indirectness of population	No indirectness

Study	Alayat 2014[3]
Interventions	(n=28) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Combination of 1) Electrotherapy: pulsed Nd:YAG laser treatment, produced by a HIRO 3 device. Apparatus provided pulsed emission (1,063 nm), very high peak power (3 kW), a high level of fluency/energy density (510-1,780 mJ/cm), a brief duration (120-150 µs), a low frequency (10-40 Hz), a duty cycle of about 0.1%, a probe diameter of 0.5 cm and a spot size of 0.2cm2. A hand piece was positioned in contact with and perpendicular to the treated area, with the patient in the prone position. Scanning was performed transversely and longitudinally in the lower-back area of L1-L5 and S1, to cover the fasciae, sacral ligaments, ileum, latissimus dorsi, obliquus externus abdominis, and the upper part of the gluteus maximus. Total energy dose of 3,000 J was administered through three phases of treatment. Initial phase was performed with fast manual scanning for a total of 1,400 J, the laser fluency was set to three successive subphases of 610, 710, and 810 mJ/cm2 for a total of 1,400 J. Intermediate phase applied the hand piece to the eight paravertebral points with 25 J, for a total of 610 mJ/cm2. Final phase was the same as the initial phase, except that slow manual scanning was used. Application time for all phases was approximately 15 minutes. HILT was applied for a total of 12 treatment sessions over 4 consecutive weeks (three sessions per week). 2) Self-management: home-based exercise program performed after the end of HILT therapy. The program was designed to be easily carried out at home, with no need of special equipment. Exercises included strengthening, stretching, mobilizing, coordinating and stabilising the abdominal back and pelvic muscles and were personalized for each patient. Participants were taught by a physiotherapist to perform exercises correctly on a first session. A family member confirmed that the participant carried out the exercises at home. Exercises were to be performed 2 times daily for 4 weeks. Duration 8 weeks. Concurrent medication/care: Not stated (n=24) Intervention 2: Self-management - Unsupervised exercise. Home-based exercise program, designed to be easily carried out at home, with no need of special equipment. Exercises included strengthening, stretching, mobilizing, coordinating and stabilising the abdominal back and pelvic muscles and were personalized for each patient. Participants were taught by a physiotherapist to perform exercises correctly on a first session. A family member confirmed that the participant carried out the exercises at home. Exercises were to be performed 2 times daily for 4 weeks. Duration 8 weeks. Concurrent medication/care: Not stated (n=20) Intervention 3: Electrotherapy - Laser therapy. Electrotherapy: pulsed Nd:YAG laser treatment, produced by a HIRO 3 device. Apparatus provided pulsed emission (1,063 nm), very high peak power (3 kW), a high level of fluency/energy density (510-1,780 mJ/cm), a brief duration (120-150 µs), a low frequency (10-40 Hz), a duty cycle of about 0.1%, a probe diameter of 0.5 cm and a spot size of 0.2cm2. A hand piece was positioned in contact with and perpendicular to the treated area, with the patient in the prone position. Scanning was performed transversely and longitudinally in the lower-back area of L1-L5 and S1, to cover the fasciae, sacral ligaments, ileum, latissimus dorsi, obliquus externus abdominis, and the upper part of the gluteus maximus. Total energy dose of 3,000 J was administered through three phases of treatment. Initial phase was performed with fast manual scanning for a total of

Study	Alayat 2014[3]
	1,400 J, the laser fluency was set to three successive subphases of 610, 710, and 810 mJ/cm2 for a total of 1,400 J. Intermediate phase applied the hand piece to the eight paravertebral points with 25 J, for a total of 610 mJ/cm2. Final phase was the same as the initial phase, except that slow manual scanning was used. Application time for all phases was approximately 15 minutes. HILT was applied for a total of 12 treatment sessions over 4 consecutive weeks (three sessions per week). . Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI: ELECTROTHERAPY (HILT LASER) + SELF-MANAGEMENT (UNSUPERVISED EXERCISE) versus SELF-MANAGEMENT (UNSUPERVISED EXERCISE) + PLACEBO LASER THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS pain score at 12 weeks; Group 1: mean 2.64 (SD 1.25); n=28, Group 2: mean 3.71 (SD 1.3); n=24; VAS pain score 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: RDQ at 12 weeks; Group 1: mean 5.5 (SD 1.17); n=28, Group 2: mean 6.92 (SD 0.78); n=24; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: MODQ at 12 weeks; Group 1: mean 15.14 (SD 4.3); n=28, Group 2: mean 18.75 (SD 3.07); n=24; MODQ 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI: ELECTROTHERAPY (HILT LASER) + SELF-MANAGEMENT (UNSUPERVISED EXERCISE) versus ELECTROTHERAPY (HILT LASER THERAPY) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS pain score at 12 weeks; Group 1: mean 2.64 (SD 1.25); n=28, Group 2: mean 5.65 (SD 1.04); n=20; VAS pain score 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: RDQ at 12 weeks; Group 1: mean 5.5 (SD 1.17); n=28, Group 2: mean 7.35 (SD 1.5); n=20; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: MODQ at 12 weeks; Group 1: mean 15.14 (SD 4.3); n=28, Group 2: mean 19.05 (SD 2.96); n=20; MODQ 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to

Study	Alayat 2014[3]
	4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=579)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention up to 9 months, follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-65 years with current back pain for three or more weeks, with presentation in primary care with low back pain more than three months previously, currently scoring 4 or more on the Roland disability scale
Exclusion criteria	Clinical indicators of serious spinal disease, current nerve root pain (below knee in dermatomal distribution), previous spinal surgery, pending litigation, previous experience of Alexander technique, perceived inability to walk 100m, history of psychosis or major alcohol misuse.
Recruitment/selection of patients	Recruited from 64 general practices in the South and West of England
Age, gender and ethnicity	Age - Range of means: 45 (11) to 46 (10) years. Gender (M:F): 177:402. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (> 3 months).
Extra comments	Baseline data not usable
Indirectness of population	No indirectness
Interventions	(n=73) Intervention 1: Postural therapies - Alexander technique. Six Alexander Technique lessons taught by registered teachers. Two lessons a week for two weeks, then one lesson a week for two weeks. Duration 4 weeks. Concurrent medication/care: Not stated

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
	(n=73) Intervention 2: Postural therapies - Alexander technique. 24 Alexander Technique lessons taught by registered teachers. Two lessons a week for six weeks, then one lesson a week for six weeks, one fortnightly for eight weeks, and two further revision lessons delivered at 7 months and 9 months. Duration 9 months. Concurrent medication/care: Not stated (n=72) Intervention 3: Individual Aerobic exercises - Walking programme. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up nurse-delivered structured counselling based on the theory of planned behaviour (brief intervention). Duration 6 weeks. Concurrent medication/care: Not stated (n=75) Intervention 4: Massage. Therapeutic massage. One session a week for six weeks. Duration 6 weeks. Concurrent medication/care: Not stated (n=72) Intervention 5: Usual care. Usual care - details not specified. Duration 9 months. Concurrent medication/care: No exercise prescription given (n=72) Intervention 6: Massage + exercise prescription - Massage + home exercise prescription. Therapeutic massage. One session a week for six weeks. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention).. Duration 6 weeks. Concurrent medication/care: Not stated (n=71) Intervention 7: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise + 6 sessions Alexander technique. Six Alexander Technique lessons taught by registered teachers. Two lessons a week for two weeks, then one lesson a week for two weeks. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention). Duration 6 weeks. Concurrent medication/care: Not stated (n=71) Intervention 8: Combinations of non-invasive interventions - Combined non-invasive interventions. 24 Alexander Technique lessons taught by registered teachers. Two lessons a week for six weeks, then one lesson a week for six weeks, one fortnightly for eight weeks, and two further revision lessons delivered at 7 months and 9 months. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention).. Duration 9 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (Medical Research Council)

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 6 SESSIONS versus MASSAGE + HOME EXERCISE PRESCRIPTION

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 59.73 (SD 24.9355); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 67.53 (SD 22.7325); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 4.08 (SD 2.7); n=56; Von Korff 0-10 (converted from 0-100) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 6.86 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.32 (SD 0.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Number of prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.6 (SD 1.55); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 6 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 64.63 (SD 23.3291); n=57; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 65.44 (SD 22.9826); n=57; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 3.66 (SD 2.6); n=57; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 6.25 (SD 5.1846); n=57; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.35 (SD 0.83); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.58 (SD 1.26); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 6 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 65.53 (SD 22.54); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 69.79 (SD 22.1589); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 3.11 (SD 2.5); n=56; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Risk of bias: ; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 5.01 (SD 5.1927); n=56; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.59 (SD 1.02); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.68 (SD 1.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 24 SESSIONS versus MASSAGE + HOME EXERCISE PRESCRIPTION

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 59.46 (SD 24.9355); n=56; sf-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 67.53 (SD 22.7325); n=56; sf-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 4.08 (SD 2.7); n=57; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 6.86 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.32 (SD 0.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Number of prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.58 (SD 1.26); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 24 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 64.63 (SD 23.3291); n=57; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 65.44 (SD 22.9826); n=57; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 3.66 (SD 2.6); n=57; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 6.25 (SD 5.1846); n=57; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.35 (SD 0.83); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.58 (SD 1.26); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 24 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 65.53 (SD 22.54); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 69.79 (SD 22.1589); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 3.11 (SD 2.5); n=56; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 5.01 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.59 (SD 1.02); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.68 (SD 1.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER versus USUAL CARE

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Median days of back pain in last 4 weeks at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 64.63 (SD 23.3291); n=57, Group 2: mean 65.53 (SD 22.54); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 65.44 (SD 22.9826); n=57, Group 2: mean 69.79 (SD 22.1589); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.66 (SD 2.6); n=57, Group 2: mean 3.11 (SD 2.5); n=56; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 6.25 (SD 5.1846); n=57, Group 2: mean 5.01 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.35 (SD 0.83); n=57, Group 2: mean 0.59 (SD 1.02); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Priescriptions at 1 year; Group 1: mean 0.58 (SD 1.26); n=57, Group 2: mean 0.68 (SD 1.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER versus USUAL CARE Protocol outcome 1: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Median days of back pain in last 4 weeks at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Djavid 2007[117]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=61)
Countries and setting	Conducted in Iran; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6 weeks + follow up at week 12
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 20 to 60 years; low back pain minimum 12 weeks; ability to give informed consent, understand instructions, adn co-operate with treatment

Study	Djavid 2007[117]
Exclusion criteria	Degenerative disc disease, disc herniation, fracture, spondylosis, spinal stenosis, neurological deficits, abnormal laboratory findings, systemic or psychiatric illness, pregnancy
Recruitment/selection of patients	Recruited from patients referred by local physicians to the clinic of an Occupational Medicine department
Age, gender and ethnicity	Age - Mean (SD): Laser + exercise: 38 (7); placebo laser + exercise: 36 (10); laser only: 40 (10) years. Gender (M:F): 34:19. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (Minimum 12 weeks duration).
Extra comments	Baseline scores for laser, laser + exercise and exercise groups, respectively (mean SD) - 7.3 (1.7), 6.2 (1.6), 6.3 (2); ODI: 33.0 (8.4), 34 (9.7), 31.8 (7.9)
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Gallium-Aluminium-Arsenide laser; wavelength 810nm; 50mW; continuous wave; 0.2211cm2 spot area; 8 points in paravertebral region (L2 to S2-S3) irradiated; dose 27J/cm2; treatment time 20 minutes; twice a week for 6 weeks. Exercise: first session with physiotherapist then exercises at home; exercises included strengthening, stretching, mobilising, co-ordination and stabilising of the abdominal, back, pelvic and lower limb muscles, dependent on the clinical findings.. Duration 6 weeks. Concurrent medication/care: Not stated (n=20) Intervention 2: Individual Biomechanical exercise - Core stability. Sham laser - as for laser group but inactive probes. Exercise: first session with physiotherapist then exercises at home; exercises included strengthening, stretching, mobilising, co-ordination and stabilising of the abdominal, back, pelvic and lower limb muscles, dependent on the clinical findings. Duration 6 weeks. Concurrent medication/care: Not stated (n=20) Intervention 3: Electrotherapy - Laser therapy. Gallium-Aluminium-Arsenide laser; wavelength 810nm; 50mW; continuous wave; 0.2211cm2 spot area; 8 points in paravertebral region (L2 to S2-S3) irradiated; dose 27J/cm2; treatment time 20 minutes; twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus CORE STABILITY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 12 weeks; Group 1: mean 2.4 cm (SD 1.4); n=19, Group 2: mean 4.3 cm (SD 1.6); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Djavid 2007[117]
Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry Disability Index at 12 weeks; Group 1: mean 16.8 Not stated (SD 3.7); n=19, Group 2: mean 24.1 Not stated (SD 5.2); n=18; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus LASER THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 12 weeks; Group 1: mean 2.4 cm (SD 1.4); n=19, Group 2: mean 4.4 cm (SD 2); n=16; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry Disability Index at 12 weeks; Group 1: mean 16.8 Not stated (SD 3.7); n=19, Group 2: mean 20.8 Not stated (SD 4.4); n=16; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Ferreira 2010[134] (Moffett 2000[377])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=34)
Countries and setting	Conducted in Australia; Setting: University of Sydney
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged between 18 and 80 years with chronic LBP (symptoms for at least 3 months) with or without pain

Study (subsidiary papers)	Ferreira 2010[134] (Moffett 2000[377])
	referral to the leg, but with neurological deficit were recruited for the study. Patients needed to have persistent pain or disability for at least 3 months; score at least 3 points on RMDQ and at least 2 units on the 0-10 pain scale at screening consultation
Exclusion criteria	Spinal surgery in the past 12 months; pregnancy at first assessment; suspected or diagnosed serious spine pathology (inflammatory spondyloarthropathy, fracture, malignancy, cauda equina syndrome or infection); nerve root compromisel contraindications to exercise; poor English comprehension.
Recruitment/selection of patients	A sample of non-specific chronic LBP patients (final 45 subjects to be enrolled)was taken from a RCT comparing the efficacy of motor control exercise, general exercise and spinal manipulative therapy. Of these, 34 were eligible to participate in this study.
Age, gender and ethnicity	Age - Mean (range): 18-80 years. Mean (SD): biomechanical ex 47.4 (17.3); ex + edu 54.9(11.3); manipulation 45..4(17.7). Gender (M:F): 11:23. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration)
Extra comments	Baseline values, mean (SD) for biomechanical ex, ex + edu and manipulation groups, respectively: RMDQ 14(4.94), 12.7(6), 9.77(5.93); Pain VAS 6.36(2.2), 7.5(1..35), 5.38(2.22). .
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. A programme based on a biopsychosocial moderl aiming to overcome a fear o movement and improving physical function in both short and long term. . Duration 8 weeks. Concurrent medication/care: Not stated (n=11) Intervention 2: Individual Biomechanical exercise - Motor control. Exercises aimed at improving control of lumbopelvic movement and stability. Exercises included training the function of specific deep muscles of the low back region, coordination of the deep trunk muscles with a diaphragmatic respiration pattern, contrl of a neutral lumbar posture and refuction of any excessive superficial trunk muscle attivation. . Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Motor Accident Authority of NSW; National Health and Medical Research Council of Australia)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI (EXERCISE + EDUCATION) versus BIOMECHANICAL (MOTOR CONTROL) EXERCISE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 8 weeks; Group 1: mean 4 (SD 2.37); n=10, Group 2: mean 4.7 (SD 1.77); n=11; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Ferreira 2010[134] (Moffett 2000[377])
Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: RMDQ at 8 weeks; Group 1: mean 7.36 (SD 6.59); n=10, Group 2: mean 9 (SD 6.04); n=11; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Gur 2003[184]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=75)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, radiology
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain for at least 1 year diagnosed clinically and radiologically; admitted to Dicle University, Faculty of Medicine, Physical Medicine and Rehabilitation Department between May 1999 and March 2000; age 20-50 years
Exclusion criteria	Pregnancy, previous spinal surgery, neurological deficits, abnormal laboratory findings, systemic or psychiatric illness
Recruitment/selection of patients	Admitted to Dicle University, Faculty of Medicine, Physical Medicine and Rehabilitation Department between May 1999 and March 2000
Age, gender and ethnicity	Age - Range of means: 35.2 (10.51) to 36.4 (9.83) years. Gender (M:F): 22:53. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 1 year).
Extra comments	Baseline scores (mean SD) for laser + exercise, laser and exercise groups, respectively - pain VAS: 6.2±2.1, 6.5±1.6,

Study	Gur 2003[184]
	6.1±1.9; Roland disability questionnaire: 17.8±4.6, 15.1±4.2, 16.3±3.9; modified oswestry: 32.4±10.6, 30.5±12.3, 33.1±11.8
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Gallium-arsenide laser; 5 times a week for 4 weeks, over standardised fields including L4 to L5 and L5 to S1 apophyseal capsules, dorsolumbar fascia and interspinous ligaments, as well as gluteal fascia, posterior sacro-iliac ligaments, hamstrings and gastro-soleus muscles of which pain points were palpated from the low back to the foot. Stimulation time of 4 minutes used for each point, producing energy of approximately 1J/cm2 (10.1cm2 energy density, 2.1kHz pulse frequency, 10W diode power, 4.2mW average power, 1cm2 surface) at each point; 30 minutes total stimulation time. Plus: lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups; 2 sessions a day; 40 sessions total for 4 weeks; 1st session with physio, then exercises done at home. Duration 4 weeks. Concurrent medication/care: Not stated (n=25) Intervention 2: Electrotherapy - Laser therapy. Gallium-arsenide laser; 5 times a week for 4 weeks, over standardised fields including L4 to L5 and L5 to S1 apophyseal capsules, dorsolumbar fascia and interspinous ligaments, as well as gluteal fascia, posterior sacro-iliac ligaments, hamstrings and gastro-soleus muscles of which pain points were palpated from the low back to the foot. Stimulation time of 4 minutes used for each point, producing energy of approximately 1J/cm2 (10.1cm2 energy density, 2.1kHz pulse frequency, 10W diode power, 4.2mW average power, 1cm2 surface) at each point; 30 minutes total stimulation time.. Duration 4 weeks. Concurrent medication/care: Not stated (n=25) Intervention 3: Individual Biomechanical exercise - Core stability. Lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups; 2 sessions a day; 40 sessions total for 4 weeks; 1st session with physio, then exercises done at home. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus LASER THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 4 weeks; Group 1: mean 1.8 Not stated (SD 1.2); n=25, Group 2: mean 1.9 Not stated (SD 1.4); n=25; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Gur 2003[184]
Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland Disability Questionnaire at 4 weeks; Group 1: mean 6.3 Not stated (SD 3.5); n=25, Group 2: mean 6.6 Not stated (SD 2.9); n=25; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Modified Oswestry Disability Questionnaire at 4 weeks; Group 1: mean 14.8 Not stated (SD 8.6); n=25, Group 2: mean 16.7 Not stated (SD 7.6); n=25; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus CORE STABILITY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 4 weeks; Group 1: mean 1.8 Not stated (SD 1.2); n=25, Group 2: mean 2.9 Not stated (SD 1.3); n=25; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland Disability Questionnaire at 4 weeks; Group 1: mean 6.3 Not stated (SD 3.5); n=25, Group 2: mean 5.5 Not stated (SD 3.2); n=25; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Modified Oswestry Disability Questionnaire at 4 weeks; Group 1: mean 14.8 Not stated (SD 8.6); n=25, Group 2: mean 13.6 Not stated (SD 7.2); n=25; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Hagen 2000[190]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=457)
Countries and setting	Conducted in Norway; Setting: Secondary care spine clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention one-off and follow up to 12 months

Study	Hagen 2000[190]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-60 years; sick leave 8-12 weeks due to low back pain with or without sciatica or leg and thigh pain
Exclusion criteria	Pregnancy, recent low back trauma, cauda equina symptoms, cancer, osteoporosis, rheumatic low back disease, ongoing low back treatment by another specialist, patients already included in the study
Recruitment/selection of patients	Selected from patients with sickness certificate >8 weeks for low back pain
Age, gender and ethnicity	Age - Mean (SD): 40.9 (10) years. Gender (M:F): 238:219. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Sick leave 8-12 weeks).
Extra comments	No baseline data
Indirectness of population	No indirectness
Interventions	(n=237) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Education including x-ray findings; informed about good prognosis and importance of remaining active; encouraged to take daily walks; advised and instructed individually by physiotherapist on how to train and stretch at home; self-management: advice on how to manage back pain and how to resume normal activities. Duration One-off. Concurrent medication/care: Not stated (n=220) Intervention 2: Usual care. Not examined at spine clinic; treated with primary health care. Had at least one visit to GP to obtain sick leave.. Duration One-off. Concurrent medication/care: Not stated
Funding	Academic or government funding (Norwegian Ministry of Health and Social Affairs)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EDUCATION; SELF-MANAGEMENT; HOME EXERCISE versus USUAL CARE (PRIMARY HEALTH CARE) Protocol outcome 1: Return to work at Up to 4 months - Actual outcome: Return to work at 3 months; Group 1: 123/237, Group 2: 79/220; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Return to work at 12 months; Group 1: 164/237, Group 2: 124/220; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations,

Study	Hagen 2000[190]
	hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at >4 months

H.5 Exercise therapies

Study	Albert 2012[4]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=181)
Countries and setting	Conducted in Denmark
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: PAin intensity VAS, Roland Morris disability questionnaire
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	18-65 years with radicular pain of dermatomal distribution to the knee or below in 1 or both legs, leg pain of more thsan 3 on the pain scale (0-10), had duration of sciatica between 2 weeks to 1 year
Exclusion criteria	Cauda equina syndrome, pending workers litigation, previous back surgeryspinal tumours, pregnancy, Danish not being 1st language, inability to follow rehabilitation protocol duen to concomitant diseasr i.e. depression or heart failure
Age, gender and ethnicity	Age - Mean (range): 45 (37-52). Gender (M:F): 94/87. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (Ssciatica for up to 1 year).
Extra comments	Baseline scores (median, IQ range) - RMDQ: exercise 16 (11-18), sham 15 (12-18); leg pain intensity: exercise 4 (3-6), sham 5 (3-7) - mean±SD: exercise 4.3±2.3, sham 4.5±2.5
Indirectness of population	No indirectness

Study	Albert 2012[4]
Interventions	(n=86) Intervention 1: Individual Biomechanical exercise - Core stability. Symptom guided exercises-directional end-range exercises and postural instructions following McKenzie method of assessing pain related physical impairment, as well as stabilising exercises for the transverse abdominis and multifidus muscles and dynamic exercises of the other layers of the abdominal wall and back extensors. Duration 8 weeks: 4-8 sessions of exercise. Concurrent medication/care: Asked to not seek any other intervention for sciatica, information-home exercise programme handed out to all patients and advice to stay active (n=95) Intervention 2: Placebo/Sham. Sham-optional exercises that were not related to the back but were low dose exercises to stimulate systemic blood circulation. Duration 8 weeks: 4-8 sessions. Concurrent medication/care: Information for home exercises and advice to stay active
Funding	Other (Federal, institutional and foundation funds were recieved)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity VAS at 8 weeks; Group 1: mean 1.5 (SD 2.1); n=83, Group 2: mean 2.3 (SD 2.7); n=87; Pain intensity visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity VAS at 1 year follow up; Group 1: mean 1.5 (SD 2.1); n=82, Group 2: mean 1.4 (SD 2.4); n=88; pain intensity visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris disability questionnaire at 8 weeks; Other: Median: Exercise group 6, sham group 6 (95%CI 2 to 12) Roland Morris disability questionnaire 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris disability questionnaire at 1 year follow up ; Other: Median: 3.5 (95%CI 1 to 10) Roland Morris disability questionnaire 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Alp 2014[8]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=48)
Countries and setting	Conducted in Turkey; Setting: Uludag University Faculty of Medicine, Bursa, Turkey
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Physical examination, laboratory analysis and imaging techniques such as X-ray or MRI scans
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain lasting for a minimum of 6 months leading to disability (diagnosis by physical examination, laboratory analysis, imaging techniques)
Exclusion criteria	Have active peripheral arthritis, spinal surgery or failed back surgery, new motor or neurologic deficit, systemic infection, cardiovascular/pulmonary disorder with contraindication to exercise, red flags suggesting spinal stabilization, or therapeutic treatment in the last 6 weeks.
Recruitment/selection of patients	64 female patients were assessed for eligibility. Details of recruitment/selection not stated
Age, gender and ethnicity	Age - Median (range): SE group - 48(36 -63); HE group - 51(25 - 64).. Gender (M:F): All patients female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Minimum of 6 months).
Extra comments	Baseline (median, range) - VAS: group exercise(GE) 6 (4-9), home exercise(HE) 6 (1-10); RMDQ: GE 15 (5-9), HE 13 (3-20); SF36 physical: GE 45 (20-85), HE 65 (15-80); SF36 limitations physical: GE 5 (0-25), HE 5 (0-100); SF36 pain: GE 40 (20-60), HE 40 (20-80); SF36 social: GE 63 (13-100), HE 75 (25-100); SF36 mental health: GE 60 (16-80), HE 52 (8-100); SF36 limitations emotional: GE 2 (0-100), HE 1 (0-100); SF36 vitality: GE 30 (0-80), HE 40 (10-80); SF36 gen health: GE 42 (29-79), HE 50 (8-83). At the end of the treatment sessions, hot-pack was applied to relieve discomfort in the lower back. Postural education and low back care advice also given. Patients underwent rehabilitation program 3 days per a week.
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Self-management - Unsupervised exercise. Instructed to do lumbar isometric and lumbar flexion-extension exercises, 1x20 repetitions a day (standardised home-based program for LBP patients given in the outpatient unit). Duration 6 weeks. Concurrent medication/care: None reported.

	(n=24) Intervention 2: Group biomechanical exercise - Core stabilization. Patients joined a supervised (physiotherapist) group exercise program 3 times a week. The lumbar stabilisation exercise program consisted of warming (5 minutes), stretching (5 minutes), stabilisation exercises of the multifidus/tranversus abdominis muscles (30 minutes) and cooling (5 minutes), for a total of 45-60 minutes a day.. Duration 6 weeks. Concurrent medication/care: None reported.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILIZATION - GROUP EXERCISE PROGRAM (SE GROUP) versus CORE STABILITY - HOMEBASED (HE GROUP)

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36-physical function at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-role limitations (physical) at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-pain at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-social function at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-mental health at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-role limitations (emotional) at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-Vitality at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36-general health at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Roland-Morris Score at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Timed sit to stand test (TSS) at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Baena-beato 2014[21]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=49)
Countries and setting	Conducted in Spain; Setting: Conducted at Massam Sport Centre (Granada, Spain)
Line of therapy	Unclear
Duration of study	Intervention time: 2 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Medical practitioner or physiotherapist referred participants
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 18-65 years, presence of self-reported low back pain for more than 12 weeks.
Exclusion criteria	Medical illness, pregnancy or recent childbirth, major rhematologic, neurologic, neoplastic, previous spinal surgery, inflammatory, infectious or malignant diseases of the vertebra, presence of severe cardiovascular disease, presence of any psychiatric disorder and engagement in physical activity ≥60 minutes per week during the last 12 months
Recruitment/selection of patients	Participants who lived within 10-15 km radius from the sports center were recruited following their referral for hydrotherapy by their medical practitioner or physiotherapist
Age, gender and ethnicity	Age - Mean (range): 46.2-50.9. Gender (M:F): 16/22 - for participants included in the analysis. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (LBP for more than 12 weeks).
Extra comments	Baseline characteristics (mean±SD): VAS at rest - 6.22± 0.47 (active group) 6.14±0.52 (control group); VAS at flexion - 6.64±0.41 (active group) 6.45±0.45 (control group); VAS at extension - 5.53±0.64 (active group) 5.76±0.72 (control group); ODI - 29.1±3.6 (active group) 29.6±4.0 (control group); Standardised physical component of SF-36 - 33.1±2.2 (active group) 41.2±2.4 (control group); Standardised mental component of SF-36 - 53.7±2.1 (active group) 52.2±2.3 (control group)
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Mixed exercise - Biomechanical + aerobic. 40 sessions, five days per week. The intensive aquatic therapy programme was carried out in an indoor pool sized 25 x 6 m, with 140 cm water depth, 29 ± 1°C of water temperature. Each aquatic therapy session was conducted in groups of 8 participants and lasted 55-60 minutes. Participants were closely supervised by trained exercise specialists and a physiotherapist. Each sessions included 10 minutes of warm-up, 15-20 minutes of resistance exercise, 20-25 minutes of aerobic exercise, and 10 minutes of cool-down (stretching exercises). Resistance exercises - progressed by changing the number of repetitions per set, specific resistance material was included to increase the resistance offered by the water and by increasing velocity of the movements, upper-body and lower-body exercises with noodles and cuff devices. Aerobic exercises planned

	considering the intensity (Borg Scale 6-20) and the volume (minutes). Static stretching techniques were performed for gluteus, lumbar back and hamstrings as part of cool down . Duration 2 months. Concurrent medication/care: Encouraged to maintain their normal dietary habits and physical activity level. Asked not to change their medication during the two-month intervention period. (n=25) Intervention 2: Usual care - Waiting-list. Received different recommendations about adequate posture, healthy lifestyle and information about exercises contraindicated for chronic low back pain patients. . Duration 2 months. Concurrent medication/care: Encouraged to maintain their normal dietary habits and physical activity level.
Funding	Academic or government funding (Postdoctoral fellowship from the Spanish Ministry of Education)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus WAITING-LIST

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: Standardised physical component of SF-36 at 2 months; Group 1: mean 43.7 (SD 2.4); n=21, Group 2: mean 39.2 (SD 2.6); n=17; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Standardised mental component of SF-36 at 2 months; Group 1: mean 51.9 (SD 1.6); n=21, Group 2: mean 52.9 (SD 1.8); n=17; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS at rest at 2 months; Group 1: mean 2.37 cm (SD 0.38); n=21, Group 2: mean 6.42 cm (SD 0.43); n=17; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: VAS at flexion at 2 months; Group 1: mean 1.62 cm (SD 0.4); n=21, Group 2: mean 6.83 cm (SD 0.45); n=17; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: VAS at extension at 2 months; Group 1: mean 1.28 cm (SD 0.51); n=21, Group 2: mean 6 cm (SD 0.57); n=17; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Oswestry Disability Index (ODI) at 2 months; Group 1: mean 16.4 (SD 3.3); n=21, Group 2: mean 31.7 (SD 3.6); n=17; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Bentsen 1997[32]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=74)
Countries and setting	Conducted in Sweden; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report and physical examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Women born in 1933 with chronic low back pain (>30 days duration, or daily within previous 12 months)
Exclusion criteria	Presence of herniated disc, fracture of spine, somatic disease or mental illness that might interfere with training
Recruitment/selection of patients	Selected from health survey as having chronic low back pain
Age, gender and ethnicity	Age - Range: All 57 years old. Gender (M:F): 100% female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (> 30 days).
Extra comments	Baseline data only reported as graph
Indirectness of population	No indirectness
Interventions	(n=41) Intervention 1: Individual Biomechanical exercise - Core stability. Dynamic strength back exercises. Duration 3 months. Concurrent medication/care: Not stated Comments: 3-month randomised intervention followed by 9 months of home exercises in both groups (n=33) Intervention 2: Placebo/Sham. Home training programme. Duration 3 months. Concurrent medication/care: Not stated Comments: 3-month randomised intervention followed by 9 months of home exercises in both groups
Funding	Other (AMF-trygghetsforsakring, Stockholm, Sweden)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus PLACEBO/SHAM

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome: Subjective disability index from VAS scores at 3 months (end of randomised period); Group 1: mean -6.75 mm (VAS score) (SD 0); n=40, Group 2:

mean -5.15 mm (VAS score) (SD 0); n=28; Subjective Index 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Bronfort 2011[55]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 12 weeks intervention, follow up till week 52
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Modified Roland Questionnaire, SF-36 mental and physical, patient-related pain scale
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Age 18 to 65 years, primary complain of mechanical lower back pain (pain that had no specific etiology but could be reproduced by back movements or provocation tests) of at least 6 weeks duration with or without radiating pain to lower extremity.
Exclusion criteria	Previous lumbar spine fusion surgery, progressive neurological deficits, aortic or peripheral vascular disease, pain scores of less than 3 (0-10 scale), pending or current ligitation, or ongoing treatment for back pain by other health care providers.
Recruitment/selection of patients	Recruitment through local newspaper advertisements, community posters, and postcard mailings. Initial screening conducted by telephone.
Age, gender and ethnicity	Age - Mean (SD): SET 44.5 (11.8), SMT 45.2 (10.8). Gender (M:F): 77/123. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (at least 6 weeks).
Extra comments	Baseline scores (mean SD) - pain severity: stability 5.1±1.3, manual 5.4±1.5; RMDQ: stability 8.4±4.5, manual 8.7±4.3; SF36 physical: stability 43.7±7.4, manual 42.8±7.4; SF36 mental: stability 53.7±8.4, manual 55.1±7.8.
Indirectness of population	No indirectness
Interventions	(n=100) Intervention 1: Individual Biomechanical exercise - Core stability. 1 hour session of strengthening exercises (including 5 minutes of aerobic warm up) including trunk and leg extensions and abdominal exercises. patients attended these sessions twice a week, with 20 sessions attended altogether. . Duration 12 weeks. Concurrent medication/care: Not stated (n=100) Intervention 2: Manual therapy - High grade impulse. Short-lever, low-amplitude, high velocity. 1 to 2 sessions per week for 15 to 30 minutes per session of SMT. . Duration 12 weeks. Concurrent medication/care: Not stated

Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus HIGH GRADE IMPULSE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical at 12 weeks; Group 1: mean 49.7 (SD 7.8); n=92, Group 2: mean 48 (SD 7.7); n=99; SF-36 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical at 52 weeks; Group 1: mean 50.4 (SD 7.2); n=82, Group 2: mean 48.4 (SD 8); n=82; SF-36 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 mental at 12 weeks; Group 1: mean 55.2 (SD 7.8); n=92, Group 2: mean 57.2 (SD 5.3); n=99; SF-36 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 mental at 52 weeks; Group 1: mean 53.9 (SD 8.6); n=82, Group 2: mean 55.2 (SD 7.5); n=82; SF-36 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain severity score at 12 weeks; Group 1: mean 2.6 (SD 2.1); n=92, Group 2: mean 2.9 (SD 1.9); n=99; Back pain severity score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain severity score at 52 weeks; Group 1: mean 2.8 (SD 2.3); n=82, Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Modified Roland Questionnaire (0-23) at 12 weeks; Group 1: mean 3.9 (SD 4.6); n=92, Group 2: mean 3.8 (SD 4.7); n=99; Roland Morris disability score 0-23 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Modified Roland Questionnaire (0-23) at 52 weeks; Group 1: mean 4.9 (SD 5); n=82, Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Celestini 2005[73]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=48)
Countries and setting	Conducted in Italy; Setting: Rehabilitation department, secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 90 days + follow up to 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Female; Relapse of chronic LBP; age 30-50 years; positive to systemic laxity test; at least one positive x-ray; at least 5 positive signs of instability in history; positive examination showing at least 1 sign of instability
Exclusion criteria	Practice of high impact sports; menopause; endocrine metabolic disturbances; osteoporosis and/or vertebral collapse; prior emilaminectomy; specific or unspecific inflammations of the lumbar spine
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Range: 30-50 years. Gender (M:F): All female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (No further details given).
Extra comments	Baseline remission details: both groups 0%
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Orthotics and appliance - Belt/corsets. Cloth band with splints of the CAMP brand. Duration 90 days. Concurrent medication/care: Not stated (n=24) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Orthoses as for orthoses group plus stabilising kinesitherapy; 12 applications, 3 times weekly for 4 weeks consisting of diaphragmatic breathing exercises, proprioceptive trunk exercises, with particular attention given to the achievement and maintenance of the neutral zone at the level of lumbar lordosis, gluteal and ischiocrural stretching exercises of the lumbar stabilising muscles (in particular of the transverse abdominis) both singly and in association with the other trunk muscles, gradually adding control during the motion of the limbs and reconditioning of endurance, exercises for trunk stabilising on ever more reduced supporting surfaces and finally on unstable surfaces, selective strengthening exercises of the lower limbs and postural and occupational counselling/guidance. Duration 90 days. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: CORSET + CORE STABILITY EXERCISE versus BELT/CORSETS Protocol outcome 1: Responder criteria at >4 months - Actual outcome: Remission of pain at 12 months; Group 1: 6/24, Group 2: 6/24; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Chan 2011[74]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	N/A (n=46)
Countries and setting	Conducted in Hong Kong (China); Setting: Physiotherapy outpatient
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 8 weeks + 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: [1] Pain measured with a 100-mm visual analogue scale. [2] Functional disability measured with a validated Chinese version of the Aberdeen Low Back Pain Disability Scale (ALBPS).
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Both: [1] LBP symptoms for at least 12 weeks; [2] declared medically fit to undertake physical fitness testing and exercise.
Exclusion criteria	Either: [1] cardiac, systemic or inflammatory disease; [2] workers' compensation client.
Recruitment/selection of patients	Participants were recruited from the Department of Physiotherapy at the David Trench Rehabilitation Centre, Hong Kong.
Age, gender and ethnicity	Age - Mean (SD): Intervention 47.1 (8.3); Control 46.0 (11.5). Gender (M:F): M:F = 10:36. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 12 weeks).
Extra comments	Baseline scores (mean SD) - VAS: exercise 59.5±13.9, UC 59.5±21.5; function: exercise 28.8±11, UC 30.8±13.9
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Individual Aerobic exercises - Aerobics exercise. [1] Individually prescribed and supervised by a physiotherapist. [2] The mode of exercise included treadmill walking/running, stepping or cycling exercises, as preferred by the participant. [3] The exercise intensity was set at 40 to 60% of heart rate reserve and gradually progressed up to 85%, at a 5% increment each week. [4] Two training sessions were given and supervised by the physiotherapist. [5] Participants performed 20 minutes of exercise per session, 3 times a week, for 8 weeks. [6] Participants were also instructed to perform at least one additional training at home each week. . Duration 8 weeks. Concurrent medication/care: Conventional physiotherapy treatments that are commonly used clinically for chronic LBP (control) (n=22) Intervention 2: Usual care. Conventional physiotherapy treatments that are commonly used clinically for chronic LBP, including electrical modalities (interferential therapy, ultrasound or heat pack), passive segmental mobilisation to the lumbar spine into end range, back mobilisation exercise, abdominal stabilisation exercise and back

	care advice (ergonomic principles, proper posture and lifting techniques). The choice of treatment was made by the physiotherapist based on the assessment findings. . Duration 8 weeks. Concurrent medication/care: N/A
Funding	Academic or government funding (The Department of Rehabilitation Sciences, Hong Kong Polytechnic University and Department of Physiotherapy, David Trench Rehabilitation Centre)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: AEROBIC TRAINING versus CONVENTIONAL PHYSIOTHERAPY TREATMENT Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 8 weeks; Group 1: mean 31.5 (SD 20.9); n=24, Group 2: mean 34.5 (SD 21.1); n=22; 100 mm visual analogue scale 0 - 100 mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Functional disability (ALBPS) at 8 weeks; Group 1: mean 19 (SD 12.7); n=24, Group 2: mean 20.8 (SD 13); n=22; Aberdeen Low Back Pain Disability Scale 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Functional disability (ALBPS) at 12 months; Group 1: mean 18.4 (SD 15.2); n=24, Group 2: mean 24 (SD 15.1); n=22; Aberdeen Low Back Pain Disability Scale 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Chen 2014[77]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=127)
Countries and setting	Conducted in Taiwan; Setting: Two regional hospitals in Southern Taiwan between September 2008 and December 2010
Line of therapy	Unclear
Duration of study	Intervention time: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Use of the Visual Analog Scale for Pain (VASP)
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	(1) Had been experiencing LBP for longer than 6 months (2) Had LBP with pain scores greater than 4 on the Visual Analogue Scale for Pain (VASP) and (3) Had agreed to participate in this study.
Exclusion criteria	(1) Taking pain-relief medication persistently (2) Having received surgery for back pain
Recruitment/selection of patients	Nurses with self-reported LBP volunteered to participate
Age, gender and ethnicity	Age - Range of means: 30.67-37.70. Gender (M:F): 100% female. Ethnicity: Taiwanese
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 6 months).
Extra comments	Baseline: VASP (mean±SD) - Experimental group - 4.12±1.81, Control group - 4.06±2.07
Indirectness of population	No indirectness
Interventions	(n=64) Intervention 1: Individual Biomechanical exercise - Stretching. Stretching exercise program (SEP) for 50 minutes per time, three times a week after work for a total of 6 months. Two research assistants implemented the SEP every day in a community health centre, participants attended depending on availability. Included a warm-up exercise (10 minutes), back pain exercises and core muscle training (30 minutes) and relaxation exercises (10 minutes).. Duration 6 months. Concurrent medication/care: Not reported. (n=63) Intervention 2: Usual care. Instructed to perform usual activities. Duration 6 months. Concurrent medication/care: None reported.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING versus USUAL CARE	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Visual Analog Scale for Pain (VASP) at 4 months; Group 1: mean 2.94 cm (SD 1.56); n=64, Group 2: mean 3.46 cm (SD 1.87); n=63; VASP 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Visual Analog Scale for Pain (VASP) at 6 months; Group 1: mean 2.17 cm (SD 1.42); n=64, Group 2: mean 3.48 cm (SD 1.77); n=63; VASP 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cherkin 1998[78]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=321)
Countries and setting	Conducted in USA; Setting: Primary care clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 20 to 64 years of age presenting with low back pain that had persisted for 7 days post-presentation
Exclusion criteria	Mild or no pain 7 days post-presentation, history of back surgery, sciatica, systemic or visceral causes of pain, osteoporosis, vertebral fracture or dislocation, severe neurological signs, spondylolisthesis, coagulation disorder, severe concurrent illness
Recruitment/selection of patients	Patients recruited between November 1993 and September 1995
Age, gender and ethnicity	Age - Mean (SD): 40.7 (10.7). Gender (M:F): 166/155. Ethnicity: not reported
Further population details	1. Chronicity of pain: Mixed (78% were < 6 weeks).
Extra comments	Baseline scores (mean SD) - RMDQ: UC 11.7±5.4, McKenzie 12.2±5.6. Duration of pain <6 weeks - 78%, prior physiotherapy for LBP - 33%, prior chiropractic for LBP - 32%
Indirectness of population	No indirectness
Interventions	(n=133) Intervention 1: Individual Biomechanical exercise - McKenzie. Patients classified according to McKenzie approach and therapy designed accordingly with nine sessions delivered over one month. All therapists trained by McKenzie Institute faculty. Patients also received a McKenzie "treat your own back book" and lumbar support.. Duration 1 month. Concurrent medication/care: Taking medication for LBP - 84%, taking narcotic analgesics for LBP - 15% (n=66) Intervention 2: Usual care. Educational booklet discussing causes of back pain, prognosis, appropriate use of imaging studies and activities for promoting recovery and preventing recurrences. Duration unclear. Concurrent medication/care: Taking medication for LBP - 77%, taking narcotic analgesics for LBP - 8%
Funding	Academic or government funding (Grant from Agency for Health Care Research and Policy)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MCKENZIE versus USUAL CARE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 12 weeks; Group 1: mean 4.1 (SD 4.97); n=117, Group 2: mean 4.3 (SD 4.86); n=63; Roland Disability Score 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cho 2014[87]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=30)
Countries and setting	Conducted in South Korea; Setting: Seoul, South Korea
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Details not given
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with chronic low back pain
Exclusion criteria	History of spinal or lower limb operation, signs of nerve compression, inflammatory disorders or signs of aggravated acute pain or had performed stabilisation exercises within 6 months were excluded
Recruitment/selection of patients	From local clinics in Seoul
Age, gender and ethnicity	Age - Mean (range): 38.1-36.5. Gender (M:F): 11/19. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough details in inclusion criteria).
Extra comments	Baseline:VAS at rest (mean±SD): CORE group -41.6 ±7.4 ,Control group - 38.5±8.5 ; VAS during movement (mean±SD): CORE group - 60.8±7.3, Control group - 58.6±8.0 ; PPT (Quadratus lumborum) - CORE group - 4.7±0.6, Control group - 4.5±1.0
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Individual Biomechanical exercise - Core stability. 30 minutes, 3 times a week, for 4 weeks. Divided into 3 categories: warm up, conditioning and cool down (described in Brill's book). Duration 4 weeks . Concurrent medication/care: Not stated (n=15) Intervention 2: Usual care. Received routine care but did not perform CORE exercises. Duration 4 weeks . Concurrent medication/care: Not stated
Funding	Academic or government funding (Ministry of Education, Science and Technology)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY - CORE EXERCISE PROGRAM versus USUAL CARE - ROUTINE	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS (at rest) at 4 weeks ; Group 1: mean 21.5 mm (SD 5.7); n=15, Group 2: mean 37.6 mm (SD 10.5); n=15; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: VAS (during movement) at 4 weeks ; Group 1: mean 36.4 mm (SD 5.1); n=15, Group 2: mean 57.1 mm (SD 7.9); n=15; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cho 2014[88]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=40)
Countries and setting	Conducted in South Korea; Setting: Kyungbuk University, South Korea
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Details not given, diagnosis by specialists stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of acute low back pain by specialists
Exclusion criteria	Subjects with problems other than low back pain were excluded
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Other: States that the subjects were in their 20s. Gender (M:F): 100% male. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough details in inclusion criteria).
Extra comments	VAS (mean±SD) - Tai chi - 3.1±0.6, Stretching - 3.4±0.6
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Individual Mind-body exercise - Tai-chi. Three times per week, for one hour each time (40 minutes of exercise), for a total of 4 weeks. Performed warm-up exercises for the first 10 min and cool-down exercises for the last 10 min. The tai-chi group performed all motions which took 20 minutes, this was performed twice. Motions: ya ma boon jong, boong ri je an, baek hak yang si, su whi bi pa, nu seul y obo, je su sang se and yeo bong sap ye.. Duration 4 weeks. Concurrent medication/care: None stated (n=20) Intervention 2: Individual Biomechanical exercise - Stretching. Three times per week, for one hour each time (40 minutes of exercise), for a total of 4 weeks. Performed warm-up exercises for the first 10 min and cool-down exercises for the last 10 min. The stretching group repetitively stretched their lower extremity joints, trunk joints and upper extremity joints.. Duration 4 weeks . Concurrent medication/care: None stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TAI-CHI versus STRETCHING

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 4 weeks ; Group 1: mean 2.1 (SD 0.5); n=20, Group 2: mean 2.8 (SD 0.5); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cho 2015[89]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in South Korea; Setting: Not clear
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Detail for diagnosis not given
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients who complained of low back pain lasting for over 3 months were selected as subjects
Exclusion criteria	Patients with musculoskeletal diseases that impaired gait, heart diseases, neurological disorders, or structural spine deformit were excluded
Recruitment/selection of patients	Based on inclusion criteria
Age, gender and ethnicity	Age - Mean (SD): Control - 27.7(4.2); exercise - 29.1(4.8). Gender (M:F): 100% male. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Over 3 months).
Extra comments	VAS (mean±SD) - control group - 36.3±17.4, exercise group - 31.3±17.9. Oswestry questionnaire (mean±SD) - control group - 16.5 ±3.5, exercise group - 14.9±3.0
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Individual Biomechanical exercise - Stretching. 30 min of treadmill exercise. Treadmill exercise conducted without a slope at a speed of 3.0-3.5 km/h, instructed to straighten their back and make initial contact with their heel. Participants were also given usual care.. Duration 8 weeks. Concurrent medication/care: Not reported. (n=10) Intervention 2: Usual care. The low back pain rehabilitation program was conducted for 30 minutes, thrice a week for 8 weeks. Consisted of 14 exercises including flexion and extension, under the supervision of an expert in a low back pain treatment room.. Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING- TREADMILL EXERCISE versus USUAL CARE - LOW BACK PAIN REHABILITION PROGRAM ONLY	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 8 weeks; Group 1: mean 16.9 cm (SD 9.3); n=10, Group 2: mean 20.5 cm (SD 13.1); n=10; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Low Back Pain Disability Questionnaire at 8 weeks; Group 1: mean 11.7 (SD 1.7); n=10, Group 2: mean 14.4 (SD 5); n=10; ODI (modified) 10-60 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Chok 1999[91]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=66)
Countries and setting	Conducted in Singapore
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Roland Morris disability questionnaire, VAS pain
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 20-55 years, low back pain was the primary complain with or without leg pain, onset of pain 7 days to 7 weeks prior to study, no history of back pain 6 months before this episode, ability to understand English.
Exclusion criteria	Receiving concurrent treatment for low back pain from another practitioner, had been diagnosed with tumour, infection or inflammatory disease affecting the spine, had spine or lower-limb surgery, had spinal fractures or structural deformities i.e. spondyolisthesis and spondylolysis, has any contraindications to exercise therapy (e.g. uncontrolled hypertension, previous myocardial infarction, cerebrovascular disease, peripheral vascular disease, respiratory disorders), involved in workers compensation claims, signs of nerve root compromise-defined as tendon reflexes, sensory loss and motor deficits, were receiving medication other than analgesics and anti-inflammatory drugs.
Age, gender and ethnicity	Age - Mean (SD): exercise group 37.5 (9.7), control group 34.2 (8.1). Gender (M:F): 41/13. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Onset 7 days - 7 weeks prior to study).
Extra comments	Baseline scores (mean, median, range) - VAS: exercise 23, 16 (0-83), control 26.7, 19.5 (0-76); RMDQ: exercise 11, 11.5 (0-21), control 11.2, 11, (2-23).
Indirectness of population	No indirectness
Interventions	(n=38) Intervention 1: Individual Biomechanical exercise - Core stability. 30-45 minutes, 3 times a week for 6 weeks of endurance exercise-bilateral shoulder lifts, contralateral arm and leg lifts in a prone position, bilateral shoulder lifts with hands behind head, bilateral shoulder lifts with arms elevated. Warm up included cycling. Back extensor stretching was performed before and after endurance session. At the end of the exercise a hot pack was applied to relieve soreness. . Duration 6 weeks. Concurrent medication/care: Were told to not seek treatment from any other practitioner. (n=28) Intervention 2: Placebo/Sham. Given hot packs to use at home, also given booklets on posture and back care ,

	as described for the experiment group. . Duration 6 weeks. Concurrent medication/care: Were told to not seek treatment from any other practitioner.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 6 weeks; Mean EG 8.1, CG: 20.1 (Range EG-max: 95, min: 0; CG-max: 81, min: 0); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 6 weeks; Mean EG 4.5, CG 7.4 (Range EG-max: 19, min: 0; CG-max: 21, min: 0); Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cox 2010[101]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	20 (n=20)
Countries and setting	Conducted in United Kingdom; Setting: Patients attending general practitioner
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 to 65 years currently suffering an episode of low back pain who had presented to their GP in the previous 18 months due to low back pain, scoring 4 or more on the Roland Morris Disability Scale, sufficiently physically mobile, and available to attend all classes
Exclusion criteria	Pregnancy, psychosis or substance abuse, already participating in yoga, already in a trial for low back pain, previous spinal surgery, clinical indications of serious spinal or neurological pathology (indicated by the red flags: difficulty passing or controlling urine, numbness/ pins and needles or weakness in legs, unsteadiness on feet)
Recruitment/selection of patients	Patients recruited between June and September 2007
Age, gender and ethnicity	Age - Mean (SD): Exercise 39 Control 51. Gender (M:F): 7/13. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough detail in inclusion criteria).
Extra comments	Baseline scores (mean SD) - RMDQ: yoga 9.9±4.5, UC 8.7±4; pain (ABPS): yoga 33.5±9.7, UC 29.6±12.8; SF12 physical: yoga 42.6±4.2, UC 38.5±9.95; SF12 mental: yoga 41.8±13, UC 48.5±9.1; EQ5D: yoga 0.71±0.06, UC 0.59±0.26
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Group mind-body exercise - Group Yoga. Yoga classes for 75 minutes weekly for 12 weeks, devised by an Iyengar Yoga teacher (IYAUK) and a LBP yoga specialist in collaboration with a British Wheel of Yoga (BWY) teacher who delivered the intervention. The structure was based on that previously used in Sherman et al 2005. Additional written advice on management provided.. Duration 12 weeks. Concurrent medication/care: patients continued with their usual care - unspecified. (n=10) Intervention 2: Usual care. Written advice on management provided. Duration 12 weeks. Concurrent medication/care: patients continued with their usual care - unspecified
Funding	Academic or government funding (York Trials Unit)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-12 Physical component at 12 weeks; Group 1: mean 1.2 (SD 10.2904); n=4, Group 2: mean 6.88 (SD 10.2904); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D at 12 weeks; Group 1: mean 0.06 (SD 0.3083); n=4, Group 2: mean 0.04 (SD 0.3083); n=8; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Mental component at 12 weeks; Group 1: mean 3.4 (SD 11.4706); n=4, Group 2: mean 0.59 (SD 11.4706); n=9; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Roland Morris disability questionnaire at 12 weeks; Group 1: mean -1.76 (SD 6.699); n=9, Group 2: mean -2.94 (SD 6.699); n=6; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome: medication use at 4 weeks; Group 1: 4/5, Group 2: 6/9; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: GP visits at 12 weeks; Group 1: mean 0.6 (SD 1.6099); n=4, Group 2: mean 1.335 (SD 1.6099); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: practice nurse visits at 12 weeks; Group 1: mean 0 (SD 0.3019); n=5, Group 2: mean 0.11 (SD 0.3019); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: physiotherapist visits at 12 weeks; Group 1: mean 0 (SD 0.9147); n=5, Group 2: mean 0.33 (SD 0.9147); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Cuesta-vargas 2012[104]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	N/A (n=58)
Countries and setting	Conducted in Spain; Setting: Primary health centre in Malaga, Spain
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 4 months + up to 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Participants were required to have a minimum 3 months diagnosis of non-specific (NS) LBP without radiation to the lower limbs and have been referred by their general practitioner.
Stratum	Overall (acute, chronic) without sciatica: N/A
Subgroup analysis within study	Not applicable: N/A
Inclusion criteria	Minimum 3 months diagnosis of NSLBP without radiation to the lower limbs
Exclusion criteria	[1] Refusal to participate in the study. [2] NSLBP as a result of specific spinal disease, infection, tumour, osteoporosis, fracture, structural deformity, inflammatory disorder, radicular syndrome or cauda equina syndrome. [3] Patients with cognitive degeneration or other problems associated with exercise intolerance.
Recruitment/selection of patients	Prospective participants were referred to the study centre by their general practitioner.
Age, gender and ethnicity	Age - Mean (SD): Intervention 38.6 (12.2); Control 37.8 (13.2). Gender (M:F): M:F = 25:33. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Minimun 3 months).
Extra comments	Baseline scores (mean, SD) - Pain VAS: exercise 67.9±17.1, UC 62.7±17.1; RMDQ: exercise 7.1±2.2, UC 8.2±2.2.
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Individual Aerobic exercises - Aerobics exercise. Deep water running (DWR): participants were provided with flotation belts and ran in water at depth of 2.15m. A physiotherapist supervised both the technique and the intensity of exercise, and controlled and supervised the sessions. Participants undertook DWR 3 times a week for 4 months at individual aerobic threshold. The progression workload of DWR during weeks 1 to 5 corresponded to the heart rate at 2 mmol of lactate in blood, for weeks 6 to 10 at 3 mmol of lactate in blood, and for weeks 10 to 15 at 4 mmol of lactate in blood. . Duration 15 weeks. Concurrent medication/care: GP intervention (control) (n=29) Intervention 2: Usual care. Participants received a 25-page educational booklet and verbal presentation on basic anatomy and physiology of the spine, principles of ergonomics for low back pain patients, and instructions on how to exercise and to cope with the chronic phase of NSLBP. At 4 months, the information was reinforced. Both appointments lasted an average of 1 hour.. Duration 15 weeks. Concurrent medication/care: N/A

Funding	Academic or government funding (The National Health Service of Andalusia, Spain)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DEEP WATER RUNNING versus GP INTERVENTION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 4 months; Group 1: mean 18 (SD 10.3); n=25, Group 2: mean 32.9 (SD 18.9); n=24; 100 mm visual analogue scale 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain at 6 months; Group 1: mean 20 (SD 8.9); n=25, Group 2: mean 34.3 (SD 7.8); n=24; 100 mm visual analogue scale 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain at 12 months; Group 1: mean 10 (SD 8.1); n=25, Group 2: mean 36 (SD 15.1); n=24; 100 mm visual analogue scale 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Disability at 4 months; Group 1: mean 2.7 (SD 1.8); n=25, Group 2: mean 5.1 (SD 3.9); n=24; Spanish version of Roland Morris Disability Questionnaire (24-RMDQ) 0 - 24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Disability at 6 months; Group 1: mean 2.1 (SD 1.3); n=25, Group 2: mean 5 (SD 3.2); n=24; Spanish version of the Roland Morris Disability Questionnaire (24-RMDQ) 0 - 24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Disability at 12 months; Group 1: mean 1.3 (SD 1.2); n=25, Group 2: mean 3.8 (SD 3.6); n=24; Spanish version of the Roland Morris Disability Questionnaire (24-RMDQ) 0 - 24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Davies 1979[108]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=43)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report, physical examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Any age; low back pain interfering with performance of usual sporting activities; >3 weeks' but <6 months' duration; no previous physical treatment; symptoms not obviously improving at presentation
Exclusion criteria	Signs suggesting nerve root compression; radiological evidence of lumbar disc degeneration; spondylolysis on oblique spinal radiographs
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Range: 15 to 45 years. Gender (M:F): 32:11. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>3 weeks but <6 months).
Extra comments	Baseline scores (mean SD) - pain: UC 8.7±3.3, extension 11.2±4.4, flexion 7.3±3.2
Indirectness of population	No indirectness
Interventions	(n=14) Intervention 1: Individual Biomechanical exercise - Stretching. Flexion exercises. Duration 4 weeks. Concurrent medication/care: Short-wave diathermy to lumbosacral spine (n=14) Intervention 2: Individual Biomechanical exercise - Stretching. Extension exercises. Duration 4 weeks. Concurrent medication/care: Short-wave diathermy to lumbosacral spine (n=15) Intervention 3: Usual care. Short-wave diathermy to lumbosacral spine. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Sports Council)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Visual analogue pain score (Flexion exercise vs. usual care) at 4 weeks; Group 1: mean 1.3 mm (SD 2.2); n=14, Group 2: mean 3.7 mm (SD 5.4); n=15; VAS Not stated but probably 0-100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Visual analogue pain score (Extension exercise vs. usual care) at 4 weeks; Group 1: mean 1.8 mm (SD 3.6); n=14, Group 2: mean 3.7 mm (SD 5.4); n=15; VAS Not stated but probably 0-100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Deyo 1990[112]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Function using the sickness impact profile score, Pain using a visual analogue pain scale
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	18 to 70 years, patients with chronic low back pain
Exclusion criteria	History of cancer, use of corticosteroids or anticoagulant agents, use of a cardiac pacemaker, maximal pain above T-12, known heart disease, severe coexisting disease, previously unevaluated neurological deficit, factors that would impair follow-up including inability to keep twice weekly appointments, inaccessibility to a phone, moving in next 3 months, inability to speak English, people having previously used TENS and those seeking or receiving disability compensation
Age, gender and ethnicity	Age - Other: Mean: IG 50.6 years, CG 48.1 years. Gender (M:F): 25/35. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (No further details provided).
Extra comments	Baseline scores (mean) - pain VAS: exercise 44.2, sham 37.9; sickness impact profile: exercise 11.3, sham 10.3
Indirectness of population	No indirectness
Interventions	(n=73) Intervention 1: Group biomechanical exercise - Stretching. 3 relaxation exercises followed by stretching exercises involving the legs and bend-sitting exercises. Duration 4 weeks. Concurrent medication/care: Sham-TENS (n=72) Intervention 2: Placebo/Sham. No treatment. Duration 4 weeks. Concurrent medication/care: Sham-TENS
Funding	Academic or government funding (Grant from the Robert Wood Jonson foundation, Multipurpose arthritis centre, National institute of health, Northwest health services research and development)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months

- Actual outcome for Overall (acute, chronic) without sciatica: Visual-analogue pain scale at 3 months; Mean Adjusted mean-intervention group: 25.6, control group:26.5 (Mean difference (exercise minus control) confidence intervals lower confidence limit 95%: -8.0, Upper confidence limit 95%: 9.7) Visual-analogue pain scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Sickness impact profile at 3 months; Mean Intervention group adjusted mean: 5.2, Control group adjusted mean; 5.2 (Mean difference (exercise minus control) confidence intervals Lower confidence limit 95%: -1.9, upper confidence limit 95%: 1.7) Sickness impact profile 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Evans 1987[129]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=127)
Countries and setting	Conducted in Canada; Setting: Referral from family physician
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: included pain radiating to legs but excluded
Subgroup analysis within study	Not applicable
Inclusion criteria	Age >16, lumbosacral pain (with or without pain radiation to the lower extremity) and had been pain free for >30 days prior to the current episode of pain
Exclusion criteria	fractures, pregnancy, spondylolisthesis, spinal infection, disease of the hip or pelvic, gastrointestinal disease, tumour, Paget's disease, rheumatic disease, any abnormality of sensation, motor strength or tendon reflexes
Age, gender and ethnicity	Age - Mean (SD): 40.6 (14.7). Gender (M:F): 66/61. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough detail in inclusion criteria).
Extra comments	Baseline scores (mean SD) - McGill pain: exercise 22.7±6.7, control 25.1±6.9.
Indirectness of population	No indirectness
Interventions	(n=62) Intervention 1: Individual Biomechanical exercise - Core stability. Adapted form of Kendall's Flexion Routine consisting of repetitions of pelvic tilts and partial sit-ups in different positions. Patients seen and supervised in follow-up clinics until they had mastered the programme and were then encouraged to continue at home. Duration unclear. Concurrent medication/care: 'major medication' (any anti-inflammatory/analgesic equivalent to >8 aspirin per day) 29% 'minor medication' (analgesics containing <8 aspirin per day or muscle relaxant) 71% (n=65) Intervention 2: Usual care. No exercise . Duration 6 months. Concurrent medication/care: 'major medication' (any anti-inflammatory/analgesic equivalent to >8 aspirin per day) 29% 'minor medication' (analgesics containing <8 aspirin per day or muscle relaxant) 71%
Funding	Academic or government funding (Ontario Ministry of Health)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE	

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: "no or mild pain" (undefined) at 1 year; Group 1: 46/59, Group 2: 46/54; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Faas 1993[130]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=473)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Define
Exclusion criteria	Define
Recruitment/selection of patients	Participants recruited between October 1987 and December 1988 from primary care practitioners
Age, gender and ethnicity	Age - Mean (SD): 36. Gender (M:F): Define. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (3 weeks or less).
Extra comments	Baseline scores (mean) - VAS: exercise 36.1, UC 36.6.
Indirectness of population	No indirectness
Interventions	(n=156) Intervention 1: Individual Biomechanical exercise - Core stability. Physiotherapist led individual 20 minute sessions twice a week, consisting of isometric strengthening exercises and stretching of the iliopsoas. Additionally an audiotape and booklet with instructions were provided.. Duration 5 weeks. Concurrent medication/care: Access to analgesics on demand. (n=155) Intervention 2: Usual care. No additional care provided. Duration 5 weeks. Concurrent medication/care: Access advice from general practitioner and analgesics on demand.
Funding	Academic or government funding (Praeventi Fonds)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain - unclear whether present pain or maximal pain in previous month at 3 months; Group 1: mean -24

(SD 24); n=130, Group 2: mean -24 (SD 30); n=130; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain - unclear whether present pain or maximal pain in previous month at 1 year; Group 1: mean -26 (SD 23); n=137, Group 2: mean -27 (SD 26); n=143; visual analogue scale 0-85 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: analgesics at 1 year; Group 1: 13/156, Group 2: 49/155; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: physiotherapy at 1 year; Group 1: 10/156, Group 2: 3/155; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Ferrell 1997[135]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	N/A (n=29)
Countries and setting	Conducted in USA; Setting: A Veterans Administration medical center
Line of therapy	Not applicable
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Prospective participants underwent brief clinical evaluation by the physician investigator to determine eligibility before randomisation. To be included in the study, they were also required to have had an evaluation by a physician for presence of LBP.
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	[1] Age 65 years or older. [2] Presence of lower extremity or mechanical LBP (> 3 months) previously evaluated by a physician and considered stable. [3] Use of analgesic medication. [4] Ambulatory without human assistance. [5] Able to understand and read English.
Exclusion criteria	[1] Currently enrolled in any type of rehabilitation or pain education programme, and if they had any of the following conditions: [2] unstable cardiovascular or pulmonary diseases; [3] inflammatory arthritis or nerve root compression; [4] advanced dementia, psychiatric disease or alcohol abuse.
Recruitment/selection of patients	Participants were elderly veterans receiving care at the Sepulveda Veterans Administration Medical Center who responded to an informational brochure mailed to their homes and community elders who responded to announcements placed in local newspapers.
Age, gender and ethnicity	Age - Mean (SD): Group 1 = 74.4 (4.0); Group 2 = 72.3 (3.4); Group 3 = 72.7 (3.8). Gender (M:F): M:F = 23:6. Ethnicity: 100% Caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores - amount of pain in past week: walking 71.6 ± 17.4, education 77.4 ± 16.9, control 76.8 ± 16.6; amount of pain at the moment: walking 60.3 ± 26.6, education 51.3 ± 27.8, control 47.2 ± 29.7; physical functioning: walking 51.5 ± 26.2, education 47.8 ± 13.0, control 51.0 ± 12.4; Role limitations: walking 7.5 ± 16.9, education 19.4 ± 32.5, control 12.5 ± 24.3; overall health: walking 40.0 ± 17.5, education 37.5 ± 18.9, control 35.0 ± 12.9.
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Group Aerobic exercise - Group walking. [1] Participants walked in small groups (4 to 6 people per group) on an outdoor track or indoor gymnasium, and were supervised by an exercise physiologist and another staff member. [2] The programme consisted of self-limited low-intensity walking, approximately 1 hour per session

	(stretch + walk + stretch), 4 times a week for 6 weeks. [3] Speed and distance of walking was self-determined by the participants, thus varied among participants due to differences in pain and functional abilities. [4] Although the participants were encouraged to increase their speed and distance over time maximum exercise intensity was not allowed to exceed 50 to 65% of heart rate reserve, based on age predicted maximum heart rate. . Duration 6 weeks. Concurrent medication/care: N/A (n=10) Intervention 2: Self-management - Advice to bed rest. [1] The participants received a 90-minute education session with the nurse educator. [2] The session focused on instruction and demonstration of non-drug pain interventions. [3] The participants received written educational materials, heating pad, ice pack, a hand-held vibrator-massager and audiotapes with examples of relaxation and distraction. [4] The nurse educator telephoned participants on a weekly basis throughout the intervention period to reinforce their use of physical methods and to enquire about their pain experience and use of medications. . Duration 6 weeks. Concurrent medication/care: N/A (n=12) Intervention 3: Usual care. [1] The participants were instructed to continue to follow the treatments prescribed by their primary care physicians. [2] They received printed material with general information about pain and its management. [3] In addition, they received a weekly friendly telephone call from the nurse educator in an effort to reduce attrition. . Duration 6 weeks. Concurrent medication/care: N/A
Funding	Academic or government funding ([1] Sepulveda Veterans Administration Geriatric Research Education and Clinical Center, the California State University. [2] National Institute of Ageing, UCLA Claude Pepper Older Americans Independence Center.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: WALKING PROGRAMME versus EDUCATION SESSION

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: Physical functioning at 6 weeks; Group 1: mean 58.5 N/A (SD 27.7); n=10, Group 2: mean 41.2 N/A (SD 15); n=9; SF-36 0 - 100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Role limitations due to health at 6 weeks; Group 1: mean 40 N/A (SD 41.2); n=10, Group 2: mean 22.2 N/A (SD 34.1); n=9; SF-36 0 - 100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Overall health rating at 6 weeks; Group 1: mean 60 N/A (SD 33.7); n=10, Group 2: mean 40.6 N/A (SD 12.9); n=8; SF-36 0 - 100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Amount of pain in the last week at 6 weeks; Group 1: mean 51.7 N/A (SD 22.6); n=9, Group 2: mean 63.7 N/A (SD 18.9); n=9; Not reported (scores obtained from 'The Patient Pain Questionnaire') 0 - 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

- Actual outcome: Amount of pain at the moment at 6 weeks; Group 1: mean 36.4 N/A (SD 25.6); n=9, Group 2: mean 43.4 N/A (SD 18.7); n=9; Not reported (scores obtained from 'The Patient Pain Questionnaire') 0 - 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: WALKING PROGRAMME versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: Physical functioning at 6 weeks; Group 1: mean 58.5 N/A (SD 27.7); n=10, Group 2: mean 43 N/A (SD 16.7); n=10; SF-36 0 - 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Role limitations due to health at 6 weeks; Group 1: mean 40 N/A (SD 41.2); n=10, Group 2: mean 22.5 N/A (SD 27.5); n=10; SF-36 0 - 100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Overall health rating at 6 weeks; Group 1: mean 40 N/A (SD 17.5); n=10, Group 2: mean 35 N/A (SD 12.9); n=10; SF-36 0 - 100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Amount of pain in the last week at 6 weeks; Group 1: mean 51.7 N/A (SD 22.6); n=9, Group 2: mean 70.2 N/A (SD 18.6); n=9; Not reported (scores obtained from 'The Patient Pain Questionnaire') 0 - 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Amount of pain at the moment at 6 weeks; Group 1: mean 71.6 N/A (SD 17.4); n=9, Group 2: mean 76.8 N/A (SD 16.6); n=9; Not reported (scores obtained from 'The Patient Pain Questionnaire') 0 - 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Galantino 2004[159]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=22)
Countries and setting	Conducted in USA
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain (pain for more than 6 months), undergone more than two conservative medical interventions (physiotherapy or chiropractic) previously without prolonged relief, previous history of surgery was not an exclusion
Exclusion criteria	previous yoga experience, current history of chronic systemic disease (e.g. diabetes, cancer), changes in medication specifically for pain in the last 14 days or during the study
Recruitment/selection of patients	Patients recruited by self-referral and through referral via healthcare practitioners
Age, gender and ethnicity	Age - Mean (SD): not reported. Gender (M:F): not reported. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 6 months).
Extra comments	Baseline scores (mean SD) - ODI: yoga 24.98±10.28, control 36.73±18.49; BDI: yoga 7.45±5.2, control 15.55±8.27.
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Group mind-body exercise - Group Yoga. Hatha yoga programme developed by two hatha yoga instructors with >10 years' experience and a physiotherapist, 1 hour session twice weekly for six weeks. Participants were encouraged to practice 1 hour a day as many times as possible. Duration 6 weeks. Concurrent medication/care: not reported (n=11) Intervention 2: Usual care - Waiting-list. Participants were asked to continue their usual medical care and were offered the yoga therapy at the end of the study period. Duration 6 weeks. Concurrent medication/care: not reported
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus WAITING-LIST	

Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index at 6 weeks; Group 1: mean 21.15 (SD 10.18); n=11, Group 2: mean 38.9 (SD 17.56); n=5; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Beck Depression Inventory at 6 weeks; Group 1: mean 7.18 (SD 6.9); n=11, Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Gladwell 2006[171]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=49)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	--:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: SF-12, Roland Morris pain visual analogue, Oswestry low back pain disability questionnaire
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Non-specific chronic low back pain for at least 12 week located below the scapulas and above the cleft of the buttocks. Patients able to travel independently, aged between 18-60 years old, otherwise medically fit to perform physical training, able to consent and understand what study entails.
Exclusion criteria	Back pain attributed to any specific pathology e.g. disc herniation, tumour, infection or fracture, osteoporosis, structural deformity, inflammatory disorder, radicular syndrome or cauda equina. Inability to walk without walking aid, already involved in regular pilates classes, constant or severe back pain due to nerve root irritation, major surgery within the past year.
Age, gender and ethnicity	Age - Mean (SD): EG 36.9 (8.1), CG 45.9 (8). Gender (M:F): 8/26. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 12 weeks).
Extra comments	Baseline scores (mean SD) - RMVAS: pilates 2.7±0.9, control 2.4±0.9; OSWDQ: pilates 19.7±9.8, control 24.1±13.4; SF12 general health: pilates 3.3±0.9, control 3.4±0.9; SF12 physical: pilates 3.1±0.5, control 3.1±0.5, SF12 role: pilates 2.9±1, control 3±0.8; SF12 social: pilates 3.4±0.6, control 3.4±0.6; SF12 bodily pain: pilates 3.8±0.9, control 3.9±0.9; SF12 health perception: pilates 2.7±0.8, control 2.8±0.7.
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Group biomechanical exercise - Pilates. Six 1 hour classes of pilates in class size of max 12, once a week, with two 30 minute sessions of the exercises taught carried out at home without supervision and recorded in a diary. . Duration 6 weeks. Concurrent medication/care: Not stated (n=24) Intervention 2: Usual care. Normal activities and pain relief. Duration 6 weeks. Concurrent medication/care: Not stated

Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PILATES versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 general health at 6 weeks ; Group 1: mean 3.7 (SD 0.7); n=20, Group 2: mean 3.6 (SD 1); n=14; SF-36 general health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 physical functioning at 6 weeks; Group 1: mean 3.2 (SD 0.3); n=20, Group 2: mean 3.1 (SD 0.5); n=14; SF-12 physical functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 role functioning at 6 weeks; Group 1: mean 3.2 (SD 0.8); n=20, Group 2: mean 3 (SD 0.7); n=14; SF-12 role functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 social functioning at 6 weeks; Group 1: mean 3.5 (SD 0.6); n=20, Group 2: mean 3.4 (SD 0.6); n=14; SF-12 social functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 bodily pain at 6 weeks; Group 1: mean 3.4 (SD 1); n=20, Group 2: mean 3.9 (SD 0.8); n=14; SF-12 bodily pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 health perception at 6 weeks ; Group 1: mean 2.5 (SD 0.9); n=20, Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris pain rating visual analogue scale at 6 weeks; Group 1: mean 2.2 (SD 0.9); n=20, Group 2: mean 2.4 (SD 0.8); n=14; Roland Morris pain rating visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry low back pain disability questionnaire at 6 weeks; Group 1: mean 18.1 (SD 11.2); n=20, Group 2: mean 18.1 (SD 13); n=14; Oswestry low back pain disability questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Goldby 2006[173]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=473)
Countries and setting	Conducted in Netherlands; Setting: Referral from 40 general practitioners in 10 different towns and cities
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 16 to 65 with acute back pain (present for 3 weeks or less), pain between T12 and gluteal folds, with or without radiation into the upper legs
Exclusion criteria	Radiation below the knee, signs of nerve root compression or neurological deficit, back pain due to trauma , previous back pain episode within 2 months of entry to study, previous back surgery, suspicion of malignancy or inflammatory diseases, pelvic obliquity >1.5cm or gibbus deformity >1cm, pregnancy
Recruitment/selection of patients	Patients recruited from October 1987 to December 1988. 52 patients declined to participate. They did not differ from the included group in terms of age, sex, employment, previous therapy for pain or radiation of pain but did have a higher level of education and more often had private insurance and less pain.
Age, gender and ethnicity	Age - Mean (SD): 36. Gender (M:F): 270/203. Ethnicity: Exercise - 79% white Control - 62% white
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (3 weeks or less).
Extra comments	Baseline scores (mean SD) - pain NRS: exercise 45.75±27.54, UC 37.6±33.99; ODI: exercise 40.47±15.62, UC 33.54±12.21.
Indirectness of population	No indirectness
Interventions	(n=84) Intervention 1: Individual Biomechanical exercise - Core stability. Individual instruction by a physiotherapist for 20 minutes twice a week for 5 weeks. The programme consisted of eight separate strengthening exercises and included advice on activities of daily living.. Duration 5 weeks. Concurrent medication/care: Both groups attended a 3 hour "back school". Background therapy included :No therapy 10.9%, Analgesics 8.5%, physiotherapy 1.9% (n=40) Intervention 2: Usual care. "Back in action" booklet provided and time with physiotherapist to explain the contents in addition to the "back school" provided to all participants but booklet has previously been proven ineffective and so was considered a control.. Duration unclear. Concurrent medication/care: Both groups attended a 3 hour "back school". Background therapy included: no therapy 8.4%, analgesics 11%, physiotherapy 6.5%

Funding	Academic or government funding (Praeventie Fonds (Dutch Prevention Funds))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain (NRS) at 3 months; Group 1: mean 28.81 (SD 28.14); n=78, Group 2: mean 34.4 (SD 36.43); n=37; NRS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain (NRS) at 1 year; Group 1: mean 29.23 (SD 28.1); n=71, Group 2: mean 30 (SD 34.95); n=28; NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Oswestry disability index at 1 year; Group 1: mean 24.76 (SD 17.44); n=78, Group 2: mean 26.9 (SD 19.6); n=28; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry disability index at 3 months; Group 1: mean 31 (SD 17.07); n=78, Group 2: mean 28.1 (SD 17.34); n=37; ODI 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Goren 2010[176]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report and physical examination and MRI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Clinical symptoms and signs consistent with lumbar spinal stenosis; pain including back/leg; standing or walking leg discomfort; age >18 years; male or female; duration of symptoms >3 months; onset of neurogenic claudication with maximum of 15 minutes' walk on treadmill (3km/h and 0 degrees incline); confirmatory MRI imaging (lumbar spinal stenosis within 1 year)
Exclusion criteria	Movement disorder or orthopaedic problems affecting ability to walk; moderate to severe arthritis of the knee or hip severely compromising walking; lower extremity peripheral vascular disease or vascular claudication; lumbar spinal stenosis surgery; serious concomitant medical illness impairing walking assessment; specific spinal disorder (e.g. ankylosing spondylitis, neoplasm, infection, metabolic disease, severe osteoporosis); major or progressive neurological deficit; contraindications for ultrasound; malignancy
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): 53.2 (12.68) years. Gender (M:F): 13:32. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores (mean SD) - back pain VAS: exercise 6.20±2.60, control 5.26±3.36; leg pain VAS: exercise 6.33±3.33, control 6.60±2.80; ODI: exercise 26.90±10.19, control 32.20±9.60.
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Individual Biomechanical exercise - Stretching. Stretching and strengthening exercises5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Sham ultrasound; allowed paracetamol Comments: Third arm of study included exercise + ultrasound (n=16) Intervention 2: Placebo/Sham. No treatment. Duration 3 weeks. Concurrent medication/care: Allowed paracetamol

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Back pain at 3 weeks; Group 1: mean -1.94 None (SD 2.86); n=15, Group 2: mean 0.4 None (SD 1.68); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain at 3 weeks; Group 1: mean -2.47 None (SD 3.75); n=15, Group 2: mean 0.53 None (SD 1.59); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index at 3 weeks; Group 1: mean -7.8 % (SD 10.26); n=15, Group 2: mean -3.6 % (SD 11.66); n=15; Oswestry Disability Index 0-100% Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Gunay 2014[182]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=63)
Countries and setting	Conducted in Turkey; Setting: Unclear - In Izmir Ataturk Education and Research Hospital, Turkey.
Line of therapy	Not applicable
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Previously diagnosed in the hospital?
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	The ages between 20-55 years, the presence of low back pain was a primary complaint, the onset of pain was three months
Exclusion criteria	Tumours, infection or inflammatory diseases affecting the spine, spinal or lower limb surgery, spinal fractures or structural deformities such as spinal stenos, spondylolisthesis and spondylolysis, signs of nerve root compression, any contraindications for exercise therapy.
Recruitment/selection of patients	Patients treated in Izmir Ataturk Education and Research Hospital, Physical Therapy Department for CLBP were involved in study
Age, gender and ethnicity	Age - Mean (range): 39.13-40.22. Gender (M:F): 16%/84%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Onset of pain was 3 months)
Extra comments	No baseline data given (from 1st week) - mean±SD - ODI - 32.42±6.49 (MET group), 33.59±6.28 (CSE group); VAS - 2.26±1.12 (MET group), 2.56±1.01 (CSE group)
Indirectness of population	No indirectness
Interventions	(n=32) Intervention 1: Individual Biomechanical exercise - Stretching. Control group were treated with CSE program including stretching exercises (such as lumbar extensor muscles, iliopsoas muscles, hamstring muscles, etc) and strengthening exercises (such as rectus abdominus crunch, pelvis extension, on hands and knees position with the raise of one leg). Each exercise was repeated 10 times. At the end of the treatment sessions, hot-pack was applied to relieve discomfort in the lower back. Postural education and low back care advice also given. Patients underwent rehabilitation program 3 days per a week.. Duration 6 weeks. Concurrent medication/care: Not reported. (n=31) Intervention 2: Mixed exercise - Biomechanical + aerobic. MET program including warm up, endurance and cool down exercises. The warm up and cool down period consisted of 5-minute walking and 10 repetitions of stretching exercises. Endurance exercises consisted of 4 levels. The first level consisted of contralateral arm and leg

	lifts in prone position and third level consisted of placement of both hands behind the head and bilateral shoulder lifts in prone position. The fourth level consisted of bilateral shoulder lifts with arms fully elevated in prone position. The exercise position was sustained for 10 seconds. 10 repetitions, instructed to rest for 30 seconds. Rest interval was 1 minute for every 50 repetitions until 300 repetitions were completed. Exercises were performed in 6 cycles consisting of 5 sets with 10 repetitions. At the end of the treatment sessions, hot-pack was applied to relieve discomfort in the lower back. Postural education and low back care advice also given. Patients underwent rehabilitation program 3 days per a week.. Duration 6 weeks. Concurrent medication/care: None reported.
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING - CLASSICAL STRENGTH EXERCISES (CSE) versus BIOMECHANICAL + AEROBIC - MUSCLE ENDURANCE TRAINING (MET) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 6 weeks; Group 1: mean 2.56 (SD 1.01); n=32, Group 2: mean 2.26 (SD 1.12); n=31; VAS 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry disability index (ODI) at 6 weeks; Group 1: mean 21.09 % (SD 5.79); n=32, Group 2: mean 18.29 % (SD 5.21); n=31; ODI 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hall 2011[196]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=160)
Countries and setting	Conducted in Australia
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of non-specific low back pain with or without leg pain, considered appropriate for exercise management of their back pain, reported a minimum level of 'moderate pain' or 'moderate activity limitation' as determined by their response to questions 7 or 8 on the SF-36 health survey
Exclusion criteria	Known or suspected serious spinal pathology, any contraindication to exercise, scheduled for spinal surgery
Recruitment/selection of patients	Participants recruited between July 2008 and April 2010 via community advertisements
Age, gender and ethnicity	Age - Mean (SD): E 43.4 (13.5) C 44.3 (13.0). Gender (M:F): 41/119. Ethnicity: not reported
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline scores (mean, 95% CI) - pain NRS: taichi 4.4 (4.0, 4.9), control 4.44 (3.98, 4.89); RMDQ: tai chi 10.2 (9.1, 11.3), control 9.1 (8, 10.2).
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Group mind-body exercise - Group tai-chi. Tai chi classes 40 minutes duration twice a week for 8 weeks followed by once a week for 2 weeks. Classes were taught by a certified tai chi teacher according to a standard protocol. Duration 10 weeks. Concurrent medication/care: not reported (n=80) Intervention 2: Usual care - Waiting-list. Participants were put on a waiting list to receive the intervention at the end of the study. Duration 10 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Arthritis Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP TAI-CHI versus WAITING-LIST	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain NRS at 10 weeks; MD -1.3 (95%CI -1.9 to 0.7); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 10 weeks; MD -2.6 (95%CI -3.7 to 1.1); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Responder criteria at follow-up - Actual outcome: Positive response (30% improvement in baseline pain score) at 10 weeks; Group 1: 37/80, Group 2: 12/80; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Positive response (30% improvement in function) at 10 weeks; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Positive response (30% improvement in function) at 10 weeks; Group 1: 40/80, Group 2: 19/80; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Han 2011[198]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=27)
Countries and setting	Conducted in South Korea
Line of therapy	Unclear
Duration of study	Intervention + follow up: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain patients who had completed 4 weeks of conservative treatment
Exclusion criteria	not reported
Age, gender and ethnicity	Age - Mean (SD): E: 61.2 (3.3) C: 60.8 (5.0). Gender (M:F): not reported. Ethnicity: not reported
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline scores (mean, SD) - VAS: exercise 6.52±3.45, control 6.09±4.33
Indirectness of population	No indirectness
Interventions	(n=9) Intervention 1: Individual Biomechanical exercise - Hydrotherapy. Aquatic therapy performed according to the programme suggested by Robert et al (1996). Sessions consider of strengthening exercises including chin twist, knee-up, sedentary kick and walking in a row and lasted 50 minutes. Sessions performed 5 times a week.. Duration 10 weeks. Concurrent medication/care: not reported (n=10) Intervention 2: Usual care. Participants received standard medical care. Duration 10 weeks. Concurrent medication/care: not reported
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: HYDROTHERAPY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain (VAS) at 10 weeks; Group 1: mean 3.12 (SD 2.32); n=9, Group 2: mean 5.89 (SD 4.42); n=10; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hansen 1993[200]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=150)
Countries and setting	Conducted in Denmark
Line of therapy	1st line
Duration of study	Intervention + follow up: 4 weeks intervention and up to 12 months follow-up time
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Pain VAS score
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised: Subgroups: Men, women, men and women with moderate/hard work load, men and women with sedentary/light workload
Inclusion criteria	Adults with chronic/subchronic lower back pain
Exclusion criteria	Spondylolisthesis, ankylosing spondylitis, axial arthritis, signs of root compression, collagenosis, osteoporosis, previous spinal fusion, neuromuscular disease of the trunk, malignant disease, uncompensated hypertension, pregnancy or lactation and any disease or malfunction in organs, extremities or elsewhere that would be hindrance to treatment.
Recruitment/selection of patients	Recruitment between November 1987 to February 1989. Occupational health service of Department of Scandinavian Airline System referred patients (employees) to study, patients were interviewed using a questionnaire. Occupational differences in workload were identified amongst people.
Age, gender and ethnicity	Age - Range: 21-64 years. Gender (M:F): 123 men : 57 female. Ethnicity: Danish
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (At least 2 pain episodes per month for the past 12 months).
Extra comments	Baseline scores (median, IQ range) - pain (men+women, moderate/hard workload): exercise 4 (6-3), control 4 (6-3); pain (men+women, sedentary/light workload): exercise 3 (2-5), control 4.5 (3-6).
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Individual Biomechanical exercise - Core stability. Intensive dynamic back muscle training: trunk lifting in prone position, leg lifting in prone position, pull down to the neck. . Duration 1 hour session twice a week for 4 weeks. Concurrent medication/care: Not stated (n=61) Intervention 2: Placebo/Sham. Resting for 20 minutes on semi hot packs, followed by intermittent gradual traction with 10% body weight force for 7 seconds and relief for 7 seconds repeated for 20 minutes, followed by 20 minutes resting on the packs which were not re-heated. Duration 1 hour twice weekly for 4 weeks. Concurrent medication/care: Not stated

Funding	Other (The Danish Rheumatism Association, The Health Insurance Foundation and The Rockwool Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Zero to none visual-interval scale, men and women with moderate/hard work load at 6 months; Other: Medians: Intervention 4, Control 4 (Interquartile ranges Intervention 2-5, control 1-7) Zero to nine visual-intensity scale (pain level by self-assessment) 0-9 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Zero to nine visual-interval scale, men and women with moderate/hard work load at 12 months; Other: Median: Intervention 3, control 4 (Interquartile range Intervention 1-5, control 1-7) Zero to nine visual-interval pain score (pain level by self-assessment) 0-9 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Zero-nine visual-intensity pain score, men and women with sedentary/light work load at 6 months; Other: Median: Intervention 2.5, control 3.5 (Interquartile range intervention 1-5, control 3-5.5) Zero-nine visual-intensity pain score (pain level by self-assessment) 0-9 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Zero to nine visual-interval score, men and women with sedentary/light work load at 12 months; Other: Median: Intervention 2, control 4 (Interquartile ranges Intervention 1-4, control 2-5) Zero to nine visual-interval scale (pain level by self-assessment) 0-9 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Harts 2008[201]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Roland Morris disability questionnaire, SF-36
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Male employees from the Netherlands Royal Army between the age of 18-54 years, with low back pain for more than 12 weeks, able to visit the department 1 to 2 times a week for 8 consecutive weeks, willingness to abandon all other treatments for low back pain during the intervention period.
Exclusion criteria	Undergone spinal surgery in the past 2 years, reported severe back pain that hinders performance of the exercise intervention, radiation below the knee with signs of nerve root compression.
Age, gender and ethnicity	Age - Mean (SD): Intervention group: 44 (10), Control group 41 (9). Gender (M:F): All male. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 12 weeks).
Extra comments	Baseline scores (mean SD) - RMDQ: exercise 6.2±4.4, UC 6.5±3.9; SF36 total: exercise 74±12, UC 69±13; SF36 physical: exercise 70±20, UC 69±13; SF36 mental: exercise 88±10, UC 81±18. All male participants recruited from the Royal Netherlands Army.
Indirectness of population	No indirectness
Interventions	(n=23) Intervention 1: Individual Biomechanical exercise - Core stability. Progressive resistance exercise program for the isolated lumbar extensor muscle group. High load with approximately 50% of the maximal isometric lumbar extensor strength of the participant-performing 15 to 20 repetitions of the low back machine-with load increasing/decreasing depending on performance. NOTE: study also consisted of a 'low-load' arm, in which participants received a low-intensity resistance exercise program. Duration 8 weeks. Concurrent medication/care: Not stated (n=21) Intervention 2: Usual care - Waiting-list. Waiting-list control. Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus WAITING-LIST Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical at 8 weeks; Group 1: mean 85 (SD 15); n=20, Group 2: mean 74 (SD 19); n=19; SF-36 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental at 8 weeks; Group 1: mean 92 (SD 10); n=20, Group 2: mean 81 (SD 21); n=19; SF-36 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 8 weeks; Group 1: mean 3.4 (SD 4); n=20, Group 2: mean 5.2 (SD 3.9); n=19; RDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hartvigsen 2010[202]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	N/A (n=151)
Countries and setting	Conducted in Denmark; Setting: Secondary sector specialised outpatient back pain clinic
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 8 weeks + 26 & 52 weeks (after randomisation)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: All prospective participants received extensive examination and diagnostic procedures before being offered inclusion into the trial.
Stratum	Overall: N/A
Subgroup analysis within study	Not applicable: N/A
Inclusion criteria	The participants [1] had LBP with/without leg pain > 8 weeks; [2] had average pain of > 3 on the 11-point numeric rating scale in the past 2 weeks; [3] had completed 4 weeks of treatment in the primary sector by a family physician, chiropractor, physical therapist or a combination; [4] had concluded all examinations, individual and group treatment at the back clinic at a minimum of 75% attendance rate; [5] were able to read and understand Danish.
Exclusion criteria	[1] Co-morbidity preventing patient from participating in the full intervention. [2] Unable to sit on a stationary bike for at least 30 minutes to perform watt max bicycle test.
Recruitment/selection of patients	The study site (i.e. the back pain clinic) generally received referrals from primary care physicians or primary care chiropractors when at least 4 weeks of treatment in primary care by a family physician, chiropractor, physical therapist or a combination thereof has not resulted in satisfactory improvement. In addition to the examination and diagnostic procedures, the prospective participants received information about self-care for back pain and attended group exercises twice a week for 4 weeks before being offered inclusion into the trial. Participants were recruited over a 2-year period from August 2005 to August 2007.
Age, gender and ethnicity	Age - Mean (SD): Group 1 = 49.2 (11.1); Group 2 = 45.4 (10.8); Group 3 = 45.5 (11.0). Gender (M:F): M:F = 38:98. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Mixed (> 8 weeks).
Extra comments	Baseline scores (mean SD): LBP pain rating: group exercise 46.1±16.6, self man 50.7±21.8, UC 47.3±18.2; EQ5D: group exercise 67.5±16.5, self man 62.7±16.1, UC 63.9±16.8.
Indirectness of population	No indirectness
Interventions	(n=45) Intervention 1: Group Aerobic exercise - Group walking. [1] Groups of six to eight people received instruction and performed Nordic Walking under supervision of a specially trained Nordic Walking instructor. [2] Each session lasted around 45 minutes and took place twice a week for 8 weeks. [3] The participants were allowed to walk at

	different speeds but the dose and frequency was equal for all participants. . Duration 8 weeks. Concurrent medication/care: N/A (n=46) Intervention 2: Self-management - Unsupervised exercise. [1] The participants received instruction on Nordic Walking only once by the same specially trained instructors in a single one-hour session. [2] They were given Nordic Walking poles and were left to perform Nordic Walking as much as they wanted at home on their own for 8 weeks. . Duration 8 weeks. Concurrent medication/care: N/A (n=45) Intervention 3: Usual care. [1] The participants received information about active living and exercise, and about maintaining the daily function level they have achieved during the 4-week period at the back pain clinic by remaining active. . Duration 8 weeks. Concurrent medication/care: N/A
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP NORDIC WALKING versus UNSUPERVISED NORDIC WALKING Protocol outcome 1: Quality of life at follow-up - Actual outcome: EQ5D at 8 weeks post-intervention; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Low Back Pain Rating at 8 weeks post-intervention; Other: Mean improvement: Group Nordic Walking = 8.8 vs. Unsupervised Nordic Walking = 3.4 Lower Back Pain Rating Scale 0 - 60 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP NORDIC WALKING versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: EQ5D at 8 weeks post-intervention; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Low Back Pain Rating at 8 weeks post-intervention; Other: Mean improvement: Group Nordic Walking = 8.8 vs. Advice = 4.8 Lower Back Pain Rating Scale 0 - 60 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health

professional visit) at Define

Study (subsidiary papers)	Henchoz 2010[215] (Henchoz 2010[214])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=105)
Countries and setting	Conducted in Switzerland
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months intervention + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report and physical examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Subacute or chronic low back pain; phases 2 to 6 of the Krause classification; without irritative neurological deficit; age 18 to 60 years; available to attend exercise classes twice a week for 12 weeks.
Exclusion criteria	Phases 7 and 8 of the Krause classification; entitled to a total disability pension; acute neurological deficit in progress; sciatica; pregnancy; acute inflammatory rheumatic disease; nonosteoarticular thoracic pain; spinal fracture in last 3 months; osteoporosis; tumour; severe heart failure or respiratory failure; active drug addiction; current involvement in litigation related to low back pain; active psychiatric pathology; missing >6/24 exercise sessions
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): Exercise: 41.09 (10.60); control: 39.25 (9.05). Gender (M:F): 64:41. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (Subacute or chronic).
Extra comments	Baseline scores (mean SD) - pain VAS: exercise 53.24±18.27, UC 51.56±21.54
Indirectness of population	No indirectness
Interventions	(n=56) Intervention 1: Group Aerobic exercise - Group aerobics. Core strengthening exercises (emphasis on endurance rather than strength) followed by aerobic exercise to 85% maximal heart rate followed by passive stretching; twice a week for 12 weeks. Duration 3 months. Concurrent medication/care: After functional multidisciplinary rehabilitation (n=49) Intervention 2: Usual care. Routine follow up. Duration 3 months. Concurrent medication/care: After multidisciplinary rehabilitation
Funding	No funding ("No funds were received in support of this work")
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP AEROBICS versus USUAL CARE	

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical functioning at 1 year; Group 1: mean 71.7 (SD 21.1); n=50, Group 2: mean 66.4 (SD 21.8); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role physical at 1 year; Group 1: mean 49.1 (SD 44.3); n=50, Group 2: mean 47.9 (SD 13.9); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 bodily pain at 1 year; Group 1: mean 49.7 (SD 22.8); n=50, Group 2: mean 49.1 (SD 24); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health perception at 1 year; Group 1: mean 55.3 (SD 24); n=50, Group 2: mean 52.7 (SD 25); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 1 year; Group 1: mean 53.6 (SD 21.3); n=50, Group 2: mean 50.6 (SD 21.4); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social functioning at 1 year; Group 1: mean 68.5 (SD 25.3); n=50, Group 2: mean 65.4 (SD 28.7); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role emotional at 1 year; Group 1: mean 67.6 (SD 41.6); n=50, Group 2: mean 64.7 (SD 43.3); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health at 1 year; Group 1: mean 65.9 (SD 20.6); n=50, Group 2: mean 68 (SD 22); n=41; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical component score at 1 year; Group 1: mean 41.3 (SD 9.3); n=50, Group 2: mean 40 (SD 10); n=41; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental component score at 1 year; Group 1: mean 46.8 (SD 12.4); n=50, Group 2: mean 46.4 (SD 13.2); n=41; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain at 3 months; Group 1: mean 36.5 mm (SD 23.68); n=45, Group 2: mean 37.78 mm (SD 24.75); n=38; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain at 12 months; Group 1: mean 38.12 mm (SD 23.97); n=47, Group 2: mean 37.66 mm (SD 26.81); n=36; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 3 months; Group 1: mean 26.13 % (SD 15.01); n=47, Group 2: mean 28.06 % (SD 14.36); n=41; Oswestry Disability Index 0 to 100% Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 12 months; Group 1: mean 25.32 % (SD 15.51); n=49, Group 2: mean 27.16 % (SD 17.03); n=40; Oswestry Disability Index 0 to 100% Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
Protocol outcomes not reported by the study	

Study	Huber 2011[229]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=52)
Countries and setting	Conducted in Poland; Setting: Outpatient rheumatology and rehabilitation ward
Line of therapy	Unclear
Duration of study	Intervention + follow up: 20 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	First episode of right sciatica caused by a herniated disc
Exclusion criteria	Other causes of low back pain
Age, gender and ethnicity	Age - Mean (range): 35 (31-41). Gender (M:F): 24/28. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline scores (mean SD) - VAS: exercise 7.2±0.9, UC 7.4±0.9
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Usual care. Participants advised to reduce physical activity and spinal loading.. Duration 20 days. Concurrent medication/care: All participants offered analgesics and myorelaxants for first 14 days post onset of acute pain (before study intervention started) (n=26) Intervention 2: Individual Biomechanical exercise - Core stability. Supervised isometric exercises three sessions daily of unspecified duration. Duration 20 days. Concurrent medication/care: All participants offered analgesics and myorelaxants for first 14 days post onset of acute pain (before study intervention started)
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain (VAS) at 20 days; Group 1: mean 5.2 (SD 1); n=26, Group 2: mean 6.9 (SD 1.3); n=26; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Irandoust 2015[243]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in Iran; Setting: Not specified
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Not reported.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Over 65 years old, no experience of a fall in the 1 year period prior to the study, no specific disease that might influence task performance, no visual or hearing impairment, and no vestibular organ problem
Exclusion criteria	Not stated
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Mean (range): 67.6-68.4. Gender (M:F): 100% male. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	No baseline data. Outcomes reported do not meet the protocol, so have not been extracted.
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=16) Intervention 1: Individual Biomechanical exercise - Hydrotherapy. Intervention given 3 days/week. A session lasted 60 mins and included a warm-up period(10 mins), the main program (40 mins) and a cool down period (10 mins).Two aerobic sessions (water walking; jogging; walking and jogging in combination with various arm movements; side stepping; water cycling; adapted water games: volley and basket) and 1 session of resistance training (chest/upper back glide; chest back press; behind-the-back press; pivoted shoulder press (upper body) and calf lifts; supported squats; outer/inner thigh scissors; forward and backward leg glide(lower body)). Exercise was conducted in a heated pool (depth 1.2 metres) and water temperature kept between 28^{o}C and 30^{o}C . Duration 12 weeks. Concurrent medication/care: Not reported. Comments: N/A (n=16) Intervention 2: Usual care. No exercise given. Participants were asked to continue with their normal daily activities. . Duration 12 weeks. Concurrent medication/care: None reported. Comments: N/A

Funding	Funding not stated
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kell 2009[267]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=33)
Countries and setting	Conducted in Canada
Line of therapy	Adjunctive to current care
Duration of study	Not clear: 16 week intervention.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Assessed by a physician.
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Suffers from chronic (≥3 months, ≥3 d.wk^-1) nonspecific (soft tissue in origin) low-back pain (lumbar 5 to lumbar 1) pain.
Exclusion criteria	Patients diagnosed with any of the following: pain below the knee, spinal stenosis, a herniated or ruptured disc, spondylolythesis, infection in the lumbosacral area, tumours, scoliosis, a rheumatologic disorder, osteoporosis, or previous back surgery. Patients with diagnosis' of metabolic, endocrine, cardiovascular, or neurological disease.
Recruitment/selection of patients	Via advertisement from the city of Regina, from the beginning in midsummer and ending in late fall.
Age, gender and ethnicity	Age - Mean (SD): Resistance training - 40.1(8.7); aerobic training - 36.7(8.9); control - 35.3(7.3).. Gender (M:F): Define. Ethnicity: Not reported.
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration)
Extra comments	Baseline Characteristics, mean (SD): Visual analogue scale (Pain): RT - 5.4 (0.9); AT - 5.1(0.8); C - 4.9 (0.6). Oswestry disability index: RT - 40.4 (2.4); AT - 39.8 (2.3); C - 39.2 (3.4). SF-36 (Physical): RT - 41.1 (3.2); AT - 42.1 (2.5); C - 39.3 (3.3). SF-36 (Mental): RT - 43.0 (4.1); AT - 44.3(2.3); C - 42.0 (3.0).
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=9) Intervention 1: Group biomechanical exercise - Motor Control. After baseline laboratory testing, those subjects assigned to the RT group completed 10-repetition maximum (RM) testing on 11 resistance exercises (Machine – Leg press, leg extension, leg curl, lateral pull-down, triceps pushdown; Free weight – bench press, incline bench press, Db shoulder press, straight bar arm curl; Body weight* – abdominal crunch, Swiss ball crunch, prone superman)After the baseline laboratory and 10RM tests were complete, subjects were given programs and rehabilitation began. The RT group performed upper- and lower-body RT exercises that consisted of free weights (i.e. barbell and dumbbell), machines, and body weight. The resistance machines used were Atlantis Strength Equipment products (Laval, QC, Canada). The load (resistance) for each exercise was determined at baseline and week 8 according to the 10RM method.Testing took place at the University of Regina fitness and lifestyle centre. The fitness and lifestyle centre had

	2 staff members on the workout floor at all times, and the staff were familiarized with the research study. Patients participated in 3 sessions per week, intensity rage 53% -72% 1RM, with 1-3 minutes of rest between sets and exercise. The rest time was dependent on the load (12-15RM = 1 minute of rest on all exercises; ≤10RM = 3 minutes of rest on primary exercises). 10 repetitions each set, with pauses ranging from 5 to 30 seconds per repetition. Progressive overload was administered by increasing the duration of the pauses; this was governed by the discretion of the patient.*Abdominal and Swiss ball crunch, the subjects were first tested with body weight, and if necessary, additional free weight was added, with the subject holding the free weight on his or her chest. The prone superman was not used during 10RM testing. . Duration 16 weeks . Concurrent medication/care: None reported. (n=9) Intervention 2: Group Aerobic exercise - Group aerobics. Patients participated in a progressive overload Aerobic Training program consisting of 3 sessions per week, a Borg scale range of 8 – 12, session duration of 20 – 35 minutes, and a total weekly duration of 55 – 155 minutes. The most common modes of exercise were: the elliptical trainer and treadmill walking or jogging. The only mode of exercise excluded was swimming, because of the body's position's effect on heart rate and the potential influence on the exerciser's rating of perceived exertion (RPE). During laboratory testing session, the subjects were familiarized with the use of the Borg scale for rating perceived exertion. The Borg scale was used to set the intensity of the AT sessions, negating the need for a heart rate monitor.. Duration 16 weeks . Concurrent medication/care: None reported. (n=9) Intervention 3: Usual care. Patients were advised to continue with their regular exercise training and levels of physical activity, for the duration of the study period.. Duration 16 weeks . Concurrent medication/care: Not reported.
Funding	Academic or government funding (Saskatchewan Health Rsearch Foundation (New Investigator Grant) and the University of Alberta, Augustana Campus (travel grant).)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: RESISTANCE TRAINING versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Short-Form 36 Health Survey (SF-36) - Physical component at 16 weeks; Group 1: mean 47.4 % (SD 3.2); n=9, Group 2: mean 39.1 % (SD 3.3); n=9; Short -Form 36 Health Survey 0 - 100% Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Short-Form 36 Health Survey (SF-36) - Mental component at 16 weeks; Group 1: mean 50.6 % (SD 3); n=9, Group 2: mean 41.56 % (SD 2.3); n=9; Short-Form 36 Health Survey 0 -100% Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Visual analog scale (VAS) at 16 weeks; Group 1: mean 3.3 (SD 0.5); n=9, Group 2: mean 4.8 (SD 0.7); n=9;

Visual analog rating scale 0 - 10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index (ODI) at 16 weeks; Group 1: mean 24.2 % (SD 0.2); n=9, Group 2: mean 39.1 % (SD 3.3); n=9; Oswestry Disability Index 0 - 100% Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP AEROBICS versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Short-Form 36 Health Survey (SF-36) - Physical component at 16 weeks; Group 1: mean 41.8 % (SD 2.5); n=9, Group 2: mean 39.1 % (SD 3.3); n=9; Short-form 36 Health Survey 0 -100% Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Short-Form 36 Health Survey (SF-36) - Mental component at 16 weeks; Group 1: mean 45.8 % (SD 1.4); n=9, Group 2: mean 41.56 % (SD 2.3); n=9; Short-Form 36 Health Survey 0 - 100% Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Visual analog scale (VAS) at 16 weeks; Group 1: mean 3.3 (SD 0.5); n=9, Group 2: mean 4.8 (SD 0.7); n=9; Visual analog score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index (ODI) at 16 weeks; Group 1: mean 35.9 % (SD 2.5); n=9, Group 2: mean 39.1 % (SD 3.3); n=9; Owestry Disability Index 0 - 100% Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kim 2014[282]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in South Korea; Setting: A K hospital located in Seoul
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosis by a medical doctor through a thorough examination, X-ray, CT and MRI examinations
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP for longer than two months
Exclusion criteria	Patients with lowered muscle strength or sensory or cauda equine syndrome were excluded
Recruitment/selection of patients	No details
Age, gender and ethnicity	Age - Mean (range): 44.33-50.46 years. Gender (M:F): 100% female. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Mixed (Longer than 2 months).
Extra comments	Baseline (Mean±SD): VAS (experimental group) - 7.00±0.89, (control group) 6.95±0.79; ODI - (experimental group) - 34.91±6.91, (control group) 36.18±5.02; RMDQ - (experimental group) - 18.64±2.84, (control group) 19.09±2.91
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Individual Mind-body exercise - Yoga. 30 minute virtual reality-based yoga program using Wii Fit activities and Wii balance board. Activities included: deep breathing, the half-moon pose, warrior pose, tree pose, chest to knee pose, chair pose, and palm tree pose. Performed in a total of 12 sessions over the course of 4 weeks, each lasting 30 minutes. Seven exercise programs, three minutes of exercise were performed followed by one minute of rest (longer resting period was provided if desired).. Duration 4 weeks. Concurrent medication/care: Not reported. (n=15) Intervention 2: Individual Biomechanical exercise - Core stability. Thirty minutes of trunk stabilising exercise and 30 minutes of normal physical therapy. Trunk stabilising exercise was performed with contraction exercise for the transverse abdominis and multifidus followed by curl ups. Other exercise included dead bug exercise, quadruped opposite arm and leg reach exercises, bridge, side bridge on knees, middle anterior plank position and balancing on unstable surfaces were performed. Each movement was comprised of two sets lasting 30 minutes. One set included 10 repetitions.. Duration 4 weeks. Concurrent medication/care: Not reported.

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: YOGA - USING WII FIT versus CORE STABILITY - CONTROL GROUP Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 4 weeks ; Group 1: mean 2.27 (SD 1.1); n=15, Group 2: mean 4.63 (SD 1.91); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry low-back pain disability index - ODI at 4 weeks ; Group 1: mean 13.82 (SD 7.65); n=15, Group 2: mean 24.55 (SD 10.88); n=15; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Roland-Morris disability questionnaire (RMDQ) at 4 weeks ; Group 1: mean 7.46 (SD 4.84); n=15, Group 2: mean 12.64 (SD 6.48); n=15; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kim 2015[283]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=74)
Countries and setting	Conducted in South Korea; Setting: Rehabilitation clinics
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 weeks intervention, 2 months follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Non-specific low back pain for more than 3 months
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	20-40 years of age, non-specific chronic low back pain for more than 3 months and ability to move without assistance.
Exclusion criteria	History of spinal or lower limb surgery, structural spinal abnormality, signs of nerve compression, pregnant or severe musculoskeletal disability.
Age, gender and ethnicity	Age - Mean (SD): Ex group: 29.7 (3.9), UC group: 28.6 (3.2). Gender (M:F): 0/53. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Pain for greater than 3 months).
Extra comments	Baseline characteristics of Ex and UC groups respectively, mean (SD): Pain VAS at rest 5.61 (0.79), 5.49 (0.98); pain VAS on movement 7.01 (0.39), 6.83 (0.86)
Indirectness of population	No indirectness
Interventions	(n=37) Intervention 1: Individual Biomechanical exercise - Core stability. 30-minute core programme, five times per week for eight weeks, with additional use of hot packs (15 minutes) and 20 minutes of transcutaneous electrical nerve stimulation. Exercise programme instructed by 2 trained physiotherapists to ensure sufficient abdominal muscle contraction, the programme emphasised isometric movement of core muscles including internal/external oblique, transversus abdominis, lumbar multifidus, rectus abdominis and erector spinae muscles. Participants also carried out slow and controlled movements to pay attention to breathing. Participants required to carry out exercises at home daily and keep a daily log of their participation. Physiotherapists also made weekly phone calls to motivate participants to adhere to exercise programme at home.. Duration 8 weeks. Concurrent medication/care: None reported. (n=37) Intervention 2: Usual care. 20 minutes TENS and 15 minutes hot packs 5 times a week. . Duration 8 weeks. Concurrent medication/care: Not reported.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at rest at 2 months; Group 1: mean 2.67 (SD 0.89); n=27, Group 2: mean 5.26 (SD 1.02); n=26; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS on movement at 2 months; Group 1: mean 4.1 (SD 1.05); n=27, Group 2: mean 6.57 (SD 0.91); n=26; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Kofotolis 2008[289]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=92)
Countries and setting	Conducted in Greece; Setting: Secondary care rehabilitation setting
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks and follow up 8 weeks after end (i.e. week 12 altogether)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Women with chronic back pain; unsuccessful resting periods for 6 months; had received some form of therapeutic treatment; LBP with at least one of the following: a) during and/or after activity; b) during and/or after sitting; c) during climbing stairs
Exclusion criteria	History of surgery or sciatica or spinal abnormalities on x-ray (i.e. spondylolysis or spondylolisthesis or lumbar scoliosis >10 degrees) or other injuries of the trunk, or muscle and tendon ruptures; previous rhythmic stabilisation or TENS
Recruitment/selection of patients	Referred for treatment of chronic low back pain

Age, gender and ethnicity	Age - Mean (SD): 40.5 (6.7) years. Gender (M:F): All women. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (6 months).
Extra comments	Baseline scores (mean SD) for exercise, TENS + exercise, TENS and placebo groups, respectively - pain: 2.1±0.8, 1.9±0.6, 2.3±0.4, 2.1±0.7; ODI: 17±1.8, 17±2.2, 18±2.3, 17±1.4
Indirectness of population	No indirectness
Interventions	(n=23) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: 120 Z unit; pulse duration 200microseconds; frequency 4 Hz; strong but comfortable stimulation; 4 rubber electrodes 2cm x 3cm applied on the fascia thoracolumbaliis and 10cm proximal to this along midline of muscle (i.e. directly over site of pain); 40-45 minutes; 5 times a week for 4 weeks. Duration 4 weeks. Concurrent medication/care: Not stated (n=23) Intervention 2: Placebo/Sham - Sham. Placebo TENS - as for TENS but electricity disconnected. Duration 4 weeks . Concurrent medication/care: Not stated (n=23) Intervention 3: Individual Biomechanical exercise - Core stability. Alternating trunk flexion-extension against resistance for 10 seconds, 3 sets of 15 repetitions; rest 30 seconds and 60 seconds after completion of 15 repetitions for each pattern and between sets; 5 times a week. Duration 4 weeks . Concurrent medication/care: Not stated (n=23) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. TENS 20 minutes plus 5 minutes rest plus 20 minutes exercises as for exercise group. Duration 4 weeks . Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity at 8 weeks post-treatment; Group 1: mean -0.47 None (SD 0.09); n=21, Group 2: mean -0.31 None (SD 0.07); n=23; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean -2.1 Not stated (SD 0.63); n=23; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus SHAM TENS Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity at 8 weeks post-treatment; Group 1: mean -0.47 None (SD 0.09); n=21, Group 2: mean 0.19 None (SD 0.04); n=21; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean 0.1 Not stated (SD 0.5); n=21; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus CORE STABILITY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity at 8 weeks post-treatment; Group 1: mean -0.47 None (SD 0.09); n=21, Group 2: mean -0.92 None (SD 0.17); n=23; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean -7.1 Not stated (SD 1.49); n=23; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Koldas dogan 2008[290]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in Turkey
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks intervention and 1 month follow up (2.5 months)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Pain Visual Analogue Scale, Roland Morris disability questionnaire, psychological assessment using Beck depression Inventory
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	History of low back pain exceeding 3 months, above age 25 years, willingness to comply with any of the treatments, written informed consent
Exclusion criteria	Herniated lumbar disk, acute phase of the lumbar disk protrusion, presence of vertebral fracture(s), cardiovascular or systemic disease or any condition which made exercise impossible, neurological deficit, psychiatric disorder which might affect compliance and assessment of symptoms, history of spinal surgery, pregnancy, inflammatory infectious or malignant diseases of the vertebra, presence of severe structural deformity
Age, gender and ethnicity	Age - Mean (SD): . Gender (M:F): 8/29. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 3 months).
Extra comments	Baseline scores (mean SD) - VAS: exercise 57.05±24.5, UC 56.0±19.9; RMDQ: exercise 11.9±5.4, UC 13.6±7.4; BDI: exercise 14.1±9.2, UC 12.8±9.2.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Individual Aerobic exercises - Aerobics exercise. Running on a treadmill 3 times a week as well as home exercise based on mobilisation, stretching, flexion and extension. Duration 6 weeks. Concurrent medication/care: Not stated (n=20) Intervention 2: Usual care. Home exercise based on mobilisation, stretching, flexion and extension. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: AEROBICS EXERCISE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 2.5 months; Group 1: mean 34.1 (SD 27.6); n=19, Group 2: mean 33.6 (SD 24.3); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 2.5 months; Group 1: mean 9.2 (SD 7.3); n=19, Group 2: mean 13.3 (SD 7.3); n=18; Roland Morris disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: BDI at 2.5 months; Group 1: mean 12.7 (SD 9.8); n=19, Group 2: mean 12.5 (SD 8.06); n=18; Becks disability inventory 0-63 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Lawand 2015[307]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=61)
Countries and setting	Conducted in Brazil; Setting: Community
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: All patients were previously evaluated and diagnosed by a rheumatologist
Stratum	Overall (acute, chronic) without sciatica: No information given about presence/absence of sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Either gender, 18-65 years of age, diagnosis of chronic low back pain, characterised by mechanical pain worsening on movement and improving with rest, for a period of >3 months, located between last rib and gluteal sulcus, score of 3.0-8.0 on VAS for pain
Exclusion criteria	Excluded patients with nerve root pain, motor impairment, inflammatory spondyloarthropathy, spondylolisthesis, previous back surgery, vertebral fracture, fibromyalgia, current pregnancy, current physiotherapy (or in previous three months), BMI >30, change in pain drugs in previous 30 days
Recruitment/selection of patients	All patients from rheumatology "ambulatory" of Federal University of Sao Paulo
Age, gender and ethnicity	Age - Range of means: 47.5 to 49.4. Gender (M:F): 14 male : 47 female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 3 months).
Extra comments	Average duration of pain 2.9-3.1 years (range of means), baseline characteristics (range of means), VAS for pain 6.4-6.3, Roland-Morris, 12.6-11.9, Beck Inventory 11.8-12.0, SF-36 functional capacity 50.8-52.7, SF-36 limitation in physical aspects 45.2-37.5, pain 41.3-40.9, general health 59.5-58, vitality 48.7-39.8, social aspects 66.1-62.1, emotional aspects 51.9-54.4, mental health 63.6-57.3
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Individual Biomechanical exercise - Stretching. Global postural re-education aiming to stretch muscles that have been shortened by constitutional, behavioural and psychological factors. 6 postures divided into two groups: hip flexion postures emphasising the posterior chain and neutral hip postures that emphasise the anterior chain. Individuals in the GPR group underwent 12, weekly, 60 minute sessions of GPR with the same physiotherapist with 12 years of experience in "technical", they were then followed-up for a further 12 weeks. All 6 GPR postures were used in a standardised manner, each posture lasted 20 minutes, in the first three sessions "lying on back with legs extended", and "lying on back with legs flexed" were performed with arms folded. In sessions 4, 5 and 6 "lying on back with legs extended" and "lying on back with the legs flexed" were performed with arms open, ending with "standing

	with the body leaning forward". In sessions 7, 8 and 9 "lying on back with the legs extended" with arms open, "lying on back with the legs flexed" with arms open and "sitting with legs extended" were performed. In the last three sessions, "lying on back with the legs extended" with arms folded, "lying on back with the legs flexed" with arms open and "standing with the back against the wall and standing in the center" were performed.. Duration 24 weeks (12 weeks of treatment). Concurrent medication/care: Up to 3.0g acetaminophen per day as first choice for back pain or up to 150mg of diclofenac as secondary choice if needed. (n=30) Intervention 2: Usual care. No physical therapy offered. Duration 24 weeks follow-up. Concurrent medication/care: Only drug treatment as per the GPR group (up to 3.0g acetaminophen per day first line/up to 150mg diclofenac per day second line) Comments: No placebo control to account for benefit of spending 12 hours with trained physiotherapist over course of follow-up
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GPR versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 functional capacity at 3 months; Group 1: mean 52.7 (SD 24.2); n=30, Group 2: mean 53.8 (SD 24.7); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 functional capacity at 6 months; Group 1: mean 63.1 (SD 20.1); n=30, Group 2: mean 57.7 (SD 25.1); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 limitation in physical aspects at 3 months; Group 1: mean 67.8 (SD 37.2); n=30, Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 limitation in physical aspects at 6 months; Group 1: mean 67.1 (SD 39.5); n=30, Group 2: mean 44.7 (SD 35.5); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 pain at 3 months; Group 1: mean 52.4 (SD 21.6); n=30, Group 2: mean 40.9 (SD 14.2); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 pain at 6 months; Group 1: mean 51 (SD 17.8); n=30, Group 2: mean 42.5 (SD 15.5); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 general health at 3 months; Group 1: mean 67.8 (SD 23.7); n=30, Group 2: mean 60.9 (SD 17); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 general health at 6 months; Group 1: mean 64.4 (SD 23); n=30, Group 2: mean 59.2 (SD 19.4); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 vitality at 3 months; Group 1: mean 64.1 (SD 19.4); n=30, Group 2: mean 48.5 (SD 17.1); n=30; SF-

36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 vitality at 6 months; Group 1: mean 64.2 (SD 20.3); n=30, Group 2: mean 50.2 (SD 17.6); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 social aspects at 3 months; Group 1: mean 79 (SD 17.2); n=30, Group 2: mean 64.6 (SD 25.9); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 social aspects at 6 months; Group 1: mean 74.6 (SD 22.2); n=30, Group 2: mean 66.5 (SD 27.5); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 emotional aspects at 3 months; Group 1: mean 75.7 (SD 35.4); n=30, Group 2: mean 56.7 (SD 42.1); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 emotional aspects at 6 months; Group 1: mean 78.9 (SD 30.4); n=30, Group 2: mean 51.6 (SD 39.2); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health at 3 months; Group 1: mean 72.7 (SD 18.9); n=30, Group 2: mean 58.8 (SD 17.5); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health at 6 months; Group 1: mean 72.1 (SD 20.7); n=30, Group 2: mean 61.8 (SD 19.9); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS for pain (cm) at 3 months; Group 1: mean 3.1 cm (SD 2.3); n=30, Group 2: mean 6.1 cm (SD 2.2); n=30; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS for pain (cm) at 6 months; Group 1: mean 4.4 cm (SD 2.5); n=30, Group 2: mean 5.8 cm (SD 1.7); n=30; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris score at 3 months; Group 1: mean 7.2 (SD 5.2); n=30, Group 2: mean 10.9 (SD 5.5); n=30; Roland Morris 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris score at 6 months; Group 1: mean 8.1 (SD 6.3); n=30, Group 2: mean 11.4 (SD 5.5); n=30; Roland Morris 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Paracetamol consumption at 3 months; Group 1: mean 7.6 Not clearly stated, plausibly "number of uses per day per patient" (SD 10.6); n=30, Group 2: mean 8.1 Not clearly stated, plausibly "number of uses per day per patient" (SD 9.7); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Paracetamol consumption at 6 months; Group 1: mean 7.9 Not clearly stated, plausibly "number of uses per day per patient" (SD 10.3); n=30, Group 2: mean 6.9 Not clearly stated, plausibly "number of uses per day per patient" (SD 10.2); n=30; Risk of bias: Very high;

Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Diclofenac consumption at 3 months; Group 1: mean 9 Not clearly stated, plausibly "number of uses per day per patient" (SD 2.6); n=30, Group 2: mean 4 Not clearly stated, plausibly "number of uses per day per patient" (SD 1.2); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Diclofenac consumption at 6 months; Group 1: mean 5 Not clearly stated, plausibly "number of uses per day per patient" (SD 2.5); n=30, Group 2: mean 5 Not clearly stated, plausibly "number of uses per day per patient" (SD 1.4); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	**Lewis 2005[319]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=80)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 8 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with mechanical non-radicular LBP >3 months, referred by consultant or family physician to physiotherapy; age 18-75 years; fluency in English
Exclusion criteria	Cardiac, respiratory, kidney, blood pressure or blood circulatory problems, spinal surgery, fracture, inflammatory or infectious disease of the spine, metabolic disease, neurological deficit, rheumatoid arthritis or diabetes, health professionals, and staff members at the institution where data collected; pregnant, attempting to become pregnant, o not capable of participating in graded exercise programme
Recruitment/selection of patients	Referred by consultant or family physician to physiotherapy
Age, gender and ethnicity	Age - Mean (SD): Group 1: 46.1 (12.7); group 2: 45.7 (12.7) years. Gender (M:F): 28:52. Ethnicity: Not stated
Further population details	1. Acute pain : Not applicable / Not stated / Unclear (Chronic). 2. Pain severity: Not applicable / Not stated / Unclear

	(Not stated). 3. Risk assessment for chronicity: Not applicable / Not stated / Unclear (Already chronic). 4. Structural pathology: No clear structural pathology (Exclusion criterion).
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise + manipulation. 8 x 1-hour sessions over 2 months; 10 patients per class; 10 minutes warm up (walking and general stretching); 40 minutes circuit: a number of "stations" including treadmill, exercise bicycle, sit to stand repetitions, spinal stabilization exercises (supine, prone, 4-point kneeling), sitting gym ball exercises, leg press, "bridging" exercises, step ups (onto 12-cm step), stepper, arm circling and arm raising (in standing), high stepping on the spot (touching opposite hand to knee), walking to jogging on trampette, gym ball (5kg) lifts toward ceiling in supine position; also curtained off manual therapy station as part of the circuit (individual treatment around 5 minutes) - most patients received 6 mobilisation sessions out of the 8 total sessions; 10 minutes cool down (walking and stretching). The Back Book. Duration 2 months. Concurrent medication/care: Not stated (n=40) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. 8 x 30-minutes sessions; individual manual therapy and spinal stabilisation exercises. The Back Book.. Duration 2 months. Concurrent medication/care: Not stated
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: GROUP EXERCISE (BIOMECH + AEROBIC) + MANIPULATION + EDUCATION versus COMBINED NON-INVASIVE INTERVENTIONS: INDIVIDUAL EXERCISE (BIOMECH) + MANIPULATION + EDUCATION Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Taking analgesics at 8 weeks; Group 1: 13/33, Group 2: 6/29; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Little 2014[328]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=69)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 months + follow up 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-65 years with current back pain for three or more weeks with presentation in primary care with low back pain more than three months previously, currently scoring 4 or more on the Roland disability scale
Exclusion criteria	Clinical indicators of serious spinal disease, previous spinal surgery, pending litigation, previous experience of Alexander technique, perceived inability to walk 100m, history of psychosis or major alcohol misuse, pregnancy.
Age, gender and ethnicity	Age - Mean (SD): Control 47.2 (11.57), exercise 47.93 (11.97), alexander 49.92, (10/11), alex + ex 56.45 (7.86). Gender (M:F): 26/43. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (At least 3 weeks).
Extra comments	Baseline scores (mean SD) for exercise, exercise + alexander, alexander and control groups, respectively – RMDQ: 10.29 (5.45), 11.44 (3.91), 10.06 (4.10), 9.24 (5.13); pain: 5.88 (1.60), 6.22 (1.94), 5.61 (2.13), 5.75 (2.04)
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Usual care. Normal care. Patients were free to consult their GP as normal and GPs were free to prescribe analgesia or refer for further care according to NICE guidance as appropriate. Duration 12 weeks. Concurrent medication/care: Not stated (n=17) Intervention 2: Postural therapies - Alexander technique. 10 lessons and a copy of a recommended book providing an introduction to the Alexander technique. Duration 12 weeks. Concurrent medication/care: Not stated (n=17) Intervention 3: Mixed exercise - Biomechanical + aerobic. It included motor relearning, strengthening, stretching and aerobic exercises; exercises tailored to the individual that can also be performed at home; 20 hours of contact time (10–12 group sessions); and exercise targeting motor control of deep abdominal and lumbar paraspinal

	muscles. Duration 12 weeks. Concurrent medication/care: Not stated (n=18) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. 10 Alexander technique lessons plus exercise (motor relearning, strengthening, stretching and aerobic exercises; exercises tailored to the individual that can also be performed at home; 20 hours of contact time (10–12 group sessions). Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Institute for Health Research (NIHR))
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE versus MIXED EXERCISE + ALEXANDER TECHNIQUE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain Von Korff at <4 months; Group 1: mean 3.71 (SD 2.7); n=15, Group 2: mean 4.36 (SD 2.95); n=15; von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Function RMDQ at <4 months; Group 1: mean 5.57 (SD 4.97); n=15, Group 2: mean 6.85 (SD 6.36); n=15; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Machado 2007[333]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=33)
Countries and setting	Conducted in Unknown
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age less than 65 years, chronic non-specific low back pain (pain between 12th rib and gluteal folds) for at least 3 months
Exclusion criteria	Suspected or confirmed serious spinal pathology (fracture, tumour, infection, cauda equina syndrome), previous spinal surgery, spondylolisthesis, pregnancy, other associated pathologies requiring current intervention, subjects exhibiting radicular syndrome (defined as leg pain following dermatomal pattern and neurological signs)
Age, gender and ethnicity	Age - Mean (SD): Exercise 42.4 (13.2) Psychotherapy 44.6 (12.1). Gender (M:F): 10/23. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores (mean SD) - pain VAS: exercise 7.0.±2.6, therapy 6.0±2.6; Disability BRM: exercise 13.3±5.5, therapy 14.4±6.6; depression BDI: exercise 24.8±16.1, therapy 18.6±10.2.
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Mixed exercise - Biomechanical + aerobic. Group exercise (of up to 10 patients) including walking, stretching and strengthening exercises for 40 minutes twice a week for 9 weeks. Exercise supervised by physiotherapist with 5 years of clinical experience. Duration 9 weeks. Concurrent medication/care: not reported (n=16) Intervention 2: Placebo/Sham. Attention control. Non-directive counselling in groups of up to 10 patients. 80 minute sessions twice a week for 9 weeks, facilitated by two psychologists with 12 years of clinical experience.. Duration 9 weeks. Concurrent medication/care: not reported
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 9 weeks; MD -1.8 (95%CI -5.16 to 1.55); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 months; MD -1.3 (95%CI -4.4 to 1.8); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Brazilian Roland Morris Disability Questionnaire at 9 weeks; MD -4.9 (95%CI -9.08 to -0.72); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Brazilian Roland Morris Disability Questionnaire at 6 months; MD -4 (95%CI -9.28 to 0.13) 0-24 Roland Morris Disability Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 9 weeks; MD -6.3 (95%CI -18.7 to 6.02); Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Machado 2010[334]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=146)
Countries and setting	Conducted in Australia; Setting: multi-centre, 27 medical practices in Sydney
Line of therapy	1st line
Duration of study	Intervention + follow up: 3 weeks intervention, 3 months follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	18-80 years, new episode of acute non-specific lower back pain (pain in the area between the 12th rib and buttock crease, with or without leg pain, of less than 6 weeks duration) able to visit one of the trial physical therapists for commencement of the McKenzie treatment program within 48 hours of presentation to the physician.
Exclusion criteria	Nerve root compromise, red flags for serious spinal pathology (e.g. fracture, infection), spinal surgery in the past 6 months, pregnancy, severe cardiovascular or metabolic disease, inability to read and understand English.
Age, gender and ethnicity	Age - Mean (SD): McKenzie group 47.5 (14.4), Control 45.9 (14.9). Gender (M:F): 73/73. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (6 weeks or less duration).
Extra comments	Baseline scores (mean SD) - pain NRS: McKenzie 6.6±1.8, UC 6.3±1.9; disability RMDQ: McKenzie 13.7±5.5, UC 13.5±5.3
Indirectness of population	No indirectness
Interventions	(n=73) Intervention 1: Individual Biomechanical exercise - McKenzie. McKenzie. Duration 3 weeks. Concurrent medication/care: Advice to remain active, paracetamol and possibly non-steroidal anti-inflammatory drugs (n=73) Intervention 2: Usual care. Advice to remain active, paracetamol and possibly non-steroidal anti-inflammatory drugs. Duration 3 weeks. Concurrent medication/care: None
Funding	Academic or government funding (University of Sydney, national health and medical research council, Australian government, FAPEMIG (Brazil))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MCKENZIE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity numeric rating scale (0-10) at 3 weeks; Group 1: mean 1.8 (SD 1.67); n=70, Group 2: mean

2.5 (SD 1.66); n=69; Pain intensity rating scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Questionnaire (0-24) at 3 weeks; Group 1: mean 4.8 (SD 5.86); n=70, Group 2: mean 5.1 (SD 5.81); n=69; Roland Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	**Mannion 1999[356] (Mannion 2001[357])**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=148)
Countries and setting	Conducted in Finland; Setting: Hospital spine unit
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 months + follow up 6 months after therapy
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History and examination by neurologists
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	<65 years; >3 months of continual or recurrent episodes of LBP with or without referred pain (of a non-radicular nature); serious enough to cause absence from work or solicitation of medical attention; ability and willingness to travel independently to the hospital; willingness to comply with the treatment randomly assigned; ability to read and write German or English; ability to perform pre-inclusion test designed to ensure a certain minimum ability to perform the functional test outcomes
Exclusion criteria	Constant or persistent severe pain; non-mechanical LBP; pregnancy; previous spinal surgery; current nerve root entrapment accompanied by neurologic deficit; spinal cord compression; tumours; severe structural deformity; severe instability; severe osteoporosis; fresh fracture; inflammatory disease of the spine; spinal infection; severe cardiovascular or metabolic disease; other corresponding disorders preventing active rehabilitation; acute infection; lack of cooperation

Recruitment/selection of patients	Local media advertisement
Age, gender and ethnicity	Age - Range of means: 43.7 (10.1) to 46.3 (10.1) years. Gender (M:F): 64:84. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores (mean, SD): average pain VAS: mixed 4.1±1.8, stability 4.4±1.8; RMDQ: mixed 7.6±4.7, stability 8±4
Indirectness of population	No indirectness
Interventions	(n=49) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Physiotherapy: half hour individual sessions focused on improving functional capacity of the patient and giving instruction on ergonomic principles; isometric exercises, exercises with Therabands and general strength-training devices; patients advised on home exercises and encouraged to perform them; programme individualised within guidelines. Twice a week for 3 months. Duration 3 months. Concurrent medication/care: Not stated (n=49) Intervention 2: Group biomechanical exercise - Core stabilization. Muscle reconditioning using training devices: David Back Clinic progressive programme of active functional restoration using controlled progressive exercises on training devices within patient's pain-free range of motion. Groups of 2-3 patients; each session around 1 hour. Isoinertial load to lumbar spine in the sagittal, frontal and horizontal planes; each session preceded by 5-10 minute aerobic warm-up (cycling, stepping); relaxation and stretching exercises before and after exercises performed on each device. Twice a week for 3 months. Duration 3 months. Concurrent medication/care: Not stated (n=50) Intervention 3: Group Aerobic exercise - Group aerobics. Aerobics/stretching classes: 12 patients per class; 1 hour; stretching and aerobic muscle-toning exercises carried out to music with appropriate tempo and rhythm to promote the desired level of exertion; 10-20 minute warm up involving whole body static stretching and low-impact aerobic exercises followed by 30 minutes of specific exercises directed predominantly at trunk and leg muscles; number of repetitions increased and more difficult variations incorporated as patients became more competent; last 15 minutes cool-down and relaxation exercises. Twice a week for 3 months. Duration 3 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (Swiss National Science Foundation, Schulthess Klinik Research Fund and DBC International)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PHYSIOTHERAPY: EXERCISE + HOME EXERCISE versus EXERCISES USING DEVICES

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 months; Group 1: mean 3.2 Not stated (SD 2.2); n=46, Group 2: mean 3.1 Not stated (SD 2.1); n=44; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 months; Group 1: mean 3.2 Not stated (SD 2); n=44, Group 2: mean 2.9 Not stated (SD 2.2); n=40; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 6.8 Not stated (SD 4.9); n=46, Group 2: mean 6.7 Not stated (SD 5); n=44; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 12 months; Group 1: mean 7.4 Not stated (SD 4.9); n=44, Group 2: mean 5.8 Not stated (SD 4.8); n=40; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PHYSIOTHERAPY: EXERCISE + HOME EXERCISE versus AEROBICS

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 months; Group 1: mean 3.2 Not stated (SD 2.2); n=46, Group 2: mean 3.6 Not stated (SD 2.5); n=47; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 months; Group 1: mean 3.2 Not stated (SD 2); n=44, Group 2: mean 3.2 Not stated (SD 2.2); n=43; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 6.8 Not stated (SD 4.9); n=46, Group 2: mean 6.3 Not stated (SD 5.1); n=47; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 12 months; Group 1: mean 7.4 Not stated (SD 4.9); n=44, Group 2: mean 6.2 Not stated (SD 4.6); n=43; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: AEROBICS versus EXERCISES USING DEVICES

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 months; Group 1: mean 3.6 Not stated (SD 2.5); n=47, Group 2: mean 3.1 Not stated (SD 2.1); n=44; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 months; Group 1: mean 3.2 Not stated (SD 2.2); n=43, Group 2: mean 2.9 Not stated (SD 2.2); n=40; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 6.3 Not stated (SD 5.1); n=47, Group 2: mean 6.7 Not stated (SD 5); n=44; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 12 months; Group 1: mean 6.2 Not stated (SD 4.6); n=43, Group 2: mean 5.8 Not stated (SD 4.8); n=40; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Marshall 2008-1[360]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=25)
Countries and setting	Conducted in New Zealand; Setting: Physiotherapy departments. Prior to randomisation to exercise therapy participants either completed the manipulation or non-manipulation therapy they had been referred for, or, if recruited through advertisements were randomised to four weeks of either manipulation or non-manipulation therapy
Line of therapy	2nd line
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Low back pain for at least 12 weeks, minimum disability score of at least 15% Oswestry Disability Questionnaire
Exclusion criteria	Presence of severe postural abnormality, neuromuscular disortderm previous diagnosis of pathology (confirmed by MRI or radiograph) which would contraindicate exercise or manipulative treatment in the last 3 months, previous participation in abdominal stabilisation training programme
Recruitment/selection of patients	Patients recruited between May 2004 and June 2005 from physiotherapy departments as well as advertisements in newspapers and television.
Age, gender and ethnicity	Age - Mean (SD): Exercise group 34.3 (9.2) Control group 35.8 (10.4). Gender (M:F): 12/13. Ethnicity: not reported
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 12 weeks).
Extra comments	Baseline scores (mean SD) - MPQ sensory: manipulation + exercise (ME)9.6±4.5; manipulation + self man (MS) 12.8±5.4, non-manip + exercise (NME) 8.9±5.2, non-manip+ self man (NMS) 11.7±4.6; MPQ affective: ME 2.8±2.5, MS 4.3±4.1, NME 2.4±3.5, NMS 2.7±2.4; SF12 physical: ME 38.5±7.7, MS 41.1±10.8, NME 40.7±12.8, NMS 39.6±9.7; SF12 mental: ME 40.8±5.9, MS 38.7±15.4, NME 47.3±11.4, NMS 51.7±8.9; VAS not given
Indirectness of population	No indirectness
Interventions	(n=12) Intervention 1: Individual Biomechanical exercise - Core stability. Swiss ball exercise programme supervised once a week by an exercise scientist (qualified with at least an undergraduate degree in sport and exercise science). Duration 12 weeks. Concurrent medication/care: Spinal manipulation (high velocity low amplitude thrusts) by registered chiropractors and manipulative physiotherapists for 4 weeks prior to intervention. (n=13) Intervention 2: Self-management - Advice to stay active. Participants provided with advice to stay active and an

	information sheet on exercises to perform . Duration 12 weeks. Concurrent medication/care: Spinal manipulation (high velocity low amplitude thrusts) by registered chiropractors and manipulative physiotherapists for 4 weeks prior to intervention.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF -12 Physical at 12 weeks ; Group 1: mean 52.5 (SD 8.3); n=12, Group 2: mean 43.2 (SD 7.4); n=13; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF -12 Mental at 12 weeks ; Group 1: mean 52.8 (SD 9.8); n=12, Group 2: mean 50.2 (SD 10.9); n=13; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF -12 Mental at 1 year; Group 1: mean 53.4 (SD 7.4); n=12, Group 2: mean 45.1 (SD 11.9); n=13; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF -12 Physical at 1 year; Group 1: mean 52.2 (SD 5.2); n=12, Group 2: mean 48.8 (SD 8.5); n=13; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS 0-10 at 12 weeks; Other: "significant reduction" p=<0.001; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Sensory Pain (McGill Pain Questionnaire) at 12 weeks; Group 1: mean 3.9 (SD 3.2); n=12, Group 2: mean 7.1 (SD 5.3); n=13; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Affective Pain (McGill Pain Questionnaire) at 12 weeks; Group 1: mean 1.4 (SD 1.6); n=12, Group 2: mean 3.3 (SD 5.4); n=13; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome: VAS 0-10 at 1 year; Other: "not significant"; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Sensory Pain (McGill Pain Questionnaire) at 1 year; Group 1: mean 4 (SD 3.2); n=12, Group 2: mean 6.3 (SD 4.8); n=13; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Affective Pain (McGill Pain Questionnaire) at 1 year; Group 1: mean 0.8 (SD 1.4); n=12, Group 2: mean 1.4 (SD 1.5); n=13; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Marshall 2013[361]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=64)
Countries and setting	Conducted in Australia
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 to 50 years, ongoing recurrent low back pain (pain between costal margins and inferior gluteal folds) for greater than 12 weeks
Exclusion criteria	Presence of postural abnormality contributing to the diagnosis, pain radiating down the knee, known history of or currently symptomatic lumbar disc hernia or fracture, history of back surgery, diagnosed inflammatory joint disease, known severe osteoporosis, known metabolic or neuromuscular disease, pregnancy, recent participation in exercise programme or any form of physical treatment i.e. manipulation, mobilisation or massage.
Age, gender and ethnicity	Age - Mean (SD): Aerobic 36.2 (8.2) Biomechanical 36.2 (6.2). Gender (M:F): 24/40. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 12 weeks).
Extra comments	Baseline scores (mean SD) - VAS: pilates 3.6±2.1, aerobic 4.5±2.5; ODI: pilates 25.4±11.2, aerobiv 24±11.9
Indirectness of population	No indirectness
Interventions	(n=32) Intervention 1: Group biomechanical exercise - Pilates. 1 hour pilates class three times a week in groups of 10. Duration 8 weeks. Concurrent medication/care: not reported (n=32) Intervention 2: Group Aerobic exercise - Group aerobics. Stationary cycling exercise group 1 hour three times a week . Duration 8 weeks. Concurrent medication/care: not reported
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP AEROBICS versus PILATES

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 2 months; Group 1: mean -0.8 (SD 1.9415); n=32, Group 2: mean -1.9 (SD 1.9415); n=32;

VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 months; Group 1: mean -1.2 (SD 1.9415); n=32, Group 2: mean -1.6 (SD 1.9415); n=32; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Function - ODI (0-100) at 2 months; Group 1: mean -3.9 (SD 10.817); n=32, Group 2: mean -10.4 (SD 10.5398); n=32; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Function - ODI (0-100) at 6 months; Group 1: mean -5.9 (SD 9.9851); n=32, Group 2: mean -10.4 (SD 9.9851); n=32; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Masharawi 2013[362] (Masharawi 2013[362])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in Israel
Line of therapy	Unclear
Duration of study	Intervention + follow up: intervention 4 weeks, follow up 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Pain severity using visual analogue scale (1-10) and disability using the Rolland Morris questionnaire score (1-24)
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Females, ages 45-65 years of age, with lower back pain for a minimum of 12 weeks, able to give informed consent, understood instructions and willing to cooperate with the treatment.
Exclusion criteria	Systemic or structural pathology, inflammatory joint disease, display of overt neurological signs.
Age, gender and ethnicity	Age - Range: 45 to 65 years. Gender (M:F): females only. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 12 weeks of LBP).
Extra comments	Baseline scores (mean SD) - pain VAS: exercise 4.00 (1.43), control 3.91 (1.64); RMDQ: exercise 14.21 (5.22), control 14.93 (5.96).. 20 participants for intervention group and 20 for waiting list control group
Extra comments	20 participants for intervention group and 20 for waiting list control group
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Group biomechanical exercise - Core stabilization. 45 minute exercise session bi-weekly for 4 weeks. Exercises focussed on lumbar-pelvic spine region aimed at improving lumbar mobility/flexibility. Exercise administered in groups by a registered physiotherapist. . Duration 4 weeks. Concurrent medication/care: Unclear (n=20) Intervention 2: Placebo/Sham. Waiting list control. Duration 4 weeks. Concurrent medication/care: Unclear
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILIZATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months	

- Actual outcome for Overall (acute, chronic) without sciatica: Visual analogue scale (1-10) for pain severity at 4 weeks; Group 1: mean 1.68 (SD 0.82); n=20, Group 2: mean 3.88 (SD 1.54); n=20; Visual analogue score 1-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Rolland Morris questionnaire score for disability (1-24) at 4 weeks; Group 1: mean 9.31 (SD 5.8); n=20, Group 2: mean 14.37 (SD 5.77); n=20; Rolland Morris Questionnaire score 1-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Mcdonough 2013[365] (Mcdonough 2010[366])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=56)
Countries and setting	Conducted in United Kingdom; Setting: Patients referred from primary care to two hospital physiotherapy departments (71%) as well as those found through searches of local primary care practices. Those recruited through physiotherapy referral were given option of physiotherapy at the end of intervention period.
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 years and over, low back pain with or without radiation persisting for >12 weeks, capable of participating in home-based exercise, fluency in written and verbal English
Exclusion criteria	Spinal surgery in the past 12 months, evidence of nerve root, spinal cord or cauda equina compression, severe spinal stenosis indicated by signs of neurogenic claudication grade 3 to 4 spondylolisthesis (grade 1 to 2 spondilolisthesis eligible for inclusion), fibromyalgia, systemic inflammatory condition, any other musculoskeletal injury or contraindication to increasing PA levels including any cardiorespiratory or other medical condition limiting exercise tolerance, low back pain caused by involvement in a road traffic accident in the last 12 months or ongoing litigation, history of serious psychological or psychiatric illness (mild depression eligible for inclusion), current pregnancy
Age, gender and ethnicity	Age - Mean (range): Exercise = 48 (43-53) Control = 51 (42-60). Gender (M:F): 25/31. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>12 weeks).
Extra comments	Baseline scores (mean, 95% CI) - disability ODQ: walking 31.9 (26.6-37.2), UC 27.7 (23.3-32.2); pain NRS: walking 5.4 (4.8-6.0), UC4.6 (3.6-5.5); ED5D weighted: walking 0.58 (0.49-0.66), UC 0.64 (0.53-0.75); EQ5D VAS: walking 68.5 (62.7-74.3), UC 59.4 (49.6-69.2)
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Individual Aerobic exercises - Walking programme. Graded pedometer-driven walking programme structured around the 5 A's framework and a single one-to-one session with physiotherapist who completed a physical examination and gave standardized education/advice to remain active using "the back book". Duration 8 weeks. Concurrent medication/care: not reported (n=17) Intervention 2: Usual care - Waiting-list. Single one-to-one session with physiotherapist who completed a

	physical examination and gave standardized education/advice to remain active using "the back book". Duration unclear. Concurrent medication/care: not reported
Funding	Academic or government funding (Physiotherapy Research Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: WALKING PROGRAMME versus WAITING-LIST Protocol outcome 1: Quality of life at follow-up - Actual outcome: EuroQol Weighted Health Index (EQ-5D) at 6 months; Group 1: mean 0.63 (SD 0.302691); n=39, Group 2: mean 0.69 (SD 0.189326); n=17; EuroQol (EQ-5D) 0.59 - 1.0 Top=--; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: EuroQol (EQ-5D Visual Analogue Scale - health state) at 6 months; Group 1: mean 72.1 (SD 20.07); n=40, Group 2: mean 62.5 (SD 24.7); n=17; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Average pain over last week (Numerical rating scale) at 6 months; Group 1: mean 3.8 (SD 2.5); n=40, Group 2: mean 4.1 (SD 2.63); n=17; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Questionnaire at 6 months; Group 1: mean 23.7 (SD 16.8); n=40, Group 2: mean 26.2 (SD 16.09); n=17; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Mcilveen 1998**[367]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=109)
Countries and setting	Conducted in Australia; Setting: Community care centre of a metropolitan hospital
Line of therapy	Unclear

Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self report, physical examination, x-ray, medical investigations
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain or back and leg pain; referred for hydrotherapy
Exclusion criteria	Uncontrolled hypertension; severe postural hypotention; left heart failure; exercise induced angina; lung vital capacity <1.5 L; faecal or urinary incontinence; allergy to chlorine; tendency to antisocial behaviour (e.g. following head injury); severe limiting airways disease; first trimester of pregnancy; could not speak or read English; spondylolisthesis; lower limb joint replacement surgery; receiving work or traffic injury-related compensation insurance; condition so severely painful or irritable that they required individual hydrotherapy or alternative physiotherapy or medical treatments
Recruitment/selection of patients	Referred by medical practitioner or physiotherapist
Age, gender and ethnicity	Age - Mean (SD): Hydrotherapy: 57.2 (15.2); control: 58.4 (15.0). Gender (M:F): 41:68. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (No futher details given).
Extra comments	No baseline data provided.
Indirectness of population	No indirectness
Interventions	(n=56) Intervention 1: Group biomechanical exercise - Hydrotherapy. 60-minute group hydrotherapy sessions twice weekly for 4 weeks. Duration 4 weeks. Concurrent medication/care: Not stated (n=53) Intervention 2: Usual care - Waiting-list. Waiting list control group. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Alfred Group of Hospitals Research Committee)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: HYDROTHERAPY versus WAITING-LIST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Present pain intensity at 4 weeks; Group 1: 15/45, Group 2: 11/50; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Oswestry Disability Questionnaire at 4 weeks; Group 1: 12/45, Group 2: 4/50; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Mirovsky 2006[373]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=84)
Countries and setting	Conducted in Israel; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 28 days + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination and x-ray, CT or MRI scan
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-65 years; mechanical LBP for at least 6 months but <2 years; degenerative discs at lumbar spine confirmed by x-ray, CT or MRI scan
Exclusion criteria	Pregnant; osteoporosis or known malignancy; neurological deficit; involved in litigation or compensation actions
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Range of means: 48.6-49.2 years. Gender (M:F): 42:34. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 6 months).
Extra comments	Baseline scores shown graphically
Indirectness of population	No indirectness
Interventions	(n=42) Intervention 1: Manual therapy - Traction. Vertical Ambulatory Traction Device: a dynamic frame corset that enables traction between the iliac crest and the ribs (with telescoping rods) and controls the amount of lordosis with a lever arm that pushes the lumbar spine form behind; the patient controls the amount of traction and lordosis - encouraged to apply these until felt discomfort; daily for 12 days then 8 more sessions on alternating days; 1st 3 sessions 20 minutes each, then 30 minutes each; patients could stand or sit as tolerated while performing vertical traction. . Duration 28 days. Concurrent medication/care: Not stated (n=42) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Vertical Ambulatory Traction Device: a dynamic frame corset that enables traction between the iliac crest and the ribs (with telescoping rods) and controls the amount of lordosis with a lever arm that pushes the lumbar spine form behind; the patient controls the amount of traction and lordosis - encouraged to apply these until felt discomfort; daily for 12 days then 8 more sessions on alternating days; 1st 3 sessions 20 minutes each, then 30 minutes each; patients instructed to walk on a treadmill at 3km/hr for 15 minutes per session after the third session. Duration 28 days. Concurrent medication/care: Not stated

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TRACTION + EXERCISE (AEROBIC) versus TRACTION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 1 month; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Miyamoto 2013[374]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=86)
Countries and setting	Conducted in Brazil; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6 weeks + follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic non-specific LBP at least 3 months; age 18-60 years
Exclusion criteria	Contraindications for physical exercise, previous regular pilates method training, pregnancy, serious spinal pathologies, previous or scheduled spinal surgery, LBP due to nerve root compromise, physical therapy treatment for chronic LBP in last 6 months; inability to write or speak in Portuguese
Recruitment/selection of patients	Advertisement in regional newspaper and on university website
Age, gender and ethnicity	Age - Mean (SD): Booklet group 38.3 (11.4), pilates group 40.7 (11.8) years. Gender (M:F): 16:70. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores (mean SD) - pain intensity: UC6.5±7.1, pilates 6.6±1.5; disability RMDQ: UC 10.5±5.4, pilates 9.7±4.5
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). Booklet containing information about the anatomy of the spine and pelvis, LBP, and recommendations regarding posture and movements involved in ADL; twice-weekly telephone calls from physio regarding booklet instructions; Pilates offered to the group after 6 month follow up. Duration 6 weeks. Concurrent medication/care: Instructed not to undergo treatment elsewhere during study period. Allowed to keep taking medication as prescribed by doctor. (n=43) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Booklet containing information about the anatomy of the spine and pelvis, LBP, and recommendations regarding posture and movements involved in ADL. Plus individual supervised 1-hour Pilates session twice a week for 6 weeks (centering, concentration, control, precision, flow, breathing), starting with 5 warm up exercises aimed at improving spine and pelvis mobility, then 8 exercises for improving breathing associated with core stability, posture, strengthening of specific muscles and flexibility of lower limbs and spinal muscles in all planes of movement; 5-10 repetitions for each

	movement; exercises tailored to [patient and progressed in difficulty.. Duration 6 weeks . Concurrent medication/care: Allowed to keep taking medication as prescribed by doctor
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PILATES AND EDUCATION versus SELF-MANAGEMENT EDUCATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain NRS at 6 weeks; Group 1: mean 3.1 Not stated (SD 2.3); n=43, Group 2: mean 5.2 Not stated (SD 2.3); n=43; Numeric Rating Scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain NRS at 6 months; Group 1: mean 4.5 Not stated (SD 2.2); n=43, Group 2: mean 5.3 Not stated (SD 2.3); n=43; Numeric Rating Scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 weeks; Group 1: mean 3.6 Not stated (SD 3.4); n=43, Group 2: mean 7.1 Not stated (SD 5.7); n=43; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 4.5 Not stated (SD 4.5); n=43, Group 2: mean 6.7 Not stated (SD 5.6); n=43; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Miyamoto 2013[374]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=86)
Countries and setting	Conducted in Brazil
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-60, chronic non-specific low back pain with duration of at least 3 months
Exclusion criteria	Previous physiotherapy treatments in the last 6 months, previous regular pilates method training, pregnancy, serious spinal pathologies, previous or scheduled spinal surgery, nerve root compromise, inability to speak or write Portuguese
Recruitment/selection of patients	Patients recruited between August 2010 and April 2011 by advertisement placed in a national newspaper and on the University website.
Age, gender and ethnicity	Age - Mean (SD): Pilates: 38.3 (11.4) Control: 40.7 (11.8). Gender (M:F): 16/70. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores (mean SD) - pain intensity: UC6.5±7.1, pilates 6.6±1.5; disability RMDQ: UC 10.5±5.4, pilates 9.7±4.5
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Individual Biomechanical exercise - Pilates. Modified Pilates method aimed at improving breathing core stability motor control posture flexibility and mobility with the spine in neutral position. One hour session delivered twice a week over 6 weeks by a certified Pilates instructor with 3 years' experience. Patients also received the same education booklet as the control group.. Duration 6 weeks. Concurrent medication/care: Physiotherapy treatment 41.9% Medication 39.5% (n=43) Intervention 2: Usual care. Education booklet and twice weekly telephone calls for clarifications regarding the booklet instructions.. Duration 6 weeks. Concurrent medication/care: Physiotherapy treatment 2.3% Medication 41.8%. Patients instructed not to undergo treatment elsewhere during the period of study.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PILATES versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 months; Mean -0.9 (95%CI -1.9 to 0.1) VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; MD -2.2 (95%CI -3.2 to -1.1) VAS 0-10 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 6 months; Mean -1.4 (95%CI -3.1 to 0.03) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 6 weeks; MD -2.7 (95%CI -4.4 to -1) RMDQ 0-24 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Monro 2015[380]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=61)
Countries and setting	Conducted in India; Setting: Took place in 2011 at the Patanjali Yogpeeth, a yoga university in Haridwar, rural district in north India
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 months
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 20-45 y, RMDQ score > 3 and/or acute sciatica in past 3 months, presence of at least 1 disc extrusion or bulge, willingness to comply with the treatment randomly assigned
Exclusion criteria	Severe motor weakness, previous spinal surgery, central canal stenosis, severe structural deformity, severe osteoporosis, fresh fracture, pregnancy, tumours, ankylosing spondylitis, spinal infection, severe cardiovascular or metabolic disease, recent history of psychosis or alcohol abuse, lack of cooperation, pending litigation
Recruitment/selection of patients	Recruitment by leafleting, advertising with the local newspaper and word of mouth for volunteers with sciatica
Age, gender and ethnicity	Age - Mean (SD): Yoga - 36(7.3); Control - 37(6.4). Gender (M:F): 46%/54%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion crieria).
Extra comments	Baseline Aberdeen Questionnaire score, mean (SD): Yoga - 21.1(8.1); Control - 22.1(6.3). Baseline RMDQ score, mean (SD): Yoga - 12.1(5.0); control - 11.4(4.9).
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Group mind-body exercise - Group Yoga. Yoga therapy comprised postural, breathing and relaxation exercises devised by a distinguished orthopaedic surgeon and are adaptable to the type and severity of LBP (See http://yogatherapy.org/hnp-yoga-1 for details). The Yoga Group first attended a yoga course (two or more group classes per week for 2 weeks) in order to develop a home practice (15 to 30 minutes), which they were asked to continue daily. Duration 3 months. Concurrent medication/care: None reported. (n=31) Intervention 2: Usual care. Continued with their normal medical care, pain killers and non-steroidal anti-inflammatory medication. Education classes were offered as a compensation for not having yoga, after 2 weeks the attendance was less than 30% and classes were discontinued.. Duration 3 months. Concurrent medication/care: None reported.

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Aberdeen Low Back Pain Questionnaire at 3-4 months; Group 1: mean 15.92 (SD 8.19); n=25, Group 2: mean 17.11 (SD 7.06); n=27; Risk of bias: Very high; Indirectness of outcome: Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire (RMDQ) score at 3-4 months; Group 1: mean 6.93 (SD 5.04); n=24, Group 2: mean 10.03 (SD 5.68); n=28; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Moon 2015[384]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=16)
Countries and setting	Conducted in South Korea; Setting: Not reported.
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Chronic low back pain
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Firefighters with chronic low back pain, with body fat rate of greater than 30%. Not participated in physical exercise for at least 6 months.
Exclusion criteria	Not stated
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Mean (SD): Ex: 45.1 (2.23), Con: 41.6 (4.27). Gender (M:F): Not stated. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Height (cm): Experimental - 171.4(5.23); control - 171.0(3.23). Weight (kg): Experimental - 71.1(6.56); control - 69.3(2.87).. N/A
Indirectness of population	No indirectness: Meets protocol
Interventions	(n=8) Intervention 1: Individual Biomechanical exercise - Core stability. Warm up for 5 minutes of stationary bicycle riding. Repeat cycles of core exercises including sit ups, knee chest, toe touch, squat training, prome, push back arch back, back arch back. As the weeks went on the number of repeats increased. Finish exercises with stretching. . Duration 8 weeks. Concurrent medication/care: Not stated Comments: N/A (n=8) Intervention 2: Usual care. No detail for control arm. . Duration 8 weeks. Concurrent medication/care: Not stated Comments: N/A
Funding	Funding not stated
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function

	(disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Myounggi 2015[398]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=90)
Countries and setting	Conducted in South Korea; Setting: Unclear - W Hospital in Daejeon
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: X-ray and physical examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of deformities in parts of the lumbar spine, and they were all confirmed to be lumbar deformation and low back pain
Exclusion criteria	Not stated
Recruitment/selection of patients	Outpatients of W Hospital in Daejeon, Republic of Korea
Age, gender and ethnicity	Age - Mean (range): 34.2-35.2 years. Gender (M:F): 15/15 in each group. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline - VAS score (mean±SD): 8.4±0.7 (Exercise group), 8.5±0.6 (Electrotherapy group)
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Individual Biomechanical exercise - McKenzie. Performed three of the McKenzie lumbar extension exercises and three of the Williams lumbar flexion. 5 times a week for 2 weeks.. Duration 2 weeks. Concurrent medication/care: None given (n=30) Intervention 2: Electrotherapy - Interferential therapy. A hot pack was first applied for 20 minutes to soften the muscles before an interferential current machine (ICT; TM-301, TOPMED. Seongnam, Republic of Korea) was used. Electrical stimulation was applied twice for 15 minutes each in order to trigger strong muscle contractions.. Duration 2 weeks. Concurrent medication/care: None given
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MCKENZIE AND WILLIAMS EXERCISE versus INTERFERENTIAL THERAPY	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS (score) at 2 weeks; Group 1: mean 5.8 (SD 0.7); n=30, Group 2: mean 7 (SD 0.7); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Nambi 2014[402]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=60)
Countries and setting	Conducted in India; Setting: C. U. Shah physiotherapy college outpatient department (OPD), Surendranagr, Gujarat during the period of January 2012 to December 2012.
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	History of LBP with symptoms persisting for 3 months. Subjects had to be 18 years of age and ambulatory.
Exclusion criteria	If their LBP was due to nerve root compression, disc prolapse, spinal stenosis, tumor, spinal infection, ankylosing spondylosis, spondylolisthesis, kyphosis or structural scoliosis, or a widespread neurological disorder. If they presented as presurgical candidates, were involved in litigation or compensation, displayed a compromised cardiopulmonary system, were pregnant, had a body mass index (BMI) of more than 35, were experiencing major depression or substance abuse and were practitioners of yoga.
Recruitment/selection of patients	Subjects were recruited through physicians and self-referral. Physicians were informed about the study through pamphlets and flyers.
Age, gender and ethnicity	Age - Mean (range): 43.66-44.26. Gender (M:F): 28/32. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (3 months).
Extra comments	Baseline characteristics (mean±SD): VAS - 6.7±0.9 (yoga group), 6.7±0.9 (exercise group)
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Group mind-body exercise - Group Yoga. Attended classes by a yoga instructor (1 hour per week), also asked to practice yoga at home (30 mins, 5 days a week). The intervention consisted of 29 postures. Poses from the following categories were used: supine, seated, standing, forward bends, twists and inversions. Subjects were gradually progressed from simple poses to progressively more challenging poses. At the program end, subjects were encouraged to continue yoga therapy at home. . Duration 4 weeks. Concurrent medication/care: Received lecture of 1 hour on physical therapy education regarding CLBP, 2 weeks prior to the commencement of the program. Instructional handouts were given to help subjects use the information they received. (n=30) Intervention 2: Individual Biomechanical exercise - Stretching. Taught specific exercises that strengthen and

	stretch abdominal and back muscles, were asked to practice them for 3 days a week with five repetitions in three sets with 30-s pauses per set to begin with and repetitions were gradually increased until they reached 15 for 4 weeks. Before the exercise program, soft tissue flexibility and range of motion was increased through stretching exercises, with 5-10 min relaxation periods (warm up). Told to refrain from performing strenuous activities outside of normal activities of daily living. . Duration 4 weeks. Concurrent medication/care: Received lecture of 1 hour on physical therapy education regarding CLBP, 2 weeks prior to the commencement of the program. Instructional handouts were given to help subjects use the information they received.
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus STRETCHING Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 4 weeks; Group 1: mean 3.8 (SD 1); n=30, Group 2: mean 5.3 (SD 0.8); n=30; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: VAS at 6 months; Group 1: mean 1.8 cm (SD 1.1); n=30, Group 2: mean 3.8 cm (SD 0.7); n=30; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Nassif 2011[403]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=)
Countries and setting	Conducted in France
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Pain intensity numeric rating scale, Roland Morris low back pain questionnaire
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Voluntary workers, men and women, ages 18 years and older, working in the assembly department of the Mulhouse site, with chronic low back pain
Exclusion criteria	Patients with recent surgery or serious pathologic conditions related to the onset of LBP or interfering with the designated monitoring measurements. Malignant, traumatic or inflammatory LBP, cardiac or respiratory problems, severe psychological disorders
Age, gender and ethnicity	Age - Mean (SD): EC 45.13 (9.11), CG 45.34 (8.80). Gender (M:F): 30/45. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Chronic LBP, no other details).
Extra comments	Baseline scores (mean SD) - pain NRS: exercise 4.54±2.73, control 4.92±2.35; RMDQ: exercise 13.91±4.63, control 12.30±4.95.. Workers for a car manufacturing company with chronic LBP
Indirectness of population	No indirectness
Interventions	(n=37) Intervention 1: Mixed exercise - Biomechanical + aerobic. 45 minutes of muscle strengthening, flexibility training and cardiovascular endurance, followed by warm packs for 15 minutes (60 minute session). This was repeated three times a week for 2 months. . Duration 2 months. Concurrent medication/care: Not stated (n=38) Intervention 2: Placebo/Sham. No direct intervention, but participants were free to consult externally. Duration 2 months. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity numeric rating scale at 2 months; Group 1: mean 2.76 (SD 2.05); n=32, Group 2: mean 4.41 (SD 2.74); n=28; Pain intensity numeric rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity numeric rating scale at 6 months; Group 1: mean 3.15 (SD 2.3); n=29, Group 2: mean 3.53 (SD 2.47); n=23; Pain intensity numeric rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 2 months; Group 1: mean 9.75 (SD 5); n=32, Group 2: mean 10.83 (SD 5.65); n=28; Roland Morris disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 6 months; Group 1: mean 10.03 (SD 5.12); n=29, Group 2: mean 10.6 (SD 5.36); n=23; Roland Morris disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Natour 2015[405]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=60)
Countries and setting	Conducted in Brazil; Setting: Unclear
Line of therapy	Unclear
Duration of study	Intervention + follow up: 180 days
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of chronic low back pain (defined as pain between the lower rib cage and gluteal folds for more than 12 months); non-specific low back pain characterised by the absence of signs of a serious underlying condition (such as cancer, infection, or cauda equina syndrome), spinal stenosis or radiculopathy, or another specific spinal cause (e.g. vertebral compression fracture or ankylosing spondylitis), pain that becomes accentuated with physical effort and is relieved with rest; male or female; aged 18 to 50 years; pain between 4-7 on a 10-cm visual analog scale
Exclusion criteria	Diagnosis of low back pain due to other causes; fibromyalgia; prior spine surgery; lawsuit; having initiated or changed regular physical activity in the previous three months; body mass index > 30; having undergone treatment with physical therapy or acupuncture in the previous three months
Recruitment/selection of patients	Unclear - based on inclusion and exclusion criteria
Age, gender and ethnicity	Age - Mean (range): 47.79-48.08. Gender (M:F): 13/47. Ethnicity: 57% Caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 12 months).
Extra comments	Baseline (mean±SD): VAS - 5.79±2.06 (EG), 5.50±1.25 (CG), Roland Morris - 10.58±5.12 (EG), 12.12±5.24 (CG), Bodily Pain - 42.70±40.69 (EG), 45.91±18.87, NSAID use - none at baseline for both groups
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Group biomechanical exercise - Pilates. Pilates sessions took place in a studio with a certified physical education. Classes lasted 50 minutes and followed a pre-established pilates protocol. Each class consisted of three to four patients and took place twice a week.. Duration 90 days. Concurrent medication/care: Use of non-steroidal anti-inflammatory drugs (NSAIDS). Instructed to use 50mg of sodium diclofenac at intervals no shorter than 8h when needed. Patients recorded the number of pills taken per day throughout the study on a chart (n=30) Intervention 2: Usual care. No intervention. Duration 90 days . Concurrent medication/care: Use of non-steroidal anti-inflammatory drugs (NSAIDS). Instructed to use 50mg of sodium diclofenac at intervals no shorter than

	8h when needed. Patients recorded the number of pills taken per day throughout the study on a chart
Funding	Academic or government funding (Fundacao Amparo a Pesquisa do Estado de Sao Paulo)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PILATES versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-36 Bodily Pain at 180 days ; Group 1: mean 52.16 (SD 24.57); n=30, Group 2: mean 43.87 (SD 29.09); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: VAS at 180 days ; Group 1: mean 4.2 (SD 2.78); n=30, Group 2: mean 5.83 (SD 2.88); n=30; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris at 180 days ; Group 1: mean 7.04 (SD 5.44); n=30, Group 2: mean 10.66 (SD 6.23); n=30; Roland Morris 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: NSAID use at 180 days ; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study (subsidiary papers)	Paatelma 2008[420] (Kilpikoski 2009[279])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=134)
Countries and setting	Conducted in Finland; Setting: Workplace
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention (duration unclear, possibly around 6 weeks) + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report, physical examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18 to 65 years; employed; current non-specific low back pain (acute or chronic; first episode or recurrent) with or without radiating pain to one or both lower legs.
Exclusion criteria	Pregnancy; low back surgery within last 2 months; "red flags" indicating serious spinal pathology.
Recruitment/selection of patients	Recruited from 4 occupational health centres
Age, gender and ethnicity	Age - Mean (SD): Mean 44 years in each group (SDs 9, 10 and 15 in the three groups). Gender (M:F): 87:47. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (Acute or chronic).
Extra comments	Baseline scores (median and IQ range) - LBP VAS: McKenzie 32 (20, 42), control 37 (21, 50); RMDQ: McKenzie 9 (4, 6), control 8 (4, 1); leg pain VAS: McKenzie 16 (0, 30), control 16 (0, 30).. Third group had spinal manipulation
Indirectness of population	No indirectness
Interventions	(n=52) Intervention 1: Individual Biomechanical exercise - McKenzie. Exercises repeated several times a day (10 to 15 repetitions every 1 to 2 hours) supplemented by therapist over-pressure or mobilisation or both. Duration Unclear. Concurrent medication/care: Not stated (n=37) Intervention 2: Placebo/Sham. Advice to avoid bed rest and continue normal activity including exercise as much as possible; 2-page back booklet. Duration Unclear. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MCKENZIE versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Leg pain at 3 months; Group 1: mean -19 mm (SD 0); n=48, Group 2: mean -11 mm (SD 0); n=29; VAS 0 to 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Low back pain at 3 months; Group 1: mean -21 mm (SD 0); n=48, Group 2: mean -14 mm (SD 0); n=29; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Leg pain at 6 months; Group 1: mean -19 mm (SD 0); n=47, Group 2: mean -4 mm (SD 0); n=27; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Low back pain at 6 months; Group 1: mean -21 mm (SD 0); n=47, Group 2: mean -8 mm (SD 0); n=27; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Leg pain at 12 months; Group 1: mean -17 mm (SD 0); n=45, Group 2: mean -7 mm (SD 0); n=26; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Low back pain at 12 months; Group 1: mean -19 mm (SD 0); n=45, Group 2: mean -15 mm (SD 0); n=26; VAS 0 to 100mm Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland-Morris Disability Questionnaire at 3 months; Group 1: mean -6 Points (SD 0); n=48, Group 2: mean -5 Points (SD 0); n=29; Roland-Morris Disability Index 0 to 24 points Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Roland-Morris Disability Questionnaire at 6 months; Group 1: mean -8 Points (SD 0); n=47, Group 2: mean -4 Points (SD 0); n=27; Roland-Morris Disability Index 0 to 24 points Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Group 1: mean -8 Points (SD 0); n=45, Group 2: mean -4 Points (SD 0); n=26; Roland-Morris Disability Index 0 to 24 points Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Park 2013[424]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=24)
Countries and setting	Conducted in South Korea; Setting: Workers from a tyre factory
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosed with chronic low back pain by a physician, over 3 months with low back pain, no history of surgical treatments for disc herniation, spina bifida or spinal stenosis
Exclusion criteria	not reported
Age, gender and ethnicity	Age - Mean (SD): 44 (5.4). Gender (M:F): not reported. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline (mean, SD) - pain: exercise 6.62±0.74, control 6.50±1.30; physical: exercise 48.75±19.59; physical role limitations: exercise 71.12±9.89, control 67.25±20.87; pain: exercise 42.50±19.82, control 30±14.14; general health: exercise 50±12.24, control 45±18.12; emotional role limitations: exercise 78±13.23, control 71±19.84; energy: exercise 68.87±15.51, control 62.75±22.77; emotional wellbeing: exercise 65±9.25, control 70.62±7.28; social functioning: exercise 69±14.82, control 59.5±19.69.
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Individual Biomechanical exercise - Core stability. 30 minute session 3 times per week for 8 weeks. Stabilisation exercises included 7 positions based on the 'back bridge'. Duration 8 weeks. Concurrent medication/care: Physical therapy with hot pack, interferential current therapy and deep heat with ultrasound (n=8) Intervention 2: Usual care. Background care of physical therapy only. Duration 8 weeks. Concurrent medication/care: Physical therapy with hot pack, interferential current therapy and deep heat with ultrasound
Funding	Academic or government funding (Hoonsunghyang University fund)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE	

Protocol outcome 1: Quality of life at follow-up - Actual outcome: RAND-36 Physical functioning at 8 weeks; Group 1: mean 57.5 (SD 17.92); n=8, Group 2: mean 58.12 (SD 26.98); n=8; 0-100 RAND-36 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 Role limitations due to physical health at 8 weeks; Group 1: mean 81.5 (SD 13.56); n=8, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 Pain at 8 weeks; Group 1: mean 57.5 (SD 12.81); n=8, Group 2: mean 36.25 (SD 10.6); n=8; RAND-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 Energy/Fatigue at 8 weeks; Group 1: mean 70.5 (SD 10.92); n=8, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 Role limitations due to emotional health at 8 weeks; Group 1: mean 80.25 (SD 10.83); n=8, Group 2: mean 73 (SD 15.36); n=8; RAND-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 Emotional wellbeing at 8 weeks; Group 1: mean 66.87 (SD 7.98); n=8, Group 2: mean 72.5 (SD 5.34); n=8; RAND-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 Social functioning at 8 weeks; Group 1: mean 72 (SD 3.93); n=8, Group 2: mean 59.62 (SD 18.74); n=8; RAND-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: RAND-36 General Health at 8 weeks; Group 1: mean 64.37 (SD 11.78); n=8, Group 2: mean 50 (SD 17.32); n=8; RAND-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain severity (VAS) at 8 weeks; Group 1: mean 4.87 (SD 0.83); n=8, Group 2: mean 5.75 (SD 0.88); n=8; Visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Quinn 2011[439]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=29)
Countries and setting	Conducted in Irish Republic; Setting: Physiotherapy department of a University Hospital
Line of therapy	2nd line
Duration of study	Intervention + follow up: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-60, with chronic back pain (>3 months duration) and residual pain (VAS >18 mm) following physiotherapy treatment in the past 6 months, and failed the Sahrmann Abdominal Test for core stability
Exclusion criteria	Suffering from a significant other co-morbidity such as unstable cardiovascular system, uncontrolled epilepsy, depression (Modified Sung Depression Index >33/69) or significant pain in other joints which would affect participation in classes, pregnancy, spinal surgery in the past 12 months, severe scoliosis, inflammatory low back pain or a high level of disability (Roland Morris Disability Questionnaire <16/24).
Recruitment/selection of patients	Patients recruited from April to September 2008
Age, gender and ethnicity	Age - Mean (SD): 43 (13.02). Gender (M:F): 0/29. Ethnicity: not reported
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores (mean SD) - RMDQ: pilates 6.87±4.57, UC 7.71±4.98; pain VAS: pilates 40.43±14.6, UC 39.9±19.9.
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Group biomechanical exercise - Pilates. Pilates one hour a week for 8 weeks. Small group classes with close supervision by a Body Control Pilates instructor who was also a Chartered Physiotherapist. Duration 8 weeks. Concurrent medication/care: not reported (n=14) Intervention 2: Usual care. Patients received no extra care and remained on a waiting list for 8 weeks. All were then invited to participate in the class following final follow-up.. Duration 8 weeks. Concurrent medication/care: not reported
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PILATES versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain severity (VAS) at 8 weeks; MD -14.2 (SE 6.66); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 8 weeks; MD 1.26 (SE 1.1832); Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Rantonen 2012[440]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=126)
Countries and setting	Conducted in Finland; Setting: Occupational health department
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention up to 12 weeks + follow up to 4 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination by Occupational physician
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Under age 57, LBP symptoms "potentially hampering work" and at least one of the following criteria: 1. LBP lasting 2 weeks or more in the past 12 months; 2. Radiating LBP at the time of responding to the questionnaire; 3. Recurrent LBP (two or more episodes irrespective of their duration during the past 12 months); 4. Self-reported work absence because of LBP during the past 12 months. In addition, they had to report an LBP intensity of 35 mm or more on a 100 mm visual analogue scale (VAS) during the past week.
Exclusion criteria	Retirement, pregnancy, presence of acute nerve root entrapment, suspicion of malignancy, recent fracture, severe osteoporosis or other specific diseases preventing participation in the follow-up.

Recruitment/selection of patients	All employees in a forestry company were invited to respond to a postal questionnaire on LBP and back-related physical impairment. Based on the responses, the employees were divided into three main categories: 'no' low back (LB) symptoms, 'some' LB symptoms and 'LB symptoms potentially hampering work'. The present study included employees with LB symptoms potentially hampering work.
Age, gender and ethnicity	Age - Range of means: 44-45 years. Gender (M:F): 86:40. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (Episode lasting 2 weeks or more in last 12 months or 2 or more episodes irrespective of duration in last 12 months).
Extra comments	Baseline scores (mean SD) for biomech exercise + self man, biomech exercise + home exercise, and self man groups, respectively - pain intensity VAS: 43 (23), 39 (24), 34 (25); Roland Morris impairment: 8 (5), 6 (5), 6 (5); ODI: 21 (13), 17 (12), 16 (11); depression: 6 (4), 4 (5), 4 (4.0); HRQoL: 0.8681, 0.8884, 0.8932.
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Outpatient rehabilitation at the hospital physical medicine unit (PMU): Intensive, bio-psychosocial and multidisciplinary LBP rehabilitation was carried out at the physical medicine outpatient unit of the South Karelian Central Hospital in the city of Lappeenranta, Finland. The rehabilitation team consisted of a specialist doctor in physical medicine and rehabilitation, a psychologist, a social worker and several physiotherapists. The program included a 3-week pre-course of 1.5 h light mobilisation and exercise sessions for 3 days each week, followed by an intensive 3-week course that included progressive exercises and multidisciplinary information about LB syndrome and pain management. The rehabilitation program lasted for 6.5 h each day for 5 days each week, i.e. 15 days altogether. Finally, a personal maintenance exercise program was designed for the subjects and they were later invited to a follow-up visit within 6 months of the initial course.. Duration 6 weeks. Concurrent medication/care: All subjects had access to OH care as usual during the study period. Comments: This arm of the trial excluded due to insufficient description of the exercise programme (n=43) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Progressive back specific exercises (DBC): A graded activity program was carried out in a physiotherapy outpatient clinic. It consisted of a 1 h session twice or three times a week, over a period of 12 weeks, supervised by a specially trained physiotherapist. The treatment included exercises targeted at the trunk muscles using specific equipment together with stretching and relaxation. The physiotherapists emphasised the 'good prognosis' for LBP during the treatment sessions and the subjects were instructed in performing LB exercises at home. The importance of home exercises was emphasised during the exercises.. Duration 12 weeks. Concurrent medication/care: All subjects had access to OH care as usual during the study period. (n=40) Intervention 3: Self-management - Self-management programmes (including education, advice and

	reassurance). Self-care advice by an OP based on the Back Book (BB): During the visit to the OP, the findings of the clinical examination were explained to the subject. The employee was given a copy of the Back Book15 and the OP explained the contents of the booklet, emphasising the benign nature of and good prognosis for LBP. The Back Book focuses on patients' beliefs and pain management and encourages staying active in spite of LBP. The booklet also offers practical advice for patients suffering from an acute or subacute LBP episode.. Duration One off. Concurrent medication/care: All subjects had access to OH care as usual during the study period.
Funding	Academic or government funding (Centenary Foundation of Kymi Corporation, Yrjo Jahnsson Foundation, Juho Vainio Foundation and Finnish Cultural Foundation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINATION: EXERCISE (BIOMECH) + SELF-MANAGEMENT versus COMBINED NON-INVASIVE INTERVENTIONS: BIOMECHANICAL EXERCISE + HOME EXERCISE

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: 15D at 3 months; Group 1: mean 0.89 Not stated (SD 0.09); n=43, Group 2: mean 0.9 Not stated (SD 0.07); n=43; 15D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: 15D at 12 months; Group 1: mean 0.87 Not stated (SD 0.09); n=43, Group 2: mean 0.9 Not stated (SD 0.08); n=43; 15D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 3 months; Group 1: mean 29 mm (SD 27); n=43, Group 2: mean 31 mm (SD 20); n=43; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain VAS at 12 months; Group 1: mean 35 mm (SD 27); n=43, Group 2: mean 29 mm (SD 21); n=43; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome: Roland Morris 18 item at 3 months; Group 1: mean 5 Not stated (SD 5); n=43, Group 2: mean 4 Not stated (SD 5); n=43; RM-18 Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index at 3 months; Group 1: mean 15 Not stated (SD 14); n=43, Group 2: mean 14 Not stated (SD 11); n=43; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome: Roland Morris 18 item at 12 months; Group 1: mean 6 Not stated (SD 6); n=43, Group 2: mean 4 Not stated (SD 5); n=43; RM-18 Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index at 12 months; Group 1: mean 15 Not stated (SD 14); n=43, Group 2: mean 12 Not stated (SD 10); n=43; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome: Depressions Scale DEPS at 3 months; Group 1: mean 5 Not stated (SD 5); n=43, Group 2: mean 4 Not stated (SD 5); n=43; DEPS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: Depressions Scale DEPS at 12 months; Group 1: mean 6 Not stated (SD 5); n=43, Group 2: mean 3 Not stated (SD 4); n=43; DEPS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINATION: EXERCISE (BIOMECH) + SELF-MANAGEMENT versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE)

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: 15D at 3 months; Group 1: mean 0.89 Not stated (SD 0.09); n=43, Group 2: mean 0.89 Not stated (SD 0.07); n=40; 15D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: 15D at 12 months; Group 1: mean 0.87 Not stated (SD 0.09); n=43, Group 2: mean 0.88 Not stated (SD 0.08); n=40; 15D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 3 months; Group 1: mean 29 mm (SD 27); n=43, Group 2: mean 35 mm (SD 28); n=40; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain VAS at 12 months; Group 1: mean 35 mm (SD 27); n=43, Group 2: mean 39 mm (SD 26); n=40; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome: Roland Morris 18 item at 3 months; Group 1: mean 5 Not stated (SD 5); n=43, Group 2: mean 4 Not stated (SD 4); n=40; Roland Morris 18 item Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

- Actual outcome: Oswestry Disability Index at 3 months; Group 1: mean 15 Not stated (SD 14); n=43, Group 2: mean 16 Not stated (SD 10); n=40; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome: Roland Morris 18 item at 12 months; Group 1: mean 6 Not stated (SD 6); n=43, Group 2: mean 5 Not stated (SD 5); n=40; Roland Morris 18 item Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index at 12 months; Group 1: mean 15 Not stated (SD 14); n=43, Group 2: mean 14 Not stated (SD 13); n=40; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome: Depressions Scale DEPS at 3 months; Group 1: mean 5 Not stated (SD 5); n=43, Group 2: mean 4 Not stated (SD 4); n=40; Depressions Scale DEPS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: Depressions Scale DEPS at 12 months; Group 1: mean 6 Not stated (SD 5); n=43, Group 2: mean 5 Not stated (SD 6); n=40; Depressions Scale DEPS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: BIOMECHANICAL EXERCISE + HOME EXERCISE versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE)

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: 15D at 3 months; Group 1: mean 0.9 Not stated (SD 0.07); n=43, Group 2: mean 0.89 Not stated (SD 0.07); n=40; 15D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: 15D at 12 months; Group 1: mean 0.9 Not stated (SD 0.08); n=43, Group 2: mean 0.88 Not stated (SD 0.08); n=40; 15D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 3 months; Group 1: mean 31 mm (SD 20); n=43, Group 2: mean 35 mm (SD 28); n=40; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain VAS at 12 months; Group 1: mean 29 mm (SD 21); n=43, Group 2: mean 39 mm (SD 26); n=40; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: Roland Morris 18 item at 3 months; Group 1: mean 4 Not stated (SD 5); n=43, Group 2: mean 4 Not stated (SD 4); n=40; Roland Morris 18 item Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Disability Index at 3 months; Group 1: mean 14 Not stated (SD 11); n=43, Group 2: mean 16 Not stated (SD 10); n=40; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: Roland Morris 18 item at 12 months; Group 1: mean 4 Not stated (SD 5); n=43, Group 2: mean 5 Not stated (SD 5); n=40; Roland Morris 18 item Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Disability Index at 12 months; Group 1: mean 12 Not stated (SD 10); n=43, Group 2: mean 14 Not stated (SD 13); n=40; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome: Depressions Scale DEPS at 3 months; Group 1: mean 4 Not stated (SD 5); n=43, Group 2: mean 4 Not stated (SD 4); n=40; Depressions Scale DEPS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome: Depressions Scale DEPS at 12 months; Group 1: mean 3 Not stated (SD 4); n=43, Group 2: mean 5 Not stated (SD 6); n=40; Depressions Scale DEPS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Rasmussen-barr 2009{RASMUSSEN2009}
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=71)
Countries and setting	Conducted in Sweden
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-60 years, still at work despite ongoing current low back pain (defined as ache pain or discomfort localized below the costal margin and above the inferior gluteal folds without referred leg pain, >8 weeks but at least 1 pain free period during the past 1 year, mechanically induced with pain on active movement and paraspinal tenderness
Exclusion criteria	First time low back pain, pain radiating to the leg or legs with or without overt neurological signs, pregnancy, known lumbar disc herniation or fracture, back surgery, diagnosed inflammatory joint disease, known severe osteoporosis, known malignant disease
Recruitment/selection of patients	Participants recruited between August 2003 and May 2004 from primary health care setting and a private physiotherapy clinic
Age, gender and ethnicity	Age - Mean (SD): E: 37 (10) C: 40 (12) . Gender (M:F): 36/35. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (> 8 weeks).
Extra comments	Baseline scores (median, IQ range) - pain VAS: exercise 32 (18-59), control 38 (10-47); disability OSD: exercise 20 (12-26), control 22 (14-28); physical health: exercise 39 (31-43), control 41 (35-45).
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Individual Biomechanical exercise - Core stability. Stabilising exercises individually supervised lasting 45 minutes weekly. Progression of stabilising exercises according to clinical judgement of supervising physiotherapist. Participants were advised to continue exercises at home for 15 minutes daily. Duration 8 weeks. Concurrent medication/care: not reported (n=35) Intervention 2: Usual care. Participants were advised to exercises at home for 30 minutes daily.. Duration 8 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Capio Research Foundation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 - Physical at 12 months; Other: E: 13 (7,16) C: 8 (0,10) (Median change score (interquartile range) p = 0.014); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 12 months; Other: E: -12 (-34.5, -3) C: -12 (-22, 0) (Median change score (interquartile range)); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry low back pain questionnaire at 12 months; Other: E: -10 (-20,-2) C: -2 (-12,2) (Median change score (interquartile range) p= 0.025); Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Reilly 1989[444]
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report and physical examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Male or female; primary diagnosis of "chronic lumbosacral strain"
Exclusion criteria	Not stated
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - --: Not stated. Gender (M:F): 20:20. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) ("chronic lumbosacral strain" - no further details).
Extra comments	Groups were matched evenly by age, sex, months in pain, exercise experience, previous number of back surgical procedures, then the two groups randomised
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Mixed exercise - Biomechanical + aerobic. A specialist monitored and worked with the subject individually, 4 times a week for 6 months (total 96 sessions) performing a predesigned exercise programme (flexibility strength and aerobic). Duration 6 months. Concurrent medication/care: Not stated (n=20) Intervention 2: Usual care. Unsupervised, participants were given a predesigned exercise programme (flexibility, strength and aerobic), to be done 4 times a week for 6 months. Duration 6 months. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months

- Actual outcome: Pain level at 6 months; Group 1: mean 33.5 Not stated (SD 11.3); n=20, Group 2: mean 80 Not stated (SD 13.9); n=20; VAS 0 to 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Number of pain relapses requiring medical attention at 6 months; Group 1: mean 0.25 None (SD 0.4); n=20, Group 2: mean 3.05 None (SD 1.9); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Risch 1993[448]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=54)
Countries and setting	Conducted in United Kingdom
Line of therapy	1st line
Duration of study	Intervention + follow up: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain for >1 year.
Exclusion criteria	Not reported
Age, gender and ethnicity	Age - Mean (range): 45 (22-70). Gender (M:F): 34/20. Ethnicity: 91% white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>1 year).
Extra comments	Baseline scores (mean SD) - psychological distress: exercise 58.8±18.8, control 71.7±28.9. Average pain duration 8 years (range 1-26), two surgeries or less, ambulatory, not dependent for activities of daily living, 46% unemployed due to back pain, 54% receiving workers compensation or disability payments as their primary source of income, 83% had sudden onset of pain as a result of automobile or work accident. Most patients diagnosed with combinations of the following: low back pain with sciatica (56%), low back pain without sciatica (43%), myofascial syndrome (50%), spinal stenosis (28%), lumbar spondylosis (46%), lumbar instability (43%)
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Individual Biomechanical exercise - Core stability. Patients were instructed in training techniques by registered physiotherapists. Variable resistance dynamic exercises 2 times a week for 4 weeks followed by once a week for 6 weeks.. Duration 8 weeks. Concurrent medication/care: Not reported (n=23) Intervention 2: Usual care. Patients were instructed in training techniques by registered physiotherapists then remained on the waiting list . Duration 10 weeks. Concurrent medication/care: not reported
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE	

Protocol outcome 1: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Mental Health Inventory - Psychological distress at 10 weeks; Group 1: mean 59 (SD 20.9); n=31, Group 2: mean 70.3 (SD 32.5); n=23; Mental Health Inventory - psychological distress 24-142 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Ryan 2010[454]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=38)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 8 weeks + follow up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	18-65 years; non-specific LBP >3 months; no history of surgery
Exclusion criteria	Physiotherapy in last 3 months, regular sports activities twice a week for past 6 months, constant or persistent pain judged to be due to nerve root irritation, fractures, non-back related musculoskeletal problems which may affect ability to participate in exercise class, women who are or have been pregnant in last year; red flags
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): Exercise: 45.2 (11.9), education: 45.5 (9.5) years. Gender (M:F): 13:25. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months duration).
Extra comments	Baseline scores (mean SD) for exercise + education and education groups respectively - function: 9.4 (4.2), 10.8 (5.2); pain: 28.1 (20.4), 39.3 (26.2)
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. "Pain biology education" - a cognitive behavioural based intervention which attempts to reduce pain and disability by

	explaining the biology of the pain to the patient: 1 x 2.5 hour session. The Back Book. . Duration One off session. Concurrent medication/care: Not stated (n=20) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. "Pain biology education" - a cognitive behavioural based intervention which attempts to reduce pain and disability by explaining the biology of the pain to the patient: 1 x 2.5 hour session. The Back Book. Plus 6 exercise classes over an 8-week period: "Back to fitness": circuit based, graded aerobic exercise with some core stability exercises; 10 minutes warm up, 20-30 minutes aerobic circuit, 10-15 minutes warm down. For most exercises there was an easy, moderate and hard version; participant could choose which version to perform; encouraged to work at an intensity considered "somewhat hard" for them.. Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (School of Health and Social Care of Glasgow Caledonian University)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (AEROBIC) + CBT + EDUCATION versus COMBINED NON-INVASIVE INTERVENTIONS: CBT + EDUCATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain NRS at 3 months; Group 1: mean 19.1 Not stated (SD 18.9); n=15, Group 2: mean 22.6 Not stated (SD 30.8); n=12; NRS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 6.4 Not stated (SD 5.1); n=15, Group 2: mean 4.3 Not stated (SD 4.2); n=12; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Rydeard 2006[455]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=39)
Countries and setting	Conducted in Hong Kong (China); Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-report and physical examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Physically active (at least 3 x 30-minute sessions per week of activity requiring a moderate effort); aged 20 to 55 years; living in Hong Kong; longstanding persistent low back pain (with or without leg pain) of >6 weeks duration or recurring low back pain (at least 2 painful incidences per year) of sufficient intensity to restrict activity; strength 4 or less out of 5 on manual muscle testing of gluteus maximus; altered recruitment of gluteus maximus by visual and manual inspection during prone leg extension test.
Exclusion criteria	Pregnant; past history of spinal surgery or spinal fracture; inflammatory joint disease; systemic metabolic disorder; rheumatic disease; chronic pain syndrome; overt neurological compromise or acute inflammatory process; difficulty understanding written or spoken English.
Recruitment/selection of patients	Notices posted to private and public physicians' and physiotherapists' offices, local sports clubs and universities, advertisement in English-language newspaper.
Age, gender and ethnicity	Age - Mean (SD): 34 (8) control group and 37 (9) intervention group. Gender (M:F): 14:25. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>6 weeks or recurring (at least 2 incidences per year)).
Extra comments	Baseline scores (mean SD) - functional disability: pilates 3.1±2.5, control 4.2±3.6; pain intensity: pilates 23±17.7, control 30.4±17.6.
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Individual Biomechanical exercise - Pilates. Training on specialised Pilates exercise equipment in the clinic for 3 x 1-hour sessions per week and training in 15-minute home programme performed 6 days a week for 4 weeks. Duration 4 weeks. Concurrent medication/care: Not stated (n=18) Intervention 2: Usual care. No specific exercise training; usual care i.e. consultation with physician and other specialists and healthcare professionals as necessary; instructed to continue what they were previously doing including regular physical activity.. Duration 4 weeks. Concurrent medication/care: Not stated

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PILATES versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity score at 4 weeks; Group 1: mean 18.3 None stated (SD 14.66); n=21, Group 2: mean 33.9 None stated (SD 14.85); n=18; NRS-101 0 to 100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland-Morris Disability Questionnaire at 4 weeks; Group 1: mean 2 Not stated (SD 1.37); n=21, Group 2: mean 3.2 Not stated (SD 1.7); n=18; Roland-Morris Disability Questionnaire 0 to 24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Saper 2009[459]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in USA; Setting: Racially diverse, low income communities in Boston Massachusetts
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-64 years, current low back pain persisting 12 weeks or more, mean pain intensity for the 2 weeks prior to enrolment 4 or over on NRS (0-10), sufficient understanding of English to follow class instructions and complete surveys,
Exclusion criteria	Yoga use in the previous year, new pain medicine, other low back pain treatments started within the previous month or anticipated starting in the next 6 months, pregnancy, back surgery in the previous 3 years, non-muscular pathologies (spinal canal stenosis, spondylolisthesis, infection, malignancy, fracture), severe or progressive neurological deficits, sciatica pain equal to or greater than back pain, active substance or alcohol abuse, serious systemic disease, medical or psychiatric comorbidities precluding yoga practice, active or planned workers compensation or personal injury claims, inability to attend classes at the times and location offered
Recruitment/selection of patients	Participants recruited through community and media advertisements and were reimbursed for travel costs and given payment for each follow-up completed
Age, gender and ethnicity	Age - Mean (SD): 44 (12). Gender (M:F): 5/25. Ethnicity: 24% White 70% Black 3% Asian 3% Native American
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (12 weeks or more).
Extra comments	Baseline scores (mean SD) - pain: yoga 6.7±1.9, UC 7.5±1.3; Roland disability score: yoga 14.5±5, UC 16.1±4; SF36 physical health: yoga 40±8, UC 34±7; SF36 mental health: yoga 47±11, UC 45±11; use of any pain medication (no. %): yoga 10(67), UC 11(73).
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Group mind-body exercise - Group Yoga. Hatha yoga standardised protocol devised by an expert panel. Yoga classes lasted 75 minutes weekly for 12 weeks, in addition participants were provided with an audio CD, personal CD player and advised to practice at home. Duration 12 weeks. Concurrent medication/care: Use of non-study treatments 27%

	(n=15) Intervention 2: Usual care - Waiting-list. Patients received no active intervention but were offered yoga classes at the end of the study period. Duration 12 weeks. Concurrent medication/care: Use of non-study treatments 40%
Funding	Other (National Centre for Complementary and Alternative Medicine and National Institutes of Health)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (NRS) at 12 weeks; Group 1: mean -2.3 (SD 2.1); n=15, Group 2: mean -0.4 (SD 1.8); n=15; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain (NRS) at 26 weeks; Group 1: mean 3.9 (SD 0.6); n=8, Group 2: mean 4.5 (SD 1.2); n=15; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 12 weeks; Group 1: mean -6.3 (SD 6.9); n=15, Group 2: mean -3.7 (SD 4.9); n=15; Roland Morris Disability Scale 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Questionnaire at 26 weeks; Group 1: mean 6.6 (SD 2.6); n=8, Group 2: mean 8.3 (SD 2.9); n=15; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Participants using any pain medication in the week preceding follow-up at 12 weeks; Group 1: 2/15, Group 2: 11/15; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome: Positive response (30% improvement in function RMDQ) at 12 weeks; Group 1: 10/15, Group 2: 6/15; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Positive response (2 point improvement in pain on NRS) at 12 weeks; Group 1: 10/15, Group 2: 2/15; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Shaughnessy 2004[471]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=41)
Countries and setting	Conducted in Irish Republic
Line of therapy	Unclear
Duration of study	Intervention time: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Roland Morris disability questionnaire, SF-36
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	20-60 years, low back pain for minimum of 12 weeks, able to give informed consent, understand instructions and cooperate with treatment.
Exclusion criteria	Low back pain due to systemic or structural pathology, diagnosed with inflammatory joint disease or display overt neurological signs.
Recruitment/selection of patients	volunteers
Age, gender and ethnicity	Age - Mean (SD): Intervention group 43 (9) years, 46 (11) years. Gender (M:F): 14/27. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Minimum 12 weeks).
Extra comments	Baseline scores (mean SD) - ODI: exercise 37±13, control 41±15; RMDQ: exercise 10±4.1, control 10.7±5.6; physical functioning: exercise 43±17, control 42±16; role physical: exercise 24±29, control 25±21; bodily pain: exercise 31±12, control 32±13; general health: exercise 61±21, control 51±15; vitality: exercise 41±21, control 40±20; social functioning: exercise 45±20, control 44±20; role emotional: exercise 57±41, control 59±38; mental health: exercise 66±17, control 62±18
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Individual Biomechanical exercise - Core stability. Low load contractions, holding postures with low-load, increasing holding time of exercises to enable patients to perform sustained contractions in low load postures. Duration 10 weeks. Concurrent medication/care: Not stated (n=21) Intervention 2: Placebo/Sham. No treatment. Duration 10 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus PLACEBO/SHAM Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Physical functioning at 10 weeks; Group 1: mean 59 (SD 15); n=20, Group 2: mean 38 (SD 16); n=21; SF-36 Physical functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Role physical at 10 weeks; Group 1: mean 50 (SD 28); n=20, Group 2: mean 23 (SD 19); n=21; SF-36 Role physical 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Bodily pain at 10 weeks; Group 1: mean 46 (SD 12); n=20, Group 2: mean 28 (SD 14); n=21; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 General health at 10 weeks; Group 1: mean 64 (SD 20); n=20, Group 2: mean 50 (SD 14); n=21; SF-36 General health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Vitality at 10 weeks; Group 1: mean 52 (SD 19); n=20, Group 2: mean 37 (SD 19); n=21; SF-36 Vitality 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Social functioning at 10 weeks; Group 1: mean 68 (SD 20); n=20, Group 2: mean 41 (SD 20); n=21; SF-36 Social functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Role emotional at 10 weeks; Group 1: mean 78 (SD 29); n=20, Group 2: mean 54 (SD 36); n=21; SF-36 Role emotional 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Mental health at 10 weeks; Group 1: mean 72 (SD 13); n=20, Group 2: mean 60 (SD 17); n=21; SF-36 Mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Roland disability scale at 10 weeks; Group 1: mean 5.1 0-23 (SD 2.8); n=20, Group 2: mean 11.3 0-23 (SD 5.6); n=21; Roland Morris Disability scale 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Sherman 2005[472] (Horn 2006[226])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=101)
Countries and setting	Conducted in USA
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 26 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 20 and 64 years of age, visited a primary care provider for treatment of back pain 3 to 15 months before the study
Exclusion criteria	Complicated back pain (e.g. sciatica, previous back surgery, diagnosed spinal stenosis), potentially attributable to specific underlying diseases or conditions (e.g. pregnancy, metastatic cancer, spondylolisthesis, fractured bones, dislocated joints), or minimal pain (rating of <3 on the bothersomeness scale of 0-10
Recruitment/selection of patients	Participants recruited between June and December 2003 by letters from primary care provider and following advertisements in the media
Age, gender and ethnicity	Age - Mean (SD): 44 (13). Gender (M:F): 34/67. Ethnicity: 80% white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (3-15 months before study).
Extra comments	Baseline scores (mean SD) - RMDQ: yoga 8.1±4.5, exercise 9±4.1, self man 8±4; use of medication in past week (%): yoga 58, exercise 57, self man 50.
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Group mind-body exercise - Group Yoga. Viniyoga therapy protocol deigned by an instructor and a senior teacher of viniyoga. Each class included a question and answer period and guided deep relaxation. Most postures were not held but were repeated. Classes 75 minutes duration, once weekly. Participants also received hand-outs and audio CDs.. Duration 12 weeks. Concurrent medication/care: Patients retained access to all medical care provided by their insurance plan (n=33) Intervention 2: Mixed exercise - Biomechanical + aerobic. Programme consisting of aerobic exercises and strengthening exercises followed by stretches as part of 75 minute classes once weekly for 12 weeks. Duration 12 weeks. Concurrent medication/care: Patients retained access to all medical care provided by their insurance plan

	(n=30) Intervention 3: Self-management - Advice to stay active. Participants were sent a copy of "the back book". Duration 12 weeks. Concurrent medication/care: Patients retained access to all medical care provided by their insurance plan
Funding	Academic or government funding (National Centre for Complementary and Alternative Medicine, National Institute of Arthritis)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus BIOMECHANICAL + AEROBIC

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; MD -1.8 (95%CI -3.5 to -0.1); Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; MD -1.5 (95%CI -3.2 to 0.2); Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Medication use in the week preceding follow-up at 6 months; Group 1: 7/34, Group 2: 16/32; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Positive response (improvement of at least 50% in RMDQ) at 6 months; Group 1: 25/36, Group 2: 15/30; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; MD -3.4 (95%CI -5.1 to -1.6); Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; MD -3.6 (95%CI -5.4 to -1.8) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Medication use in the week preceding follow-up at 6 months; Group 1: 7/34, Group 2: 17/29; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Positive response (improvement of at least 50% in RMDQ) at 6 months; Group 1: 25/36, Group 2: 9/30; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus ADVICE TO STAY ACTIVE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; MD -1.6 (95%CI -3.5 to 0.5); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; MD -2.1 (95%CI -4.1 to -0.1) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Medication use in the week preceding follow-up at 6 months; Group 1: 16/32, Group 2: 17/29; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Positive response (improvement of at least 50% in RMDQ) at 6 months; Group 1: 16/32, Group 2: 9/29; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Sherman 2011[473]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=228)
Countries and setting	Conducted in USA
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic non-specific low back pain (>3 months)
Exclusion criteria	Back pain attributed to a specific cause (e.g. spondylolisthesis, fractured vertebra), potentially due to an underlying medical condition (e.g. metastatic cancer, pregnancy), complex (sciatica, spinal stenosis), medicolegal issues, previous back surgery, minimally painful at time of screening (less than 3 on 0-10 bothersomeness scale), duration <3 months, severe disc disease, major depression, inability to speak English or attend classes
Recruitment/selection of patients	Recruited from Group Health an integrated healthcare organisation and from the general population through advertisements in the media
Age, gender and ethnicity	Age - Mean (SD): 48.4 (9.8). Gender (M:F): 82/146. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 3 months).
Extra comments	Baseline scores (mean, SD) - RMDQ: yoga 9.8±5.2, mixed exercise 8.6±4.0, self management 9±5.
Indirectness of population	No indirectness
Interventions	(n=91) Intervention 1: Mixed exercise - Biomechanical + aerobic. Class sessions included strengthening and aerobic exercises with stretching for 75 minutes once a week. Classes led by an experienced physiotherapist. Participants also received hand-outs and audio CDs.. Duration 12 weeks. Concurrent medication/care: Participants permitted to access medical care as required (n=92) Intervention 2: Group mind-body exercise - Group Yoga. Viniyoga therapy protocol deigned by an instructor and a senior teacher of viniyoga. Each class included a question and answer period and guided deep relaxation. Most postures were not held but were repeated. Classes 75 minutes duration, once weekly. Participants also received hand-outs and audio CDs.. Duration 12 weeks. Concurrent medication/care: Participants permitted to access medical care as required

	(n=45) Intervention 3: Self-management - Advice to stay active. Participants given "The Back Pain Help book" providing information on causes of back pain, advice on exercising and making appropriate lifestyle modifications. Duration 12 weeks. Concurrent medication/care: Participants permitted to access medical care as required
Funding	Academic or government funding (Nat)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 4.61 (SD 3.12); n=81, Group 2: mean 6.79 (SD 3.15); n=44; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 4.47 (SD 3.7); n=80, Group 2: mean 5.93 (SD 3.36); n=45; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Positive response (30% improvement in function) at 3 months; RR 1.58 (95%CI 1.1 to 2.27); Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus BIOMECHANICAL + AEROBIC

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 4.12 (SD 3.847); n=83, Group 2: mean 4.61 (SD 3.1); n=81; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 4.12 (SD 3.847); n=83, Group 2: mean 4.47 (SD 3.93); n=80; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Positive response (30% improvement in function) at 3 months; RR 1.06 (95%CI 0.87 to 1.28); Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 4.31 (SD 3.437); n=81, Group 2: mean 6.79 (SD 3.157); n=44; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 4.12 (SD 3.8469); n=83, Group 2: mean 5.93 (SD 3.6); n=45; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Positive response (30% improvement in function) at 3 months; RR 1.67 (95%CI 1.17 to 2.4); Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Shnayderman 2013[477]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	N/A (n=52)
Countries and setting	Conducted in Israel; Setting: Outpatient Clinic, Department of Physiotherapy, Maccabi Healthcare Services, Israel
Line of therapy	Not applicable
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: The method of assessment/diagnosis was not specifically stated, however, the participants were recruited from a physiotherapy department of healthcare services, and thus it is assumed that they had a condition that required physiotherapy. Baseline measurements did include assessments and questionnaires on pain and other relevant factors, which were performed by senior physical therapists.
Stratum	Overall: N/A
Subgroup analysis within study	Not applicable: N/A
Inclusion criteria	Adults aged between 18 and 65 years with chronic LBP of at least 3 months with/without radiation to the lower limb.
Exclusion criteria	Physically active on regular basis, fracture and/or surgery in the spinal or lower extremity within the previous 6 months, active cardiac disease as unstable angina/congestive heart failure or coronary arteries bypass in the last 6 months, on treatment for cancer, or suffering LBP due to a road traffic accident.
Recruitment/selection of patients	Not described.
Age, gender and ethnicity	Age - Mean (SD): Walking = 43.6 (13.5) vs. Strengthening = 47.0 (10.0). Gender (M:F): M:F = 11:41. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores (mean SD) - LBP functional scale: strengthening 52.8±9.7, walking 49.5±8.4; Oswestry LBP: strengthening 27.5±15.3, walking 34.4±17
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Individual Aerobic exercises - Walking programme. [1] The participants walked on a treadmill at a low to moderate intensity twice a week for 6 weeks. [2] The intensity was based on each participant's resting heart rate and calculated by the Karvonen formula. [3] Each session lasted 20 minutes in the first week and increased by 5 minutes per week; in the last 4 weeks, the participants walked for 40 minutes per session. . Duration 6 weeks. Concurrent medication/care: N/A (n=26) Intervention 2: Individual Biomechanical exercise - Motor control. [1] The participants performed active movements and strengthening exercises for the trunk and upper and lower limbs. [2] The participants began with low-

	load exercise, progressing through the session by increasing the number of repetitions and loading positions. [3] Each session lasted 20 minutes in the first week and increased by 5 minutes per week up to the fifth week. . Duration 6 weeks. Concurrent medication/care: N/A
Funding	No funding ("This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.")
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: WALKING PROGRAMME versus STRENGTHENING EXERCISES Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Oswestry Low Back Pain Disability Questionnaire score at 6 weeks; Group 1: mean 22.6 (SD 14.4); n=26, Group 2: mean 19.1 (SD 12.8); n=26; Oswestry Low Back Pain Disability Questionnaire score 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=104)
Countries and setting	Conducted in Netherlands; Setting: First time referrals to an outpatient rehabilitation centre from general practice
Line of therapy	Unclear
Duration of study	Intervention + follow up: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 18 and 65 years, non-specific low back pain (with or without radiation to the leg) for more than 3 months resulting in functional limitations (Roland Morris Disability Questionnaire score >3), ability to walk >100m without interruption
Exclusion criteria	Vertebral fracture, spinal infections or malignancy, current nerve root pathology spondylosis or spondylolisthesis, lumbar spondylodesis, medical comorbidity making intensive exercising impossible (e.g. cardiovascular or metabolic disease), ongoing investigations for treatments for chronic low back pain at the time of referral or a clear treatment preference
Recruitment/selection of patients	Patients recruited between April 2002 and December 2004
Age, gender and ethnicity	Age - Mean (SD): Exercise 42.68 (9.06) Control 40.55 (11.17). Gender (M:F): 56/48. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (More than 3 months).
Extra comments	Baseline scores (mean, SD) - VAS: exercise 51.23 ± 26.55, psych 48.84 ± 23.51, combi 45.98 ± 23.95, UC 51.02 ± 25.40; RMDQ: exercise 14.15 ± 3.70, psych 13.74 ± 3.65, combi 13.51 ± 3.92, UC 13.96 ± 3.88; BDI: exercise 10.38 ± 7.62, psych 10.45 ± 7.06, combi 9.75 ± 6.68, UC 9.78 ± 7.67.
Indirectness of population	No indirectness
Interventions	(n=54) Intervention 1: Mixed exercise - Biomechanical + aerobic. Aerobic exercise on a bicycle for 30 minutes, performing at 65-80% maximal heart rate (increased after two and four weeks) followed by muscle strengthening exercises (dynamic-static). Total session lasting 105 minutes, given 3 times a week for 10 weeks. Duration 10 weeks. Concurrent medication/care: No other interventions than those that were randomised took place. (n=51) Intervention 2: Usual care - Waiting-list. Patients remained on waiting list and were then allocated to either treatment with exercise, CBT or a combination.. Duration 10 weeks. Concurrent medication/care: No other interventions than those that were randomised took place.

	(n=60) Intervention 3: Psychological therapies - CBT. CBT consisting of operant behavioural graded activity training and problem solving training. Graded activity training was 3 group sessions followed by a max of 17 individual sessions of 30 minutes. Problem solving started with 3 explanatory sessions, the next 6 were teaching sessions and a course-book was provided. Groups were a max of 4 people. Homework assignments were given. Duration 10 weeks. Concurrent medication/care: No physical therapy elements were incorporated in the therapy. All other therapies for low back pain except for pain medication were not allowed. (n=62) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise + CBT - as for exercise and CBT arms . Duration 10 weeks . Concurrent medication/care: As for other arms
Funding	Academic or government funding (ZonMw Grant (Netherlands))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus WAITING-LIST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain (VAS) at 10 weeks; MD -8.68 (95%CI -16.87 to -0.48) VAS 0-100mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris Disability Questionnaire at 10 weeks; MD -2.4 (95%CI -4.14 to -0.65) Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Beck Depression Inventory at 10 weeks; MD -2.09 (95%CI -3.86 to -0.32) Beck Depression Inventory 0-63 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus CBT

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain (VAS) at 10 weeks; Group 1: mean 0.47 (SD 2.43); n=52, Group 2: mean 1.03 (SD 2.44); n=55; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain (VAS) at 12 months; Group 1: mean 0.231 (SD 2.42); n=51, Group 2: mean 0.315 (SD 2.41); n=52; Risk of

bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 2.42 (SD 4.7); n=52, Group 2: mean 3.04 (SD 4.7); n=55; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris Disability Questionnaire at 12 months; Group 1: mean 3.28 (SD 4.7); n=51, Group 2: mean 3.74 (SD 4.7); n=52; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Beck Depression Inventory at 10 weeks; Group 1: mean 2.86 (SD 5.3); n=52, Group 2: mean 2.31 (SD 5.3); n=55; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Beck Depression Inventory at 12 months; Group 1: mean 3.23 (SD 5.3); n=51, Group 2: mean 2.08 (SD 5.3); n=52; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: General practice (no. of visits) at 12 months; Group 1: mean 2.99 (SD 5.58); n=52, Group 2: mean 3.29 (SD 4.62); n=52; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Medical specialist care (no. of visits) at 12 months; Group 1: mean 1.7 (SD 2.81); n=52, Group 2: mean 1.12 (SD 1.97); n=52; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Radiology (no. of visits) at 12 months; Group 1: mean 0.06 (SD 0.24); n=52, Group 2: mean 0.16 (SD 0.46); n=52; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Occupational physician (no. of visits) at 12 months; Group 1: mean 0.1 (SD 0.41); n=52, Group 2: mean 0.24 (SD 0.96); n=52; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Psychologist (no. of visits) at 12 months; Group 1: mean 0.57 (SD 3.14); n=52, Group 2: mean 0.29 (SD 1.26); n=52; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Therapist (no. of visits) at 12 months; Group 1: mean 4.41 (SD 9.47); n=52, Group 2: mean 9.03 (SD 18.34); n=52; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Smith 2001[491]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=28)
Countries and setting	Conducted in New Zealand
Line of therapy	Unclear
Duration of study	Intervention time: 30 minutes
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Short-form McGill pain questionnaire, the state trait anxiety inventory
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	People with chronic low back pain
Exclusion criteria	Hearing deficits or difficulty comprehending written or spoken English language.
Age, gender and ethnicity	Age - Range: . Gender (M:F): 10/16 (for the 26 participants that answered the questionnaires). Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores (mean SD) - sensory pain: Feldenkrais 7.1±7, control 6.9±5.8; affective pain: Feldenkrais 2.6±2.7, control 1.8±2.6; evaluative pain: Feldenkrais 24.7±19.9, control 25.8±23.9; anxiety: Feldenkrais 41±12.9, control 35.4±9.8
Indirectness of population	No indirectness
Interventions	(n=14) Intervention 1: Group biomechanical exercise - Feldenkrais. participants listened to a 30 minute audio tape with instructions to sit with a comfortable posture, gentle breathing, participants were not required to do repetitive movements involving the upper or lower limbs or pelvis to avoid aggravation of LBP discomfort, therefore the session was physically simple. . Duration 30 minutes. Concurrent medication/care: Not stated (n=12) Intervention 2: Placebo/Sham. listed to an audiotaped story for 30 minutes . Duration 30 minutes. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FELDENKRAIS versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Sensory pain at 30 minutes ; Group 1: mean 6.1 (SD 8); n=14, Group 2: mean 3.4 (SD 3.6); n=12; Risk of

bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Affective pain at 30 minutes; Group 1: mean 1.4 (SD 2.3); n=14, Group 2: mean 1 (SD 1.4); n=12; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Evaluative pain at 30 minutes; Group 1: mean 25.8 (SD 29.2); n=14, Group 2: mean 17.8 (SD 19.5); n=12; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: State trait anxiety inventory at 30 minutes; Group 1: mean 36.5 (SD 10.9); n=14, Group 2: mean 30.9 (SD 8.2); n=12; State trait anxiety inventory 20-80 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Sokunbi 0g 2014[494]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=15)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 week intervention, 3 months follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Current episode of low back pain for no more than 12 weeks
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Define
Exclusion criteria	Define
Age, gender and ethnicity	Age - Mean (SD): Acu 40.3 (8.2), CS 42.1 (9.3). Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Low back pain for no longer than 12 weeks).
Extra comments	Baseline characteristics for ACU and CS respectively, mean (SD): Pain VAS 6.28 (1.47), 6 (1.85); RMDQ 8.2 (3.7), 8 (3.1); medication intake (number of tablets) 12 (1..5), 12.4 (2.3).
Indirectness of population	No indirectness
Interventions	(n=5) Intervention 1: Acupuncture. 20 minutes acupuncture on affected back area. . Duration 6 weeks. Concurrent medication/care: Participants were allowed to continue medication they were taking on recruitment. (n=5) Intervention 2: Individual Biomechanical exercise - Core stability. Participants shown how to activate core stability muscles, exercises carried out for 20 minutes. . Duration 6 weeks. Concurrent medication/care: Participants were allowed to continue medication they were taking on recruitment.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus CORE STABILITY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 3 months; Group 1: mean 5.8 (SD 2.25); n=5, Group 2: mean 5.09 (SD 1.04); n=5; VAS 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 3 months; Group 1: mean 7.5 (SD 2.6); n=5, Group 2: mean 4.1 (SD 2.4); n=5; RMDQ 0-23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Daily medication intake (number of tablets) at 3 months; Group 1: mean 8.9 (SD 2.4); n=5, Group 2: mean 4.8 (SD 0.9); n=5; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	**Steele 2013[502]**
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=31)
Countries and setting	Conducted in United Kingdom; Setting: Sport Science Laboratories at Southampton Solent University
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Participants who experienced nonspecific low back pain having lasted longer than 12 weeks and had no medical condition contraindicating resistance training.
Exclusion criteria	Any medical condition for which movement therapy might be contraindicated. These included acute (not reoccurring) low back injury occurring within the last 12 weeks, pregnancy, evidence of sciatic nerve root compression (sciatica), leg pain radiating to below the knee, paresthesia (tingling or numbness), current tension sign, lower limb motor deficit, current disc herniation, previous vertebral fractures, or other major structural abnormalities.
Recruitment/selection of patients	Posters, word of mouth, advertisement in a local private chiropractors practice.
Age, gender and ethnicity	Age - Mean (SD): fullROM 46 (12.36), limROM 41.86 (17.45), control 41.7 (15.1). Gender (M:F): 21/17. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>12 weeks).

Extra comments	Baseline scores (mean SD) for full, limited and control groups, respectively - VAS: 47.73 (25.52), 41.29 (22.92), 19.2 (15.51); ODI: 36.18 (11.12), 26.86 (13.56), 26.2 (7.27)
Indirectness of population	No indirectness
Interventions	(n=12) Intervention 1: Individual Biomechanical exercise - Core stability. Groups performed 1 set of variable resistance lumbar extension exercise. The FullROM group used their full range of motion. Training was conducted at a frequency of once per week for a period of 12 weeks.. Duration 12 weeks. Concurrent medication/care: Participants continued with any current treatments or training they were receiving including medication per recommendation from the reviewing ethics committees. Participants were, however, instructed to avoid beginning any other resistance training exercises designed to address the lower back. (n=10) Intervention 2: Individual Biomechanical exercise - Core stability. Training was conducted at a frequency of once per week for a period of 12 weeks. Groups performed 1 set of variable resistance lumbar extension exercise. The LimROM group used only the mid 50% of their individual range of motion. . Duration 12 weeks. Concurrent medication/care: Participants continued with any current treatments or training they were receiving including medication per recommendation from the reviewing ethics committees. Participants were, however, instructed to avoid beginning any other resistance training exercises designed to address the lower back. (n=9) Intervention 3: Usual care. Participants did not train. . Duration 12 weeks. Concurrent medication/care: Participants continued with any current treatments or training they were receiving including medication per recommendation from the reviewing ethics committees. Participants were, however, instructed to avoid beginning any other resistance training exercises designed to address the lower back.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FULL RANGE OF MOTION versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 weeks; Group 1: mean -3.03 (SD 2.576); n=10, Group 2: mean 0.671 (SD 1.489); n=7; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Function ODI at 12 weeks; Group 1: mean -1.82 (SD 0.663); n=10, Group 2: mean -0.3 (SD 0.687); n=7; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LIMITED RANGE OF MOTIOIN versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 weeks; Group 1: mean -1.629 (SD 1.097); n=7, Group 2: mean 0.671 (SD 1.489); n=7; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Function ODI at 12 weeks; Group 1: mean -1.2 (SD 0.516); n=7, Group 2: mean -0.3 (SD 0.687); n=7; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Storheim 2000[507]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=29)
Countries and setting	Conducted in Norway
Line of therapy	Unclear
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Self-reported low back pain for >3 months, accessibility to follow the exercise protocol, sedentary or moderate physical activity level
Exclusion criteria	Recent onset of sciatic pain, back surgery within the last 6 months, pregnancy or other diseases that might interfere with participation, adherence <70%
Recruitment/selection of patients	Recruited by pamphlet distribution advertising study
Age, gender and ethnicity	Age - Mean (SD): Exercise 45.4 (11.07) Control 48.3 (10.23). Gender (M:F): 10/19. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores (mean SD) - lumbar pain VAS: exercise 43.1±2.3, UC 38.2±1.8; Oswestry disability: exercise 20.86±9.1, UC 16.97±6.8; HADS depression: exercise 2.44±2, UC 1.85±1.8; HADS anxiety: exercise 5.12±4.4, UC 4.31±2.6
Indirectness of population	No indirectness
Interventions	(n=16) Intervention 1: Mixed exercise - Aerobic + mind-body + biomechanical. Group programme consisting of aerobic dance session followed by strength training focused on back and abdominal muscles, stretching exercises and a relaxation session. Each session lasted 75 minutes and was attended twice weekly for 15 weeks . Duration 15. Concurrent medication/care: not reported (n=13) Intervention 2: Usual care - Waiting-list. Patients received usual medical care during the study period. Duration 15 weeks. Concurrent medication/care: not reported
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: AEROBIC + MIND-BODY + BIOMECHANICAL versus WAITING-LIST	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Lumbar pain at 15 weeks; Group 1: mean -5 (SD 2); n=16, Group 2: mean 4.5 (SD 2.16); n=13; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry score at 15 weeks; Group 1: mean -5.86 (SD 8); n=16, Group 2: mean 0.43 (SD 6.9); n=13; Oswestry Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: HAD - Depression Score at 15 weeks; Group 1: mean -1.07 (SD 2.4); n=16, Group 2: mean -0.08 (SD 1.4); n=13; HAD 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: HAD - Anxiety Score at 15 weeks; Group 1: mean -0.93 (SD 2.4); n=16, Group 2: mean -0.38 (SD 2.16); n=13; HAD 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Storheim 2003[508]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=)
Countries and setting	Conducted in Norway
Line of therapy	Unclear
Duration of study	Intervention + follow up: 18 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-efficacy for pain, self-efficacy for function, SF-36
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Sick listed for 8-12 weeks due to non-specific LBP (receiving at least 50 sickness benefit, and with no sick leave due to LBP during a period of 12 weeks before this sickness period), sick-listed from a permanent job, aged 20-60 years, understand Norwegian, accessibility to follow all 3 treatment alternatives, conducting regular exercise more than 3 times per week for the last 6 months
Exclusion criteria	Sciatic pain , spinal stenosis with neurological affection, spondylolysis or spondylolisthesis > grade 2, spinal fracture, tumour or infection, abuse of drugs or alcohol, rheumatic disease, back surgery, pregnancy or disease that may interfere with participation, and conducting regular physical exercise less than 3 times a week for the last 6 months
Age, gender and ethnicity	Age - Mean (SD): Usual care: 38.9 (11.9), Exercise 42.3 (9.2), Cognitive: 41.3 (9.4). Gender (M:F): 45/45. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline (mean SD) - VAS: exercise (EG) 53.2±23.2, UC 58.3±21.6; RMDQ: EG 8.2±3.5, UC 9.3±3.6: self efficacy for pain: EG 4.3±1.1, UC 4±1.3; self efficacy for function: EG 40.9±10, UC 39±9; physical function: EG 64.7±19.3, UC 60.9±17.2; role physical: EG 4.2±11.5, UC 7.8±17.8; pain: EG 30.8±12.9, UC 58.8±10.8; vitality: EG 51.5±16.5, UC 40.3±16.2; social functioning: EG 72.1±17.9, UC 63.8±22.2; mental health: EG 73.1±12.7, UC 67.7±17.8; health transition: EG 29.1±24.4, UC 24.9±27.3.
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Mixed exercise - Biomechanical + aerobic. 1 hour, preferably 3 times a week of group exercise consisting of the Norwegian aerobics fitness model, strengthening, flexibility, relaxation. Duration 15 weeks. Concurrent medication/care: Not stated (n=29) Intervention 2: Usual care. Treated by their GP with any intervention prescribed. Duration Not stated. Concurrent medication/care: Nothing stated

Funding	Academic or government funding (The Norwegian Foundation for Health and Rehabilitation and the Norwegian Fund for Postgraduate education in Physiotherapy)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical function at 18 weeks ; Group 1: mean 6.5 (SD 9.2); n=16, Group 2: mean 6 (SD 10.3); n=20; SF-36 physical function 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 role physical at 18 weeks; Group 1: mean 30.8 (SD 31.2); n=16, Group 2: mean 18.1 (SD 146.2); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 bodily pain at 18 weeks; Group 1: mean 14.7 (SD 12.4); n=16, Group 2: mean 12.6 (SD 15.2); n=20; SF-36 bodily pain 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 general health at 18 weeks; Group 1: mean 0.9 (SD 9.6); n=16, Group 2: mean -2.9 (SD 8.9); n=20; SF-36 general health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 vitality at 18 weeks; Group 1: mean 4 (SD 11.2); n=16, Group 2: mean 3.9 (SD 17.9); n=20; SF-36 vitality 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 social function at 18 weeks; Group 1: mean 8.3 (SD 14.8); n=16, Group 2: mean 9.5 (SD 15.7); n=20; SF-36 social function 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 role emotional at 18 weeks; Group 1: mean 18.9 (SD 31.6); n=16, Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health at 18 weeks; Group 1: mean 4.7 (SD 7.2); n=16, Group 2: mean 5.6 (SD 11.2); n=20; SF-36 mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 health transition at 18 weeks; Group 1: mean 26.6 (SD 28.4); n=16, Group 2: mean 23.6 (SD 28.6); n=20; SF-36 health transition 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 life satisfaction at 18 weeks; Group 1: mean 0.4 (SD 0.8); n=16, Group 2: mean -0.2 (SD 1.3); n=20; SF-36 life satisfaction 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Self-efficacy for pain at 18 weeks; Group 1: mean 0.2 (SD 0.8); n=16, Group 2: mean -1.2 (SD 1.3); n=20; Self-efficacy for pain 1-7 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Self-efficacy for function at 18 weeks; Group 1: mean 2.5 (SD 7.6); n=16, Group 2: mean 1 (SD 5.4); n=20; Self-efficacy for function 8-64 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Szulc 2015[511]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Poland; Setting: Intervention given at home and within a clinical setting.
Line of therapy	Not applicable

Duration of study	Intervention + follow up: 2 weeks + 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosed by a specialist physician and referred for rehabilitation; all patients were diagnosed with chronic spinal pain persisting for longer than 1 year.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	1) Documented magnetic resonance imaging (MRI) of the spine, 2) confirmed protrusion or bulging in the lumbosacral spine, 3) intermittent lumbosacral pain, 4) projection of pain to the buttock or thigh, 5) unilateral character of the symptoms.
Exclusion criteria	1) confirmed extrusion or sequestration of nucleus pulposus of the spinal disc, 2) symptoms manifesting below the knee, 3) history of spinal surgery, 4) structural disorders of spinal discs in more than 2 spinal segments, 5) evident stenosis of the spinal canal, 6) focal lesions of the spinal cord, and 7) spondylolisthesis.
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Other: mean of 44 years (SD not reported).. Gender (M:F): Not reported.. Ethnicity: Not reported.
Further population details	1. Chronicity of pain : Chronic (>3 months duration)
Extra comments	Baseline values, mean (SD) for massage + ex + self manag, ex + self manag and standart treatment respectively: ODI 24.3(6.78), 28.35(7.82), 31.2(10.01); VAS 6.35(1.6), 6.25(1.71), 5.7(0.92)
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=20) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. One session lasted 30 minutes. On the basis of the McKenzie spinal pain classification, the derangement syndrome was diagnosed in allpatients. The therapy included hyperextension techniques, hyperextension with self-pressure or pressure applied by therapist, and hyperextensive mobilization. These techniques were applied in the sagittal plane, following the rule of force progression. In addition to this, the patients were asked to self-perform the theraputic procedure at home (5 cycles per day with 2 hour interals, 15 repetitions each). The theraputic protocol included 10 daily sessions, performed during 5 consecutive weekdays. 24 hours following the last theraputic session, the same parameters as at the baseline were determinedby the investigator.. Duration 2 weeks. Concurrent medication/care: Not reported. Comments: N/A (n=20) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Patients were treated with classic massage, laser therapy, and transcutaneous electrical nerve stimulation (TENS) applied to the lumbosacral region. Patients were asked to perform general exercises strengthening spinal and abdominal muscles (once a day at home). The exercises were to be performed for 15 minutes, in a prone, supine, and lateral position. The classical massage lasted 20 minutes. The laser therapy was conducted with a contact technique with Lasertronic LT-2S

	device. The duration of laser therapy was 80 seconds (2 x40s). The treatment was applied on both sides of the lumbosacral spine. TENS lasted for 15 minutes, frequency 50 Hz, current 20 - 30 mA (subjectively adjusted), duration of a single impluse 50 microseconds. The total time per session = 36min 20 sec + 15min as home exercises once a day.The theraputic protocol included 10 daily sessions, performed during 5 consecutive weekdays. 24 hours following the last theraputic session, the same parameters as at the baseline were determinedby the investigator.. Duration 2 weeks. Concurrent medication/care: Not reported. Comments: None. (n=20) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. Classic McKenzie method enriched with Muscle Energy Technique was implemented. McKenzie protocol was the same as in the other group. A technique of post-isometric relaxation was used at the end off each therapeutic session. It was characterized by the following parameters: 1) time of contraction equal to 7-10 seconds, 2) intensity of contraction corresponding to 20-35%, 3) beginning in the intermediate extent of movement for a given patient, 4) 3 seconds of interval between consecutive contraction phases, 5) 3 repetitions, 6) contraction of antagonist muscle at the terminal phase of the procedure, 7) passive return to the baseline position. The procedure involved relaxation of the erector spinae muscle group and was performed in an anterior and lateral flexion, and in rotation. The therapy involved bilateral parts of the erector spinae so as to balance the muscular tension. The duration of 1 combined session was 40 minutes. Patients treated with the combined method were also asked to exercise at home (5 cycles per day with 2-hour intervals, 15 repetitions each). . Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Ministry of Science and Higher Education for the statutory activity of the Department of Anatomy of the University School of Physical Education in Pozan)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL EXERCISE (MCKENZIE) + SELF-MANAGEMENT (UNSUPERVISED EXCERCISE) versus STANDARD TREATMENT (MASSAGE + LASER + TENS) + SELF-MANAGEMENT

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Visual analogue scale (VAS) at 3 months; Group 1: mean 2.1 mm (SD 1.04); n=20, Group 2: mean 5.29 mm (SD 1.39); n=20; Visual analogue scale 0 - 100 mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Revised Oswestry pain questionnaire at 3 months; Group 1: mean 10.05 % (SD 4.38); n=20, Group 2: mean 28.26 % (SD 10.2); n=20; Revised oswestry low back pain disability questionnaire 0 - 100 % Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (SOFT TISSUE TECHNIQUES - MET) + BIOMECHANICAL EXERCISE (MCKENZIE) + SELF MANAGEMENT (UNSUPERVISED EXERCISE) versus BIOMECHANICAL EXERCISE (MCKENZIE) + SELF-MANAGEMENT (UNSUPERVISED EXCERCISE) Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS at 3 months; Group 1: mean 2 (SD 0.96); n=20, Group 2: mean 2.1 (SD 1.04); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Revised ODI at 3 months; Group 1: mean 9.19 (SD 6.02); n=20, Group 2: mean 10.5 (SD 4.38); n=20; revised ODI 0-100 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (SOFT TISSUE TECHNIQUES - MET) + BIOMECHANICAL EXERCISE (MCKENZIE) + SELF MANAGEMENT (UNSUPERVISED EXERCISE) versus STANDARD TREATMENT (MASSAGE + LASER + TENS) + SELF-MANAGEMENT Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS at 3 months; Group 1: mean 2 (SD 0.96); n=20, Group 2: mean 5.29 (SD 1.39); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Revised ODI at 3 months; Group 1: mean 9.19 (SD 6.02); n=20, Group 2: mean 28.26 (SD 10.2); n=20; revised ODI 0-100 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study (subsidiary papers)	Tilbrook 2011[519] (Chuang 2012[93], Tilbrook 2011[519], Tilbrook 2014[520])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=313)
Countries and setting	Conducted in United Kingdom
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 weeks + 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Roland Morris Disability Questionnaire score of 4 or more, musculoskeletal pain bounded by the lowest ribs and gluteal folds and ability to attend one of the yoga venues
Exclusion criteria	performed yoga in the previous 6 months, unable to get off the floor unaided, unable to use stairs, pregnancy, life threatening comorbid conditions, previously undergone spinal surgery, severe psychiatric problems or alcohol dependency, indication of serious spinal abnormality (one or more of the following: difficulty passing urine, numbness around the back passage genitas or inner thighs, numbness pins and needles or weakness in both legs or unsteadiness on feet)
Recruitment/selection of patients	Participants recruited between July 2007 and July 2008 and identified for recruitment by searching GP databases, then in a second wave of recruitment by advertisements in the local media. Participants received financial incentives (£5) for each follow-up questionnaire completed
Age, gender and ethnicity	Age - Mean (SD): E 46.4 (11.3) C 46.3 (11.5). Gender (M:F): 93/220. Ethnicity: Not reported.
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough detail in inclusion criteria).
Extra comments	Baseline scores (mean SD) - RMDQ: yoga 7.84±3.96, UC 7.75±4.72; SF12 physical: yoga 44.41±9.13, UC 44.04±9.45; SF12 mental: yoga 45.04±10.9, UC 45.02±10.66; pain (ABPS): yoga 25.36±10.59, UC 26.69±10.87.
Indirectness of population	No indirectness
Interventions	(n=156) Intervention 1: Group mind-body exercise - Group Yoga. Yoga class for 75 minutes, once per week run by experienced yoga teachers from the British Wheel of Yoga and Iyengar Yoga. Participants were also given a relaxation compact disc and home practice sheets, and were encouraged to practice at least twice per week. Duration 12 weeks. Concurrent medication/care: All participants received a back pain educational booklet (the back book) and continued their usual care (not specified) (n=157) Intervention 2: Usual care - Waiting-list. Participants were offered yoga session after the final follow-up.

	Duration 12 weeks. Concurrent medication/care: All participants received a back pain educational booklet (the back book) and continued their usual care (not specified)
Funding	Academic or government funding (Arthritis Research UK)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus WAITING-LIST Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-12 Physical at 12 months; MD 0.8 (95%CI -1.28 to 2.87); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Physical at 3 months; MD 1.36 (95%CI -0.7 to 3.4); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Mental at 3 months; MD 2.02 (95%CI -0.31 to 4.35); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Mental at 12 months; MD 0.42 (95%CI -1.92 to 2.77); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: EQ-5D at 12 months; Group 1: mean 0.761 (SD 0.225); n=156, Group 2: mean 0.744 (SD 0.217); n=157; EQ5D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: EQ-5D at 3 months; Group 1: mean 0.776 (SD 0.166); n=156, Group 2: mean 0.717 (SD 0.236); n=157; EQ5D 0-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (Aberdeen back pain scale) at 12 months; MD -0.73 (95%CI -3.3 to 1.84); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain (Aberdeen back pain scale) at 3 months; MD -2.42 (95%CI -4.97 to 0.12); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Questionnaire at 12 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Torstensen 1998[522]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=141)
Countries and setting	Conducted in Norway
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months treatment, 1 year follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Pain intensity-VAS scale, Function-Oswestry low back pain questionnaire
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Low back pain with or without leg pain, age 20-65 years, born in Norway, employment, completion of other treatment types, no preference towards the treatment types
Exclusion criteria	Prolapse with neurological signs and symptoms requiring surgery, spondylolisthesis, hip arthrosis, previous back surgery, suspicion of malignancy, known rheumatic joint disease, pain in areas other than the lower back and other somatic or psychological dysfunction making it difficult to follow the treatment program.
Age, gender and ethnicity	Age - Mean (SD): Exercise group 42.1 (11.2), Sham group 39.9 (11.4). Gender (M:F): Not stated. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline scores (mean SD) - pain VAS: exercise 53.1±21.3, control 55±21; Oswestry LBP disability questionnaire: exercise 51.7±10.7, control 50±11.9.
Indirectness of population	--
Interventions	(n=71) Intervention 1: Group biomechanical exercise - Core stabilization. Exercise equipment: wall pulleys, lateral pulley, angle bench, multipurpose bench, incline board, wall bar, deloading frame, dumbbells, and bar bells. Patients received 36 treatments lasting 1 hour each, 3 times a week for 12 weeks. . Duration 3 hours a week for 12 weeks. Concurrent medication/care: Not stated (n=70) Intervention 2: Placebo/Sham. Sham: patients asked to walk for 1 hour 3 times a week for 12 weeks. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Ministry of health and social affairs- Norwegian national budget and Foundation of education and research in physiotherapy, Norway)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILIZATION versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity VAS (0-100) at 12 weeks; Group 1: mean 37.2 (SD 25.3); n=71, Group 2: mean 50.4 (SD 27.2); n=70; Pain intensity visual analogue scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity VAS (0-100) at 1 year; Group 1: mean 40.5 (SD 24.4); n=71, Group 2: mean 55 (SD 21); n=70; Pain intensity visual analogue scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry low back pain disability questionnaire (0-100) at 12 weeks; Group 1: mean 46.2 (SD 13.1); n=71, Group 2: mean 52.7 (SD 16.6); n=70; Oswestry low back pain disability questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry low back pain disability questionnaire (0-100) at 1 year; Group 1: mean 44.1 (SD 13.79); n=71, Group 2: mean 50.6 (SD 16.6); n=70; Oswestry low back pain disability questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Turner 1990[530]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=96)
Countries and setting	Conducted in USA; Setting:
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain (persisting for >6 months), age 20-65 and currently married or cohabiting
Exclusion criteria	Evidence of current infectious medical disorder, cardiovascular disease, spine fracture or dislocation, spondylolisthesis, spine instability, ankylosing spondylitis, rheumatoid arthritis, or connective tissue disease, history of cancer, surgery within the past year, non-spine limitation of lower limb function, leg pain with sciatic tension signs
Recruitment/selection of patients	Patients referred by community physicians or self-referred following media campaign
Age, gender and ethnicity	Age - Mean (range): 44 (25-64). Gender (M:F): 50/46. Ethnicity: white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 6 months).
Extra comments	Baseline scores (mean SD) - McGill pain: exercise 19.42±10.62, WL 21.17±8.84; depression: exercise 11.95±7.68, WL 10.48±4.19.
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Group Aerobic exercise - Group walking. Walking/jogging programme based on a quota system, progressing from 10 minute to 20 minute and from 60% to 70% maximal heart rate for 2 hour session weekly for eight weeks. Sessions led by trained physiotherapists. Duration 8 weeks. Concurrent medication/care: not reported (n=23) Intervention 2: Usual care - Waiting-list. patients put on waiting list for either exercise, behavioural therapy or a combination. Duration 8 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Grant from National Institute of Neurological and Communicative Disorders and Stroke)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP WALKING versus WAITING-LIST	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Pain Questionnaire) at 8 weeks; Group 1: mean 17.52 (SD 10.2); n=21, Group 2: mean 20.95 (SD 10.62); n=19; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Centre for Epidemiological Studies Depression Scale at 8 weeks; Group 1: mean 7.38 (SD 4.57); n=21, Group 2: mean 7.03 (SD 5.02); n=19; Centre for epidemiological studies depression scale 0-60 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Vad 2007[536]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Qatar, USA; Setting: Outpatient setting of a major teaching hospital
Line of therapy	Unclear
Duration of study	--:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Roland Morris disability score, numeric pain rating score
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	symptoms of low back pain greater than leg pain for at least 3 months, exacerbation of pain with sitting and alleviation with walking, MRI documented evidence of disk pathology
Exclusion criteria	Recent history of trauma, prior history of lumbar spinal surgery, or had undergone any recent spinal interventional procedures, patients with pending legal claims or worker's compensation claims
Age, gender and ethnicity	Age - Other: not defined, both groups matched for age. Gender (M:F): Not defined- both groups matched for sex. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (low back pain for at least 3 months).
Extra comments	Baseline scores (mean SD) - RMDQ: exercise 11.2±1.3, UC 11.4±1.4; pain: exercise 8.7±1.6, UC 8.4±1.5.
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Mixed exercise - Mind-body + biomechanical. Patients received a DVD to use at home- combination of strengthening, flexibility and endurance with physical therapy as well as elements of yoga and pilates. . Duration At least 15 minutes a day, 3 times a week for 1 year. Concurrent medication/care: Celecoxib (200 mg) and hydrocodone (5 mg) with acetaminophen (500 mg) as needed, and all participants wore a lumbar cryobrace for 15 minutes before bedtime (n=25) Intervention 2: Usual care. no treatment. Duration 1 year. Concurrent medication/care: Celecoxib (200 mg) and hydrocodone (5 mg) with acetaminophen (500 mg) as needed, and all participants wore a lumbar cryobrace for 15 minutes before bedtime
Funding	Other author(s) funded by industry (funding not stated, one of the authors will receive financial benefit from a commercial party with a direct financial interest in the results)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MIND-BODY + BIOMECHANICAL versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Numeric pain rating score at 3 months; Group 1: mean 6.4 (SD 1.3); n=25, Group 2: mean 7.1 (SD 1.5); n=25; Numeric pain rating score 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Numeric pain rating score at 1 year; Group 1: mean 1.8 (SD 1.3); n=23, Group 2: mean 4.1 (SD 1.6); n=21; numeric pain rating score 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 3 months; Group 1: mean 14.6 (SD 1.3); n=25, Group 2: mean 13.4 (SD 1.3); n=25; Roland Morris disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 1 year; Group 1: mean 22.3 (SD 1.4); n=23, Group 2: mean 15.7 (SD 1.4); n=21; Roland Morris disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Vincent 2010[548]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in USA; Setting: Spring Forest External Qigong Centre, Minnesota
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 weeks
Method of assessment of guideline condition	--
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 or older, pain experienced for at least 3 months, severity of at least 3 on a numerical analogue scale for pain ranging from 0-10, no active plans to change the pain management strategy over the next 2 to 3 months, ability to read and understand English and participate in four weekly visits
Exclusion criteria	no further criteria
Recruitment/selection of patients	Patients requesting lessons in qigong
Age, gender and ethnicity	Age - --: . Gender (M:F): Define. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores (mean, SD) - VAS pain: tai chi 3.72±2.54, control not given.
Indirectness of population	--
Interventions	(n=26) Intervention 1: Individual Mind-body exercise - Tai-chi. External Qigong session delivered by certified international Qigong masters (duration unspecified) for four weekly visits, with methods used left to discretion of practitioner. Duration 4 weeks. Concurrent medication/care: not reported (n=24) Intervention 2: Placebo/Sham. Attention control . Participants received 25-30 minutes full attention from an investigator in which both engaged in conversation.. Duration 4 weeks. Concurrent medication/care: not reported
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TAI-CHI versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months

- Actual outcome: Pain (VAS) at 8 weeks; Other: "not statistically significant"; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Vincent 2014[549]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 4 months
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Men and women 60-85 years old, experiencing LBP for ≥ 6 months, with abdominal obesity and free of abnormal cardiovascular responses during ECG screening tests
Exclusion criteria	Wheelchair bound, regular resistance training (participating in resistance exercise three or more times per week within the last 6 months), presence of specific LBP due to an acute back injury such as lumbar disc herniation or rupture, spinal stenosis with neurogenic claudication, back surgery within the previous 2 years, and use of weight loss medication
Age, gender and ethnicity	Age - Range: 60-85 years. Gender (M:F): -. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 6 months).
Extra comments	Baseline scores (mean, SD) - ODI: control 24.4±12.1, exercise 28.6±15.2; RMDQ: control 8.4±4.7, exercise 9.3±4.3; pain chair rise: control 1.4±2.1, exercise 0.7±1.3; pain stair climb: control 2.3±3.1, exercise 1.9±2.5; pain walking: control 3±2.5, exercise 3.2±2.4.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Individual Biomechanical exercise - Stretching. Lumar resistance exercise: Participants reported to the laboratory three times a week for one-on-one training sessions with an experienced exercise physiologist. For each exercise, a warm up of five repetitions at a low weight was followed by three repetitions at a higher weight of each dynamic exercise. During the first two weeks, participants performed two sets of lumbar extensions as they acclimated to the exercise (15 repetitions until volitional fatigue) once a week. From two weeks until the end of the study, participants performed one set of lumbar extensions (15 repetitions) three times a week. The resistance load for the lumbar extension resistance exercise was set at 60% 1RM and was increased by ~2% per week for the set to maintain a relative level of muscle effort at ~16–18 for the exercise over time. This was monitored by monthly assessment of 1RM values to ensure that an increase was occurring at the anticipated rate for this group.. Duration 4 months. Concurrent medication/care: Educational recommendations from the Centers for Disease Control and

	Prevention and the American Heart Association regarding physical activity and diet were provided and reviewed with each participant as part of standard care. Materials included information and demonstrations of strengthening body weight-based exercise for back health, healthy nutritional choices and information about back pain. (n=20) Intervention 2: Usual care. The control group consisted of participants who received normal medical care and follow-up during the four month study, with no resistance exercise intervention. Educational recommendations from the Centers for Disease Control and Prevention and the American Heart Association regarding physical activity and diet were provided and reviewed with each participant as part of standard care. Materials included information and demonstrations of strengthening body weight-based exercise for back health, healthy nutritional choices and information about back pain. . Duration 4 months. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STRETCHING-LUMBAR RESISTANCE EXERCISE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: NRS-pain walking at 4 months; Group 1: mean 1.1 (SD 2.4); n=18, Group 2: mean 2.6 (SD 2.9); n=14; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: NRS-stair climb at 4 months; Group 1: mean 1.7 (SD 2.4); n=18, Group 2: mean 1.4 (SD 2.5); n=14; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: NRS-chair rise at 4 months; Group 1: mean 0.9 (SD 1.6); n=18, Group 2: mean 1.3 (SD 2.4); n=14; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 4 months; Group 1: mean 8.2 (SD 5.5); n=18, Group 2: mean 6.3 (SD 4.2); n=14; RMDQ 0-23 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Adverse events at 4 months; Group 1: 3/20, Group 2: 0/20; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Weiner 2008[559]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6 weeks + follow up 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Community dwelling older adults (age 65 or older) with LBP every day or almost every day of moderate intensity or greater for 3 months or more; English speaking
Exclusion criteria	Red flags; prominent radicular pain; back surgery; spinal pathology other than degenerative disease; pain outside lower back more severe than back pain; conditions making PENS unsafe (pacemaker, anticoagulation); absolute contraindications to exercise (uncontrolled arrhythmia, third degree heart block, recent ECG changes, unstable angina, acute MI or CHF); medical instability (class III or IV CHF, oxygen dependence, recurrent falls, uncontrolled hypertension, inability to stand independently); severe uncorrected visual or hearing impairment; acute illness or pain, neurological or psychiatric disorder that could interfere with pain reporting (e.g. uncontrolled thought disorder, Alzheimer's disease, prior stroke, substance abuse)
Recruitment/selection of patients	Outpatient research facility attached to Older Adult Pain Management Program at University of Pittsburgh
Age, gender and ethnicity	Age - Range of means: 73.3 (6.0) to 74.3 (6.4) years. Gender (M:F): 86:114. Ethnicity: 89.5% white; others not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS: 32-gauge 40mm needles placed just below skin into subcutaneous fascia, approx. 15mm depth; 10 needles per session placed bilaterally at T12, L3, L5, S2 and the motor point for the piriformis muscle; electrical stimulation 30 minutes; frequency determined by response to previous session; amplitude set to perceived stimulus of moderate intensity, adjusted to continuous perceptibility; 2 needles at T12 with transient high frequency electrical stimulation as for sham PENS; twice a week for 6 weeks. Duration 6 weeks . Concurrent medication/care: Not stated

	(n=50) Intervention 2: Placebo/Sham - Sham. Sham PENS: needles placed as for PENS but stimulation applied only to 2 T12 needles; frequency 100Hz for 5 minutes then switched off for remaining time to 30 minutes. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. PENS + exercise (strength and flexibility plus aerobic components): duration up to 30 minutes, plus home exercise programme: flexibility i.e. stretches, 3 repetitions, 3 times a day, plus walking: 3 times a week, increased up to 30 minutes per day beyond routine activities. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 4: Mixed exercise - Biomechanical + aerobic. Exercise (strength and flexibility plus aerobic components): duration up to 30 minutes, plus home exercise programme: flexibility i.e. stretches, 3 repetitions, 3 times a day, plus walking: 3 times a week, increased up to 30 minutes per day beyond routine activities + sham PENS. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Center for Complementary and Alternative Medicine and the National Institute on Agine, National Institutes of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PENS + EXERCISE (BIOMECH + AEROBIC) versus PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS)

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 weeks; Group 1: mean -0.3 Not stated (SD 11.4); n=45, Group 2: mean 1.5 Not stated (SD 12); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 weeks; Group 1: mean 3.9 Not stated (SD 25.8); n=45, Group 2: mean -1.1 Not stated (SD 20.7); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean -1.8 Not stated (SD 15.5); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean -5.9 Not stated (SD 21); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean -4.1 Not stated (SD 8.2); n=45, Group 2: mean -2.9

Not stated (SD 9.2); n=47; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 weeks; Group 1: mean -0.7 Not stated (SD 0.9); n=45, Group 2: mean -0.7 Not stated (SD 1.1); n=47; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.4 Not stated (SD 7.4); n=47; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.5 Not stated (SD 1.1); n=47; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 weeks; Group 1: mean -2.6 Not stated (SD 4.6); n=45, Group 2: mean -2.6 Not stated (SD 4.5); n=47; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -2.1 Not stated (SD 4.2); n=47; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 weeks; Group 1: mean -0.4 Not stated (SD 2.6); n=45, Group 2: mean 0.3 Not stated (SD 3.2); n=47; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean 0.5 Not stated (SD 3); n=47; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PENS + EXERCISE (BIOMECH + AEROBIC) versus SHAM PENS

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 weeks; Group 1: mean -0.3 Not stated (SD 11.4); n=45, Group 2: mean -0.1 Not stated (SD 10.8); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 weeks; Group 1: mean 3.9 Not stated (SD 25.8); n=45, Group 2: mean 5.9 Not stated (SD 23.8); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months

- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean 1.2 Not stated (SD 11.3); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean 5.1 Not stated (SD 24.7); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean -4.1 Not stated (SD 8.2); n=45, Group 2: mean -2.3 Not stated (SD 6.3); n=48; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 weeks; Group 1: mean -0.7 Not stated (SD 0.9); n=45, Group 2: mean -0.6 Not stated (SD 0.7); n=48; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.3 Not stated (SD 7.4); n=48; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.6 Not stated (SD 0.8); n=48; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 weeks; Group 1: mean -2.6 Not stated (SD 4.6); n=45, Group 2: mean -2.7 Not stated (SD 3.8); n=48; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -3 Not stated (SD 4.7); n=48; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 weeks; Group 1: mean -0.4 Not stated (SD 2.6); n=45, Group 2: mean -0.2 Not stated (SD 2.8); n=48; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean -0.4 Not stated (SD 2.7); n=48; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PENS + EXERCISE (BIOMECH + AEROBIC) versus EXERCISE (BIOMECHANICAL + AEROBIC) + SHAM PENS

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 weeks; Group 1: mean -0.3 Not stated (SD 11.4); n=45, Group 2: mean 2.8 Not stated (SD 13.7); n=44; SF-36 Mental health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 weeks; Group 1: mean 3.9 Not stated (SD 25.8); n=45, Group 2: mean 6.9 Not stated (SD 22.7); n=44; SF-36 Physical health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean 1.5 Not stated (SD 13.9); n=44; SF-36 Mental health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean 8.5 Not stated (SD 27.4); n=44; SF-36 Physical health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean -4.1 Not stated (SD 8.2); n=45, Group 2: mean -3.1 Not stated (SD 7.9); n=44; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 weeks; Group 1: mean -0.7 Not stated (SD 0.9); n=45, Group 2: mean -0.6 Not stated (SD 1.2); n=44; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.1 Not stated (SD 7.1); n=44; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.58 Not stated (SD 1.1); n=44; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 weeks; Group 1: mean -2.6 Not stated (SD 4.6); n=45, Group 2: mean -3 Not stated (SD 7.9); n=44; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -2.8 Not stated (SD 5.3); n=44; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 weeks; Group 1: mean -0.4 Not stated (SD 2.6); n=45, Group 2: mean -0.3 Not stated (SD 3.2); n=44; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean -0.1 Not stated (SD 3); n=44; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Williams 2005[574]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in USA
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 7 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age over 18 years, history of non-specific low back pain with symptoms persisting for >3 months, ambulatory and English speaking
Exclusion criteria	Low back pain due to nerve root compression, disc prolapse, spinal stenosis, tumour, spinal infection, ankylosing spondylitis, spondylolisthesis, kyphosis, structural scoliosis or widespread neurological disorder, involved in litigation or compensation, pre-surgical candidates, compromised cardiopulmonary system, pregnant, BMI >35, experiencing major depression or substance abuse, practitioners of yoga
Recruitment/selection of patients	Patients recruited through physician referral and self-referral
Age, gender and ethnicity	Age - Mean (SD): E 48.7 (10.6) C 48.0 (1.96). Gender (M:F): 14/30. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 3 months).
Extra comments	Baseline scores (mean SD) - VAS: control 3.2±2.3, yoga 2.3±1.6.
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Group mind-body exercise - Group Yoga. Iyengar yoga classes for 90 minutes each week for 16 weeks. Participants were encouraged to practice at home for half an hour, five times a week. Duration 16 weeks. Concurrent medication/care: All participants received two educational lectures on low back pain, weekly newsletters on back care and were permitted to continue with their usual medical care. (n=30) Intervention 2: Usual care. Participants continued their usual medical care. Duration 16 weeks. Concurrent medication/care: All participants received two educational lectures on low back pain, weekly newsletters on back care and were permitted to continue with their usual medical care but asked to forgo any other forms of CAM during the study
Funding	Academic or government funding (West Virginia University)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 4 months; Group 1: mean 1 (SD 1.1); n=20, Group 2: mean 2.1 (SD 2.3); n=22; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 7 months; Group 1: mean 0.6 (SD 1.1); n=20, Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: decreased or stopped medication at 7 months; Group 1: 10/20, Group 2: 15/22; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: decreased or stopped medication at 4 months; Group 1: 14/20, Group 2: 6/24; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Williams 2009[573]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=90)
Countries and setting	Conducted in USA
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-70, low back pain with symptoms persisting for >3 months, BMI < 37, ODI score 10-60, VAS score 3-8cm, living within 1 hour drive of study centre, ability to get up and down from the floor and rise to standing without assistance, agree to attend a minimum number of classes and practice at home, agree not to receive any chiropractic, massage, pilates or acupuncture therapies.
Exclusion criteria	Low back pain due to spinal stenosis with pseudoclaudication, abdominal or spinal tumours, spinal infection, osteoporosis with vertebral fracture, ankylosing spondylitis, spondylolisthesis with radiculopathy, structural kyphosis or scoliosis, radicular pain with weakness or loss of reflexes, failed back syndrome, pregnancy, pre-surgical candidate, actively undergoing cancer treatment, confirmed fibromyalgia, abdominal hernia, compromised cardiopulmonary system, major depression, substance abuse, widespread neurological disorder, currently involved in litigation or receiving compensation
Recruitment/selection of patients	Unclear
Age, gender and ethnicity	Age - Mean (SD): E 48.4 (12.2) C 47.6 (10). Gender (M:F): 21/69. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores (mean, standard error) - ODI: yoga 25.2±1.08, control 23.1±1.58; VAS: yoga 41.9±2.44, control 41.2±2.67; BDI: yoga 9.2±0.92, control 8.3±0.89.
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Group mind-body exercise - Group Yoga. Iyengar yoga group classes (of 9 to 16 subjects) for 90 minutes twice weekly. Yoga therapy developed in collaboration with two senior Iyengar teachers and led by certified Iyengar yoga teachers.. Duration 24 weeks. Concurrent medication/care: not reported (n=47) Intervention 2: Usual care - Waiting-list. Participants were advised to continue self-directed standard medical care. Duration 24 weeks. Concurrent medication/care: not reported

Funding	Academic or government funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GROUP YOGA versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 1 year; Group 1: mean 27.7 (SD 22.6); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Pain VAS at 3 months; Group 1: mean 33.1 (SD 18.5); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index at 3 months; Group 1: mean 22.2 (SD 10.5); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Disability Index at 1 year; Group 1: mean 19.3 (SD 12.7); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Depression (Beck Depression Inventory) at 3 months; Group 1: mean 6.6 (SD 5.2); n=43, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Depression (Beck Depression Inventory) at 1 year; Group 1: mean 4.9 (SD 4.3); n=43, Group 2: mean 7.5 (SD 5.8); n=47; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Zhang 2015[586]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=92)
Countries and setting	Conducted in China; Setting: Qingzhou hospital of traditional Chinese medicine
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall

Subgroup analysis within study	Not applicable
Inclusion criteria	Age < 55 years; having non-specific low back pain without any relevant ongoing pathologies such as disc prolapse, fractures, spondylolysthesis, tumor, osteoporosis, or infection; willingness to participate in the study and signed informed consent
Exclusion criteria	other pain syndromes; spinal surgery in the past 6 months or having to undergo surgery or invasive examination during the study; neurological disease; psychiatric disease; serious chronic disease that could interfere with the outcomes (e.g. cardiovascular disease, rheumatoid arthritis, epilepsy, or other disqualifying conditions); pregnant or planning to become pregnant during the study
Recruitment/selection of patients	Patients were recruited from patients with non-specific low back pain in Qingzhou hospital of traditional Chinese medicine between March 2011 and June 2012.
Age, gender and ethnicity	Age - Mean (SD): Experimental group 48.71 (3.89); control group 51.62 (4.03). Gender (M:F): 60/32. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Not stated / Unclear
Extra comments	Baseline values (n) for experimental and control group, respectively: duration of pain >12 weeks 26, 29; duration of pain < 12 weeks 20, 17; Baseline values, mean (SD) for experimental and control group, respectively: ODI 29.65(8.76), 27.89(9.03); VAS 7.51(1.56), 7.58(1.54)
Indirectness of population	No indirectness
Interventions	(n=46) Intervention 1: Massage + exercise prescription - Massage + home exercise prescription. Massage (40 min, once daily, for 8 weeks: rolling, rubbing, pushing, oblique-pulling, stroking, tapotement in the low back) + unsupervised exercise (core stability: plank, side plank, bridge, straight leg raise, modified push-up; every movement performed ten times per side, once daily for 8 weeks. Patients were instructed before the beginning of treatment and were asked to demonstrate they had mastered training at time point during the trial). Duration 1 year follow up. Concurrent medication/care: Not stated. (n=46) Intervention 2: Massage. Massage (40 min, once daily, for 8 weeks: rolling, rubbing, pushing, oblique-pulling, stroking, tapotement in the low back). Duration 1 year follow-up. Concurrent medication/care: Not stated
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (MASSAGE) + EXERCISE versus MANUAL THERAPY (MASSAGE)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS at 8 weeks; Group 1: mean 1.46 (SD 0.76); n=46, Group 2: mean 2.85 (SD 1.58); n=46; VAS 0-10 Top=High is poor outcome; Risk of bias: Very

high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: ODI at 8 weeks; Group 1: mean 13.2 (SD 2.42); n=46, Group 2: mean 18.39 (SD 3.67); n=46; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Responder criteria at >4 months - Actual outcome: pain-free period for at least 30 days after treatment at 1 year; Group 1: 43/43, Group 2: 42/42; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Zylbergold 1981[589]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=28)
Countries and setting	Conducted in Canada; Setting: Outpatient waiting room of a physiotherapy department
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 1 month
Method of assessment of guideline condition	Unclear method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 25 to 65 years
Exclusion criteria	History of back surgery, neurologic involvement, gross bony abnormality, receiving compensation.
Age, gender and ethnicity	Age - Mean (SD): Exercise 49.1 (13.25) Control 46.0 (9.59). Gender (M:F): inadequately reported. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough details in inclusion criteria).
Extra comments	Baseline pain scores (mean SD): exercise 2.3±1.32, UC 2.1±1.6
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Individual Biomechanical exercise - Core stability. Moist heat for 15 minute period followed by a 15 minute lumbar flexion exercise session performed twice a week for 4 weeks. Patients were advised to continue the exercise programme at home.. Duration 1 month. Concurrent medication/care: not reported (n=8) Intervention 2: Usual care. Home-care instruction in back and body mechanics. Duration 1 month. Concurrent medication/care: not reported
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain - Melzack pain scale at 1 month; Group 1: mean -1 (SD 0.85); n=10, Group 2: mean -0.6 (SD 0.82); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up

- Actual outcome for Overall (acute, chronic) without sciatica: Problem-oriented Index for Functional Assessment at 1 month; Group 1: mean 2.05 (SD 1.4); n=10, Group 2: mean 2.95 (SD 4.3); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.6 Postural therapies

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Study (subsidiary papers)	**ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=579)
Countries and setting	Conducted in United Kingdom

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Line of therapy	Unclear
Duration of study	Intervention and follow-up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-65 years with current back pain for 3 or more weeks with presentation in primary care with low back pain more than 3 months previously, currently scoring 4 or more on the Roland disability scale
Exclusion criteria	Clinical indicators of serious spinal disease, current nerve root pain (below knee in dermatomal distribution), previous spinal surgery, pending litigation, previous experience of Alexander technique, perceived inability to walk 100m, history of psychosis or major alcohol misuse.
Recruitment/selection of patients	Patients recruited between July 2002 and July 2004
Age, gender and ethnicity	Age - Mean (SD): 45. Gender (M:F): 177:402. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Presentation more than 3 months previously, current episode 3 or more weeks).
Extra comments	Baseline data not usable
Indirectness of population	No indirectness
Interventions	(n=73) Intervention 1: Postural therapies - Alexander technique. Six Alexander technique lessons taught by registered teachers. Two lessons a week for 2 weeks, then one lesson a week for 2 weeks. Duration 4 weeks. Concurrent medication/care: not reported. (n=71) Intervention 2: Postural therapy and exercise - Alexander technique and home exercise prescription. Six Alexander technique lessons taught by registered teachers. Two lessons a week for 2 weeks, then one lesson a week for 2 weeks. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention). Duration 4 weeks. Concurrent medication/care: not reported. (n=73) Intervention 3: Postural therapies - Alexander technique. Six Alexander technique lessons taught by registered teachers. Two lessons a week for 6 weeks, then one lesson a week for 6 weeks, one fortnightly for 8 weeks, and 2 further revision lessons delivered at 7 months and 9 months. Duration 9 months. Concurrent medication/care: not reported

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
	(n=71) Intervention 4: Postural therapy and exercise - Alexander technique and home exercise prescription. Six Alexander technique lessons taught by registered teachers. Two lessons a week for 6 weeks, then one lesson a week for 6 weeks, one fortnightly for 8 weeks, and 2 further revision lessons delivered at 7 months and 9 months. prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention). Duration 9 months. Concurrent medication/care: not reported (n=75) Intervention 5: Massage. Therapeutic massage. One lesson a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: not reported (n=72) Intervention 6: Massage and exercise - Massage and home exercise prescription. Therapeutic massage. One lesson a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: not reported (n=72) Intervention 7: Usual care. Usual care - details not specified. Duration 9 months. Concurrent medication/care: no exercise prescription given (n=72) Intervention 8: Individual Aerobic exercises - Aerobics exercise. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention). Duration 6 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Medical Research Council)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (6 lessons) versus Alexander technique (24 lessons) Protocol outcome 1: Quality of life at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 67.93 (SD 22.8075); n=61; Risk of bias: High; Indirectness of outcome: No indirectness Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 68.54 (SD 23.127); n=61; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 3.4 (SD 2.6); n=61; Von Korff Pain Score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 1.07 (SD 2.24); n=61; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 5.09 (SD 5.1933); n=61; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.44 (SD 0.91); n=61; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (24 lessons) versus MASSAGE

Protocol outcome 1: Quality of life at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 54.65 (SD 24.3053); n=64; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 5.03 (SD 2.7); n=64; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.077 (SD 1.65); n=64; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 8.78 (SD 5.207); n=64; Roland Morris Disability Score 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.32 (SD 0.75); n=56; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (6 lessons) versus USUAL CARE

Protocol outcome 1: Quality of life at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 56.1 (SD 18.6); n=60; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 64.8 (SD 20.4206); n=60; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 4.47 (SD 2.2); n=60; Von Korff Pain Scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.85 (SD 1.64); n=60; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 9.23 (SD 5.3); n=60; Roland Disability Score 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.43 (SD 0.71); n=60; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (6 lessons) versus AEROBICS EXERCISE

Protocol outcome 1: Quality of life at > 4 months - 1 year

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.286); n=58, Group 2: mean 54.02 (SD 25.8778); n=51; Risk of bias: High; Indirectness of outcome: No indirectness Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 65.52 (SD 24.7131); n=51; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 4.3 (SD 2.6); n=61, Group 2: mean 4.43 (SD 2.8); n=51; Von Korff Pain Score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.88 (SD 1.56); n=51; Risk of bias:; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 7.58 (SD 5.258); n=51; Risk of bias:; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.91); n=58, Group 2: mean 0.5 (SD 0.99); n=51; Risk of bias:; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (6 lessons) versus MASSAGE Protocol outcome 1: Quality of life at > 4 months - 1 year Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 54.65 (SD 24.305); n=64; Risk of bias: High; Indirectness of outcome: No indirectness Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 62.69 (SD 23.4832); n=64; Risk of bias: High; Indirectness of outcome: No indirectness Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 62.69 (SD 23.4832); n=64; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness	

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 5.03 (SD 2.7); n=64; Von Korff Pain Scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.6 (SD 1.55); n=56; Risk of bias:; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 8.78 (SD 5.207); n=64; Roland Disability Score 0-24 Top=High is poor outcome; Risk of bias:; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.67 (SD 0.91); n=60; Risk of bias:; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (24 lessons) versus USUAL CARE

Protocol outcome 1: Quality of life at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8); n=61, Group 2: mean 56.1 (SD 18.6); n=60; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 64.8 (SD 17.5); n=60; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 4.74 (SD 2.2); n=60; Von Korff Pain Score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=58, Group 2: mean 0.85 (SD 1.64); n=60; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Protocol outcome 4: Function (disability scores) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 9.23 (SD 5.3); n=60; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.43 (SD 0.71); n=60; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique (24 lessons) versus AEROBICS EXERCISE

Protocol outcome 1: Quality of life at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 54.02 (SD 25.8778); n=51; Risk of bias: High; Indirectness of outcome: No indirectness

Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 65.52 (SD 24.7131); n=51; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Von Korff Pain Score at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 4.43 (SD 2.8); n=51; Von Korff Pain Score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.88 (SD 1.56); n=51; Risk of bias:; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 7.58 (SD 5.258); n=51; Roland Disability Score 0-24 Top=High is poor outcome; Risk of bias:; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (hospitalisation/GP visit) at > 4 months - 1 year

Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.5 (SD 0.99); n=51;

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Risk of bias:; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS) at ≤ 4 months; Adverse event (mortality) at ≤ 4 months; Mood (HADS) at ≤ 4 months; Mood (HADS) at > 4 months - 1 year; Adverse events (additional treatment) at ≤ 4 months

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Study	Little 2014[328]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=69)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-65 years with current back pain for 3 or more weeks with presentation in primary care with low back pain more than 3 months previously, currently scoring 4 or more on the Roland disability scale
Exclusion criteria	Clinical indicators of serious spinal disease, previous spinal surgery, pending litigation, previous experience of Alexander technique, perceived inability to walk 100m, history of psychosis or major alcohol misuse, pregnancy.
Recruitment/selection of patients	Mailed invitation to potential participant, based on GP and surgery visits.
Age, gender and ethnicity	Age - Mean (SD): 50.51 (11.09). Gender (M:F): 43/26. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (Not focused on due to variable nature of chronic and recurrent back pain.).
Extra comments	Baseline scores (mean SD) for exercise, exercise + alexander, alexander and control groups, respectively – RMDQ: 10.29 (5.45), 11.44 (3.91), 10.06 (4.10), 9.24 (5.13); pain: 5.88 (1.60), 6.22 (1.94), 5.61 (2.13), 5.75 (2.04)
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Usual care. No treatment or exercise prescribed. Duration 12 weeks. Concurrent medication/care: Not reported (n=17) Intervention 2: Postural therapies - Alexander technique. 10 lessons and a copy of a recommended book

Study	Little 2014[328]
	providing an introduction to the Alexander technique. Duration 12 weeks. Concurrent medication/care: Not reported (n=17) Intervention 3: Mixed exercise - Biomechanical + aerobic. 20 hours of supervised, tailored exercises in a group setting, spread over 10-12 sessions. Sessions include motor relearning, strengthening, stretching, and aerobic exercises. Duration 12 weeks. Concurrent medication/care: Not stated (n=18) Intervention 4: Postural therapy + exercise prescription - Alexander technique + home exercise prescription. 10 lessons and a copy of a recommended book providing an introduction to the Alexander technique. Plus 20 hours of supervised, tailored exercises in a group setting, spread over 10-12 sessions. Sessions include motor relearning, strengthening, stretching, and aerobic exercises. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Equipment / drugs provided by industry (Myoton Ltd.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: USUAL CARE versus Alexander technique

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Von Korff pain scale at 3 months; Mean -0.63 (95%CI -1.99 to 0.73) (p value 0.358) Von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Von Korff pain scale at 6 months; MD 0.09 (95%CI -1.35 to 1.52) (p value 0.906) Von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: RMDQ at 3 months; MD -1.37 (95%CI -4.82 to 2.07) (p value 0.427) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: RMDQ at 6 months; MD -2.86 (95%CI -6.53 to 0.81) (p value 0.124) 0-24 RMDQ Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: USUAL CARE versus BIOMECHANICAL + AEROBIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Von Korff pain scale at 3 months; MD -0.88 (95%CI -2.26 to 0.5) (p value 0.208) Von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Little 2014[328]
	Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Von Korff pain scale at 6 months; MD 0.15 (95%CI -1.34 to 1.63) (p value 0.841) Von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: RMDQ at 3 months; MD -1.90 (95%CI -5.41 to 1.6) (p value 0.281) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: RMDQ at 6 months; MD -3 (95%CI -6.88 to 0.88) (p value 0.126) 0-24 RMDQ Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: USUAL CARE versus Alexander technique + HOME EXERCISE PRESCRIPTION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Von Korff pain scale at 3 months; Mean -1.27 (95%CI -2.63 to 0.1) (p value 0.068) Von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Von Korff pain scale at 6 months; MD -0.59 (95%CI -2.04 to 0.86) (p value 0.415) Von Korff pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: RMDQ at 3 months; MD -0.75 (95%CI -4.21 to 2.72) (p value 0.667) 0-24 RMDQ Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: RMDQ at 6 months; MD -2.51 (95%CI -6.21 to 1.19) (p value 0.179) 0-24 RMDQ Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: Alexander technique versus Alexander technique + HOME EXERCISE PRESCRIPTION Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: Days in pain during previous week. at 10 weeks; Group 1: mean 3.71 days (SD 2.7); n=15, Group 2: mean 4.36 days (SD 2.95); n=15; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 10 weeks; Group 1: mean 5.57 (SD 4.97); n=15, Group 2: mean 6.85 (SD 6.36); n=15; RMDQ 0-24 Top=High is poor outcome; Risk of bias:

Study	Little 2014[328]
High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL + AEROBIC versus Alexander technique + HOME EXERCISE PRESCRIPTION Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: Days in pain during previous week. at 10 weeks; Group 1: mean 3.64 days (SD 2.16); n=14, Group 2: mean 3.2 days (SD 2.78); n=15; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 10 weeks; Group 1: mean 5.45 (SD 3.72); n=14, Group 2: mean 5.9 (SD 6.57); n=15; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Moustafa 2015[394]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=154)
Countries and setting	Conducted in Egypt; Setting: outpatient clinic, Faculty of physical therapy, Cairo University, Egypt
Line of therapy	Unclear
Duration of study	Follow-up (post intervention): 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: People with confirmed chronic unilateral lumbosacral radiculopathy associated with L5-S1 disc prolapse
Subgroup analysis within study	Not applicable
Inclusion criteria	Anterior head translation distance of more than 15 mm on lateral cervical radiograph; confirmed chronic unilateral lumbosacral radiculopathy associated with L5-S1 lumbar disc prolapse, with symptoms lasting longer than 3 months; unilateral leg pain with mild to moderate disability (ODI up to 40%) and side-to-side H-reflex latency differences of > 1 millisecond and prolonged H-reflex latency > 30 milliseconds; patients with lumbar hyperlordosis were selected
Exclusion criteria	Previous history of lumbosacral surgery, metabolic system disorder, cancer, cardiac problems, peripheral neuropathy, history of upper motor neuron lesion, spinal canal stenosis, rheumatoid arthritis, osteoporosis, and any lower extremity deformity that might interfere with global posture alignment
Recruitment/selection of patients	Patients recruited from January to October 2010 from the outpatient clinic of physical therapy, Cairo University
Age, gender and ethnicity	Age - Mean (SD): intervention group 49.1 (4.9); control group 50.5 (4.8). Gender (M:F): 100/54. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (>3 months).
Extra comments	Baseline values (mean (SD)) for intervention and control groups, respectively: duration of pain (weeks) 26(8.6), 25(8); ODI 32.4(5.3), 30.1(5); NRS back pain 4.6(1), 5.2(0.8); NRS leg pain 6.4(1.2), 6.9(0.7). Baseline values (n) for intervention and control groups, respectively: past use of physiotherapy 44, 50; use of medication for low back pain 44, 50
Indirectness of population	No indirectness
Interventions	(n=77) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. 3-MBR as described for intervention group + head posture corrective exercise program. The latter consisted of 2 strengthening (deep cervical flexors and shoulder retractors) and 2 stretching (cervical extensors and pectoral muscles) exercises, to be repeated 4 times per week (30 minutes each) for 10 weeks.. Duration 2 years. Concurrent medication/care: Avoidance of other exercise programs that could interfere with the results.

Study	Moustafa 2015[394]
	(n=77) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. 'Functional restoration program' involving physical therapists and clinical psychologists.a) Education: patients taught about their injuries, self-management strategies and coping strategies for stress and catastrophizing thoughts, relaxation techniques (group sessions)b) Cognitive: challenging instances of maladaptive thinking; positive reinforcement of wellness and social behaviours (group sessions)c) Physical: phase 1- exercises to retrain of the transversus abdominis, lumbar multifidus and pelvic floor muscles; phase 2- clinic-based, supervised functional restoration program (3 times/week plus additional sessions at home), eg walking on a treadmill, step-ups, dumbbells; phase 3 - individual independent program of endurance and low-impact aerobic exercise at a public gymnasium (20-30 min twice per week) after the first 6 weeks for 2 years.. Duration 2 years. Concurrent medication/care: Avoidance of other exercise programs that could interfere with the results.
Funding	Funding not stated (No funding sources or conflicts of interests were reported)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3-MBR + HEAD POSTURE CORRECTIVE EXERCISE PROGRAM versus 3-MBR Protocol outcome 1: Pain severity (VAS/NRS) at ≤4 months - Actual outcome for Overall (acute, chronic) with sciatica: NRS back pain at 10 weeks; Group 1: mean 3.2 (SD 1.2); n=77, Group 2: mean 3.1 (SD 1.3); n=77; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS leg pain at 10 weeks; Group 1: mean 4.6 (SD 1.6); n=77, Group 2: mean 4.4 (SD 1.8); n=77; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at ≤4 months - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 10 weeks; Group 1: mean 16.6 (SD 5.1); n=77, Group 2: mean 19.4 (SD 6.4); n=77; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Quality of life at >4 months – 1 year; Pain severity (VAS/NRS) at >4 months – 1 year; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months – 1 year; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months – 1 year; Adverse event (mortality) at ≤4 months; Adverse event (mortality) at >4 months – 1 year; Responder criteria at ≤4 months; Responder criteria at >4 months – 1 year; Return to work at ≤4 months; Return to work at >4 months– 1 year

H.7 Orthotics

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Study	Alexander 1995[7]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in USA; Setting:
Line of therapy	Unclear
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	People working in nursing and environmental services
Exclusion criteria	Back surgery, current workers compensation claims, pregnant, cardiovascular problems
Age, gender and ethnicity	Age - Mean (SD): Belted group 38 (9.95), control group 36 (8.65). Gender (M:F): 12/48. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline scores - number of people with no lower back pain: belts 3, control 2
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Orthotics and appliance - Belt/corsets. Participants received back belts and were trained in their use, they were asked to wear them at work. Duration 3 months. Concurrent medication/care: Not stated (n=30) Intervention 2: Usual care. No intervention. Duration 3 months. Concurrent medication/care: Asked to not wear any back belts during this time
Funding	Equipment / drugs provided by industry (Belts provided by North Coast Medical Inc.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus USUAL CARE

Protocol outcome 1: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Number of improvers (pain) at 3 months; Group 1: 5/30, Group 2: 3/29; Risk of bias: Very high;

Study	Alexander 1995[7]
Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Calmels 2009[63]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=197)
Countries and setting	Conducted in France
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Men and women aged 20-60 years, treatment for an initial episode or recurring non-specific low back pain, episode lasting 1-3 months, no contraindications to step I or step II analgesics, NSAIDS, benzodiazepines and thiocolchicoside, signing the consent form
Exclusion criteria	Have used lumbar belt during last 6 months, sciatica, having suffered from a low back pain episode during the past 6 months prior to inclusion, had spinal surgery in the past 5 years, secondary low back pain due to accident at work, history of spinal arthrodesis, instable or symptomatic chronic cardiac or respiratory complaint, low back pain with an inflammatory, tumoural or infectious cause, with contraindication to step I or step II analgesics, NSAID, benzodiazepine, and thiocolchicodiside, pregnancy, higher functions do not allow patients to properly comprehend to protocol or to reliable record data
Age, gender and ethnicity	Age - Mean (SD): 43 (10.37). Gender (M:F): 108/89. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Episode lasting 1-3 months (new or recurrent episode)).
Extra comments	Baseline scores - EIFEL: belt group 10.3±4.3, control 10.1±4.3; VAS: belt group 60.9±17.7, control 59.7±18.1
Indirectness of population	--

Interventions	(n=102) Intervention 1: Orthotics and appliance - Belt/corsets. Lumbar belt to be worn every day. Duration 3 months. Concurrent medication/care: Unclear (n=95) Intervention 2: Usual care. No intervention. Duration 3 months. Concurrent medication/care: unclear
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 months; Group 1: mean -41.5 (SD 21.49); n=98, Group 2: mean -32 (SD 20); n=92; Pain visual analogue scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: EIFEL score (French version of the Roland Morris disability questionnaire) at 3 months; Group 1: mean -7.6 (SD 4.4); n=98, Group 2: mean 6.1 (SD 4.73); n=92; EIFEL score (French version of the RMDQ) 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Cambron 2011[65]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised

Inclusion criteria	18 years and above, symptomatic with current pain between T12 and the S1 joints with or without radiating pain, symptoms present for at least 3 months
Exclusion criteria	Use of custom made orthotics in the past year, brain disorders that would lead to difficulty in questionnaire completion, active conservative care (such as physiotherapy, chiropractic care) for low back received in the last 6 months (excluding the use of oral medication or daily at-home exercises for general wellbeing) to prevent overtreatment as well as possible crossover effects within this study from prevention treatments, not fluent or literate in English, current or future litigation for low back pain, chronic pain other than low back pain such as fibromyalgia or thyroid disease, low back surgery in the last 6 months, other conditions that may affect the outcomes of this study including contraindications to orthotic use, peripheral neuropathology due to disorders such as diabetes, low back or leg pain that is not reproducible
Age, gender and ethnicity	Age - Mean (SD): Orthotics group 51 (16), control group 53 (16). Gender (M:F): 22/28. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores - Oswestry: orthotics 10.0±4.9, control 10.4±5.4; VAS: orthotics 5.0±2.2, control 4.3±1.9
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Orthotics and appliance - Orthopaedic shoes. Shoe orthotics. Duration 6 weeks. Concurrent medication/care: Not stated (n=25) Intervention 2: Usual care - Waiting list. Waiting list for shoe orthotics. Duration 6 weeks. Concurrent medication/care: not stated
Funding	Equipment / drugs provided by industry (Foot Levelers, Inc. funded the study, provided the foot orthotics and gave compensation to one of the authors conducting the study for postgraduate lectures.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ORTHOPAEDIC SHOES versus WAITING LIST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS at 6 weeks; Group 1: mean 2.8 (SD 2.6); n=23, Group 2: mean 4.1 (SD 2.3); n=25; Pain visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 6 weeks; Group 1: mean 6.2 (SD 5.2); n=23, Group 2: mean 10.2 (SD 5.4); n=25; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Castro-mendez 2013[72]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Spain
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Foot pressure index of 6 or more indicating at least one pronated foot, presence of chronic low back pain, ages 18-65 years
Exclusion criteria	Serious illness, pregnancy, previous back or lower extremity surgery, currently under medical or physiotherapy treatment for low back pain or some foot pathology, and leg length discrepancy >5 mm
Recruitment/selection of patients	All participants had a routine lower limb examination to determine whether they were candidates for treatment with foot orthotics (foot pressure index of 6 and over)
Age, gender and ethnicity	Age - Mean (SD): Experimental group 39.55 (14.38), control group 42.05 (15.17). Gender (M:F): 9/51. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) ('Presence of chronic low back pain').
Extra comments	Baseline scores - VAS: orthotics group 6.21±1.24, control group 6.95±1.79; Oswestry: orthotics group 18.83±11.34, control group 20.82±9.29
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Orthotics and appliance - Orthopaedic shoes. Foot orthotics. Duration 4 weeks. Concurrent medication/care: Participants instructed not to receive any other medical, podiatric, or physiotherapy treatment during this study, and avoid taking self-medication (n=26) Intervention 2: Placebo/Sham. Placebo foot orthotics. Duration 4 weeks. Concurrent medication/care: Participants instructed not to receive any other medical, podiatric, or physiotherapy treatment during this study, and

	avoid taking self-medication
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ORTHOPAEDIC SHOES versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at ≤ 4 months Actual outcome for Overall (acute, chronic) with sciatica: Pain VAS at 4 weeks; Group 1: mean 3.17 (SD 1.95); n=29, Group 2: mean 6.64 (SD 1.56); n=22; Pain visual analogue scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up Actual outcome for Overall (acute, chronic) with sciatica: Oswestry's disability index questionnaire at 4 weeks; Group 1: mean 8.69 (SD 8.93); n=29, Group 2: mean 21.64 (SD 8.87); n=22; Oswestry's disability index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months - 1 year; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Psychological distress (HADS/GHQ/BPI/STAI) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	**Doran 1975[118] (Newel 1977[407])**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=456)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Age 20 to 50 years, have painful limitation of movement in the lumbar spine, be suitable for any of the experimental treatments
Exclusion criteria	Psychological disturbance, pregnancy, deviation of the lumbar spine from vertical of over 15 degrees, significant root pain in one or both legs, straight-leg raising reduced to less than 30 degrees on either side continuous paraesthesia

	brought on by weight bearing, associated disturbances of micturition, abnormal reflexes, sensory loss, significant weakness or wasting due to latest attack, osteoarthritis of the hip joint, clinical evidence of sacroiliitis, significant radiological osteoporosis, previous manipulation, corset wearing, radiological evidence of spondylosis, spondylolisthesis, hemivertebra, or vertebral abnormalities including those associated with systemic disease
Age, gender and ethnicity	Age - Range: 20-50 years. Gender (M:F): 245/211. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	No baseline scores reported
Indirectness of population	No indirectness
Interventions	(n=117) Intervention 1: Manual therapy - Manipulation. manipulation (any sort at discretion of manipulator), 2 times a week for 3 weeks. Duration 6 weeks. Concurrent medication/care: unclear (n=113) Intervention 2: Paracetamol. 2 tablets every 4 hours. Duration 6 weeks. Concurrent medication/care: unclear (n=116) Intervention 3: Orthotics and appliance - Belt/corsets. Any type of corset. Duration 6 weeks. Concurrent medication/care: unclear
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION (HIGH VELOCITY LOW AMPLITUDE) versus BELT/CORSETS

Protocol outcome 1: Responder criteria at Up to 4 months*
- Actual outcome for Overall (acute, chronic) without sciatica: pain assessment at 3 months; Group 1: 44/98, Group 2: 27/93; Risk of bias: Very high; Indirectness of outcome: No indirectness

* Error in the study: reports 0-100 pain scale for pain but should be 0-10.

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PARACETAMOL versus BELT/CORSETS

Protocol outcome 1: Responder criteria at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: pain assessment at 3 months; Group 1: 33/100, Group 2: 27/93; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up;

	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Ferrari 2013[133]**
Study type	Other non-randomised study
Number of studies (number of participants)	1 (n=66)
Countries and setting	Conducted in Canada
Line of therapy	Adjunctive to current care
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Over 17 years of age, read and write English at grade 8 or higher, current pain from T12 or lower, with or without radiating pain, present for at least 3 months, pain attributed to a previous motor collision, no loss of consciousness, presented with low back pain within 3 days of accident
Exclusion criteria	Current use of customised foot orthotics, neurological disorders including sciatica and objective neurological signs, cancer, spinal stenosis, spinal or low limb surgery, recent or complicated fracture, known inflammatory arthropathy, severe osteoarthritis of the lower limb joints, prosthetic joints, or congenital low limb deformity. Mild to moderate lower limb joint osteoarthritis was not an exclusion. Participants in the usual care group were excluded if they obtained orthotics during the study period.
Age, gender and ethnicity	Age - Mean (SD): usual care 39.2 (10.4), orthotics 35.4 (9.6). Gender (M:F): 27/39. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (>3 months duration) (At least 3 months pain).
Extra comments	Baseline scores (mean SD) - ODI: orthotics 39.6 ± 11.6, usual care 37.0 ± 11.4. Individuals with chronic low back pain following a motor collision
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Orthotics and appliance - Orthopaedic shoes. Foot orthotic (shoe) (Footmaxx Premium Allsport orthotic). Duration 8 weeks. Concurrent medication/care: Participants also received usual care which consisted of education, referral to a physiotherapist for spinal assessment and a tailored exercise for 6-7 weeks, and analgesic medication. They could seek orthotics from other sources.

	(n=32) Intervention 2: Usual care. Participants received usual care which consisted of education, referral to a physiotherapist for spinal assessment and a tailored exercise for 6-7 weeks, and analgesic medication. Duration 8 weeks. Concurrent medication/care: They could seek orthotics from other sources.
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ORTHOPAEDIC SHOES versus USUAL CARE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 8 weeks; Group 1: mean 23.1 (SD 11.1); n=34, Group 2: mean 16.2 (SD 10.5); n=30; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Psychological distress (HADS/GHQ/BPI/STAI) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Hsieh 1992[227]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=53)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Aged 18 to 55 years, low back pain for more than 3 weeks and less than 6 months for this episode, self-report good health, willingness to travel to the facility and be randomised to either treatment
Exclusion criteria	Sciatica or radiating pain below the knee accompanied by positive nerve root tension sign, neurological deficits of the lumbosacral roots, low back pain due to fracture, tumour, infection or spondyloarthropathy, overweight, previous

	manipulation for this episode, pregnancy, previous back surgery, heart pacemaker, workmen's compensation or disability insurance issues
Age, gender and ethnicity	Age - Mean (SD): 33.97 (9.81). Gender (M:F): Not specified. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (3 weeks 0 - 6 months for current episode).
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Manual therapy - Manipulation. Chiropractic manipulation 3 times a week, including a hot packs on the low back for 10 minutes followed by diversified manipulation of the lumbar and/or sacroiliac joint areas. Duration 3 weeks. Concurrent medication/care: Not stated (n=15) Intervention 2: Massage. 3 times a week sessions of hot pack on low back for 10 minutes followed by gentle stroking massage to the whole back area-no deep tissue massage. Duration 3 weeks. Concurrent medication/care: Not stated (n=12) Intervention 3: Orthotics and appliance - Belt/corsets. Participant's received an initial fitting with Freeman Lumbosacral Corset, they were told to wear the corset 8 hours per day during the daytime. Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Other (The foundation for chiropractic education and research, and the national institute of disability and rehabilitation research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus MANIPULATION (HIGH VELOCITY LOW AMPLITUDE)

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Revised Oswestry Low Back Pain Questionnaire at 3 weeks; Group 1: mean 21 (SD 13.09); n=12, Group 2: mean 10.15 (SD 13.67); n=26; Revised Oswestry Low Back Pain Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus MASSAGE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Revised Oswestry Low Back Pain Questionnaire at 3 weeks; Group 1: mean 21 (SD 13.09); n=12, Group 2: mean 32.67 (SD 18.7); n=15; Revised Oswestry Low Back Pain Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	**Macrae 2013[336] (Macrae 2013[335])**
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=115)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention time: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	18 to 65 years of age, at least 3 months of low back pain history.
Exclusion criteria	Constant low back pain, specific spinal medical diagnosis inappropriate for physiotherapy interventions for example spinal fracture or infection, inappropriate to wear rocker sole shoes in accordance with footwear company (Masai GB Ltd.) recommendations for example peripheral neuropathy, history of falls, Morton neuroma, inappropriate for exercise physiotherapy for example severe cardiovascular or metabolic disease preventing participation in the exercise group, participants who has previously used rocker sole shoes.
Age, gender and ethnicity	Age - Mean (SD): usual care 43 (12.1), orthotics group 43.1 (12.1). Gender (M:F): 39/76. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months history).
Extra comments	Baseline scores - disability (RMDQ): orthotics group 7.8±5.0, sham group 9.2±4.7; pain NRS: orthotics group 6.6±1.7, sham group 6.6±2.0; EQ5D: orthotics group 0.6±0.2, sham group 0.7±0.2; anxiety HADS: orthotics group 7.5±4.2, sham group 7.7±3.6; depression HADS: orthotics group 4.8±3.7, sham group 5.2±3.1
Indirectness of population	No indirectness
Interventions	(n=57) Intervention 1: Orthotics and appliance - Orthopaedic shoes. Rocker sole shoes worn a minimum of 2 hours a day. Duration 1 year. Concurrent medication/care: Attended low back pain exercise group-1 hour once a week for 4 weeks. Exercise aimed to improve strength of limb and trunk muscles and increase cardiovascular fitness, in addition to specific trunk muscle exercises. Shoes worn during exercise

	(n=58) Intervention 2: Placebo/Sham. Flat sole shoes worn at least 2 hours a day. Duration 1 year. Concurrent medication/care: Attended low back pain exercise group-1 hour once a week for 4 weeks. Exercise aimed to improve strength of limb and trunk muscles and increase cardiovascular fitness, in addition to specific trunk muscle exercises.
Funding	Other (Masai GC Ltd. grant funds supported the research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ORTHOPAEDIC SHOES versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: EQ-5D-3L at 6 weeks; Group 1: mean 0.6 (SD 0.3481); n=49, Group 2: mean 0.7 (SD 0.3519); n=50; EQ-5D-3L -0.5-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: EQ-5D-3L at 1 year; Group 1: mean 0.7 (SD 0.3289); n=44, Group 2: mean 0.8 (SD 0.3481); n=49; EQ-5D-3L -0.5-1 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS at 6 weeks; Group 1: mean 4.6 (SD 2.4631); n=50, Group 2: mean 4.9 (SD 2.1112); n=50; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS at 1 year; Group 1: mean 4.2 (SD 3.2892); n=44, Group 2: mean 4.2 (SD 2.7852); n=49; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris disability questionnaire at 6 weeks; Group 1: mean 4.9 (SD 5.278); n=50, Group 2: mean 6.1 (SD 4.2224); n=50; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris disability questionnaire at 1 year; Group 1: mean 4 (SD 4.9338); n=44, Group 2: mean 4.8 (SD 4.8741); n=49; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Anxiety (HADS) at 6 weeks; Group 1: mean 7.4 (SD 5.9818); n=50, Group 2: mean 6.1 (SD 3.5187); n=50; Hospital anxiety and depression scale (HADS) 0-21 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Anxiety (HADS) at 1 year; Group 1: mean 6.3 (SD 5.2627); n=44, Group 2: mean 6 (SD 3.8296); n=41; HADS 0-21 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Depression (HADS) at 6 weeks; Group 1: mean 4.1 (SD 5.278); n=50, Group 2: mean 3.2 (SD 3.1668); n=50;

HADS 0-21 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Depression (HADS) at 1 year; Group 1: mean 4.3 (SD 5.2627); n=44, Group 2: mean 3.5 (SD 2.7852); n=49; HADS 0-21 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Morrisette2014 trial: Morrisette 2014[389]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=98)
Countries and setting	Conducted in USA; Setting: Secondary care.
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks.
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Not reported.
Stratum	Overall
Subgroup analysis within study	Not applicable: N/A
Inclusion criteria	18 years of age or older, with a primary report of acute, sub-acute, or chronic low back pain.
Exclusion criteria	Previous spinal surgery; Litigation related to low back pain; Neurological disease or injury; Systematic inflammatory disease; Current pregnancy; Acute fracture; Tumour or metastatic disease; Systematic or spinal infection; Presence of pathological reflexes (e.g., Babinski); Presence of lower extremity pain upon cervical motion. The presence of 2 or more of the following signs: diminished lower extremity strength after a myotomal distribution, diminished sensation, and/or absence of deep tendon reflexes.
Recruitment/selection of patients	Consecutive patients as they sought care.
Age, gender and ethnicity	Age - Mean (SD): Standard care: 45.0(16.6); eLSO: 48.8(15.6); iLSO: 50.4(14.0). Gender (M:F): Standard Care:11/18; eLSO:10/22; iLSO:17/20. Ethnicity: Standard care: Caucasian(C) - 8, African American (AA) - 21; eLSO: C-10, AA - 2; iLSO: C - 8, AA - 29.
Further population details	1. Chronicity of pain: Mixed (Acute / sub-acute / chronic).
Extra comments	Baseline ODI% score, mean (SD): Standard Care - 33.8(16.2); eLSO - 35.6(14.8); iLSO - 40.5(16.7). Baseline NPRS score, mean(SD): Standard Care - 7.6(1.8); eLSO - 7.6(2.0); iLSO - 7.6(2.3). N/A
Indirectness of population	No indirectness: Meets protocol.

Interventions	(n=32) Intervention 1: Orthotics and appliance - Belt/corsets. Extensible lumbosacral orthotics (eLSO), worn for 4.8 hours a day. Belts provided by Mueller Sports Medicine, Inc., Prairie du Sac, Wisconsin, USA. Standard care was also given: Physician advice and medication (no injections during the study period); Treatments included: posture and activity education, stabilisation exercise, centralization exercise, aerobic exercise, manual therapy: mobilization/manipulation, electrical stimulation, traction, soft tissue manipulation/massage, cold pack/moist heat, ultrasound. Duration 2 weeks. Concurrent medication/care: Medication treatment (no. of people): Narcotic - 6; Muscle relaxant - 3; NSAID - 15; Antidepressant - 4. Comments: N/A (n=37) Intervention 2: Orthotics and appliance - Belt/corsets. Inextensible lumbosacral orthotics (iLSO), worn for 4.8 hours a day. Belts provided by QuickDraw Pro, Aspen Medical Products Inc., Long Beach, California, USA. Standard care is also given: Physician advice and medication (no injections during the study period); Treatments included: posture and activity education, stabilisation exercise, centralization exercise, aerobic exercise, manual therapy: mobilization/manipulation, electrical stimulation, traction, soft tissue manipulation/massage, cold pack/moist heat, ultrasound. Duration 2 weeks. Concurrent medication/care: Medication treatment (no. of people): Narcotic - 7; Muscle relaxant - 5; NSAID - 14; Antidepressant - 3. Comments: N/A (n=29) Intervention 3: Usual care. Physician advice and medication (no injections during the study period); Treatments included: posture and activity education, stabilisation exercise, centralization exercise, aerobic exercise, manual therapy: mobilization/manipulation, electrical stimulation, traction, soft tissue manipulation/massage, cold pack/moist heat, ultrasound. Duration 2 weeks. Concurrent medication/care: Medication treatment (no. of people): Narcotic - 5; Muscle relaxant - 7; NSAID - 13; Antidepressant - 2. Comments: N/A
Funding	Study funded by industry (Aspen Medical Products, Irvine CA and NIH)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ELSO versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Numerical Pain Rating Scale (NPRS) at 2 weeks; Group 1: mean 3.3 No units. (SD 3.1); n=32, Group 2: mean 2.4 No units. (SD 2.6); n=29; NPRS 0 - 10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Oswestry Disability Index (ODI) at 2 weeks; Group 1: mean 8.1 No units. (SD 14.7); n=32, Group 2: mean 2.4 No units. (SD 12.1); n=29; ODI 0 - 100

Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ILSO versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Numerical Pain Rating Scale (NPRS) at 2 weeks; Group 1: mean 3.3 No units. (SD 3); n=37, Group 2: mean 2.4 No units. (SD 2.6); n=29; NPRS 0 - 10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index (ODI) at 2 weeks; Group 1: mean 14 No units. (SD 17.4); n=37, Group 2: mean 2.4 No units. (SD 12.1); n=29; ODI 0 - 100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Pope 1994{POPE1994}**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=164)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-55 years, general health is good, current low back pain episode between 3 weeks and 6 months duration, no low back pain episode 3 weeks before current episode,
Exclusion criteria	Pregnancy, sciatica (pain radiating below the knee, including patient with buttocks and upper thigh pain), no neurologic deficits such as loss of sensation, strength and reflex, no previous vertebral fracture, tumour, infection, or spondyloarthropathy, no previous back surgery, davenport weight index (kg/meter) not greater than 33, no previous manipulation therapy, no conditions potentially aggravated by electrical devices ie pacemaker, no workmen's

	compensation or disability insurance issues, willing to travel to the facility for treatments and to be randomised
Age, gender and ethnicity	Age - Other: median age 32 years. Gender (M:F): 102/62. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (3 weeks - 6 months for current episode).
Extra comments	No baseline data reported
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Orthotics and appliance - Belt/corsets. Participants measured for a Freeman Lumbosacral Corset by a trained clinician, asked to wear corset during waking hours. Duration 3 weeks. Concurrent medication/care: not stated (n=37) Intervention 2: Massage. Soft tissue massage, 15 minutes, 3 times a week. Duration 3 weeks. Concurrent medication/care: Not stated (n=70) Intervention 3: Manual therapy - Manipulation. Spinal manipulation- physiologic range of motions followed by a dynamic short lever, high velocity, and low amplitude thrust to exert force to the lumbar spine and/or sacroiliac joint. 3 or more sessions received per week. Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Other (Foundation of Chiropractic Research and Education)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus MASSAGE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean -15.9 (SD 27); n=25, Group 2: mean -17.2 (SD 25); n=32; Pain visual analogue scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus MANIPULATION (HIGH VELOCITY LOW AMPLITUDE)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean -15.9 (SD 27); n=25, Group 2: mean -24.1 (SD 27); n=65; Pain visual analogue scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Rosner 2014[452]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=46)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Current low back episode present 1 month or more, no change in the past month in prescription medications affecting musculoskeletal pain, able to speak and understand English adequately, score on Roland Morris questionnaire of 7.5 or higher, average score of on the quadruple numeric pain rating scale of 4 or higher
Exclusion criteria	Use of foot orthotics within the past 12 months, previous lumbar spine surgery, self-reported on-going low back pain treatment by health care providers other than stable prescription medications affecting musculoskeletal pain, clinical significant chronic inflammatory spinal arthritis, severe osteoporosis for which spinal manipulation is contraindicated, spinal pathology or fracture, progressive neurologic deficits due to nerve root or spinal cord compression, including symptoms/signs of cauda equina syndrome, history of bleeding disorder, known arterial aneurysm, self-reported pending/current litigation pertaining to low back pain including workers compensation claims, pregnancy, lack of means of contacting which might preclude successful completion of study requirements, inability to speak, read and understand English, affecting the capability of a patient in the informed consent process
Age, gender and ethnicity	Age - Mean (range): 59.5 (28-74 years). Gender (M:F): 25/21. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (Current low back episode present 1 month or more).
Extra comments	Baseline data not reported
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Orthotics and appliance - Orthopaedic shoes. Custom foot orthotic (insole). Duration 4 weeks.

	Concurrent medication/care: Chiropractic manipulation (n=22) Intervention 2: Placebo/Sham. Sham insole. Duration 4 weeks. Concurrent medication/care: Chiropractic manipulation
Funding	Equipment / drugs provided by industry (Foot Levelers, Inc.)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ORTHOPAEDIC SHOES versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Quadruple NRS at 4 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 4 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Sato 2012[462]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in Japan
Line of therapy	Unclear
Duration of study	Intervention time: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Chronic low back pain-back pain for 3 months or more, localisation of the pain at area surrounded by the right and left iliac crests caudally. Participants who gave informed consent.

Exclusion criteria	Low back pain as a result of infection, osteoporosis, or osseous metastasis of a malignant tumour, lower extremity symptoms, neurological deficit. Subjects having a psychogenic factor were excluded using the Zung self-rating depression scale.
Age, gender and ethnicity	Age - Range: 30-78 years. Gender (M:F): 20/20. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (3 months or more).
Extra comments	Baseline data only presented as graphs
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Orthotics and appliance - Belt/corsets. Corset. Duration 6 months. Concurrent medication/care: non-steroidal anti-inflammatory drugs (n=20) Intervention 2: Usual care. No treatment. Duration 6 months. Concurrent medication/care: Non-steroidal anti-inflammatory drugs
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Japanese orthopaedic association score incorporates pain score and function score at 6 months; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Zomalheto 2015[588]**
Study type	Prospective cohort study
Number of studies (number of participants)	1 (n=67)
Countries and setting	Conducted in Nigeria; Setting: Secondary care.
Line of therapy	Adjunctive to current care

Duration of study	Intervention + follow-up: 30 days + 6 month follow-up
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Details of assessment not reported.
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable: N/A
Inclusion criteria	Having been consulted in the hospital rheumatology unit during the study period; suffer from acute back pain (duration <6 weeks); no contradictions to step I and II analgesics (according to Word Health Organization pain ladder), non-steroidal anti-inflammatory drugs, benzodiazepines and thiocolchicoside; signing the consent form after being explained to them; respected the follow-up visit for 6 months.
Exclusion criteria	Nerve root pain; suffered from low back pain during the year before; performed a spinal operation; low back pain related to infection, inflammatory diseases or malignancy; pregnancy.
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Mean (SD): Plaster - 39.03(12.1); Control - 38.2(13.7). Gender (M:F): Plaster - 0.64; Control - 0.71. Ethnicity: Not reported.
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<6 weeks duration).
Extra comments	Baseline VAS score, mean (SD): Plaster - 86.7(21.3); Control - 88.3(20.2). No baseline score fore EIFEL reported. N/A
Indirectness of population	No indirectness: Meets protocol
Interventions	(n=33) Intervention 1: Orthotics and appliance - Belt/corsets. None reported. Duration 30 days. Concurrent medication/care: Medical treatment: analgesics - tramadol or co-codamol; anti-inflammatories - diclofenac, ketoprofen or piroxicam; myorelaxant - thiocolchicoside. Comments: N/A (n=34) Intervention 2: Usual care. Medicinal therapy, analgesia - co-codamol or tramadol; anti-inflammatory drugs - diclofenac, ketoprofen or piroxicam; myorelaxant - thiocolchicoside. No doses or frequencies are reported. Duration Unclear. Concurrent medication/care: N/A Comments: N/A
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BELT/CORSETS versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS score at 3 months; Risk of bias: Very high; Indirectness of outcome: Serious indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS score at 6 months; Risk of bias: Very high; Indirectness of outcome: Serious indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: EIFEL score at 6 months; Risk of bias: Very high; Indirectness of outcome: Serious indirectness - Actual outcome for Overall (acute, chronic) without sciatica: EIFEL score at 3 months; Risk of bias: Very high; Indirectness of outcome: Serious indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Psychological distress (HADS/GHQ/BPI/STAI) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.711 Combinations of interventions – orthotics adjunct

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Study	**He 2006[208] [208,209]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in China; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, CT or MRI
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar disc herniation shown on CT or MRI and 2 of the following: 1) pain in lower back with radicular lower limb pain presenting as sciatica, aggravated with increasing intra-abdominal pressure; 2) local tenderness between the spinous processes or beside vertebrae, pain radiating to the leg or foot, or with scoliosis; 3) limited anterior flexion of the spinal column, positive results from the straight-leg raising test and its strength test; 4) Two of the following 4 neurological signs: muscular atrophy, decreased myodynamia, sensory disturbance, and reflex anomalies. First onset or presentation in the acute stages of a repeated attack; age 18-70 years.
Exclusion criteria	Received surgical treatment because of lumbar disc herniation; psychosis; liver or kidney disease, haematopathy, tumour, respiratory system disease, cardiovascular or cerebral vascular disease, auto-immune disease or extreme

Study	He 2006[208 208,209]
	debility; implanted cardiac pacemaker or artificial valve; pregnant or lactating; massive skin lesions in lumbar region; indications for immediate surgery
Recruitment/selection of patients	Outpatient or inpatient departments of the Rehabilitation Centre of the West China hospital
Age, gender and ethnicity	Age - Mean (SD): Intervention 43.37 (13.50), control 41.90 (14.62) years. Gender (M:F): 33:27. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Not stated / Unclear (New or recurrent acute).
Extra comments	Baseline scores (mean SD) for corset and control group - pain VAS: 76.33 (15.20), 75.83 (15.03)
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Lumbar traction (30 min once a day) + medium frequency electrotherapy (20 minutes once a day) + massage (kneading, rolling, grasping, pushing, digital-striking and traction-manipulation, 15 minutes, once a day). Duration 4 weeks. Concurrent medication/care: Information about disc disease and instructions about daily activities (n=30) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Lumbar traction (30 min once a day) + medium frequency electrotherapy (20 minutes once a day) + massage (kneading, rolling, grasping, pushing, digital-striking and traction-manipulation, 15 minutes, once a day) + herbal magnetic corset (herbs = Salviae Miltiorrhizae 10g, ginger 50g and menthol 0.25g); worn ay lumbar sacral region in the day; at night taken off and placed under the waist. Duration 4 weeks. Concurrent medication/care: Information about disc disease and instructions about daily activities
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TRACTION + ELECTROTHERAPY + MASSAGE + CORSET versus COMBINED NON-INVASIVE INTERVENTIONS: TRACTION + ELECTROTHERAPY + MASSAGE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 4 weeks; Group 1: mean 13.67 Not stated (SD 12.73); n=29, Group 2: mean 23.83 Not stated (SD 13.94); n=29; VAS Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome: Lumbar disease grade at 4 weeks; Group 1: mean 24.67 Not stated (SD 3.22); n=29, Group 2: mean 21.5 Not stated (SD 3.25); n=29; Japanese Orthopaedics Academic Association Lumbar disease grade Maximum score is 29; minimum not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	He 2006[208 208,209]
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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H.8 Manual therapies

H.8.1 Single interventions

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Study	Ajimsha 2014[2]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=80)
Countries and setting	Conducted in India
Line of therapy	Unclear
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Nurses aged 20 to 40 years, chronic low back pain (defined as pain of >3 months duration) judged to have musculoskeletal pain based on evaluation by musculoskeletal physician and physiotherapist
Exclusion criteria	Osteoporosis, primary joint disease e.g. RA, metabolic bone disease, malignant bone disease, fracture, hypermobility of the lumbar spine, cardiovascular or other medical disorders preventing the person from engaging in strenuous exercise, evidence of radiculopathy or primary complaint of radiating pain, pregnancy, severe psychiatric disturbance,

Study	Ajimsha 2014[2]
	use of oral steroids use of analgesics on more than 10 days per month, any other treatment for chronic low back pain during the previous 6 months
Age, gender and ethnicity	Age - Mean (SD): 35 (9). Gender (M:F): 17/57. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline characteristics: Quebec back pain disability scale: myofascial release - 37.1 sham - 35.3, McGill pain scale: myofascial release - 23.2 sham - 23.0
Indirectness of population	No indirectness
Interventions	(n=38) Intervention 1: Massage. Myofascial release. Three times weekly for a total of 24 sessions. Duration of therapy 40 minutes. Protocol consisted of myofascial release of the lower thoracolumbar fasciae and gluteus maximums, posterior hip and piriformis, deeper back muscles and sides. Duration 8 weeks. Concurrent medication/care: All patients received 20 minutes of specific back exercises (n=36) Intervention 2: Placebo/Sham. Sham myofascial release over the same areas as in the treatment group. Sham was conducted by gently placing the hand over the desired area, maintaining contact for the desired time. Duration 8 weeks. Concurrent medication/care: All patients received 20 minutes of specific back exercises
Funding	Academic or government funding (Mahatma Gandhi University)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MASSAGE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain - McGill subjective pain experience score at 3 months; Group 1: mean 13.1 (SD 6.9); n=38, Group 2: mean 18.3 (SD 7.5); n=36; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Quebec disability score at 3 months; Group 1: mean 28.7 (SD 9.1); n=38, Group 2: mean 32.5 (SD 10.4); n=36; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Beurskens 1997[40] (Beurskens 1995[39])

Study (subsidiary papers)	Beurskens 1997[40] (Beurskens 1995[39])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=151)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged over 18, non-specific low back pain for at least 6 weeks (non-specific defined as no evidence of underlying diseases or anatomical abnormalities e.g. malignancy or osteoporosis)
Exclusion criteria	Significant improvement in pain in the preceding 2 weeks
Recruitment/selection of patients	Participants recruited from June 1993 to December1994
Age, gender and ethnicity	Age - Mean (SD): Traction 39 (10) Sham 42 (11). Gender (M:F): 85/66. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (At least 6 weeks duration).
Extra comments	Baseline characteristics: Traction - pain 6.1 RMDQ 12, Sham - pain 5.5 RMDQ 12.
Indirectness of population	No indirectness
Interventions	(n=77) Intervention 1: Manual therapy - Traction. Traction using Eltract traction apparatus (DIMEC Delft Instruments, The Netherlands) for 12 sessions lasting 20 minutes. Minimum force of 35% body weight and maximum force 50% total body weight.. Duration 5 weeks. Concurrent medication/care: Participants allowed to continue pain medication they had used before entry into the study (simple analgesics) other co-interventions were not permitted. The patients were asked to refrain from using analgesics in the 24 hours before outcome measurement (n=74) Intervention 2: Placebo/Sham. Traction using Eltract traction apparatus (DIMEC Delft Instruments, The Netherlands) for 12 sessions lasting 20 minutes. Force slowly increased to a maximum of 20%. Brace used designed to tighten during sham traction to give the impression that traction force being exherted. Duration 5 weeks. Concurrent medication/care: Participants allowed to continue pain medication they had used before entry into the study (simple analgesics) other co-interventions were not permitted. The patients were asked to refrain from using analgesics in the 24 hours before outcome measurement
Funding	Funding not stated

Study (subsidiary papers)	Beurskens 1997[40] (Beurskens 1995[39])
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS 0-10) at 3 months; MD 0.57 (95%CI -0.46 to 1.59); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain (VAS 0-10) at 6 months; MD 0.37 (95%CI -0.84 to 1.58); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 6 months; MD 0.7 (95%CI -1.1 to 2.6) RMDQ 0-24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Questionnaire at 3 months; MD 0.1 (95%CI -1.8 to 1.9); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Extra medical treatments sought at 6 months; Group 1: 34/76, Group 2: 30/72; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Extra medical treatments sought at 3 months; Group 1: 26/77, Group 2: 18/73; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Bialosky 2014[41]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=110)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 18 and 60 years; currently experiencing mechanical LBP rated ≥4/10 at its worst over the past 24 hours

Study	Bialosky 2014[41]
	on a numeric rating scale (NRS) (0=no pain at all; 10=worst pain imaginable).
Exclusion criteria	Pain or paresthesia below the knees; potential non-muscoloskeletal causes of LBP as indicated by unexplained weight loss >10 pounds, fever corresponding to LBP, non-mechanical pain, and bowel or bladder dysfunction; surgery to the low back within the past 6 months; systemic illness known to affect sensation (diabetes); chronic pain condition unrelated to LBP; fracture as the cause of LBP; pregnancy.
Recruitment/selection of patients	Patients recruited from the general community of the University of Florida campus and Health Science Centre by posted flyers and electronic distribution.
Age, gender and ethnicity	Age - Mean (SD): 31.68 (11.85). Gender (M:F): 30% Male/ 70% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline scores (mean SD) - ODI: manipulation 17.04 (9.17), placebo 14.22 (8.56), enhanced placebo 17.92 (13.31), UC 20.04 (15.27); usual pain: manipulation 45.26 (26.21), placebo 43.78 (22.45), enhanced placebo 37.89 (22.13), UC 33.93 (26.21; mechanical pain sensitivity: manipulation 19.12 (20.96), placebo 26.48 (30.02), enhanced placebo 18.81 (23.82), UC 21.68 (26.46)
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Manual therapy - Manipulation. Spinal manipulation therapy. Duration 2 weeks (6 sessions). Concurrent medication/care: Not stated (n=27) Intervention 2: Placebo/Sham. It maintained the lumbar spine in a neutral position. Duration 2 weeks (6 sessions). Concurrent medication/care: Not stated (n=27) Intervention 3: Placebo/Sham. Placebo SMT with instructional set "The manual therapy technique you will receive has been shown to significantly reduce low back pain inn some people". Duration 2 weeks (6 sessions). Concurrent medication/care: Not stated (n=28) Intervention 4: Usual care. The no treatment control group sat quietly for 5 minutes during the initial session. Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (University of Florida Research Opportunity Fund)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Mechanical pain sensitivity (PSIS) at 2 weeks; Group 1: mean 18.56 mm (SD 23.18); n=28, Group 2: mean 23.64 mm (SD 28.93); n=27; Risk of bias:

Study	Bialosky 2014[41]
High; Indirectness of outcome: No indirectness - Actual outcome: Mechanical pain sensitivity (PSIS) at 2 weeks; Group 1: mean 18.56 mm (SD 23.18); n=28, Group 2: mean 11.78 mm (SD 16.67); n=27; Mechanical VAS scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Mechanical pain sensitivity (PSIS) at 2 weeks; Group 1: mean 18.56 mm (SD 23.18); n=28, Group 2: mean 21.23 mm (SD 27.2); n=28; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Borman 2003[44]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=42)
Countries and setting	Conducted in Turkey; Setting: Outpatient physiotherapy and rehabilitation department of a large training hospital
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18 and 65 years, non-specific low back pain for >6 months and/or recurrent pain
Exclusion criteria	Inflammatory, infectious, malignant or metabolic disease of the spine, pregnancy , osteoporosis and those with spinal operations, neurological defects and severe orthopaedic, cardiovascular or metabolic disorders
Recruitment/selection of patients	Baseline characteristics: Traction - pain (VAS) 5.6 ODQ 32.3; Usual care - pain (VAS) 5.6 ODQ 25.2
Age, gender and ethnicity	Age - Mean (SD): 43.1 (9.5). Gender (M:F): 14/28. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months duration).

Study	Borman 2003[44]
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Manual therapy - Traction. Mechanical traction (Eltract 439, Enraf, Holland) 20 minute sessions daily for ten sessions with traction force applied up to 50% total body weight. Duration 2 weeks. Concurrent medication/care: Standard physiotherapy - hot pack, ultrasound therapy, active exercise programme consecutively five times a week for two weeks (n=21) Intervention 2: Usual care. no traction. Duration 2 weeks. Concurrent medication/care: Standard physiotherapy - hot pack, ultrasound therapy, active exercise programme consecutively five times a week for two weeks
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS) at 3 months; Group 1: mean 4.1 (SD 1.7); n=20, Group 2: mean 3.6 (SD 1.7); n=19; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Questionnaire at 3 months; Group 1: mean 23.7 (SD 10.8); n=20, Group 2: mean 19.7 (SD 10.8); n=19; ODQ 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Bronfort 1990{BRONFORT1990A}
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=16)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks

Study	Bronfort 1990{BRONFORT1990A}
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP duration >6 weeks.
Exclusion criteria	Not stated
Age, gender and ethnicity	Age - Mean (range): 40 (21-60). Gender (M:F): 7 Males/ 9 Females. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>6 weeks duration).
Extra comments	Baseline scores not reported. This is a pilot/feasibility study.
Indirectness of population	No indirectness
Interventions	(n=5) Intervention 1: Manual therapy - Manipulation. Chiropractic spinal adjustive therapy+High intensity strengthening back exercise. Duration 4 weeks. Concurrent medication/care: Not stated Comments: Number of patients in each arm not stated. (n=5) Intervention 2: Placebo/Sham. Placebo manual interventions+High intensity strengthening back exercise. Duration 4 weeks. Concurrent medication/care: Not stated Comments: Number of patients in each arm not stated. (n=6) Intervention 3: Manual therapy - Manual therapy (combination of techniques). Chiropractic spinal adjustive therapy+stretching back exercise . Duration 4 weeks. Concurrent medication/care: Not stated. Comments: Number of patients in each arm not stated.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain index at 4 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Disability at 4 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-

Study	Bronfort 1990{BRONFORT1990A}
	up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Bronfort 1996[51] (Bronfort 1999[52])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=174)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 20 and 60 years, non-specific low back pain (localised to an area limited superiorly by a horizontal line through the spinous process of the first lumbar vertebra laterally by the midaxillary lines and inferiorly by the iliac crests including the sacrum) for at least 6 weeks, with or without radiation to one or both legs to the level of the knee
Exclusion criteria	Low back pain caused by spiecific identifiable pathology in the sopine and lower extremities , organic diseases with referred pain to the lumbar spine, severe osteopenia, previous back surgery, severe arterial hypertension or existing cardiovascular diseases requiring medical treatment, poor general health, obesity, history of duodenal or stomach ulcers, previous hypersensitivity to NSAID therapy, pregnancy
Recruitment/selection of patients	Participants recruited through media advertisements. Baseline characteristics: SMT: pain 5.3, function (Roland Morris) 33.3, SF-36 Global health score 63.9; NSAID: pain 5.3, function (Roland Morris) 33.3, SF-36 Global health score 63.9
Age, gender and ethnicity	Age - Mean (SD): 41 (9.7). Gender (M:F): 93/81. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (At least 6 weeks duration).
Indirectness of population	No indirectness
Interventions	(n=71) Intervention 1: Manual therapy - Manipulation. Manual palpatory findings were used to identify the spinal segments to be manipulated. The choice of specific manual treatment technique and spinal segments to be manipulated was made by the participating chiropractors. Most commonly short-lever high-velocity low-amplitude thrust used. No adjunctive physiotherapy was allowed except for brief pre-treatment muscle relaxation massage Ten

Study (subsidiary papers)	Bronfort 1996[51] (Bronfort 1999[52])
	sessions lasting 15 minutes. Treatment provided by five licensed chiropractors whose practice experience varied from 5 to 25 years.. Duration 5 weeks. Concurrent medication/care: Treatment sessions for 5 weeks were followed by 6 weeks of exercise therapy (n=52) Intervention 2: Non-steroidal anti-inflammatory drugs - Naproxen. Naproxen sodium 500 mg twice daily. Duration 5 weeks. Concurrent medication/care: Treatment sessions for 5 weeks were followed by 6 weeks of exercise therapy
Funding	Academic or government funding (Foundation for Chiropractic Education and Research)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus NAPROXEN Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 11 weeks; Group 1: mean 2.7 (SD 2); n=56, Group 2: mean 3.5 (SD 2.2); n=40; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Scale at 11 weeks; Group 1: mean 15.1 (SD 17.4); n=56, Group 2: mean 20.9 (SD 17); n=40; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Bronfort 2014[54]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=192)
Countries and setting	Conducted in USA; Setting: Trial conducted at research clinics at Northwestern Health Sciences University and Palmer College of Chiropractic.
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Quebec Task Force on Spinal Disorders

Study	Bronfort 2014[54]
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 21 years or older; BRLP based on Quebec Task Force on Spinal Disorders classifications 2,3,4 or 6; BRLP severity of 3 or greater; current episode of 4 weeks or more and a stable prescription medication plan in the previous month
Exclusion criteria	Quebec Task Force on Spinal Disorders classifications of 1, 5, 7, 8, 9, 10 and 11. Pain without radiation into the lower extremities, progressive neurologic deficits, the cauda equina syndrome, spinal fracture, spinal stenosis, surgical lumbar spine fusion, several incidents of lumbar spine surgery, chronic pain syndrome, visceral diseases, compression fractures or metastases, blood clotting disorders, severe osteoporosis, and inflammatory or destructive tissue changes of the spine. Patients could not be receiving ongoing treatments of leg pain or LBP, be pregnant or nursing, current pending litigation for worker's compensation, disability, or personal injury, evidence of substance abuse
Recruitment/selection of patients	Through newspaper advertisements, direct mail, and community posters.
Age, gender and ethnicity	Age - Mean (range): 57.1-57.7. Gender (M:F): 36%/64%. Ethnicity: 94% White
Further population details	1. Chronicity of pain: Mixed (Current episode 4 weeks or more).
Extra comments	Baseline characteristics - mean (SD) - RMDQ - 10.2 (4.8) SMT Plus HEA group, 10.2 (5.2) HEA group; NRS for LBP over past wk (scale of 0-10) - 5.4 (2.2) SMT Plus HEA group, 5.2 (2.1) HEA group; SF-36 score mental health - 54.0 (8.2) SMT Plus HEA Group, 54.3 (8.2) HEA group; SF-36 physical component - 40.5 (8.0) SMT Plus HEA Group, 40.1 (9.0) HEA Group
Indirectness of population	No indirectness
Interventions	(n=96) Intervention 1: Manual therapy - Manipulation. Spinal manipulative therapy (SMT) - 20 SMT visits were allowed, each lasting 10 to 20 minutes, including brief history and examination. Primary focus of treatment was on manual techniques (including high-velocity, low amplitude thrust procedures or low-velocity, variable amplitude mobilisation maneuvers to the lumbar vertebral or sacroiliac joints. Light soft-tissue techniques (active and passive muscle stretching and ischemic compression of tender points) and hot or cold packs were used to facilitate SMT if needed. . Duration 12 weeks. Concurrent medication/care: Also attended 4 home exercise advice (HEA) (details see HEA intervention details) (n=96) Intervention 2: Usual care. Home exercise and advice (HEA) were delivered in four 1-hour, one-on-one visits. Goals were to provide patients with the tools to manage existing pain, prevent pain recurrences, and facilitate engagement in daily activities. Individualised instruction and practice were provided for positioning and stablisation exercises to enhance mobility and increase trunk endurance.Positioning exercises included extension and flexion motion cycles (25 repititions 3 times per day in lying, standing or seated position). Stabilisation exercises: pelvic tilt, quadruped, bridging, abdominal curl-ups, and side bridging with positional variations. 8 to 12 repititions of each

Study	Bronfort 2014[54]
	stabilisation exercise every other day. . Duration 12 weeks. Concurrent medication/care: Instructed in methods for developing spine posture awareness related to their activities of daily living. Information about pain-management techniques were provided along with printed material about exercises. To facilitate adherence, providers called or emailed patients 3 times (1, 4, 9 weeks) to reaffirm main messages and answer questions
Funding	Academic or government funding (Health Resources and Services Administration, U.S. Department of Health and Human Services)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION - SMT versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) - HEA

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - mental health component at 12 weeks; Group 1: mean 52.4 (SD 19.74); n=96, Group 2: mean 52.4 (SD 13.33); n=96; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - mental health component at 52 weeks; Group 1: mean 51.6 (SD 19.74); n=96, Group 2: mean 50.9 (SD 19.74); n=96; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - physical component at 52 weeks; Group 1: mean 43.2 (SD 23.2); n=96, Group 2: mean 41.7 (SD 21.72); n=96; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - physical component at 12 weeks; Group 1: mean 44.2 (SD 23.2); n=96, Group 2: mean 40.8 (SD 23.69); n=96; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Mean NRS for LBP at 12 weeks; Group 1: mean 3.7 (SD 5.92); n=96, Group 2: mean 4.6 (SD 5.92); n=96; Numeric Rating Scale for LBP 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Mean NRS for LBP at 52 weeks; Group 1: mean 4.2 (SD 6.41); n=96, Group 2: mean 4.6 (SD 5.92); n=96; Numerical Rating Scale of LBP 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris Disability Questionnaire (RMDQ) at 52 weeks; Group 1: mean 8.9 (SD 13.33); n=96, Group 2: mean 10.2 (SD 13.33); n=96; RMDQ scale 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris Disability Questionnaire (RMDQ) at 12 weeks; Group 1: mean 7.9 (SD 13.33); n=96, Group 2: mean 10.4 (SD 13.33); n=96; RMDQ scale 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) with sciatica: Patients with ≥ 1 adverse event at 12 weeks at 12 weeks; Group 1: 29/96, Group 2: 40/96; Risk of bias: Very

Study	Bronfort 2014[54]
high; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Patients with absolute reduction in leg pain ≥ 50% reduction at 12 weeks; Group 1: 58/96, Group 2: 42/96; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Patients with absolute reduction in leg pain ≥ 50% reduction at 52 weeks; Group 1: 52/96, Group 2: 44/96; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Cambron 2014[64]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=60)
Countries and setting	Conducted in USA; Setting: National University of Health Sciences Whole Health Center in Lombard, Illinois
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: LSS syndrome - viewed by MRI
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	At least 50 years old, had LSS syndrome, fluent in English, associated clinical symptoms of current pain in the back and/or one or both legs diagnosed as neurogenic claudication or chronic nerve root compression, and had symptoms for at least 6 months with an insidious onset.
Exclusion criteria	Congenital stenosis or other spinal deformities, had lumbar spine surgery within the previous 3 months, had a cormorbid condition precluding exercise, had cauda equina symptoms, or were involved in litigation for any health care problem.
Recruitment/selection of patients	Recruited from the suburban Chicago area, via metropolitan newspaper and radio advertisements as well as direct mailings.
Age, gender and ethnicity	Age - Mean (range): 59.4-64.5. Gender (M:F): 67%/33%. Ethnicity: 89% White
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months duration).

Study	Cambron 2014[64]
Extra comments	Baseline characteristics - mean(SD): SSS: symptom severity - 6.2 (1.0) Manual therapy group, 6.4 (0.8) Placebo group [converted scale from 1-5 to 1-10]; SSS: physical function - 2.2 (0.6) Manual therapy group, 2.5 (0.5) Placebo group. ODI - 32% (13.6) Manual therapy group, 36% (11.0) Placebo group
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Manual therapy - Manual therapy (combination of techniques). The Flexion-distraction (F-D care) included mobilisation and traction, depending on the subject's symptoms. Mobilisation is passive movement within the physiologic joint space to restore full painless joint function. Traction is a sustained or rhythmically intermittent force, manually or mechanically applied in longitudinal axis of a body part. The total treatment encounter time each visit was approximately 20 minutes, including the F-D treatment and hot/cold pack application.. Duration 6 weeks. Concurrent medication/care: Hot and/or cold packs were permitted to be used before or after the F-D treatment for a maximum of 8 minutes. (n=14) Intervention 2: Placebo/Sham. The placebo treatment included a combination of a low-level laser device and a handheld mechanical manipulation instrument. The laser pad was placed upside down (lights away from the body) on each subject's low back for 8 minutes. After the laser pad was removed, a placebo "manipulation" was simulated by clicking the handheld instrument at several locations in the lumbar, pelvis and lower extremities. Total treatment time in the placebo group was approximately 20 minutes.. Duration 6 weeks. Concurrent medication/care: None stated
Funding	Study funded by industry (Foundation for Chiropractic Education and Research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Swiss Spinal Stenosis Questionnaire (SSS) - Symptom Severity at 3 months; Group 1: mean 5.94 (SD 1); n=15, Group 2: mean 5.66 (SD 1.04); n=14; Swiss Spinal Stenosis Questionnaire symptom severity subscale 1-10 (originally 1-5) Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Swiss Spinal Stenosis Questionnaire (SSS) - Symptom Severity at 6 months; Group 1: mean 5.82 (SD 2.48); n=15, Group 2: mean 6.14 (SD 1.28); n=14; Swiss Spinal Stenosis Questionnaire symptom severity subscale 1-10 (originally 1-5) Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Swiss Spinal Stenosis Questionnaire (SSS) - Physical functioning at 3 months; Group 1: mean 2.25 (SD 0.46); n=15, Group 2: mean 2.21 (SD 0.45);

Study	Cambron 2014[64]
n=14; Swiss Spinal Stenosis Questionnaire physical function subscale 1-4 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Swiss Spinal Stenosis Questionnaire (SSS) - Physical functioning at 6 months; Group 1: mean 2.17 (SD 0.54); n=15, Group 2: mean 2.29 (SD 0.52); n=14; Swiss Spinal Stenosis Questionnaire physical functioning subscale 1-4 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Low Back Pain Disability Index (ODI) at 3 months; Group 1: mean -4.81 (SD 8.85); n=15, Group 2: mean -2.78 (SD 9.01); n=14; Oswestry Low Back Pain Disability Index scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Low Back Pain Disability Index (ODI) at 6 months; Group 1: mean -2.71 (SD 10.27); n=15, Group 2: mean -1.45 (SD 9.46); n=14; Oswestry Low Back Pain Disability Index (ODI) scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Cherkin 2001[80]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=262)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged 20 to 70 years visiting a primary care physician for low back pain
Exclusion criteria	Symptoms of sciatica, acupuncture or massage for low back pain within the past year, back care from a specialist or CAM provider, severe clotting disorders or anticoagulant therapy, cardiac pacemakers, underlying systemic or visceral disease, pregnancy, involvement with litigation or compensation claims for back pain, inability to speak English, severe or progressive neurological deficits, lumbar surgery within the past 3 years, recent vertebral fracture, serious comorbid conditions and bothersomeness of back pain rated less than 4/10
Recruitment/selection of patients	Baseline characteristics: RMDQ - Massage:11.8 (4.4) Self-management: 12 (5.3) Acupuncture: 12.8 (5.3)
Age, gender and ethnicity	Age - Mean (SD): 44.9 (11.5). Gender (M:F): 110/152. Ethnicity: 85% white
Further population details	1. Chronicity of pain: Not stated / Unclear

Study	Cherkin 2001[80]
Indirectness of population	No indirectness
Interventions	(n=78) Intervention 1: Manual therapy - Massage. Massage therapy protocol consisted of soft tissue therapies including Swedish, deep-tissue, neuromuscular and trigger point techniques. 'Energy techniques' that do not involve physical contact e.g. Reiki were specifically prohibited. Acupressure and shiatsu were prohibited because of similarities with acupuncture. Treatment delivered by 12 therapists with at least 3 years of experience. 10 sessions were scheduled. Duration 10 weeks. Concurrent medication/care: not reported (n=94) Intervention 2: Acupuncture. Traditional Chinese Medical (TCM) acupuncture protocol, permitting basic TCM needling techniques , electrical stimulation and manual manipulation of the needles, indirect moxibustion, infrared heat, cupping and exercise recommendations. Decisions about number and location of needles was left to the provider. Treatment provided by 7 acupuncturists with at least 3 years' experience. Ten sessions provided. Duration 10 weeks. Concurrent medication/care: not reported (n=90) Intervention 3: Self management - Self-management programmes (including education, advice and reassurance). Participants received high-quality educational materials including the back book and two professionally produced videotapes on self-management of back pain and specific exercises. These materials provided techniques for controlling and preventing pain, improving quality of life, and suggesting coping with the emotional and interpersonal problems often accompanying chronic illness. Duration 10 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Group health cooperative)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MASSAGE versus ACUPUNCTURE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 6.3 (SD 5.4); n=77, Group 2: mean 7.9 (SD 6.7); n=89; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 1 year; Group 1: mean 6.8 (SD 5.8); n=76, Group 2: mean 8 (SD 6.8); n=90; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MASSAGE versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE)

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 6.3 (SD 5.4); n=77, Group 2: mean

Study	Cherkin 2001[80]
8.8 (SD 6.5); n=83; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 1 year; Group 1: mean 6.8 (SD 5.8); n=76, Group 2: mean 6.4 (SD 6); n=83; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Cherkin 2011[83]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=401)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 20 to 65 years, low back pain lasting at least 3 months without two or more pain-free weeks and bothersomeness rated at least 3 on a scale of 0 to 10
Exclusion criteria	Specific causes of back pain (cancer, fractures or spinal stenosis), complicated back problems (sciatica, back surgery or medico-legal issues), conditions making treatment difficult (e.g. paralysis or psychoses), conditions that might confound treatment effects or interpretation of results (e.g. severe fibromyalgia or rheumatoid arthritis), inability to speak English, treated with massage in the past year, plans to visit a provider for back pain treatment
Recruitment/selection of patients	Participants recruited by advertisements in the media and invitations sent to patients with an outpatient visit suggesting non-specific low back pain. Baseline characteristics:
Age, gender and ethnicity	Age - Mean (SD): 47 (11). Gender (M:F): 144/257. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline scores (mean SD) - SF12 physical health: SM 40±9, RM 38±8, UC 39±8; SF12 mental health: SM 50±9, RM 50±10, UC 50±9; Roland Disability Questionnaire: SM 10.1±5.0, RM 11.6±5.0, UC 10.5±5.3

Study	Cherkin 2011[83]
Indirectness of population	No indirectness
Interventions	(n=132) Intervention 1: Massage. Structural massage intends to identify and alleviate musculoskeletal contributors to back pain and comprises myofascial, neuro-musclular and other soft-tissue techniques. Treatment was over 10 weekly sessions each lasting 50 to 60 minutes. Massage was provided by 27 licensed therapists with at least 5 years of experience. Duration 10 weeks. Concurrent medication/care: not reported (n=136) Intervention 2: Massage. Relaxation massage - effleurage, pertrissage, circular friction, vibration and holding. Treatment was over 10 weekly sessions each lasting 50 to 60 minutes. Massage was provided by 27 licensed therapists with at least 5 years of experience.. Duration 10 weeks. Concurrent medication/care: not reported (n=133) Intervention 3: Usual care. No massage. Duration 10 weeks. Concurrent medication/care: Usual care with medical practitioner permitted
Funding	Academic or government funding (National Centre for Complementary and Alternative Medicine)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MASSAGE versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical score at 1 year; Mean Massage 37.7 (36.8 to 38.7) Usual care 37.7 (36.8 to 38.6); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental score at 1 year; Mean Massage 52.4 (50.9 to 53.8) Usual care 51.9 (50.2 to 53.6); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical score at 10 weeks; Mean Massage 37.2 (36.4 to 38.0) Usual care 37.9 (37.1 to 38.8); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental score at 10 weeks; Mean Massage 53.7 (52.5 to 55) Usual care 50.9 (49.5 to 52.2); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Mean Massage 6.5 (5.8 to 7.2) Usual care 9 (8.2 to 9.8); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 1 year; Mean Massage 7.2 (6.4 to 7.9) Usual care 7.4 (6.6 to 8.3); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Any medication use in the past week at 10 weeks; RR 0.7 (95%CI 0.6 to 0.9); Risk of bias: High;

Study	Cherkin 2011[83]
Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Dougherty 2014[119]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=136)
Countries and setting	Conducted in USA; Setting: Multi-site prospective RCT conducted at 2 separate Veterans Affairs Medical Centers (VAMCs) in Upstate New York.
Line of therapy	Unclear
Duration of study	Intervention + follow up: 12 weeks (intervention = 4 weeks)
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Older adults, 65 years old or > 65 years old, having chronic LBP and naive to chiropractic. Based on previously defined parameters for chronic "mechanical" nonspecific LBP. Included LBP pain > 3 months in duration, localised pain to the lumbosacral and gluteal regions and no focal radicular symptoms.
Exclusion criteria	Any radiographic or examination evidence of cauda equina syndrome, spinal neoplasia or metastatic disease, destructive joint pathology such as rheumatoid arthritis, urinary retention/incontinence associated with cauda equina syndrome, progressive myelopathy, spinal surgery within the past 6 months.
Recruitment/selection of patients	Recruited through direct mailing, posters, and physician recruitment.
Age, gender and ethnicity	Age - Mean (range): 76.99-77.04. Gender (M:F): Define. Ethnicity: 90% White
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline characteristics (mean± 95% CI): VAS - 61.45 (57.56-65.33) (SMT group), 58.06 (54.12-62.00) (Sham group); SF-36 pain subscale - 5.75 (5.42-6.13) (SMT group), 5.97 (5.61-6.33) (Sham group); ODI - 36.70 (3.80-39.70) (SMT group), 35.60 (32.60-38.60) (Sham group); SF-36 physical function subscale - 1.87 (1.76-1.98) (SMT group), 1.81 (1.70-1.92) (Sham group)

Study	Dougherty 2014[119]
Indirectness of population	No indirectness
Interventions	(n=69) Intervention 1: Manual therapy - Manipulation. Spinal manipulative therapy was performed, including high-velocity, low-amplitude (HVLA) spinal manipulation, and/or flexion distraction therapy and/or mobilisation. Patients were treated 2 times per week for 4 weeks, assessing outcomes at baseline, 5, and 12 weeks. Duration 4 weeks . Concurrent medication/care: No other physical treatements were permitted, but the clinicians could make reference to the Arthritis Foundation brochure that contained stretching and strengthening exercises. The brochure was given to both groups (n=67) Intervention 2: Placebo/Sham. Consisted of "detuned ultrasound" applied over the lumbar spine for 11 minutes. Simulate a treatment that is believable by the patient and minimises patient bias. The clinician set the intensity at "0" w/cm2, utilised the ultrasound wand and gently ran the wand over the patient's back for 11 minutes of the intervention.. Duration 4 weeks . Concurrent medication/care: Clinicians could make reference to the Arthritis Foundation brochure that contained stretching and strengthening exercises, the brochure was given to both groups.
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION/MOBILISATION (SMT) versus PLACEBO/SHAM Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 pain subscale at 12 weeks; Group 1: mean 6.73 (SD 1.75); n=69, Group 2: mean 6.62 (SD 1.76); n=67; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical function subscale at 12 weeks; Group 1: mean 1.92 (SD 0.5); n=69, Group 2: mean 1.93 (SD 0.53); n=67; SF-36 2-12 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 12 weeks; Group 1: mean 39.27 (SD 23.02); n=69, Group 2: mean 41.49 (SD 23.04); n=67; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: ODI at 12 weeks; Group 1: mean 27.9 (SD 14.15); n=69, Group 2: mean 32 (SD 13.94); n=67; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Ferreira 2010[134] (Moffett 2000[377])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=34)
Countries and setting	Conducted in Australia; Setting: University of Sydney
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged between 18 and 80 years with chronic LBP (symptoms for at least 3 months) with or without pain referral to the leg, but with neurological deficit were recruited for the study. Patients needed to have persistent pain or disability for at least 3 months; score at least 3 points on RMDQ and at least 2 units on the 0-10 pain scale at screening consultation
Exclusion criteria	Spinal surgery in the past 12 months; pregnancy at first assessment; suspected or diagnosed serious spine pathology (inflammatory spondyloarthropathy, fracture, malignancy, cauda equina syndrome or infection); nerve root compromisel contraindications to exercise; poor English comprehension.
Recruitment/selection of patients	A sample of non-specific chronic LBP patients (final 45 subjects to be enrolled)was taken from a RCT comparing the efficacy of motor control exercise, general exercise and spinal manipulative therapy. Of these, 34 were eligible to participate in this study.
Age, gender and ethnicity	Age - Range: 18-80 years. Mean (SD): biomechanical ex 47.4 (17.3); ex + edu 54.9(11.3); manipulation 45..4(17.7). Gender (M:F): 11:23. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration)
Extra comments	Baseline values, mean (SD) for biomechanical ex, ex + edu and manipulation groups, respectively: RMDQ 14(4.94), 12.7(6), 9.77(5.93); Pain VAS 6.36(2.2), 7.5(1..35), 5.38(2.22).
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Individual Biomechanical exercise - Motor control. Exercises aimed at improving control of lumbopelvic movement and stability. Exercises included training the function of specific deep muscles of the low back region, coordination of the deep trunk muscles with a diaphragmatic respiration pattern, contrl of a neutral lumbar posture and refuction of any excessive superficial trunk muscle attivation. . Duration 8 weeks. Concurrent

Study (subsidiary papers)	Ferreira 2010[134] (Moffett 2000[377])
	medication/care: Not stated (n=13) Intervention 2: Manual therapy - Manipulation. Joint mobilisation techniques, but not thrust manipulation techniques were applied to the participant's spine or pelvis using grades and techniques that were at the discretion of the treating physiotherapist. . Duration 8 weeks. Concurrent medication/care: Not stated (n=10) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. A programme based on a biopsychosocial moderl aiming to overcome a fear o movement and improving physical function in both short and long term. . Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Motor Accident Authority of NSW; National Health and Medical Research Council of Australia)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus BIOMECHANICAL (MOTOR CONTROL) EXERCISE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 8 weeks; Group 1: mean 2.92 (SD 1.71); n=13, Group 2: mean 4 (SD 2.37); n=11; VAS Pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 8 weeks; Group 1: mean 4.15 (SD 2.76); n=13, Group 2: mean 7.36 (SD 6.59); n=11; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus COMBI (EXERCISE + EDUCATION) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 8 weeks; Group 1: mean 2.92 (SD 1.71); n=13, Group 2: mean 4.7 (SD 1.77); n=10; Pain VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 8 weeks; Group 1: mean 4.15 (SD 2.76); n=13, Group 2: mean 9 (SD 6.04); n=10; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Fritz 2005[149]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=131)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Age 18 to 60 years, with low back pain as primary complaint and a score of at least 30% on the Oswestry disability questionnaire, symptoms extending to the lower extremity.
Exclusion criteria	Current pregnancy, red flags for serious spinal conditions e.g. tumor, compression fractures, infection), or prior surgery to the lumbar spine or buttocks. Lower leg pain with signs of nerve root compression.
Age, gender and ethnicity	Age - Mean (SD): 33.9 (10.9). Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline Oswestry disability questionnaire score: Manipulation group 41.4 (10.1), usual care group 40.9 (10.8)
Indirectness of population	No indirectness
Interventions	(n=70) Intervention 1: Manual therapy - Manipulation. 2 sessions of Spinal manipulation . Duration 4 weeks. Concurrent medication/care: 5 sessions of stabilisation exercises and participants given instructions to exercise at home in between the sessions (n=61) Intervention 2: Usual care. 5 sessions of stabilisation exercises and participants given instructions to exercise at home in between the sessions. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Other (Foundation of physical therapy)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability questionnaire score at 4 weeks; Group 1: mean 17.7 (SD 16.6); n=68, Group 2: mean

Study	Fritz 2005[149]
26 (SD 17.6); n=57; Oswestry disability questionnaire score 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Fritz 2008[147] (Fritz 2007[148])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=64)
Countries and setting	Conducted in USA; Setting: Outpatient physiotherapy clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 18 and 60 years, symptoms of pain and/or numbness extending distal to the buttock in the past 24 hours, ODQ score >30/100 signs of nerve root compression (positive SLR or reflex, sensory or muscle strength deficit)
Exclusion criteria	Red flag symptoms indicative of non-mechanical LBP, previous spinal fusion or spine surgery in the past 6 months, current pregnancy, absence of symptoms while sitting
Recruitment/selection of patients	Baseline characteristics: Traction - Pain (NRS) 5.0, ODQ 46.1; Usual care - Pain (NRS) 5.3, ODQ 41.3
Age, gender and ethnicity	Age - Mean (SD): . Gender (M:F): 28/36. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Pain and/or numbness extending distal to the buttock in the past 24 hours).
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Manual therapy - Traction. Mechanical traction provided using an adjustable table (3-D Active-Trac table, The Saunders Group Inc.). Static traction was applied for a maximum of 12 minutes with intensity of traction force between 40% and 50% of total body weight adjusted according to tolerance. A maximum of 12 treatment sessions was provided, each lasting between 30 and 45 minutes. Duration 6 weeks. Concurrent medication/care: Extension-oriented treatment was provided to each group. This included exercise, mobilisation, and

Study (subsidiary papers)	Fritz 2008[147] (Fritz 2007[148])
	education to promote extension of the lumbar spine wtih the goal of producing centralisation of symptoms. During treatment sessions subjectes received a series of 10 to 20 oscillations of posterior to anterior mobilisation. A maximum of 9 treatment sessions were provided. Both groups were permitted to receive other medical care during the trial. (n=33) Intervention 2: Usual care. No traction. Duration 6 weeks. Concurrent medication/care: Extension-oriented treatment was provided to each group. This included exercise, mobilisation, and education to promote extension of the lumbar spine with the goal of producing centralisation of symptoms. During treatment sessions subjects received a series of 10 to 20 oscillations of posterior to anterior mobilisation. A maximum of 9 treatment sessions were provided. Both groups were permitted to receive other medical care during the trial.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain (NRS) at 6 weeks; Group 1: mean 3.2 (SD 2.5); n=31, Group 2: mean 3 (SD 2.4); n=33; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Questionnaire at 6 weeks; Group 1: mean 28.3 (SD 19.3); n=31, Group 2: mean 25.6 (SD 19.9); n=33; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Geisser 2005-1[162]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=100)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis

Study	Geisser 2005-1[162]
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 to 65 years, low back pain for 3 or more months' duration, single or primary complaint of low back pain, judged to have musculoskeletal pain
Exclusion criteria	Down's syndrome, osteoporosis of the spine, agenesis of the odontoid process, primary joint disease, metabolic bone disease, malignant bone disease, fracture, hypermobility of the lumbosacral spine, cardiovascular or other medical disoders preventing the person from engaging in strenuous exercise, evidence of radiculopathy or primary complaint of radiating pain, pregnancy, severe psychiatric disorders
Recruitment/selection of patients	Individuals presenting to the University of Michigan Spine Program for treatment.
Age, gender and ethnicity	Age - Mean (SD): 40.7 (11.3). Gender (M:F): 20/31. Ethnicity: 85% Caucasian, 8% African-American, 5% Asian-American, 2% Hispanic
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline scores - VAS pain: man+exercise 4.45 (2.3), sham man+exercise 3.84 (2.0), sham exercise+man 3.91 (2.5), sham exercise+sham man 5.20 (2.2); Quebec pain disability: man+exercise 36.05 (20.8), sham man + exercise 34.25 (19.6), sham exerise+man 38.47 (16.0), sham exercise+sham man 51.08 (18.6).; MPQ: man+exercise 22.24 (12.7); sham man+exercise 22.00 (7.6), sham exercise+man 25.13 (11.6), sham exercise+sham man 23.39 (12.6).
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Muscle energy technique used, with specific maneuvers dependent on patient's specific musculoskeletal dysfunction or "positional diagnosis" over six sessions. Duration 6 weeks. Concurrent medication/care: Specific adjuvant exercise programme designed to help improve specific musuloskeletal dysfunctions observed during the initial standardized manual medicine screening evaluation. Programme included self-corrections, stretches and strengthening exercises. (n=25) Intervention 2: Individual Biomechanical exercise - Stretching. Patients placed in the controlled position that would potentially correct their musculoskeletal dysfunction but muscle energy technique not performed. Treatment time was the same as intervention group. Duration 6 weeks. Concurrent medication/care: Specific adjuvant exercise programme designed to help improve specific musuloskeletal dysfunctions observed during the initial standardized manual medicine screening evaluation. Programme included self-corrections, stretches and strengthening exercises. (n=24) Intervention 3: Manual therapy - Massage. Muscle energy technique used, with specific maneuvers dependent on patient's specific musculoskeletal dysfunction or "positional diagnosis" over six sessions. Duration 6 weeks. Concurrent medication/care: Non-specific exercises performed. These were not designed to treat specific

Study	Geisser 2005-1[162]
	musculoskeletal dysfunction and included quadriceps stretch, knee to chest stretch, prone on elbows stretch (n=25) Intervention 4: Placebo/Sham. Patients placed in the controlled position that would potentially correct their musculoskeletal dysfunction but muscle energy technique not performed. Treatment time was the same as intervention group.. Duration 6 weeks. Concurrent medication/care: Non-specific exercises performed. These were not designed to treat specific musculoskeletal dysfunction and included quadriceps stretch, knee to chest stretch, prone on elbows stretch
Funding	Academic or government funding (National centre for Medical Rehabilitation Research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE + MANUAL THERAPY versus EXERCISE + SHAM MANUAL THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Group 1: mean 2.4 (SD 2); n=21, Group 2: mean 3.46 (SD 2); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Score) at 6 weeks; Group 1: mean 12.86 (SD 10.9); n=21, Group 2: mean 18 (SD 10.3); n=18; MPQ 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Score at 6 weeks; Group 1: mean 31.05 (SD 19.1); n=21, Group 2: mean 33.28 (SD 19.4); n=18; QBPDS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE + MANUAL THERAPY versus SHAM EXERCISE + MANUAL THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Group 1: mean 2.4 (SD 2); n=21, Group 2: mean 3.39 (SD 2.5); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Score) at 6 weeks; Group 1: mean 12.86 (SD 10.9); n=21, Group 2: mean 22.67 (SD 16.6); n=15; McGill Pain Questionnair MPQ 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Score at 6 weeks; Group 1: mean 31.05 (SD 19.1); n=21, Group 2: mean 31.8 (SD 18); n=15; QBPDS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE + MANUAL THERAPY versus SHAM EXERCISE + SHAM MANUAL THERAPY

Study	Geisser 2005-1[162]
	Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Group 1: mean 2.4 (SD 2); n=21, Group 2: mean 4.29 (SD 2.7); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Score) at 6 weeks; Group 1: mean 12.86 (SD 10.9); n=21, Group 2: mean 22.11 (SD 11.9); n=18; MPQ 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Score at 6 weeks; Group 1: mean 31.05 (SD 19.1); n=21, Group 2: mean 42.5 (SD 19.3); n=18; QBPDS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE + SHAM MANUAL THERAPY versus SHAM EXERCISE + MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Group 1: mean 3.46 (SD 2); n=18, Group 2: mean 3.39 (SD 2.5); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Score) at 6 weeks; Group 1: mean 18 (SD 10.3); n=18, Group 2: mean 22.67 (SD 16.6); n=15; MPQ 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Score at 6 weeks; Group 1: mean 33.28 (SD 19.4); n=18, Group 2: mean 31.8 (SD 18); n=15; QBPDS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE + SHAM MANUAL THERAPY versus SHAM EXERCISE + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Group 1: mean 3.46 (SD 2); n=18, Group 2: mean 4.29 (SD 2.7); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Score) at 6 weeks; Group 1: mean 18 (SD 10.3); n=18, Group 2: mean 22.11 (SD 11.9); n=18; MPQ 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Score at 6 weeks; Group 1: mean 33.28 (SD 19.4); n=18, Group 2: mean 42.5 (SD 19.3); n=18; QPBDS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Geisser 2005-1[162]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SHAM EXERCISE + MANUAL THERAPY versus SHAM EXERCISE + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Group 1: mean 3.39 (SD 2.5); n=15, Group 2: mean 4.29 (SD 2.7); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Score) at 6 weeks; Group 1: mean 22.67 (SD 16.6); n=15, Group 2: mean 21.11 (SD 11.9); n=18; MPQ 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Score at 6 weeks; Group 1: mean 31.8 (SD 18); n=15, Group 2: mean 42.5 (SD 19.3); n=18; QBPDS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Haas 2014[189] (Vavrek 2014[545])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=391)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 years or over, current episode of low back pain of mechanical origin of at least 3 months duration, have had some low back pain on 30 days in the previous 6 weeks and a minimum LBP index of 25 on a 100-point scale
Exclusion criteria	Received manual therapy within the previous 90 days, contraindications to the studyn interventions, complicating conditions such as cancer, spinal pathology, inflammatory arthoropathis, autoimmune disorders, anticoagulant conditions, cneurodegenerative diseases, pain radiating below the knee, organic referred pain, pregnancy and disability compensation

Study (subsidiary papers)	Haas 2014[189] (Vavrek 2014[545])
Recruitment/selection of patients	Baseline characteristics: SMT(12 sessions): Euroqol health state 73.5 (14.4), SF-12 Physical 44.3 (8.4), SF-12 Mental 47.6 (11.2); Sham: Euroqol health state 70.1 (17.2), SF-12 Physical 43.0 (9.3), SF-12 Mental 50.2 (10.5)
Age, gender and ethnicity	Age - Mean (SD): 41.3 (14.1). Gender (M:F): 195/196. Ethnicity: 15% Hispanic or not Caucaisan
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=100) Intervention 1: Manual therapy - Manipulation. Manipulative therapy consisted of manual thrust (high velocity, low amplitude) spinal manipulation in the lumbar and transition thoracic regions, predominantly in the side-posture position. Specific manipulations to be performed were determined at each visit by the chiropractor, no manipulation was performed if the therapist failed to find an indication for manipulation. Each session was 15 minutes long with 5 minutes of hot pack, 5 minutes manipulation and 5 minutes of very low dose (sham) ultrasound. 12 sessions of manipulation, followed by 6 sessions of sham (light massage only). Duration 6 weeks. Concurrent medication/care: not reported (n=100) Intervention 2: Placebo/Sham. Sham manipulative therapy consisted of light massage (effleurage) and petrissage. Each session was 15 minutes long with 5 minutes of hot pack, 5 minutes effleurage and 5 minutes of very low dose (sham) ultrasound. Three sessions per week with a total of 18 sessions.. Duration 6 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (NIH Grant)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Euroqol Health State at 3 months; Group 1: mean 77.9 (SD 15); n=89, Group 2: mean 73.5 (SD 17.3); n=85; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Euroqol Health State at 1 year; Group 1: mean 77.3 (SD 15.3); n=85, Group 2: mean 74.8 (SD 17); n=81; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 Physical score at 3 months; Group 1: mean 49.6 (SD 8.5); n=89, Group 2: mean 45.5 (SD 10.3); n=85; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 Physical score at 1 year; Group 1: mean 52.6 (SD 10.3); n=85, Group 2: mean 50.7 (SD 12); n=81; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 Mental score at 3 months; Group 1: mean 47.8 (SD 11); n=89, Group 2: mean 50.2 (SD 10.8); n=85; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-12 Mental score at 1 year; Group 1: mean 50.6 (SD 12.7); n=85, Group 2: mean 51.3 (SD 12); n=81;

Study (subsidiary papers)	Haas 2014[189] (Vavrek 2014[545])
Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity 0-100 at 3 months; Group 1: mean 29 (SD 20.8); n=89, Group 2: mean 29 (SD 20.8); n=85; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity 0-100 at 1 year; Group 1: mean 31.9 (SD 22.5); n=85, Group 2: mean 36.5 (SD 21.8); n=81; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Von Korff disability scale at 3 months; Group 1: mean 22 (SD 20.7); n=89, Group 2: mean 29.2 (SD 23.7); n=85; Von Korff disability scale 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Von Korff disability scale at 1 year; Group 1: mean 22.4 (SD 21.2); n=85, Group 2: mean 28 (SD 23.7); n=81; Von Korff disability scale 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Hancock 2007[199]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=239)
Countries and setting	Conducted in Australia
Line of therapy	Adjunctive to current care
Duration of study	Intervention + follow up: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Complaint of pain in the area between the 12th rib and buttock crease causing moderate pain and disability
Exclusion criteria	Present episode of pain not preceded by a pain-free episode of atleast 1 month, in which case care was not provided, nerve root compromise with atleast two of the signs: myotomal weakness, dermatomal sensory loss or hyporeflexia

Study	Hancock 2007[199]
	of the lower limb, known of suspected serious spinal pathology, any spinal surgery within the last 6 months or any contraindication to paracetamol, diclofenac, or spinal manipulation therapy
Age, gender and ethnicity	Age - Mean (SD): 40.7 (15.6). Gender (M:F): 125/105. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline scores (mean SD): disability RMDQ: manipulation 13.8±5.0, drug 13.4±5.2; function: manipulation 3.8±1.6, drug 3.9±1.7; pain NRS: manipulation 6.7±1.6, drug 6.4±1.7
Indirectness of population	No indirectness
Interventions	(n=59) Intervention 1: Manual therapy - Manipulation. Spinal manipulation therapy. Duration 2 weeks. Concurrent medication/care: usual care (paracetamol and advice) and placebo for diclofenac (n=60) Intervention 2: Non-steroidal anti-inflammatory drugs - Diclofenac. Diclofenac twice daily for 2 weeks. Duration 2 weeks. Concurrent medication/care: usual care (paracetamol and advice) and sham manipulation
Funding	Academic or government funding (National health and medical research council)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus DICLOFENAC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Numeric rating scale at 12 weeks; Mean ; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Roland Morris disability questionnaire at 12 weeks; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hawk 2000[205]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in USA

Study	Hawk 2000[205]
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 or over, low back pain classified as sub-acute (4-12 weeks duration) or chronic (>3 months duration), pain in the lumbar spine and may extend into the posterolateral gluteal or thigh region if no clinical evidence of neurological involvement (dermatomal pain) accompanies it
Exclusion criteria	Pregnancy, radiation of pain distal to the knee wtih clincial evidence of neurological involvement, other contraindications to manipulation (presence of fracture, osteoporosis, spondylolysis), indications of musculoskeletal dysfunction, litigation for a health-related claim, currently under the care of a chiropractor, unwilling to postpone use of all other types of manual therapy except those provided in the study
Age, gender and ethnicity	Age - Median (range): 52 (29-84). Gender (M:F): 20/12. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (Sub acute (4-12 weeks) or chronic (>3 months)).
Extra comments	Baseline scores (mean SD) for combined manual therapy, sham, manipulation and massage groups, respectively - RMQ: 5±9, 9.5±6.5, 3±3, 4±2.5; depression: 4.5±9, 2.5±3.5, 6±8, 2±2.5; pain VAS: 23±40, 61.5±36, 11±49, 29±42
Indirectness of population	No indirectness
Interventions	(n=7) Intervention 1: Manual therapy - Manipulation. Chiropractic manipulation - flexion/distraction technique. Three treatments per week for the first week and twice a week thereafter.. Duration 6 weeks. Concurrent medication/care: Sham massage therapy - effleurage (massage using lighter pressure) for 10 seconds (n=8) Intervention 2: Manual therapy - Massage. Trigger point therapy - this technique involved manual ischaemic compression applied to muscles where localized regions of painful contracted tissue are palpated. Three treatments per week for the first week and twice a week thereafter.. Duration 6 weeks. Concurrent medication/care: Sham chiropractic manipulation - performed using a hand-held spring-loaded piston-activated instrument with adjustable amplitude position and acceleration features that delivers a reproducible amount of force over the selected osseous contact point. The pressure gague was set to 0 thus producing a sound but very little force (n=9) Intervention 3: Manual therapy - Manual therapy (combination of techniques). Chiropractic manipulation (flexion-distraction technique) plus trigger point therapy. Duration 6 weeks. Concurrent medication/care: not reported

Study	Hawk 2000[205]
	(n=8) Intervention 4: Placebo/Sham. Sham chiropractic adjustments - performed using a hand-held spring-loaded piston-activated instrument with adjustable amplitude position and acceleration features that delivers a reproducible amount of force over the selected osseous contact point. The pressure gague was set to 0 thus producing a sound but very little force and sham massage (effleurage) - massage using lighter pressure for 10 seconds. Duration 6 weeks. Concurrent medication/care: not reported
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 6 weeks; Other: no data; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Other: no data; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 weeks; Mean Median Manipulation 2 Median sham 3.5; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MASSAGE versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 6 weeks; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 weeks; Other: Median massage 1.5 median sham 3.5; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus PLACEBO/SHAM

Study	Hawk 2000[205]
Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 6 weeks; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 weeks; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 weeks; Mean Median manual therapy 2 median sham 3.5; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Hoiriis 2004[223]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=192)
Countries and setting	Conducted in USA; Setting: Chiropractic practice
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 21 to 59 years, uncomplicated low back pain of 2 weeks to 6 weeks duration
Exclusion criteria	Previous low back pain within the last 18 months, previous spinal surgery, spinal fractures, spinal stenosis, known or suspected disc herniation, neuropathy, spondylosis, vascular disease, malignant disease, cervical complaints, pregnancy, personal injury litigation
Age, gender and ethnicity	Age - Mean (SD): 41.9 (9.9). Gender (M:F): 89/67. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (2-6 weeks duration).
Extra comments	Baseline values= Pain VAS: chiropractic group 4.52 (1.78), sham group 4.24 (1.85). Oswestry disability scores:

Study	Hoiriis 2004[223]
	chiropractic group 24 (11.7), sham group 25.2 (12). Zung self-rating depression scale: Chiropractic group 17.6 (10.4), sham group 17.2 (9.7.
Indirectness of population	No indirectness
Interventions	(n=49) Intervention 1: Manual therapy - Manipulation. Chiropractic adjustments tailored to each person's needs, focussed on the upper cervical and lumbar, sacral or pelvic adjustments. Manual spinal adjustments. . Duration 2 weeks. Concurrent medication/care: placebo drugs for muscle relaxants (n=53) Intervention 2: Placebo/Sham. Sham chiropractic adjustments. Duration 2 weeks. Concurrent medication/care: Placebo for muscle relaxants
Funding	Academic or government funding (Research centre of Life University)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Visual analogue scale at 4 weeks; Group 1: mean 1.71 (SD 1.88); n=34, Group 2: mean 2.21 (SD 2.02); n=40; Pain visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability index at 4 weeks; Group 1: mean 11.94 (SD 11.94); n=46, Group 2: mean 16.32 (SD 12.95); n=48; Oswestry disability index 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Zung depression scale at 4 weeks; Group 1: mean 11.91 (SD 10.53); n=47, Group 2: mean 11.81 (SD 7.37); n=47; Zung self-rating depression scale 0-20 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hondras 2009[225]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=240)

Study	Hondras 2009[225]
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged >55 years old, non-specific low back pain for at least 4 weeks with or without radiation to the extremities
Exclusion criteria	Frank radiculopathy or neurological signs such as altered lower extremity reflex, dermatomal sensory deficit, progressive unilateral muscle weakness or motor loss, symptoms of cauda equina compression or CT/MRI evidence of anatomical pathology (e.g. central canal stenosis, abnormal disc), comorbid conditions or general poor health that could significantly complicate the prognosis of low back pain including pregnancy, bleeding disorders and clear evidence of narcotic or other drug abuse, major clinical depression, bone or joint pathology contraindicating spinal manipulation including spinal fracture, tumors, infections, arthropathies and significant osteoporosis, pacemaker, current litigation in progress, receiving disability allowance, had received manipulation in the past month, unable to read or comprehend English
Recruitment/selection of patients	Baseline characteristics: Manipulation (HVLA) pain 4.21, RMDQ 6.5, BDI 7.3, SF-36 physical 39.1, SF-36 mental 51.7; Manipulation (LV)pain 4.21, RMDQ 6.5, BDI 7.3, SF-36 physical 39.1, SF-36 mental 51.7; Usual care pain 4.24, RMDQ 5.7, BDI 6.9, SF-36 physical 40.7, SF-36 mental 52.1
Age, gender and ethnicity	Age - Mean (SD): 63.1 (6.7). Gender (M:F): 135/105. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (At least 4 weeks duration).
Indirectness of population	No indirectness
Interventions	(n=96) Intervention 1: Manual therapy - Manipulation. High-velocity low-amplitude spinal manipulation was designed as the side-lying diversified lumbar spine adjustment. The manipulative load was applied with the chiropractors hand using a pisiform contact on the participants lumbar spine, the impulse load was delivered by a quick short controlled movement of the shoulder arm and hand combined with a slight body drop. Duration 6 weeks. Concurrent medication/care: All participants received 30 minutes of standardized instruction for home exercise in the 3rd week of treatment. (n=95) Intervention 2: Manual therapy - Manipulation. Low-velocity variable amplitude spinal manipulation was designed as the flexion-distraction technique or the Cox technique. Participants were positioned prone on a treatment table designed to allow free but controllable motion to the lower half of the body. Duration 6 weeks.

Study	Hondras 2009[225]
	Concurrent medication/care: All participants received 30 minutes of standardized instruction for home exercise in the 3rd week of treatment. (n=49) Intervention 3: Usual care. Minimal conservative medical care consisted of three consultations with a medical practitioner within the 6 week treatment period. The goal of management was improvement in pain and optimisation of actuvities of daily living. Choice of medication was participant sepcific and based on the fewest potential adverse drug effects and interactions. Paracetamol was considered first, then NSAIDs, followed by muscle relaxants only if the pain was associated with significant muscle spasm. Duration 6 weeks. Concurrent medication/care: All participants received 30 minutes of standardized instruction for home exercise in the 3rd week of treatment.
Funding	Academic or government funding (NIH Grant)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical function at 3 weeks; MD 4.3 (95%CI -1.2 to 9.7); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (average low back pain over the previous week) at 6 weeks; MD -0.43 (95%CI -1.36 to 0.5); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; MD -1.5 (95%CI -3.1 to 0.1); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; MD -1.3 (95%CI -2.9 to 0.6); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Total adverse events at 3 months; Group 1: 10/96, Group 2: 4/49; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up

Study	Hondras 2009[225]
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical function at 3 weeks; MD 5.9 (95%CI 0.3 to 11.4); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (average low back pain over the previous week) at 6 weeks; MD -0.45 (95%CI -1.39 to 0.49); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 months; MD -2.2 (95%CI -3.7 to 0.6); Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; MD -1.9 (95%CI -3.6 to 0.2) (p value 0.3) RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Total adverse events at 3 months; Group 1: 6/95, Group 2: 4/95; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Hsieh 2002[228]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 years or over, low back pain duration of between 3 weeks and 6 months or, for recurrent pain, a pain-free

Study	Hsieh 2002[228]
	period of at least 2 months in the preceding 8 months
Exclusion criteria	Pregnancy, serious medical problems (e.g. cancer, heart failure), definable neurological abnormalities in the lower extremities (e.g. peripheral neuropathy, multiple sclerosis, hemiplegia, myelopathy), spine disorders with bony lesions (e.g. osteoporosis, fracture, unstable spondylolisthesis, multiple myeloma
Recruitment/selection of patients	Participants recruited via media advertisements. Baseline characteristics: Manipulation: pain 3.66, function (RMDQ) 8.4; Myofascial therapy: pain 4.05, function (RMDQ) 8.35; Combined manipulation + myofascial: pain 3.75, function (RMDQ) 7.62
Age, gender and ethnicity	Age - Mean (SD): . Gender (M:F): 131/69. Ethnicity:
Further population details	1. Chronicity of pain: Mixed (3 weeks - 6 months duration of recurrent pain).
Indirectness of population	No indirectness
Interventions	(n=49) Intervention 1: Manual therapy - Manipulation. Joint manipulation on a Leander model 900 EZ Table (Leander Health Technologies, WA) consisting of high-velocity low-amplitude thrusts to the lumbar and/or sacroiliac regions. Side or sitting posture was allowed. Drop-table techniques were also allowed. Treatment provided by experienced, licensed chiropractors with a minimum of five years clinical experience. Nine sessions in total, three sessions per week.. Duration 3 weeks. Concurrent medication/care: participants advised to avoid any unusual activities, were discouraged from using any other treatments for the low back including external applications and pain medication (n=51) Intervention 2: Massage. Myofascial therapy including intermittent fluori-methane sprays and 5-10 stretches after3-5 seconds of each isometric contraction of 50-70% maximal effort, ischaemic compression using a massage finger, slipping massage along the orientation of the taut bands by the two thumbs for 3-5 strokes and hot packs for 10 minutes at the completion of the therapy. Treatment provided by experienced, licensed chiropractors or physiotherapists. Nine sessions in total, three sessions per week. . Duration 3 weeks. Concurrent medication/care: participants advised to avoid any unusual activities, were discouraged from using any other treatments for the low back including external applications and pain medication (n=52) Intervention 3: Manual therapy - Manual therapy (combination of techniques). Both the manipulation and myofascial therapy techniques 3 times a week for three weeks.. Duration 3 weeks. Concurrent medication/care: participants advised to avoid any unusual activities, were discouraged from using any other treatments for the low back including external applications and pain medication
Funding	Academic or government funding (Foundation for Chiropractic Education and Research)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus MASSAGE	

Study	Hsieh 2002[228]
	Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 3 weeks; Group 1: mean 2.58 (SD 1.93); n=45, Group 2: mean 2.78 (SD 1.82); n=49; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 weeks; Group 1: mean 4.42 (SD 4.92); n=45, Group 2: mean 5.8 (SD 5.12); n=49; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 6 months; Group 1: mean 2.4 (SD 2.41); n=40, Group 2: mean 2.99 (SD 2.28); n=47; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 3.29 (SD 4.73); n=41, Group 2: mean 5.06 (SD 4.78); n=47; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus MANIPULATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 3 weeks; Group 1: mean 2.04 (SD 4.35); n=48, Group 2: mean 2.58 (SD 1.93); n=45; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 6 months; Group 1: mean 2.24 (SD 2.01); n=49, Group 2: mean 2.4 (SD 2.41); n=40; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 weeks; Group 1: mean 3.73 (SD 3.76); n=48, Group 2: mean 4.42 (SD 4.92); n=45; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 3.56 (SD 3.46); n=48, Group 2: mean 3.29 (SD 4.73); n=41; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus MASSAGE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 3 weeks; Group 1: mean 2.04 (SD 1.35); n=48, Group 2: mean 2.78 (SD 1.82); n=49; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 6 months; Group 1: mean 2.24 (SD 2.01); n=49, Group 2: mean 2.99 (SD 2.28); n=47; Risk of bias:

Study	Hsieh 2002[228]
Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 3 weeks; Group 1: mean 3.73 (SD 3.76); n=48, Group 2: mean 5.8 (SD 5.12); n=49; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 6 months; Group 1: mean 3.56 (SD 3.46); n=48, Group 2: mean 5.06 (SD 4.78); n=47; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hurley 2004[232]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=240)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18 and 65, referred from GP for treatment of low back pain with or radiation of 4 to 12 weeks' duration
Exclusion criteria	Previous spinal surgery, recent motor vehicle accident, systemic disease, concurrent medical or muskuloskeletal conditions, contraindications to either treatment,
Recruitment/selection of patients	Baseline characteristics: Maitland Technique pain 5.2 (2.5), RMDQ 10.7 (4.86) Interferential therapy pain 5.2 (2.5), RMDQ 9.04 (4.45)
Age, gender and ethnicity	Age - Mean (SD): 40 (11.6). Gender (M:F): 96/144. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (4- 12 weeks duration).
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Manual therapy - Maitland Technique. Therapy protocol described manipulation or

Study	Hurley 2004[232]
	mobilisation techniques described by Maitland or Cyriax over 4 to 10 sessions.. Duration 8 weeks. Concurrent medication/care: participants were requested to continue normal activities and to avoid other forms of treatments for the duration of the study, apart from routine physiotherapy and analgesics (n=80) Intervention 2: Electrotherapy - Interferential therapy. Interferential therapy with Omega Inter 4150 portable IFT units (TENScare limited) delivering standardised IFT stimulation parameters. Duration 8 weeks. Concurrent medication/care: participants were requested to continue normal activities and to avoid other forms of treatments for the duration of the study, apart from routine physiotherapy and analgesics
Funding	Academic or government funding (Society for Orthopaedic Medicine)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MAITLAND TECHNIQUE versus ELECTROTHERAPY

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: EQ-5D at discharge; Group 1: mean 0.16 (SD 0.635); n=63, Group 2: mean 0.16 (SD 0.646); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning at discharge; Group 1: mean 15.26 (SD 20.8); n=63, Group 2: mean 10.62 (SD 20.6); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical role limitation at discharge; Group 1: mean 28.58 (SD 40.8); n=63, Group 2: mean 31.37 (SD 41); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 bodily pain at discharge; Group 1: mean 22.89 (SD 22.6); n=63, Group 2: mean 22.68 (SD 22.5); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 general health at discharge; Group 1: mean -1.25 (SD 16.48); n=63, Group 2: mean -0.87 (SD 16.26); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 vitality at discharge; Group 1: mean 8.17 (SD 18.9); n=63, Group 2: mean 6.32 (SD 19); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 social functioning at discharge; Group 1: mean 15.56 (SD 25.3); n=63, Group 2: mean 12.51 (SD 25.5); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 emotional role limitation at discharge; Group 1: mean 10.2 (SD 43.2); n=63, Group 2: mean 18.03 (SD 42); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 mental health at discharge; Group 1: mean 3.89 (SD 15); n=63, Group 2: mean 1.54 (SD 15.9); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D at 1 year; Group 1: mean 0.15 (SD 0.538); n=52, Group 2: mean 0.2 (SD 0.369); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning at 1 year; Group 1: mean 9.36 (SD 23.9); n=52, Group 2: mean 11.7 (SD 20); n=55; Risk of bias: Very high; Indirectness of

Study	Hurley 2004[232]
outcome: No indirectness - Actual outcome: SF-36 Physical role limitation at 1 year; Group 1: mean 36.9 (SD 44.5); n=52, Group 2: mean 37.7 (SD 45); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 bodily pain at 1 year; Group 1: mean 23.81 (SD 24.4); n=52, Group 2: mean 30.4 (SD 24.4); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 general health at 1 year; Group 1: mean -2.53 (SD 20); n=52, Group 2: mean -2.69 (SD 26); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 vitality at 1 year; Group 1: mean 11.23 (SD 20.6); n=52, Group 2: mean 9.4 (SD 19.9); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 social functioning at 1 year; Group 1: mean 24.4 (SD 35.2); n=52, Group 2: mean 16.1 (SD 34.8); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 emotional role limitation at 1 year; Group 1: mean 21.3 (SD 38.4); n=52, Group 2: mean 18.7 (SD 38.5); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 mental health at 1 year; Group 1: mean 4.72 (SD 8); n=52, Group 2: mean 0.84 (SD 17.5); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS) at discharge; Group 1: mean 1.988 (SD 2.47); n=63, Group 2: mean 2.138 (SD 2.47); n=65; Risk of bias: ; Indirectness of outcome: No indirectness - Actual outcome: Pain (VAS) at 1 year; Group 1: mean -1.82 (SD 2.66); n=52, Group 2: mean -2.65 (SD 2.7); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at discharge; Group 1: mean -4.53 (SD 4.65); n=63, Group 2: mean -3.56 (SD 5); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Questionnaire at 1 year; Group 1: mean -4.71 (SD 5.52); n=52, Group 2: mean -4.9 (SD 5.25); n=55; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Hurwitz 2002[236] (Hurwitz 2002[233], Hurwitz 2002[235], Hurwitz 2002[234], Hurwitz 2006[237], Hurwitz 2005[238])
Study type	RCT (Patient randomised; Parallel)

Study (subsidiary papers)	Hurwitz 2002[236] (Hurwitz 2002[233], Hurwitz 2002[235], Hurwitz 2002[234], Hurwitz 2006[237], Hurwitz 2005[238])
Number of studies (number of participants)	1 (n=681)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged at least 18 years, presenting with low back pain (defined as pain in the region of the lumbosacral spine and its surrounding musculature) with or without leg pain, not received treatment for low back pain within the previous month
Exclusion criteria	Pain resulting from fracture, tumor, infection, spondyloarthropathy, other non-mechanical causes of back pain, severe coexisting disease, being treated wtih electrical devices (e.g. pacemaker) had a blood coagulation disorder or were using corticosteroids or anticoagulant medications, had progressive unilateral lower limb weakness, had symptoms or signs of cauda equina syndrome, had plans to move out of the area, unable to understand English
Recruitment/selection of patients	Baseline characteristics: Manual therapy - average pain intensity (VAS) 4.5 function (RMDQ) 10.3; Usual care - average pain intensity (VAS) 4.4 function (RMDQ) 10.5
Age, gender and ethnicity	Age - Mean (SD): 51 (16.7). Gender (M:F): 327/354. Ethnicity: 60% Caucasian 30% Hispanic 4.5% Asian 3% African American 2.5% other
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Two other arms of trial included 1) medical care with other physical modalities 2) chiropractic care with other physical modalities
Indirectness of population	No indirectness
Interventions	(n=169) Intervention 1: Manual therapy - Manipulation. Patients received spinal manipulation (diversified technique) or another spinal-adjusting technique (e.g. mobilization). Number of sessions at discretion of therapist.. Duration Unclear. Concurrent medication/care: Instruction in strengthening and flexibility exercises as well as instruction in proper back care (n=170) Intervention 2: Usual care. Back care instructions and advice, as for manipulation group as well as use of analgesics at discretion of medical practitioner. Duration Unclear. Concurrent medication/care: Instruction in strengthening and flexibility exercises as well as instruction in proper back care

Study (subsidiary papers)	Hurwitz 2002[236] (Hurwitz 2002[233], Hurwitz 2002[235], Hurwitz 2002[234], Hurwitz 2006[237], Hurwitz 2005[238])
Funding	Academic or government funding (Agency of Healthcare Research and Quality Funding and the National Centre for Complementary and Alternative Medicine)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (average pain over last week) VAS 0-10 at 6 weeks; MD 0.22 (95%CI -0.21 to 0.65); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain (average pain over last week) VAS 0-10 at 6 months; MD 0.22 (95%CI -0.25 to 0.69); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 6 weeks; MD 0.57 (95%CI -0.43 to 1.57); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Roland Morris Disability Questionnaire at 6 months; MD 0.75 (95%CI -0.29 to 1.79); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: number of back pain related healthcare visits at 6 weeks; Group 1: mean 3.2 (SD 1.5); n=169, Group 2: mean 1.7 (SD 1.1); n=169; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: number of back pain related healthcare visits at 6 months; Group 1: mean 5.3 (SD 3.8); n=165, Group 2: mean 2.9 (SD 3.3); n=165; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Hussain 2013[239]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Pakistan
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall (acute, chronic) with sciatica

Study	Hussain 2013[239]
Subgroup analysis within study	Not applicable
Inclusion criteria	Any age with acute LBP.
Exclusion criteria	Not stated.
Age, gender and ethnicity	Age - Mean (SD): 40.90 (13.08). Gender (M:F): 55% male/ 45% female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (No further details).
Extra comments	. Baseline scores - total disability: SMT 558, exercise 416; Pain intensity (divided into two groups: 0-2 and 3-5) SMT 0-2: 30.0%, SMT 3-5: 70.0%, exercise 0-2: 43.3%, exercise 3-5: 56.7%. Disability (divided into two groups: 0-2 and 3-5)- disability in standing: SMT 0-2: 30.0%, exercise 0-2: 63.3%, SMT 3-5: 70.0%, exercise 3-5: 36.7%; disability in sleeping: SMT 0-2: 26.7%, exercise 0-2: 76.7%, SMT 3-5: 73.3%, exercise 3-5: 23.3%; disability in sleeping: SMT 0-2: 26.7%, exercise 0-2: 76.7%, SMT 3-5: 73.3%, exercise 3-5: 23.3%; disability in walking: SMT 0-2: 30.0%, exercise 0-2: 66.7%, SMT 3-5: 70.0%, exercise 3-5: 33.3%; disability in social activity: SMT 0-2: 30.0%, exercise 0-2: 60.0%, SMT 3-5: 70.0%, exercise 3-5: 40.0%.
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Manual therapy - Mobilisation. Soft tissue mobilisation. 2 or 3 treatments per week, for a maximum of 12 treatments over 4 weeks. . Duration 4 weeks. Concurrent medication/care: Not stated. (n=30) Intervention 2: Individual Biomechanical exercise - McKenzie. McKenzie back extension, William flexion and raising head in crook lying position 10 repetitions of each exercise 2 times a day for 4 weeks, under supervision of physical therapist. The exercise therapy intervention could include exercises designed to: affect pain in low back and its intensity, improve spinal motion, alignment and posture, enhance spinal stability, and lower limb and back strength. Duration 4 weeks. Concurrent medication/care: Not stated.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MOBILISATION versus MCKENZIE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity at 4 weeks.; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Disability (modified Oswestry Scale) at 4 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Hussain 2013[239]
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Juni 2009[259]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=104)
Countries and setting	Conducted in Switzerland
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 22-55 years with acute low back pain (duration of current episode <4 weeks)
Exclusion criteria	Pregnant women; signs of nerve root irritation or compression; pain radiating below the knee; cauda equina syndrome; suspected specific cause of LBP such as fracture, tumor or infection; blood coagulation disorder; severe renal or hepatic dysfunction; severe osteoporosis; allergy or intolerance to an administered medication; epidural corticosteroid injections in the preceding 3 months.
Recruitment/selection of patients	Emergency department of the University Hospital Bern, or mediXPractice Bubenberg, a general group practice in Bern.
Age, gender and ethnicity	Age - Mean (SD): SMT: 34.4 (9.4). Usual care: 36.5 (8.2). Gender (M:F): 65% Male/35% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<4 weeks duration).
Extra comments	Baseline scores (mean SD) - pain intensity: SMT 6.8±2.2, UC 6.3±2.2; RMDQ: SMT 12.8±5.1, UC 14.3±4.9
Indirectness of population	No indirectness
Interventions	(n=52) Intervention 1: Manual therapy - Manual therapy (combination of techniques). Combination of high velocity low amplitude thrusts, spinal mobilisation and muscle energy techniques. Duration Maximum of 5 sessions within 2 weeks. . Concurrent medication/care: Usual care (n=52) Intervention 2: Usual care. General advice on rapid return to normal activities and the avoidance of bed rest in

Study	Juni 2009[259]
	the acute phase and the use of paracetamol, diclofenac or dihydrocodeine according to local guidelines as required. . Duration 2 weeks. Concurrent medication/care: not stated
Funding	Academic or government funding (Swiss Society for Manual Therapy)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity (BS-11) at 2 weeks; Mean 0.5 (95%CI -0.2 to 1.2); Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Kim 2013[281]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=47)
Countries and setting	Conducted in South Korea
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain in everyday life for more than 3 months
Exclusion criteria	Past or present neurological, hypertension or cardiopulmonary diseases, choric disease or surgery for low back pain, abnormal ophthalmic artery pressure during inversion
Recruitment/selection of patients	Baseline characteristics: Pain - 30 degrees inversion: 5.78, 60 degrees inversion: 5.57, Supine (sham) group: 5.73
Age, gender and ethnicity	Age - Mean (SD): 21. Gender (M:F): 0/47. Ethnicity:

Study	Kim 2013[281]
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Manual therapy - Traction. Using motorized gravitational machine (MS-UP1, Medical Science Inc, Seoul, Korea) participants were inverted to 30 degrees for 3 minutes, for 3 repetitions with a rest time of 4 minutes. Treatments were performed 4 days a week for 8 weeks.. Duration 8 weeks. Concurrent medication/care: not reported (n=14) Intervention 2: Manual therapy - Traction. Using motorized gravitational machine (MS-UP1, Medical Science Inc, Seoul, Korea) participants were inverted to 60 degrees for 3 minutes, for 3 repetitions with a rest time of 4 minutes. Treatments were performed 4 days a week for 8 weeks.. Duration 8 weeks. Concurrent medication/care: not reported (n=15) Intervention 3: Placebo/Sham. Participants fastened to and lay supine on motorised gravitational machine. Duration 8 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Hanseo University Grant)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Back pain (VAS) at 8 weeks; Group 1: mean 2.14 (SD 0.66); n=14, Group 2: mean 3.73 (SD 1.53); n=15; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Koes 1992[288]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=256)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear

Study	Koes 1992[288]
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Back and neck pain duration >6 weeks.
Exclusion criteria	Underlying disease (e.g. malignity, osteoporosis, herniated disc); physiotherapy or manipulative therapy for back and neck complaints in the past 2 years.
Recruitment/selection of patients	Patient selected by GPs and by advertisements in the local press from January 1988 to December 1989.
Age, gender and ethnicity	Age - Other: Mean age: 43 years. Gender (M:F): 52% Male/ 48% Female. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Mixed (>6 weeks duration).
Extra comments	Baseline scores - physical functioning: manual 5.8, manipulation 5.9, placebo 5.7, UC 5.7. The effects in the groups receiving treatment by the GP (usual care) and placebo seemed to be seriously biased owing to contamination and cointerventions. The authors restricted data analysis to the manipulative therapy and physiotherapy groups only.
Indirectness of population	No indirectness
Interventions	(n=66) Intervention 1: Manual therapy - Manual therapy (combination of techniques). Physiotherapy: exercises, massage and/or physical therapy modalities (heat, electrotherapy, ultrasound, shortwave diathermy). Duration 3 months. Concurrent medication/care: Not stated (n=65) Intervention 2: Manual therapy - Manipulation. Manipulation and mobilisation of the spine. Duration 3 months. Concurrent medication/care: Not stated (n=61) Intervention 3: Usual care. Continued treatment by the GP: prescribed drugs (analgesics, NSAIDs), advice about posture, home exercises, participation in sports, bed rest, etc. . Duration 3 months. Concurrent medication/care: Not stated (n=64) Intervention 4: Placebo/Sham. Physical examination and then detuned shortwave diathermy (10 minutes) and detuned ultrasound (10 minutes) carried out by the participating physiotherapist. . Duration 6 weeks (twice a week). Concurrent medication/care: Not stated
Funding	Academic or government funding (Dutch Ministry of Welfare, Health and Cultural Affairs. Dutch National Health Insurance Council)

Study	Koes 1992[288]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus MANIPULATION Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Improvement in physical functioning (10 point scale), long term at 12 months; Group 1: mean 3.7 (SD 2); n=66, Group 2: mean 4.2 (SD 2.1); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Improvement in physical functioning (10 point scale), short term at 12 weeks; Group 1: mean 3.2 (SD 2); n=66, Group 2: mean 4 (SD 2.3); n=65; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Mohseni-bandpei 2006[378]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=120)
Countries and setting	Conducted in Iran; Setting: General practice and community physiotherapy
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18 and 55, pain in the low back (between L1 and L5 and the sacroiliac joints), low back pain for >3 months duration, signs and symptoms that were interpreted as referred from the lumbar spine and not from other organs, good self-reported health, literate and able to speak and understand English
Exclusion criteria	Underlying diseases such as malignancy, obvious disc herniation, osteoporosis, viscerogenic causes, infection or systemic disease of the musculoskeletal system, previous spinal manipulation therapy or ultrasound treatmetn, neurologic or sciatic nerve root compression, radicular pain, sensory disturbances, loss of strength and reflexes, previous back surgery, evidence of previous vertebral fractures or major structural abnormalities, tumour of the spine, pregnancy, devices usch as heart pacemakers that may be affected by electrical stimulation or registered disability or receiving any type of benefits because of low back pain

Study	Mohseni-bandpei 2006[378]
Recruitment/selection of patients	Baseline characteristics: Manipulation - pain (VAS) 6.5 function (ODQ) 30.8 Ultrasound therapy - pain (VAS) 6.3 function (ODQ) 32.2
Age, gender and ethnicity	Age - Mean (SD): 36 (10). Gender (M:F): 66/66. Ethnicity: not stated
Further population details	1. Chronicity of pain: Mixed (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Manual therapy - Maitland Technique. Patient placed in a side-lying position, with therapist in position as described by Maitland. Patients uppermost hip and knee were flexed. With the therapist's thing in contact with the patient's thigh the therapist exerted a downward pressure on the lumbar and pelvis to move the joint through full range of motion. Once the full physiological range was reached a dynamic short-lever high-velocity thrust was applied. An avrrage of four sessions were attended. Duration 2 weeks. Concurrent medication/care: Patients were provided with a written set of exercises appropriate for each individual patient's condition (n=60) Intervention 2: Electrotherapy - Ultrasound therapy. Therapeutic ultrasound using a frequency of 1MHz. Patients attended an average of six sessions (range from 3 to 11). Duration 2 weeks. Concurrent medication/care: Patients were provided with a written set of exercises appropriate for each individual patient's condition
Funding	Academic or government funding (Iran Ministry of Health and Medical Education)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MAITLAND TECHNIQUE versus ULTRASOUND THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at end of treatment; Mean Manipulation -4.16 (CI -4.96 to -3.42) US -2.51 (CI -3.25 to -1.77); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 6 months; Mean Manipulation -3.79 (CI -4.81 to -2.77) US -2.28 (CI -3.32.2 to -1.24); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at end of treatment; Mean Manipulation -17.9 (CI -21.8 to -14) US -10.1 (CI 6.2 to 13.9); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 6 months; Mean Manipulation -16.7 (CI -22.3 to -11.1) US -11.5 (CI 6.2 to 13.9); Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Mohseni-bandpei 2006[378]
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Moret 1998[386]
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=16)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 week intervention; 3 week follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-60 years; back pain radiating below the knee and were prescribed bed rest by their physician for at least 1 and a maximum of 2 weeks; at least two of the following neurological signs: loss of sensitivity in one or two dermatomes (L4-S1), paralysis in the musculature of the lower extremities, provocation of the leg symptoms with increased pressure such as coughing or sneezing, a positive Lasegue's sign and asymmetry of the lower limb references.
Exclusion criteria	Patients with radicular syndrome due to specific underlying disease (e.g. cauda syndrome, malignancies, traumas, etc.) or anatomical abnormalities (e.g. trunk-obesity, etc.); suffering from a disease, which constituted a contraindication for traction therapy, such as respiratory disease.
Recruitment/selection of patients	Incident cases of lumbar radicular syndrome, diagnosed by their GP or neurologist, were recruited from 6 general practices and 1 hospital department of neurology from January 1996 to May 1996.
Age, gender and ethnicity	Age - Mean (SD): Bed rest: 39.8 (8.8); bed rest and traction: 43.3 (9.0). Gender (M:F): 75% Male/25% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline scores (mean SD) - back pain: traction+rest 6.6±2.0, rest 5.3±2.7; Roland disability score: traction+rest 18.1±1.8, rest 18.5±2.1; leg pain: traction+rest 7.4±1.2, rest 7.3±1.0.. Physical therapy was not allowed during the intervention period; if the patient's attending physician insisted on physical therapy, the therapist was allowed to give instructions concerning the best way to use the back only. The following agreements were made with the cooperating

Study	Moret 1998[386]
	physicians regarding the patient's medication. If the physician wished to prescribe pain medication, an analgesic was prescribed first. If necessary NSAIDs could be prescribed. If the effect of the NSAID was not sufficient, the physician could add diazepam or they could then change NSAID for an alternative NSAID. Finally, the physician was allowed to prescribe an opiate. The patients were asked to register in a diary the drugs that they had used.
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Manual therapy - Traction. Vertical traction in addition to bed rest therapy. In the traction device the patient hung in a vertical position. The device consisted of a metal frame and a synthetic belt, which was applied around the chest. Patients, who received traction devices at home, could apply the devices themselves without assistance. On the first day of their bed rest period the patients received an instruction regarding the use of the traction device. The prescription was for 4 times 45 minutes, or 6 times 30 minutes. Duration 2 weeks. Concurrent medication/care: Not stated (both groups were prescribed bed rest) (n=8) Intervention 2: Usual care. The bed rest intervention (in both groups) was prescribed for at least 1 and a maximum of 2 weeks by the treating physician. Toilet visits were allowed but the patients had to register in a diary the number of times they got out of bed. In order to equalize the number of times the patients had to get out of bed in both groups, traction patients were asked to combine a toilet visit with a traction session. Duration 2 weeks. Concurrent medication/care: Not stated (both groups were prescribed bed rest)
Funding	Other (Zorgverzekeraar Zorg en Zekerheid)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Mean pain reduction (back) at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Mean pain reduction (leg) at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Improvement on the RMDQ at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Morton 1999[393]

Study	Morton 1999[393]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=29)
Countries and setting	Conducted in Australia
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 18 and 70 years; acute mechanical LB of approx 4 weeks or less; pain located between T12 abd the gluteal fold (it might radiate to one lower limb).
Exclusion criteria	Contra-indications for manipulation; pregnancy; neoplastic disease; bone disease; inflammatory arthritis; advanced diabetes mellitus; vascular abnormalities; congenital generalised hypermobility; severe nerve root pain; anticoagulant medication; previous lumbar spine surgery; significant spinal abnormalities
Age, gender and ethnicity	Age - Mean (SD): Intervention: 42.9 (9.1). Control: 46.4 (9.0). Gender (M:F): 10 Male/ 19 Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (4 weeks or less).
Extra comments	Baseline scores - Pain: man+exercise 49.73±23.62, exercise 46.57±25.10; disability: man+exercise 10.6±5.23, exercise 10.07±6.40
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Manual therapy - Manipulation. Either L1-L5 or L5-S1 traction gap manipiulation.. Duration 4 weeks (twice weekly). Concurrent medication/care: Exercise therapy: patients commenced training in the hands-knee position, gradually progressing to a standing position with lumbar spine in neutral and enhanced by use of pelvic stabilizer, i.e. the pressure sensor biofeedback unit (n=14) Intervention 2: Usual care. Usual care. Duration 4 weeks (twice weekly). Concurrent medication/care: Exercise therapy: patients commenced training in the hands-knee position, gradually progressing to a standing position with lumbar spine in neutral and enhanced by use of pelvic stabilizer, i.e. the pressure sensor biofeedback unit
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE	

Study	Morton 1999[393]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity (AVAS: absolute visual analogue scale) at 3 months; Group 1: mean 0 (SD 0); n=15, Group 2: mean 13.57 (SD 9.4); n=14; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Disability (Roland Morris Disability Index) at 3 months; Group 1: mean 0.33 (SD 0.82); n=15, Group 2: mean 3.64 (SD 2.8); n=14; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Disability (Roland Morris Disability Index) at 3 months; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Olah 2008[416]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=36)
Countries and setting	Conducted in Hungary
Line of therapy	Unclear
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar pain caused by lumbar discopathy (demonstrated by MRI) radiating to the lower extremities
Exclusion criteria	Intolerable pain (the presence of mild radicular symptoms was an exception), blood circulation abnormalities in the extremities, spondylosis/spondylolisthesis, ankylosing spondylitis, osteoporosis causing vertebral compression, malignant disease, spondylitis, other contraindications (heart disease, respiratory insufficiency, serious infection), previous surgery of the spine
Recruitment/selection of patients	Baseline characteristics: Weightbath traction - VAS 7.94, ODQ 52.17, SF-PF 33.06, SF-RP 15.28, SF-RE 27.67, SF-VT 41.39, SF-MH 47.56, SF-SF 51.22, SF-BP 35.06, SF-GH 42.5; Usual care - VAS 5.28 ODQ 67.11, SF-PF 48.61, SF-RP 27.5, SF-RE 31.33, SF-VT 32.11, SF-MH 51.5, SF-SF 49.78, SF-BP 40.28, SF-GH 31.56
Age, gender and ethnicity	Age - Mean (SD): not reported. Gender (M:F): not reported. Ethnicity:

Study	Olah 2008[416]
Further population details	1. Chronicity of pain: Not stated / Unclear
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Manual therapy - Traction. Weightbath traction for 15 sessions starting at 10 minutes duration, then 15 minutes for the second session and 20 minutes for subsequent sessions. The first session was administered without any weights, however, 6kg weight was affixed to the waist for subsequent sessions. Water temperature was 33-34 degrees. Duration Unclear. Concurrent medication/care: Mckenzie exercises and electrotherapy provided. Patients continued on their regular medications, no changes to medications were allowed after the 3rd day of treatment. Rescue-analgesics in the form of paracetamol was permitted (n=18) Intervention 2: Usual care. No weight-bath traction performed.. Duration Unclear. Concurrent medication/care: Mckenzie exercises and electrotherapy provided. Patients continued on their regular medications, no changes to medications were allowed after the 3rd day of treatment. Rescue-analgesics in the form of paracetamol was permitted
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical functioning at 3 months; Group 1: mean 68.24 (SD 27.27); n=18, Group 2: mean 53.33 (SD 21.82); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical role limitation at 3 months; Group 1: mean 58.82 (SD 42.34); n=18, Group 2: mean 31.94 (SD 35.15); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 emotional role limitation at 3 months; Group 1: mean 64.59 (SD 43.28); n=18, Group 2: mean 27.72 (SD 41.61); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 vitality at 3 months; Group 1: mean 62.06 (SD 28.56); n=18, Group 2: mean 41.39 (SD 25.19); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 mental health at 3 months; Group 1: mean 73.65 (SD 26); n=18, Group 2: mean 53 (SD 30.39); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 social functioning at 3 months; Group 1: mean 74.88 (SD 24.97); n=18, Group 2: mean 56.33 (SD 30.25); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 bodily pain at 3 months; Group 1: mean 64.18 (SD 20.5); n=18, Group 2: mean 48.11 (SD 16.5); n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 general health at 3 months; Group 1: mean 57.35 (SD 24.76); n=18, Group 2: mean 35.44 (SD 21.3);

Study	Olah 2008[416]
n=18; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain (VAS) at 3 months; Group 1: mean 2.41 (SD 2.48); n=18, Group 2: mean 5.39 (SD 2.2); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Questionnaire at 3 months; Group 1: mean 81.59 (SD 15.55); n=18, Group 2: mean 72.33 (SD 13.83); n=18; ODQ 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	OSTEOPATHIC trial: Licciardone 2013{LICCIARDONE2013B} (Licciardone 2012[324], Licciardone 2012[323], Licciardone 2013[325], Licciardone 2014[322])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=455)
Countries and setting	Conducted in USA
Line of therapy	Mixed line
Duration of study	Intervention + follow up: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Adults aged 21 to 69 years, non-pregnant, low back pain for at least 3 months
Exclusion criteria	Red-flag conditions (cancer, spinal osteomyelitis, spinal fracture, herniated disc, ankylosing spondylitis, or cauda equina), low back surgery in the past year, workers' compensation benefits in the past 3 months, ongoing litigation involving back problems, angina or congestive heart failure symptoms, history of stroke or TIA int he past year, implanted biomedical devices e.g. pacemaker, active bleeding or infection in the lower back or other conditions impeding protocol implementation, use of corticosteroids in the past month, use of manual therapies in the past 3 months or more than 3 times in the past year.

Study (subsidiary papers)	OSTEOPATHIC trial: Licciardone 2013{LICCIARDONE2013B} (Licciardone 2012[324], Licciardone 2012[323], Licciardone 2013[325], Licciardone 2014[322])
Recruitment/selection of patients	Patient recruited in Dallas-Fort Worth, Texas, from August 2006 to September 2010 through newspaper advertisements, community agencies, and medical clinics, including those affiliated with the group practice of the University of North Texas Health Science Centre, but excluding clinics that provided OMT specialty services.
Age, gender and ethnicity	Age - Median (IQR): 41 (29-51). Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline scores (median IQR) - Roland-Morris disability score: manual 5 (3-9), sham 5 (3-10); SF-36 general health score: manual 67 (57-82), sham 72 (52-85); pain VAS: manual 44 (25-61), sham 45 (28-60). 2x2 factorial design. Patients also received UST (ultrasound therapy) or sham UST.
Indirectness of population	No indirectness
Interventions	(n=230) Intervention 1: Manual therapy - Manual therapy (combination of techniques). High velocity, low amplitude thrusts; moderate-velocity, moderate-amplitude thrusts; soft tissue stretching, kneading, and pressure; myofascial stretching and release; positional treatment of myofascial tender points; patient's isometric muscle activation against the physician's unyielding and equal counterforce. Duration 8 weeks (6 treatment sessions). Concurrent medication/care: Patients could self-initiate LBP co-treatments, such as non-prescription drugs and complementary and alternative medicine therapies. Patients could also independently receive low back pain usual care (any co-treatment except OMT, other manual therapies, or UST) at any time from physicians not associated with the study. Co-treatments were documented at 4-week intervals throughout the study. (n=225) Intervention 2: Placebo/Sham. Hand contact, active and passive range of motion, and techniques that simulated OMT but that used such maneuvers as light touch, improper patient positioning, purposely misdirected movements, and diminished physician force.. Duration 8 weeks (6 treatment sessions). Concurrent medication/care: Patients could self-initiate LBP co-treatments, such as non-prescription drugs and complementary and alternative medicine therapies. Patients could also independently receive low back pain usual care (any co-treatment except OMT, other manual therapies, or UST) at any time from physicians not associated with the study. Co-treatments were documented at 4-week intervals throughout the study.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 GH score [median (IQR)] at 12 weeks; Other: Change score [median (IQR)]. Manipulation: 72 (52-

Study (subsidiary papers)	OSTEOPATHIC trial: Licciardone 2013{LICCIARDONE2013B} (Licciardone 2012[324], Licciardone 2012[323], Licciardone 2013[325], Licciardone 2014[322])
87). Sham: 72 (57-87); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (change scores on VAS) at 12 weeks; Other: Change score [median (IQR)]. Manipulation group: -18 (-31 to 0). Sham group: -9 (-25 to 3); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 12 weeks; Other: Median (IQR) Manipulation 2 (1-6) Sham 3 (1-7); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Responder criteria (LBP reduction ≥30%) at 12 weeks; Mean log RR 1.38 [1.16, 1.64]. SE 0.0886; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Pal 1986[421]
Study type	Systematic Review
Number of studies (number of participants)	1 (n=41)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	People admitted to hospital with low back pain and sciatica
Exclusion criteria	Not reported
Recruitment/selection of patients	Baseline characteristics (median values) Traction - Pain (VAS 0-10) 5 Sham(VAS 0-10) 5

Study	Pal 1986[421]
Age, gender and ethnicity	Age - Mean (SD): 38.5. Gender (M:F): 23/18. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear (People admitted to hosptial with LBP and sciatica).
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Manual therapy - Traction. Traction of 5.5kg - 8kg applied while patient supine on a tilted bed (foot end raised on a 23cm high wooden block) by means of a pelvid haress pulled by metal weights over a pulley. Weights were encased by an aluminium container and so could not be seen. Duration Unclear. Concurrent medication/care: not reported (n=15) Intervention 2: Placebo/Sham. Traction of 1.4kg - 1.8kg applied while patient supine on a tilted bed (foot end raised on a 23cm high wooden block) by means of a pelvid haress pulled by metal weights over a pulley. Weights were encased by an aluminium container and so could not be seen. Duration Unclear. Concurrent medication/care: not reported
Funding	Funding not stated
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Pope 2012{POPE2012}
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=70)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 to 55 inclusive, good general health, BMI <33kg/m2, willing to travel to the facility for treatment

Study	Pope 2012{POPE2012}
Exclusion criteria	Pregnancy, sciatica (defined as pain radiating below the knee, a positive straight leg raise test) including patients with buttock and upper thigh pain, neurological deficit, previous vertebral fracture, tumor, infection or spondyloarthropathy, previous back surgery, previous manipulation therapy, condition potentially aggravated by electrical devices, workmen's compensation or disability insurance issues,
Recruitment/selection of patients	Those attending Whittier Health Centre at the Los Angeles College of Chiropractic.
Age, gender and ethnicity	Age - Median (range): 32. Gender (M:F): 102/62. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline scores not reported
Indirectness of population	No indirectness
Interventions	(n=70) Intervention 1: Manual therapy - Manipulation. Short lever high-velocity low-amplitude thrust spinal manipulation of lumbar spine and/or sacroiliac joint performed with patient lying on side. Three session per week.. Duration 3 weeks. Concurrent medication/care: not reported (n=37) Intervention 2: Massage. Soft tissue massage or effleurage conducted with patient lying prone. Massage therapist used a smooth non-forceful motion. Treatment session lasted no longer than 15 minutes, three times a week.. Duration 3 weeks. Concurrent medication/care: not reported (n=29) Intervention 3: Orthotics and appliance - Belt/corsets. Freeman lumbosacral corset by a trained clinician. Patient was instructed to wear the corset during waking hours except while bathing, The patient removed the corset for a maximum of 10 minutes a time up to three times per day. Duration 3 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Foundation for chiropractic research and education)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus MASSAGE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 3 weeks; Group 1: mean -2.41 (SD 2.7); n=65, Group 2: mean -1.72 (SD 2.51); n=32; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus BELT/CORSETS

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months

Study	Pope 2012{POPE2012}
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 3 weeks; Group 1: mean -2.41 (SD 2.7); n=65, Group 2: mean -1.59 (SD 2.7); n=25; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Rasmussen 2008[441]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=72)
Countries and setting	Conducted in Denmark
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 to 60 years, LBP for >3 months
Exclusion criteria	Ongoing insurance claim, unsettled social pension claim, LBP caused my major trauma, pain extension below the knee, excessive distribution of pain according to pain drawing, neurological diseases including known disc herniation, significant medical diseases including cancer, inflammation, language problems, suspected non-compliance or planned other treatment
Recruitment/selection of patients	Baseline characteristics: Median (range) back pain scores - Manipulation 5 (3-6) Usual care 5 (3-6)
Age, gender and ethnicity	Age - Median (range): 40 (26-65). Gender (M:F): 34/38. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=35) Intervention 1: Usual care. No manipulation given. Full physical examination performed by a manual therapist prior to randomisation. Patients in both groups were instructed in two simple extension exercises and advised to repeat at home as often as possible. Duration 1 day. Concurrent medication/care: No further details

Study	Rasmussen 2008[441]
	(n=37) Intervention 2: Manual therapy - Manipulation. High-velocity low-amplitude thrust manipulative therapy. Full physical examination performed by a manual therapist prior to randomisation. Patients in both groups were instructed in two simple extension exercises and advised to repeat at home as often as possible. Duration 1 day. Concurrent medication/care: no further details
Funding	Academic or government funding (Oak Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity (VAS 0-10) at 1 year; Mean Median values Manipulation: 2 (1-3) Usual care 2 (1-3); Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity (VAS 0-10) at 4 weeks; Mean Median values manipulation 3 (1-4) usual care 3 (1-4); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Disc herniation at 1 year; Group 1: 0/37, Group 2: 0/35; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Santilli 2006[458]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=102)
Countries and setting	Conducted in Italy
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 to 65 years, acute low back pain (pain for <10 days without any episodes of pain in the preceding 3 months)

Study	Santilli 2006[458]
	of moderate to severe intensity (>5 on VAS 0-10 scale), moderate to severe radiating pain to one leg and magnetic resonance imaging evidence of disc protrusion (Modic classification 4A herniation included in the study) with or without disc degeneration in the spinal segments involved in pain
Exclusion criteria	BMI >30, lumbar scoliosis >20 degrees, lower limb length difference >1.5cm on x-ray, spondylolisthesis, previous spinal surgery, diabetic neuropathy to rule out alternative pain sources, severe osteoporosis (BMD >2.5 SD lower than normal age matched individuals), metabolic bone diseases, clinical findings suggesting a lesion requiring surgery, herniated disc classified as Modic 4B (extrusion with rupture of either annulus or posterior longitudinal ligament) or 4C, history of chronic back pain, previous spinal manipulation
Recruitment/selection of patients	Baseline characteristics: Manipulation M/F 37/16, Pain 6.4 (0.9) Sham/placebo M/F 27/22, Pain 6.4 (0.8)
Age, gender and ethnicity	Age - Mean (range): 43.1 (19 to 63). Gender (M:F): 64/38. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<10 days pain without any episodes in preceding 3 months.).
Indirectness of population	No indirectness
Interventions	(n=53) Intervention 1: Manual therapy - Manipulation. Treatments 5 days per week, each session lasting 5 minutes. Active manipulations consisted of examination of range of motion in the back followed by soft tissue manipulations and brisk rotational thrusting away from the greatest restriction (as described by Herbst and Plaugher). Treatments provided by two experienced chiropractors who had received the same formal training. Duration 1 month. Concurrent medication/care: Opiates and steroids were not permitted, however NSAIDs and simple analgesics were permitted and their use monitored (n=49) Intervention 2: Placebo/Sham. Treatments 5 days per week, each session lasting 5 minutes. Sham manipulations composed of soft muscle pressing apparently similar to manipulations but not following any specific patterns and not involving rapid thrusts. Treatments provided by two experienced chiropractors who had received the same formal training. Duration 1 month. Concurrent medication/care: Opiates and steroids were not permitted, however NSAIDs and simple analgesics were permitted and their use monitored
Funding	Academic or government funding (Mario Negri Foundation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION (HIGH VELOCITY LOW AMPLITUDE) versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - physical functioning at 6 months; Group 1: mean 67.4 (SD 17.9); n=48, Group 2: mean 60.5 (SD 22.5); n=48; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - physical role limitation at 6 months; Group 1: mean 31.1 (SD 37.6); n=48, Group 2: mean 29.1 (SD

Study	Santilli 2006[458]
	37.6); n=48; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - bodily pain at 6 months; Group 1: mean 33.8 (SD 12.5); n=48, Group 2: mean 31.9 (SD 13.6); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - general health at 6 months; Group 1: mean 53.8 (SD 16.8); n=48, Group 2: mean 57.5 (SD 20); n=48; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - vitality at 6 months; Group 1: mean 57.7 (SD 14.1); n=48, Group 2: mean 521 (SD 16.4); n=48; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - social functioning at 6 months; Group 1: mean 57.8 (SD 13.5); n=48, Group 2: mean 52.1 (SD 16.4); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - emotional role limitation at 6 months; Group 1: mean 44.6 (SD 41.8); n=48, Group 2: mean 37.4 (SD 42.8); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - mental health at 6 months; Group 1: mean 73.5 (SD 16.9); n=48, Group 2: mean 70.2 (SD 14.7); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain severity VAS 0-10 (local back pain) at 3 months; MD -1.8; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Kellner score - anxiety at 6 months; Group 1: mean 6.1 (SD 3.6); n=48, Group 2: mean 6.4 (SD 3.8); n=48; Kellner score Unclear - not reported Top=--; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Kellner score - depression at 6 months; Group 1: mean 4.1 (SD 3.1); n=48, Group 2: mean 4.4 (SD 2.8); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Kellner score - somatisation at 6 months; Group 1: mean 9.7 (SD 3.5); n=48, Group 2: mean 9.2 (SD 4.6); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Kellner score - hostility at 6 months; Group 1: mean 3.5 (SD 3.1); n=48, Group 2: mean 3.2 (SD 2.9); n=48; Risk of bias: Low; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Schimmel 2009[464]
Study type	RCT (Patient randomised; Parallel)

Study	Schimmel 2009[464]
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain (>3 months), bulging disc, lumbar degenerative disc disease, place of residence within 25 km of participating hospital
Exclusion criteria	Previous spinal surgical treatment with dynamic stabilisation, radicular leg pain, malignancy, pregnancy, osteoporosis
Recruitment/selection of patients	Baseline characteristics; Traction - pain severity (low back) 6.1 (2.46), ODQ 36 (15.7), Sham/placebo - pain severity (low back) 5.3 (2.64), ODQ 33 (16.8)
Age, gender and ethnicity	Age - Mean (SD): Traction 42 (8.6) Sham 46 (9.7). Gender (M:F): 33/27. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Manual therapy - Traction. 20 traction sessions using the Accu-SPINA device according to intervertebral differential dynamics theory (IDD) protocol, beginning with forces of 50% total body weight minus 10lb, increasing every session thereafter to a force of 50% total body weight plus 10lb. Traction maintained for 60 seconds with intervals of partial relaxation for 30 seconds. Total treatment session lasted 25-30 minutes. Accu-SPINA device also accomplished a light massage, heat and relaxing music during treatment. Duration 6 weeks. Concurrent medication/care: Standard graded activity programme for 1 hour twice a week for a total of 12 weeks (n=31) Intervention 2: Placebo/Sham. 20 traction sessions using the Accu-SPINA device using 10lb of traction <10% total body weight. Traction maintained for 60 seconds with intervals of partial relaxation for 30 seconds. Total treatment session lasted 25-30. Accu-SPINA device also accomplished a light massage, heat and relaxing music during treatment. Duration 6 weeks. Concurrent medication/care: Standard graded activity programme for 1 hour twice a week for a total of 12 weeks
Funding	Equipment / drugs provided by industry (Steadfast Corporation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus PLACEBO/SHAM	

Study	Schimmel 2009[464]
Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 overall score at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain severity (VAS 0-10) at 3 months; Group 1: mean 3.2 (SD 2.68); n=29, Group 2: mean 3.6 (SD 2.71); n=31; VAS 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability questionnaire at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Schneider 2015[466]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=102)
Countries and setting	Conducted in USA; Setting: Study conducted between November 2010 and March 2013 at the UPMC Center for Integrative Medicine in Pittsburgh.
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Participants were required to have a new LBP episode within the previous 3 months, be at least 18 years of age, and speak/understand English. To prevent floor effects, minimum levels of self-reported pain (3 on 0-10 scale) and disability (20 on 0-100 scale) were also required.
Exclusion criteria	(1) Chronic LBP > 3 month duration (2) previous chiropractic, medical or physical therapy treatment for the current LBP episdoe (3) radicular features including leg pain distal to the knee, numbness/weakness of the lower leg, or

Study	Schneider 2015[466]
	positive nerve root tension/neurological signs (4) contraindications to spinal manipulation, including: previous history of metastatic cancer, severe osteoporosis, fracture or instability, or prolonged anticoagulant or oral steroid use or (5) current use of prescription pain medications
Recruitment/selection of patients	No details given
Age, gender and ethnicity	Age - Mean (range): 40.4-41.4. Gender (M:F): 63%/37%. Ethnicity: 62.7% Caucasian
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<3 months duration).
Extra comments	Baseline characteristics (mean±SD): Disability (0-100 scale) Manual - 33.1 ± 9.6 , Disability Medical - 33.9 ± 8.1; Pain (0-10 scale) Manual - 5.5 ± 1.3, Pain Medical - 5.7 ± 1.3
Indirectness of population	No indirectness
Interventions	(n=37) Intervention 1: Manual therapy - Manipulation. Participants were given high-velocity low-amplitude thrust manipulation in the side posture position by a licensed chiropractor. Segmental levels where manipulation was applied were determined using standard chiropractic methods of static and motion palpation. Attended 8 office visits (approximately 15 minutes each), twice per week for 4 weeks.. Duration 4 weeks. Concurrent medication/care: The same clinician provided all care within each treatment group, participants received a copy of the same educational booklet from their clinician providing information about proper posture and movements during activities of daily living. (n=35) Intervention 2: Usual care. Participants were seen by a medical physician, board certified in physical medicine and rehabilitation. These participants were told that most new episodes of back pain are typically self-limiting, were prescribed over-the-counter analgesic and nonsteroidal anti-inflammatory drugs medications, given advice to stay physically active and avoid prolonged bed rest. Attended a total of 3 office visits; an initial visit (approximately 30 min) with follow up visits (approximately 15 min each) at 2 and 4 weeks. . Duration 4 weeks. Concurrent medication/care: The same clinician provided all care within each treatment group, participants received a copy of the same educational booklet from their clinician providing information about proper posture and movements during activities of daily living. After the 4-week assessment, participants were free to pursue rehabilitation or manipulative treatment.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION - THRUST versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain at 3 months; Group 1: mean 2.7 (SD 2.3); n=37, Group 2: mean 3.9 (SD 2.3); n=35; Self-reported

Study	Schneider 2015[466]
pain intensity scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 6 months; Group 1: mean 2.5 (SD 2); n=37, Group 2: mean 3.4 (SD 2.6); n=35; Self-reported pain intensity scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry LBP Disability Index (OSW) at 3 months; Group 1: mean 18.6 (SD 14.9); n=37, Group 2: mean 22.7 (SD 14.3); n=35; Oswestry LBP Disability Index scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry LBP Disability Index (OSW) at 6 months; Group 1: mean 19.8 (SD 13.9); n=37, Group 2: mean 22.1 (SD 15.6); n=35; Oswestry LBP Disability Index (OSW) 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: ≥ 50% reduction disability (OSW) at 4 weeks; Group 1: 19/37, Group 2: 14/35; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: ≥ 50% reduction pain (NPR) at 4 weeks; Group 1: 28/37, Group 2: 14/35; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: ≥ 30% reduction pain (NPR) at 4 weeks; Group 1: 35/37, Group 2: 20/35; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: ≥ 30% reduction disability (OSW) at 4 weeks; Group 1: 28/37, Group 2: 17/35; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Senna 2011[468]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=93)
Countries and setting	Conducted in Egypt; Setting: Outpatient clinic of a rheumatology and rehabilitation department in a University Hospital
Line of therapy	Unclear
Duration of study	Intervention + follow up: 10 months

Study	Senna 2011[468]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 20 and 6 years, chronic non-specific low back pain (>6 months duration)
Exclusion criteria	"Red flag" symptoms of a serious spinal condition (e.g. tumor, compression fracture, infection), signs consistent with nerve root compression (i.e. positive straight leg raise >45 degrees or diminished reflexes, sensation or lower extremity strength), structural deformity, spondylolisthesis, spinal stenosis, ankylosing spondylitis, osteoporosis, prior surgery to the lumbar spine or buttock, obvious psychiatric disorders, referred pain to the back, widespread pain (e.g. fibromyalgia), obesity, current pregnancy, previous experience of spinal manipulation
Recruitment/selection of patients	Baseline characteristics: Manipulation ODQ 38.7 VAS 4.2 SF-36 27.8 Usual care ODQ 38.1 VAS 4.1 SF-36 27.5
Age, gender and ethnicity	Age - Mean (SD): 41 (10). Gender (M:F): 66/22. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months duration).
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Manual therapy - Manipulation. Spinal manipulation - high velocity thrust to a joint beyond its restricted range of movement, performed with patient lying supine. Twelve sessions, 3 times weekly. Both groups instructed in a pelvic tilt ROM exercise after the procedure and advised to practice at home. Duration 4 weeks. Concurrent medication/care: not reported (n=37) Intervention 2: Placebo/Sham. Sham manipulation - manually applied forces of diminished magnitude aimed purposely to avoid treatable areas of the spine and provide minimal likelihood of a therapeutic effect performed with patient lying supine. Twelve sessions, 3 times weekly. Both groups instructed in a pelvic tilt ROM exercise after the procedure and advised to practice at home. Duration 4 weeks. Concurrent medication/care: not reported
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 4 months; Group 1: mean 29.1619 (SD 8.266); n=26, Group 2: mean 26.3802 (SD 7.9); n=37; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 10 months; Group 1: mean 27.6489 (SD 8.209); n=26, Group 2: mean 25.9079 (SD 7.716); n=37; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Senna 2011[468]
Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS 0-10) at 4 months; Group 1: mean 3.516 (SD 0.655); n=26, Group 2: mean 3.517 (SD 0.762); n=37; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS 0-10) at 10 months; Group 1: mean 3.852 (SD 12.49); n=26, Group 2: mean 3.829 (SD 12.89); n=37; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability questionnaire at 4 months; Group 1: mean 29.8324 (SD 10.7); n=26, Group 2: mean 33.4644 (SD 12.98); n=37; ODQ 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability questionnaire at 10 months; Group 1: mean 34.9058 (SD 12.02); n=26, Group 2: mean 37.4374 (SD 13.38); n=37; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Triano 1995[526] (Triano 1994[525])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=209)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 or over, pain anywhere from L1 to L5 and the sacroiliac joints inclusively, non-radicular extremity pain was permitted, duration of symptoms longer than 50 days or more than 6 episodes in the preceeding 12 months, on examination palpatory tendernes over one or more zygapophysial articulations
Exclusion criteria	Evidence of neuropathy, systemic disease potentially affecting the musculoskeletal system severe osteopoosis

Study (subsidiary papers)	Triano 1995[526] (Triano 1994[525])
	fracture or osseous pathology of the spine, persons taking medicationn on an irregular schedule or receiving other treatment intended to relieve symptoms associated wtiht heir low back pain and those involved in workers compensation or pending litigation claims
Age, gender and ethnicity	Age - Mean (SD): 41.6 (4.7). Gender (M:F): 113/96. Ethnicity: not stated
Further population details	1. Chronicity of pain: Mixed (>50 days or more than 6 episodes in last 12 months).
Extra comments	Baseline scores - pain VAS: manipulation 38.4±23.4, sham 37.4±23.7, self 35.6±23.0; Oswestry disability: manipulation 17.5±12.8, sham 21.7±15.0, self 20.2±13.6
Indirectness of population	No indirectness
Interventions	(n=47) Intervention 1: Manual therapy - Manipulation. High-velocity low-amplitude thrust spinal manipulation daily on six days each week for two weeks. Participating chiropractic physicians were trained to deliver loads above 400N having rehearsed using a specially developed load-sensing table. Duration 2 weeks. Concurrent medication/care: not reported (n=42) Intervention 2: Placebo/Sham. Sham manipulation - low force high-velocity thrust daily on six days each week for two weeks. Participating chiropractic physicians were trained to deliver loads above 400N having rehearsed using a specially developed load-sensing table. Duration 2 weeks. Concurrent medication/care: not reported (n=43) Intervention 3: Self management - Self-management programmes (including education, advice and reassurance). Each session consisted of a presentation using attractive color graphics of common anatomic and biomechanical information on spinal function and hygiene, exercises were described in general terms but none were specifically recommended. Salient features of the lesson were contained on information sheets that were given to the patient. Duration 2 weeks. Concurrent medication/care: not reported
Funding	Academic or government funding (Foundation for chiropractic education fund)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS 0-10) at 4 weeks; Group 1: mean 1.33 (SD 1.59); n=47, Group 2: mean 2.17 (SD 2.44); n=39; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability score at 4 weeks; Group 1: mean 10.6 (SD 11.7); n=39, Group 2: mean 14 (SD 11.7); n=42; ODQ 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Triano 1995[526] (Triano 1994[525])
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS 0-10) at 4 weeks; Group 1: mean 1.33 (SD 1.59); n=47, Group 2: mean 1.51 (SD 1.94); n=43; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry disability score at 4 weeks; Group 1: mean 6 (SD 11.7); n=39, Group 2: mean 11.4 (SD 10.3); n=38; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Van der heijden 1995[541]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=25)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 25-65 years, low back pain for >3 months, never before treated with traction, no other treatment, fluent in Dutch
Exclusion criteria	Inguinal hernia, pregnancy, cardiovascular disorder, respiratory disorder, spastic hemiplegia, malignancy, previous disc prolapse, pain or numbness on coughing or sneezing, spondylolysis/spondylolisthesis, hemilumbarisation/hemisacralisation, congenital hip dysplasia, Bechterew syndrome, Ehlers Danlos syndrome, osteoporosis, previous fracture, local acute infection, 5cm or more leg length discrepancy

Study	Van der heijden 1995[541]
Recruitment/selection of patients	Baseline characteristics: Traction - pain severity (VAS) 4.7 (2.7), function (RMDQ) 11 (6) Sham/placebo - pain severity (VAS) 3.7 (2.3), function (RMDQ) 11 (5)
Age, gender and ethnicity	Age - Mean (SD): 46.5 (8). Gender (M:F): 13/12. Ethnicity: not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Indirectness of population	No indirectness
Interventions	(n=13) Intervention 1: Manual therapy - Traction. Traction using a calibrated traction device (Finntrac-03, Instrumentarium Oy Kojevalmistus Lameris Instruments, Utrecht, The Netherlands) for 10-12 sessions, usually three times per week. Minimal traction force set at 30% body weight ranging to 50% total body weight. Traction force slowly increased from zero and held for 20 minutes. Duration 4 weeks. Concurrent medication/care: Instruction leaflet on low back pain and activities of daily living provided to all patients. Participants allowed to continue their regular medications but other co-interventions (massage, exercises, physiotherapy, injections) not permitted (n=12) Intervention 2: Placebo/Sham. Sham (low intensity) traction using a calibrated traction device (Finntrac-03, Instrumentarium Oy Kojevalmistus Lameris Instruments, Utrecht, The Netherlands) for 10-12 sessions, usually three times per week. Maximum traction force set at 25% body weight (as spinal elongation not likely to occur with forces under 25% body weight). Traction force slowly increased from zero and held for 20 minutes. Duration 4 weeks. Concurrent medication/care: Instruction leaflet on low back pain and activities of daily living provided to all patients. Participants allowed to continue their regular medications but other co-interventions (massage, exercises, physiotherapy, injections) not permitted
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRACTION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain severity (VAS 0-10) at 9 weeks; Other: -1 (median) (95%CI -3.1 to 1.7) (median); Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Function (Roland Morris Disability Questionnaire) at 9 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Von heymann 2013[550]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=101)
Countries and setting	Conducted in Germany; Setting: Conducted in 5 orthopaedic or general practices in four different cities
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 week
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18 and 55 years of age presenting with acute low back pain (<48 hours before randomisation)
Exclusion criteria	Known intolerance to NSAIDs or paracetamol, occurrence of low back pain or spinal manipulation for any cause within the last 3 months, known or suspected alcohol or drug abuse, metabolic or malignant or any serious organic neurological disease, atopic diathesis, any structural disturbances of the spine (osteoporosis, scoliosis, disc herniation, spondylolisthesis, hip dysplasia and others), women of childbearing age had to be undertaking effective contraceptive methods, sacroiliac dysfunction
Recruitment/selection of patients	Baseline characteristics: (median values) manipulation - RMDQ 13.46; diclofenac RMDQ 14.42; sham manipulation plus sham diclofenac RMDQ 15
Age, gender and ethnicity	Age - Mean (range): 36.7 (18-55). Gender (M:F): 60/40. Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Presnting <48 hours before randomisation).
Indirectness of population	No indirectness
Interventions	(n=38) Intervention 1: Manual therapy - Manipulation. Spinal manipulation - high velocity low amplitude thrust technique. Duration Unclear. Concurrent medication/care: Placebo Diclofenac three times daily (n=37) Intervention 2: Non-steroidal anti-inflammatory drugs - Diclofenac. Diclofenac 50mg three times daily. Duration Unclear. Concurrent medication/care: Sham manipulation - manipulation using an HVLA technique, however, at an "incorrect" position. This technique was designed to treat the sacroiliac joint by traction on the leg combined with a cephalad impulse on the sacrum (n=25) Intervention 3: Placebo/Sham. Sham spinal manipulation - using an HVLA technique, however, at an "incorrect" position. This technique was designed to treat the sacroiliac joint by traction on the leg combined with a cephalad

Study	Von heymann 2013[550]
	impulse on the sacrum plus placebo diclofenac three times daily. Duration Unclear. Concurrent medication/care: no details
Funding	Academic or government funding (Deutche Gesellschaft fur Manuelle Medezin)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION versus DICLOFENAC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS) at 1 week; Mean no data - graph shown only; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 1 week; Group 1: mean -7.71 (SD 4.88); n=38, Group 2: mean -4.75 (SD 4.93); n=37; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Number of tablets of rescue analgesia required (500mg paracetamol) at 1 week; Group 1: mean 2.22 (SD 3.73); n=38, Group 2: mean 6.41 (SD 10.67); n=37; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Waagen 1986[556]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=29)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Ambulatory patients aged 18-65 with chronic back pain (>3 months duration), low back pain as the chief complaint,

Study	Waagen 1986[556]
	naive to chiropractic treatments, no contraindications to chiropractic treatment
Exclusion criteria	Pregnancy, malingering, receiving workers compensation for a back problem, non-ambulatory, obesity, radiographic evidence of fractures, osteoporosis or sponylolisthesis, back pain secondary to visceral disorder (kidney/liver/bladder), indications of disc herniation
Recruitment/selection of patients	Baseline characteristics: Pre trial pain (VAS 0-10) Manipulation 4.6 Sham 3.7; Pain duration (years) Manipulation 2.8 Sham 2.5
Age, gender and ethnicity	Age - Mean (SD): Manipulation: 25.2 Sham/placebo: 24.3. Gender (M:F): 13/16. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Manual therapy - Manipulation. Chiropractic spinal adjustive therapy with full-spine adjustments administered to each of the experimental patients in order to specifically correct all the chiropractic lesions found by the treating clinician. Location of the lesions determined by palpation of the patient's spine, consultation with patients and inspection of radiographs. Patients treated two to three times weekly. Duration 2 weeks. Concurrent medication/care: No adjustive or concurrent therapy (chiropractic or medical) was administered during the trial period (n=18) Intervention 2: Placebo/Sham. Sham adjustment using minimal force for a generalised manipulation, for the sham adjustment the lumbar drop-piece on a standard chiropractic adjusting table was set to minimal tension, adjustment was simulated by applying gentle pressure over both posterior superior iliac spines followed by gentle paraspinal massage. Patients treated two to three times weekly. Duration 2 weeks. Concurrent medication/care: not reported
Funding	Other (Pamler College of Chiropractic grant)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION (HIGH VELOCITY LOW AMPLITUDE) versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity (VAS 0-10) at 2 weeks; Mean Manipulation: +2.3 Sham/placebo: +0.6; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Zheng 2012[587]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=64)
Countries and setting	Conducted in China; Setting: Rehabilitation centre of a general hospital
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific low back pain (defined as pain under the scapulas, above the cleft of the buttocks, with or without radiation to the lower extremities) lasting more than 3 months and aged between 21 and 75 years
Exclusion criteria	Patients with language barriers and those with low back pain caused by neoplasm, osteoporosis, vertebral fracture, rheumatoid arthritis, acute herniated disc accompanied by nerve root entrapment and unstable spondylolisthesis
Recruitment/selection of patients	Baseline characteristics: massage plus traction - pain (VAS) 6.7; traction only - pain (VAS) 6.9
Age, gender and ethnicity	Age - Mean (SD): 42.5 (15). Gender (M:F): 34/30. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Indirectness of population	No indirectness
Interventions	(n=32) Intervention 1: Manual therapy - Manual therapy (combination of techniques). Deep massage to tender points with patient prone on examination bed. Deep massage applied for 8-10 s until discomfort felt. Sequence repeated four to five times over tender points. Combined with intermittent lumbar traction (Model OL-2000, og Gilken Co.) using traction force of between 40 and 50% total body weight over 20 minutes. Treatment performed twice per week. Duration 3 weeks. Concurrent medication/care: not reported (n=32) Intervention 2: Manual therapy - Traction. Traction using 40 to 50% total body weight intermittently for 20 minutes twice per week. Duration 3 weeks. Concurrent medication/care: not reported
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus TRACTION	

Study	Zheng 2012[587]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (<4 months) at 3 weeks; Group 1: mean 4.9 (SD 1.3); n=30, Group 2: mean 5.9 (SD 1.3); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Zylbergold 1981{ZYLBERGOLD1981}
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=28)
Countries and setting	Conducted in Canada; Setting: Outpatient waiting room of a physiotherapy department
Line of therapy	1st line
Duration of study	Intervention + follow up: 1 month
Method of assessment of guideline condition	Unclear method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 25 to 65 years
Exclusion criteria	History of back surgery, neurologic involvement, gross bony abnormality, receiving compensation.
Age, gender and ethnicity	Age - Mean (SD): Manual therapy 46(9.59); exercise 49.1(13.25); UC 53.6(12.58). Gender (M:F): inadequately reported. Ethnicity:
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline pain scores, mean (SD): manual therapy 2.87 (0.88); exercise 2.3(1.32), UC 2.1(1.6)
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Manual therapy - Manual therapy (combination of techniques). Moist heat for 15 minutes followed by 15 minutes manual therapy session consisting of posterior-anterior pressures, rotational mobilizations, and manual tractions, as indicated. Twice a week . Duration 1 month. Concurrent medication/care: Back care and proper body mechanics education

Study	Zylbergold 1981{ZYLBERGOLD1981}
	(n=10) Intervention 2: Individual Biomechanical exercise - Core stability. Moist heat for 15 minute period followed by a 15 minute lumbar flexion exercise session performed twice a week for 4 weeks. Patietns were advised to continue the exercise programme at home. Twice a week . Duration 1 month. Concurrent medication/care: Back care and proper body mechanics education (n=10) Intervention 3: Usual care. Home care instructions. Duration 1 months. Concurrent medication/care: Back care and proper body mechanics education.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus CORE STABILITY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Melzack pain scale at 1 months; Group 1: mean -1.5 (SD 0.1); n=8, Group 2: mean -1 (SD 0.85); n=10; Melzack pain scale 1-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (COMBINATION OF TECHNIQUES) versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Melzack pain scale at 1 months; Group 1: mean -1.5 (SD 0.1); n=8, Group 2: mean -0.6 (SD 0.82); n=10; Melzack pain scale 0-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.1.12 Combination interventions – manual therapy adjunct

Study	Aure 2003[18]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=49)

Study	Aure 2003[18]
Countries and setting	Conducted in Norway; Setting: People sick listed in the community, referred in for the trial to physiotherapy clinics
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 8 weeks + follow up to 1 year
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Sick listed
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Men and women aged 20-60 years; sick listed between 8 weeks and 6 months due to LBP with or without leg pain
Exclusion criteria	Unemployment or early retirement because of LBP,prolapse with neurologic signs and symptoms requiring surgery; pregnancy; spondylolisthesis; spondylolysis; degenerative olisthesis; fractures; suspicion of malignancy; osteoporosis; previous back surgery; known rheumatic, neurologic or mental disease; absence of pain aggravation on active functional movement
Recruitment/selection of patients	A letter with information about the study was mailed to all patients in the area on sick leave for >8 weeks and <6 months under ICPC codes L84 or L86 (back syndrome without or with radiating pain, respectively). Interested patients phoned the physiotherapist in charge of the study, who advised them to ask their primary physician for referral
Age, gender and ethnicity	Age - Mean (SD): Manual 38.9 (34.1-43.8); exercise 41.4 (36.9-45.9) years. Gender (M:F): 26:23. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (On sick leave for >8 weeks but <6 months).
Extra comments	Baseline scores (mean 95% CI) for manual+home exercise and exercise+home exercise groups respectively - pain VAS: 55 (48-62), 54 (46-64); Oswestry: 39 (34-43), 39 (33-44)
Indirectness of population	No indirectness
Interventions	(n=27) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Manual + self management (home exercise). Individualised treatment plan. 16 treatments, each 45 minutes; 2 treatments a week for 8 weeks. Manual therapy: spinal manipulation and mobilisation and stretching. The patient also performed a subset of 5 general exercises for the spine, abdomen and lower limbs and 6 specific and localised exercises for spinal segments and the pelvic girdle; 2 or 3 sets of 20-30 repetitions for each exercise; 30s-1 minute rest between each set. Maximum of 6 individually designed home exercises to be performed daily. Encouraged to perform walking, running, cycling etc at least 3 times per week. Duration 8 weeks. Concurrent medication/care: No restriction on medication. Other forms of treatment e.g. acupuncture, chiropractic or alternative medicine were not allowed during treatment period but there were no restrictions during follow up period. (n=22) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise + home exercise. Individualised treatment plan. 16 treatments, each 45 minutes; 2 treatments a week for 8 weeks. 10

Study	Aure 2003[18]
	minutes warm up on exercise bicycle, then strengthening, stretching, mobilising, coordination and stabilising exercises for the abdominal, back, pelvic and lower limb muscles.. Duration 8 weeks. Concurrent medication/care: Group training and massage were not allowed during the treatment period. No restriction on medication. Other forms of treatment e.g. acupuncture, chiropractic or alternative medicine were not allowed during treatment period but there were no restrictions during follow up period.
Funding	Academic or government funding (Foundation for Education and Research in Physiotherapy)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY + HOME EXERCISE versus EXERCISE + HOME EXERCISE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 4 weeks; Group 1: mean 22 mm (SD 19.88); n=27, Group 2: mean 39 mm (SD 20.34); n=21; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain VAS at 12 months; Group 1: mean 21 mm (SD 14.58); n=27, Group 2: mean 35 mm (SD 23.93); n=22; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry LBP Disability Questionnaire at 4 weeks; Group 1: mean 18 % (SD 11.93); n=27, Group 2: mean 30 % (SD 14.02); n=21; Oswestry LBP Disability Questionnaire 0-100 % of total possible score Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome: Oswestry LBP Disability Questionnaire at 12 months; Group 1: mean 17 % (SD 13.26); n=27, Group 2: mean 26 % (SD 14.36); n=22; Oswestry LBP Disability Questionnaire 0-100 % of total possible score Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Return to work at Up to 4 months - Actual outcome: Number not still sick listed at 4 weeks; Group 1: 19/27, Group 2: 9/21; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Return to work at >4 months - Actual outcome: Number not still sick listed at 12 months; Group 1: 22/27, Group 2: 9/22; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months

Study	Bishop 2010[43]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=88)
Countries and setting	Conducted in Canada; Setting: ombined Neurosurgical and Orthopaedic Spine Program (CNOSP) Outpatient Clinic at Vancouver General Hospital
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Quebec Task Force Classification of Spinal Disorders criteria
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 19 to 65 years with chief complaint of AM-LBP (Acute LBP). All patients included in the study satisfied the Quebec Task Force Classification of Spinal Disorders criteria for Categories 1 or 2 and had symptoms of 2 to 4 weeks in duration.
Exclusion criteria	Patients were excluded if they had signs of a spinal "red flag" condition (eg, cauda equina syndrome, fracture, malignancy, systemic signs of infection, and active inflammatory process), any spinal nerve root irritation or deficit, or were pregnant. Also excluded if they had persisting pain in any other areas of their spine (eg, chronic neck pain), had previous spinal surgery, or were involved in a thire-party insurance claim
Recruitment/selection of patients	All study patients were recruited from the patient population currently referred for assessment at the International Collaboration on Repair Discoveries, Combined Neurosurgical and Orthopaedic Spine Program (CNOSP) Outpatient Clinic at Vancouver General Hospital.
Age, gender and ethnicity	Age - Mean (range): 37-38 years. Gender (M:F): 40%/60%. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (Sumptoms 2-4 weeks duration).
Extra comments	Baseline characteristics mean (SD): RDQ - 13.1 (5.6) Usual care, 12.2 (6.0) Study group; SF-36 physical functioning 46.3 (14.7) Usual care, 47.5 (12.6) Study care; SF36 bodily pain 38.8 (7.4) Usual care, 38.0 (13.4) study care
Indirectness of population	No indirectness
Interventions	(n=45) Intervention 1: Manual therapy - Manipulation. Study care group patients received reassurance regarding the natural history of acute low back pain, advice to avoid passive treatment approaches (e.g. bed rest, heat or the use of back supports/corsets/braces), advice to carry out a progressive walking program (two walks a day, each with an initial duration of between 5 and 15 minutes depending on the patient's tolerance increasing by 2 minutes each walk per week; acetaminophen, 650mg every 6 to 8 hours as required for 2 to 4 weeks, maximum 4 weeks of lumbar spinal

Study	Bishop 2010[43]
	manipulative therapy using conventional side-posture, high-velocity, low-amplitude techniques. Spinal manipulative therapy was specifically limited to the lumbar spine (ie, no treatment directed to the cervical or thoracic regions), administered by a registered chiropractor. Chiropractic treatment was conudcted 2 to 3 times per week, for a maximum of 4 weeks.. Duration 4 weeks. Concurrent medication/care: Also, adviced to avoid treatments such as muscle relaxant and opioid-class medications, passive physiotherapy modalities, bed rest, and "special" back exercise programs (eg, "core stability" or extension exercises. (n=43) Intervention 2: Usual care. Advised of their diagnosis (ie, mechanical low back pain) and referred back to their family physician with a letter explaining the protocol of the present study. Family physicians were also provided with a standardised consulation report containing information that confirmed a diagnosis of acute mechanical low back pain. Family physicians were not offered specific treatment recommendations but were simply advised to treat at their own discretion. . Duration 4 weeks. Concurrent medication/care: None given
Funding	Study funded by industry (Operating grant from WorkSafeBC)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION + SELF MANAGEMENT (ADVICE) + NSAIDS versus USUAL CARE Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome: SF-36 Bodily pain at 16 weeks; Group 1: mean 8.38 (SD 11.19); n=37, Group 2: mean 6.55 (SD 12); n=35; SF-36 Bodily pain scale 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical functioning at 16 weeks; Group 1: mean 12.18 (SD 14.11); n=37, Group 2: mean 7.41 (SD 14.97); n=35; SF-36 Physical functioning 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Roland-Morris Disability Questionnaire (RDQ) at 16 weeks; Group 1: mean -2.5 (SD 3.89); n=37, Group 2: mean 0.04 (SD 4.02); n=35; RDQ scale 0-24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome: SF-36 Bodily pain at 24 weeks; Group 1: mean 8.09 (SD 11.04); n=36, Group 2: mean 4.71 (SD 12); n=35; SF-36 Bodily pain scale 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical functioning at 24 weeks; Group 1: mean 11.67 (SD 13.92); n=36, Group 2: mean 8.67 (SD 14.97); n=35; SF-36 Physical functioning scale 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Roland-Morris Disability Questionnaire (RDQ) at 24 weeks; Group 1: mean -2.52 (SD 3.84); n=36, Group 2: mean 0.06 (SD 4.02); n=35; RDQ scale 0-24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare

Study	Bishop 2010[43]
	utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Brennan 2006[49]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=123)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 weeks intervention + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self report; referred to physical therapy with chief complaint of low back pain; physical examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	18 to 65 years; primary complaint of low back pain for <90 days; with or without referral to lower extremity; Oswestry disability score 25% or more
Exclusion criteria	Visible lateral shift or acute kyphotic deformity, signs of nerve root compression, red flags indicating serious pathology e.g. spinal neoplasm, infection or fracture; inability to reproduce any symptoms with lumbar spine active range of motion (AROM) or palpation; current pregnancy; prior surgery to lumbar and /or sacral region
Recruitment/selection of patients	3 clinics in Utah; 2000 to 2003
Age, gender and ethnicity	Age - Mean (SD): 37.7 (10.7) years. Gender (M:F): 68:55. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (< 90 days).
Extra comments	Baseline scores (mean SD) for manipulation, stretching and core stability groups, respectively - ODI: 44.0 (12.0), 42.1 (10.7), 43.6 (11.9)
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Manipulation + exercise: manual therapy that could include thrust manipulation or low amplitude mobilisation

Study	Brennan 2006[49]
	(chosen between these two types for each patient i.e. individualised). Active range of motion exercise: alternate flexion and extension of lumbar spine in quadruped position. Duration 4 weeks. Concurrent medication/care: Not stated (n=37) Intervention 2: Individual Biomechanical exercise - Stretching. ROM exercises, either flexion or extension. Duration 4 weeks. Concurrent medication/care: Not stated (n=46) Intervention 3: Individual Biomechanical exercise - Core stability. Trunk strengthening and stabilisation exercises twice weekly. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Deseret Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION + EXERCISE versus STRETCHING Protocol outcome 1: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Score at 4 weeks; Group 1: mean 17.9 % (SD 17.6); n=40, Group 2: mean 20.6 % (SD 16.4); n=37; Oswestry Disability Score 0-100% Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Score at 1 year; Group 1: mean 16.8 % (SD 18.5); n=40, Group 2: mean 14.8 % (SD 14.8); n=37; Oswestry Disability Score 0-100% Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANIPULATION + EXERCISE versus CORE STABILITY Protocol outcome 1: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Score at 4 weeks; Group 1: mean 17.9 % (SD 17.6); n=40, Group 2: mean 21.9 % (SD 17); n=46; Oswestry Disability Score 0-100% Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Score at 1 year; Group 1: mean 16.8 % (SD 18.5); n=40, Group 2: mean 20.5 % (SD 18.1); n=46; Oswestry Disability Score 0-100% Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing,

Study	Brennan 2006[49]
	investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Bronfort 1996[51] (Bronfort 1999[52])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=174)
Countries and setting	Conducted in USA; Setting: Research and outpatient clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 11 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Between 20 and 60 years; non-specific LBP at least 6 weeks with or without radiating pain to 1 or both legs to the level of the knee
Exclusion criteria	LBP caused by specific identifiable pathology in spine and lower extremities; organic diseases with referred pain to lumbar spine; severe osteopenia; previous back surgery; severe arterial hypertension or existing cardiovascular diseases requiring medical treatment; poor general health; obesity; history of duodenal or stomach ulcers; previous hypersensitivity to NSAIDs; pregnancy; unable to keep appointments during baseline period or evidence of other risk of non-compliance e.g. pending litigation, plans for change of residence, inaccessibility by phone or difficulties with English language; received prescribed NSAIDs or spinal manipulation or had performed prescribed exercise for LBP <3 months before study entry
Recruitment/selection of patients	Responded to local newspaper advertisements
Age, gender and ethnicity	Age - Mean (SD): 41.0 (9.7) years. Gender (M:F): 93:81. Ethnicity: 93% White, 2% Black, 5% Other
Further population details	1. Chronicity of pain : Mixed (>6 weeks duration).
Extra comments	Baseline scores (mean SD) for manual+strength exercise, NSAID+strength exercise and manual+stretching groups, respectively - pain VAS: 5.3 (1.5), 5.5 (1.7), 5.4 (1.4); RMDQ: 33.3 (17.8), 35 (16.9), 34.7 (17.9). 1 year follow up results

Study (subsidiary papers)	Bronfort 1996[51] (Bronfort 1999[52])
	not usable data
Indirectness of population	No indirectness
Interventions	(n=71) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. A: Spinal manipulative therapy (SMT) + trunk strengthening exercises (TSE). SMT: chiropractors: 10 treatment sessions in first 5 weeks of trial, each 10-15 minutes. Technique and spinal segment individualised; manual spinal thrust with high-velocity, low amplitude thrust. TSE: 20 exercise sessions (10 in first 5 weeks, 10 in next 6 weeks): trunk and leg extension plus abdominal strengthening; 20 repetitions of each of 3 types of exercise with 1 minute rest between sets; 1 hour session; training cycle repeated as many times and patient could tolerate. Patients encouraged to continue exercises after end of study.. Duration 11 weeks. Concurrent medication/care: No adjunctive physiotherapy allowed except brief pre-manipulation heat and manual muscle relaxation techniques. No other prescription NSAIDs or analgesics allowed. (n=52) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. B: NSAID + trunk strengthening exercises (TSE). NSAID: naproxen sodium 1 x 500mg capsule morning and evening. TSE: 20 exercise sessions (10 in first 5 weeks, 10 in next 6 weeks): trunk and leg extension plus abdominal strengthening; 20 repetitions of each of 3 types of exercise with 1 minute rest between sets; 1 hour session; training cycle repeated as many times and patient could tolerate. Patients encouraged to continue exercises after end of study.. Duration 11 weeks. Concurrent medication/care: No adjunctive physiotherapy allowed except brief pre-manipulation heat and manual muscle relaxation techniques. No other prescription NSAIDs or analgesics allowed. (n=51) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. C: Spinal manipulative therapy (SMT) + trunk stretching exercise. SMT: chiropractors: 10 treatment sessions in first 5 weeks of trial, each 10-15 minutes. Technique and spinal segment individualised; manual spinal thrust with high-velocity, low amplitude thrust. Exercises designed to improve the flexibility of the spine, hips and lower extremities; individual exercises maintained for 1 minute, series repeated twice during each 1-hour session. Patients encouraged to continue exercises after end of study.. Duration 11 weeks. Concurrent medication/care: No adjunctive physiotherapy allowed except brief pre-manipulation heat and manual muscle relaxation techniques. No other prescription NSAIDs or analgesics allowed.
Funding	Academic or government funding (Foundation for Chiropractic Education and Research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + STRENGTH EXERCISE versus COMBINED NON-INVASIVE INTERVENTIONS: NSAID + STRENGTH EXERCISE

Study (subsidiary papers)	Bronfort 1996[51] (Bronfort 1999[52])
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 11 weeks; Group 1: mean 2.7 None (SD 2); n=56, Group 2: mean 3.5 None (SD 2.2); n=40; 11-box scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris (0-100) index at 11 weeks; Group 1: mean 15.1 Not stated (SD 17.4); n=56, Group 2: mean 20.9 Not stated (SD 17); n=36; Roland Morris index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + STRENGTH EXERCISE versus COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + STRETCH EXERCISE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 11 weeks; Group 1: mean 2.7 None (SD 2); n=56, Group 2: mean 3.3 None (SD 2.3); n=36; 11-box scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris (0-100) index at 11 weeks; Group 1: mean 15.1 Not stated (SD 17.4); n=56, Group 2: mean 18.4 Not stated (SD 17.1); n=36; Roland Morris index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: NSAID + STRENGTH EXERCISE versus COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + STRETCH EXERCISE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 11 weeks; Group 1: mean 3.5 None (SD 2.2); n=40, Group 2: mean 3.3 None (SD 2.3); n=36; 11-box scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris (0-100) index at 11 weeks; Group 1: mean 20.9 Not stated (SD 17); n=40, Group 2: mean 18.4 Not stated (SD 17.1); n=36; Roland-Morris index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months;

Study (subsidiary papers)	Bronfort 1996[51] (Bronfort 1999[52])
	Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Childs 2004{CHILDS2004A}
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=131)
Countries and setting	Conducted in USA; Setting: 8 clinics in various U.S. regions and settings (2 academic medical centers and smaller outpatient practice settings).
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks + follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 to 60 years; a primary symptom of low back pain, with or without referral into the lower extremity; and an Oswestry Disability Questionnaire (ODQ) score of at least 30%.
Exclusion criteria	Patients who had “red flags” for a serious spinal condition (for example, tumor, compression fracture, or infection), those who had signs consistent with nerve root compression (that is, positive straight-leg increase < 45 degrees or diminished reflexes, sensation, or lower-extremity strength), those who were pregnant, or those who had previous surgery to the lumbar spine or buttock.

Recruitment/selection of patients	Referred for physical therapy
Age, gender and ethnicity	Age - Mean (SD): 33.9 (10.9) years. Gender (M:F): 76:55. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Not stated / Unclear (Median duration 27 days).
Extra comments	Baseline scores (mean SD) for exercise + manipulation and exercise groups, respectively - pain: 5.7 (1.7), 5.9 (1.5); ODQ: 41.4 (10.1), 40.9 (10.8); medication use (%): 87.1, 80.3
Indirectness of population	No indirectness
Interventions	(n=61) Intervention 1: Individual Biomechanical exercise - Core stability. Low-stress aerobic and lumbar spine strengthening program; the strengthening program was designed to target the trunk musculature identified as important stabilizers of the spine in the biomechanical literature; also included an aerobic exercise component. Patients began with a goal of 10 minutes of aerobic exercise on a stationary bike or treadmill at a self-selected pace. The exercise program progressed according to criteria previously described. Twice in first week then once a week for 3 weeks. All patients recevied exercsie instruction booklet and were instructed to perform assigned exercise program once daily on the days they did not attend therapy. . Duration 4 weeks. Concurrent medication/care: Advice to maintain usual activity within limits of pain (n=70) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Low-stress aerobic and lumbar spine strengthening program; the strengthening program was designed to target the trunk musculature identified as important stabilizers of the spine in the biomechanical literature; also included an aerobic exercise component. Patients began with a goal of 10 minutes of aerobic exercise on a stationary bike or treadmill at a self-selected pace. The exercise program progressed according to criteria previously described. Twice in first week then once a week for 3 weeks. All patients received exercise instruction booklet and were instructed to perform assigned exercise program once daily on the days they did not attend therapy. But in the first 2 sessions, patients received high-velocity thrust spinal manipulation and range-of-motion exercise only. . Duration 4 weeks. Concurrent medication/care: Advice to maintain usual activity within limits of pain

Funding	Academic or government funding (Foundation for Physical Therapy, Inc., and the Wilford Hall Medical Center Commander's Intramural Research Funding Program)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + MANIPULATION versus CORE STABILITY Protocol outcome 1: Function (disability scores) at >4 months - Actual outcome: Modified Oswestry Disability Questionnaire at 6 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: Medications for back pain in last week at 6 months; Group 1: 19/52, Group 2: 24/40; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Presently seeking treatment for back pain at 6 months; Group 1: 6/52, Group 2: 17/40; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	**Diab 2013[113]**

Study	Diab 2013[113]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=80)
Countries and setting	Conducted in Egypt; Setting: Research laboratory, secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 10 weeks and follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Cobb angle <40; chronic mechanical LBP; symptoms >3 months
Exclusion criteria	Soinal canal stenosis, rheumatoid arthritis, osteoporosis, inability to tolerate the lumbar extension position, scoliotic deformity and any lower extremity deformity that may interfere with global alignment
Recruitment/selection of patients	Selected from university outpatient clinic
Age, gender and ethnicity	Age - Mean (SD): Traction: 46.3 (2.05), control 45.9 (2.1) years. Gender (M:F): 45:35. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Extra comments	Baseline scores for traction and control groups, respectively (mean SD) - pain: 6±1, 5.5±1.7; ODI: 32.4±3.1, 31.1±4.8
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Stretching exercises for the erector spinae muscles and hamstring muscles (each movement held for 30 seconds, each exercise repeated 3 times; stretching programme performed 3 times a week for 10 weeks) and infra-red radiation (15 minute sessions 3 times a week for 10 weeks). Duration 10 weeks. Concurrent medication/care: Avoid other exercise programme (n=40) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Stretching and inra-red as for control group + lumbar extension traction 3 times a week for 10 weeks; started at 3 minutes/session, increased by 1 minute per session to 20 minutes; encouraged to use maximum tolerable force. Duration 10 weeks. Concurrent medication/care: Avoid other exercise programme
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: STRETCHING + INFRA-RED + TRACTION versus	

Study	Diab 2013[113]
COMBINED NON-INVASIVE INTERVENTIONS: STRETCHING + INFRA-RED Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain NRS at 10 weeks; Group 1: mean 3.2 None (SD 1.4); n=34, Group 2: mean 3.5 None (SD 1.2); n=37; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain NRS at 6 months; Group 1: mean 2.6 None (SD 1.1); n=32, Group 2: mean 3.5 None (SD 1.2); n=35; NRS 0-10 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry Disability Index at 10 weeks; Group 1: mean 21.8 None (SD 3.1); n=34, Group 2: mean 23.4 None (SD 3.4); n=37; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome: Oswestry Disability Index at 6 months; Group 1: mean 23.8 None (SD 2.7); n=32, Group 2: mean 27.1 None (SD 3); n=35; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome: Using medication for LBP at 10 weeks; Group 1: 8/34, Group 2: 11/37; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: Using medication for LBP at 6 months; Group 1: 5/32, Group 2: 8/35; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Geisser 2005[162]
Study type	RCT (Patient randomised; Parallel)

Study	Geisser 2005[162]
Number of studies (number of participants)	1 (n=100)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	1) Age 18–65 years; 2) single or primary complaint of chronic LBP (3 months or more); and 3) judged to have musculoskeletal pain based on evaluation by the physician or physical therapist
Exclusion criteria	1) Down's syndrome; 2) osteoporosis of the spine; 3) agenesis of the odontoid process; 4) primary joint disease such as active rheumatoid arthritis; 5) metabolic bone disease; 6) malignant bone disease; 7) fracture; 8) hypermobility of the lumbar/sacral spine; 9) cardiovascular or other medical disorder preventing the person from engaging in strenuous exercise; 10) evidence of radiculopathy, or primary complaint of radiating pain; 11) pregnancy; or 12) severe psychiatric disturbance.
Recruitment/selection of patients	Individuals presenting to the University of Michigan Spine Program for treatment
Age, gender and ethnicity	Age - Mean (SD): 40.7 (11.3) years. Gender (M:F): 41:59. Ethnicity: 85 Caucasian, 8 African-American, 5 Asian-American, 2 Hispanic
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (3 months or more).
Extra comments	Baseline scores (mean SD) for manual therapy+stability, sham manual therapy+stability, manual therapy+aerobics, sham manual therapy+aerobics groups, respectively - VAS Pain: 4.45 (2.3), 3.84 (2.0), 3.91 (2.5), 5.20 (2.2); MPQ: 22.24 (12.7), 22.00 (7.6), 25.13 (11.6), 23.39 (12.6);QBPDS: 36.05 (20.8), 34.25 (19.6), 38.47 (16.0), 51.08 (18.6); MPI: 37.24 (14.1), 36.01 (14.4), 35.07 (14.0), 43.83 (9.8)
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Manual therapy + specific exercise. Manual therapy interventions primarily involved muscle energy technique (MET). The MET's used depended on the patient's specific musculoskeletal dysfunction or "positional diagnosis". Specific adjuvant exercise program (SE) designed to help improve specific musculoskeletal dysfunctions observed during the standardized manual medicine screening evaluation. Specific exercises were taken from Sahrman and Bookhout and included self-corrections, stretches, and strengthening exercises. Examples of self-corrections included: 1) anterior innominate self-correction; 2) unilateral prone press-up; 3) pubis self-correction; and 4) pelvic clock. Commonly used

Study	Geisser 2005[162]
	stretches included: 1) supine hip flexor stretching; 2) supine hamstring stretch; 3) kneeling quadratus lumborum stretch; and 4) tensor fascia latae stretch. Examples of strengthening exercises included: 1) lower abdominal progression; 2) prone hip extension; 3) hip abduction/external rotation side lying; and 4) gluteus medius strengthening with hip diagonals. Subjects were asked to do stretches and/or self-corrections twice daily (usually 10 repetitions each time). Patients were asked to hold each stretch for 30 seconds. These exercises were introduced at the first visit, and others were added as the study progressed. . Duration 6 weeks. Concurrent medication/care: Subjects were allowed to continue their use of pain medications, but were asked to not change their usage during the course of the study. (n=24) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Manual therapy interventions primarily involved muscle energy technique (MET). The MET's used depended on the patient's specific musculoskeletal dysfunction or "positional diagnosis". Subjects received non-specific exercises (NE; VHI Exercise and Rehabilitation Prescription Kit, Tacoma, WA). These exercises were not designed to treat specific musculoskeletal dysfunctions, as they did not target stretching or strengthening dysfunctional muscles, or improving joint mobility in a restricted area. Examples of these exercises included: 1) quadriceps stretch; 2) double or single knee to chest stretch; 3) sitting hamstring stretch; and 4) prone on elbows. In addition, subjects in this group were asked to perform aerobic exercise three times per week. Subjects were trained by the physical therapist to monitor their heart rate and were asked to engage in aerobic exercise for 20 minutes between 70–80% of their maximum heart rate. Participants were free to choose how they performed aerobic exercise. Walking at a fast pace was the most common type of aerobic exercise reported by subjects. Subjects were asked to do stretches and/or self-corrections twice daily (usually 10 repetitions each time). Patients were asked to hold each stretch for 30 seconds. These exercises were introduced at the first visit, and others were added as the study progressed.. Duration 6 weeks. Concurrent medication/care: Subjects were allowed to continue their use of pain medications, but were asked to not change their usage during the course of the study. (n=25) Intervention 3: Individual Biomechanical exercise - Core stability. For the sham MT condition, persons were placed in the controlled position that would potentially correct their musculoskeletal dysfunction, but MET's were not performed. The therapist attempted to keep the treatment time consistent between conditions. Specific adjuvant exercise program (SE) designed to help improve specific musculoskeletal dysfunctions observed during the standardized manual medicine screening evaluation. Specific exercises were taken from Sahrman and Bookhout and included self-corrections, stretches, and strengthening exercises. Examples of self-corrections included: 1) anterior innominate self-correction; 2) unilateral prone press-up; 3) pubis self-correction; and 4) pelvic clock. Commonly used stretches included: 1) supine hip flexor stretching; 2) supine hamstring stretch; 3) kneeling quadratus lumborum stretch; and 4) tensor fascia latae stretch. Examples of strengthening exercises included: 1) lower abdominal progression; 2) prone hip extension; 3) hip abduction/external rotation side lying; and 4) gluteus medius

Study	Geisser 2005[162]
	strengthening with hip diagonals. Subjects were asked to do stretches and/or self-corrections twice daily (usually 10 repetitions each time). Patients were asked to hold each stretch for 30 seconds. These exercises were introduced at the first visit, and others were added as the study progressed. . Duration 6 weeks . Concurrent medication/care: Subjects were allowed to continue their use of pain medications, but were asked to not change their usage during the course of the study. (n=25) Intervention 4: Individual Aerobic exercises - Walking programme. For the sham MT condition, persons were placed in the controlled position that would potentially correct their musculoskeletal dysfunction, but MET's were not performed. The therapist attempted to keep the treatment time consistent between conditions. Subjects received non-specific exercises (NE; VHI Exercise and Rehabilitation Prescription Kit, Tacoma, WA). These exercises were not designed to treat specific musculoskeletal dysfunctions, as they did not target stretching or strengthening dysfunctional muscles, or improving joint mobility in a restricted area. Examples of these exercises included: 1) quadriceps stretch; 2) double or single knee to chest stretch; 3) sitting hamstring stretch; and 4) prone on elbows. In addition, subjects in this group were asked to perform aerobic exercise three times per week. Subjects were trained by the physical therapist to monitor their heart rate and were asked to engage in aerobic exercise for 20 minutes between 70–80% of their maximum heart rate. Participants were free to choose how they performed aerobic exercise. Walking at a fast pace was the most common type of aerobic exercise reported by subjects. Subjects were asked to do stretches and/or self-corrections twice daily (usually 10 repetitions each time). Patients were asked to hold each stretch for 30 seconds. These exercises were introduced at the first visit, and others were added as the study progressed.. Duration 6 weeks. Concurrent medication/care: Subjects were allowed to continue their use of pain medications, but were asked to not change their usage during the course of the study.
Funding	Academic or government funding (National Center for Medical Rehabilitation Research, National Institute of Child and Human Development, and National Institutes of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + BIOMECHANICAL EXERCISE versus COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + AEROBIC EXERCISE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 2.4 cm (SD 2); n=21, Group 2: mean 3.39 cm (SD 2.5); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean 12.86 Not stated (SD 10.9); n=21, Group 2: mean 22.67 Not stated (SD 16.6); n=15; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months

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- Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Scale at 6 weeks; Group 1: mean 31.05 Not stated (SD 19.1); n=21, Group 2: mean 31.8 Not stated (SD 18); n=15; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Multidimensional Pain Inventory Interference subscale at 6 weeks; Group 1: mean 32.86 Not stated (SD 13.6); n=21, Group 2: mean 27.67 Not stated (SD 15.1); n=15; Multidimensional Pain Inventory Interference subscale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + BIOMECHANICAL EXERCISE versus CORE STABILITY + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 2.4 cm (SD 2); n=21, Group 2: mean 3.46 cm (SD 2); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean 12.86 Not stated (SD 10.9); n=21, Group 2: mean 18 Not stated (SD 10.3); n=18; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Scale at 6 weeks; Group 1: mean 31.05 Not stated (SD 19.01); n=21, Group 2: mean 33.28 Not stated (SD 19.4); n=18; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Multidimensional Pain Inventory Interference subscale at 6 weeks; Group 1: mean 32.86 Not stated (SD 13.6); n=21, Group 2: mean 36.06 Not stated (SD 14.9); n=18; Multidimensional Pain Inventory Interference subscale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + BIOMECHANICAL EXERCISE versus AEROBIC EXERCISE + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 2.4 cm (SD 2); n=21, Group 2: mean 4.29 cm (SD 2.7); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean 12.86 Not stated (SD 10.9); n=21, Group 2: mean 22.11 Not stated (SD 11.9); n=18; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Scale at 6 weeks; Group 1: mean 31.05 Not stated (SD 19.1); n=21, Group 2:

Study	Geisser 2005[162]
mean 42.5 Not stated (SD 19.3); n=18; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Multidimensional Pain Inventory Interference subscale at 6 weeks; Group 1: mean 32.86 Not stated (SD 13.6); n=21, Group 2: mean 38.89 Not stated (SD 11.5); n=18; Multidimensional Pain Inventory Interference subscale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + AEROBIC EXERCISE versus CORE STABILITY + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 3.39 cm (SD 2.5); n=15, Group 2: mean 3.46 cm (SD 2); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean 22.67 Not stated (SD 16.6); n=15, Group 2: mean 18 Not stated (SD 10.3); n=18; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Scale at 6 weeks; Group 1: mean 31.8 Not stated (SD 18); n=15, Group 2: mean 33.28 Not stated (SD 19.4); n=18; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Multidimensional Pain Inventory Interference subscale at 6 weeks; Group 1: mean 27.67 Not stated (SD 15.1); n=15, Group 2: mean 36.06 Not stated (SD 14.9); n=18; Multidimensional Pain Inventory Interference subscale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + AEROBIC EXERCISE versus AEROBIC EXERCISE + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 3.39 cm (SD 2.5); n=15, Group 2: mean 4.29 cm (SD 2.7); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean 22.67 Not stated (SD 16.6); n=15, Group 2: mean 22.11 Not stated (SD 11.9); n=18; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Scale at 6 weeks; Group 1: mean 31.8 Not stated (SD 18); n=15, Group 2: mean 42.5 Not stated (SD 19.3); n=18; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No

Study	Geisser 2005[162]
	indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Multidimensional Pain Inventory Interference subscale at 6 weeks; Group 1: mean 27.67 Not stated (SD 15.1); n=15, Group 2: mean 38.89 Not stated (SD 11.5); n=18; Multidimensional Pain Inventory Interference subscale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: CORE STABILITY + SHAM MANUAL THERAPY versus AEROBIC EXERCISE + SHAM MANUAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 3.46 cm (SD 2); n=18, Group 2: mean 4.29 cm (SD 2.7); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean 18 Not stated (SD 10.3); n=18, Group 2: mean 22.11 Not stated (SD 11.9); n=18; McGill Pain Questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Quebec Back Pain Disability Scale at 6 weeks; Group 1: mean 33.28 Not stated (SD 19.4); n=18, Group 2: mean 42.5 Not stated (SD 19.3); n=18; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Multidimensional Pain Inventory Interference subscale at 6 weeks; Group 1: mean 36.06 Not stated (SD 14.9); n=18, Group 2: mean 38.89 Not stated (SD 11.5); n=18; Multidimensional Pain Inventory Interference subscale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Hallegraeff 2009[197]

Study	Hallegraeff 2009[197]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=64)
Countries and setting	Conducted in Netherlands; Setting: Three primary health-care centres for physical therapy and manual therapy located in the north of the Netherlands.
Line of therapy	Unclear
Duration of study	Intervention time:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Standard physical examination with specifc manipulative therapy tests was carried out by three experienced physical therapists, all members of the Dutch Association of Manual Therapy and registered with the Royal Dutch Assocaition for Physical Therapy, a member of the InternationalFederation of Orthopaedic Manipulative Therapists.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute nonspecific low back pain (<16 days), age between 20 and 55 years, with or without previous complaints, and no symptoms distal of the knee.
Exclusion criteria	Specific low back pain, such as low back pain with neurological signs, specific rheumatic diseases, signs of osteoporotic fractures or inability to fil in the research questionnaires.
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): 40 (9.6) years. Gender (M:F): 35:29. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (Acute <16 days).
Extra comments	Baseline scores (mean SD) for manipulation and no manipulation groups, respectively - pain: 42.7±18.4, 54±17.6; Disability: 24±18, 26±12
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Manipulation + physical therapy. Manipulation: 4 treatments over 2.5 weeks, low amplitude, range-expanding thrusts of high velocity to restricted lumbosacral joints, sacroiliac joints or both, immediately following standard physiotherapy as for control group. Duration 2.5 weeks. Concurrent medication/care: Not stated (n=33) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. "Standard physiotherapy" comprising low intensity, low load endurance exercises to train abdominal oblique and straight abdominal muscles for 2 min and stretch lumbar extensors for 2 min; in total around 5 min, twice a day. Information

Study	Hallegraeff 2009[197]
	on back pain provided together with advice to stay active within functional limits, supported by leaflet "Less complaints with your back". Practical recommendations about how to sit/squat correctly.. Duration 2.5 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL + PHYSIOTHERAPY + EDUCATION + SELF-MANAGEMENT versus COMBINED NON-INVASIVE INTERVENTIONS: PHYSIO + EDUCATION + SELF-MANAGEMENT Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 2.5 weeks; Group 1: mean 19 mm (SD 16.9); n=31, Group 2: mean 24.8 mm (SD 20.1); n=33; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 2.5 weeks; Group 1: mean 14 % (SD 17); n=31, Group 2: mean 14 % (SD 12); n=33; Oswestry Disability Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Hawk 2005[206]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=111)
Countries and setting	Conducted in USA; Setting: Chiropractic college research clinic
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks

Study	Hawk 2005[206]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	18 years or older; subacute (onset 4-12 weeks prior) or chronic (>12 weeks prior)
Exclusion criteria	Pregnancy; radiation of pain distal to the knee with evidence of neurologic involvement; contraindications to manipulation; no indication of musculo-skeletal system dysfunction; litigation for a health-related claim (in process or pending); chiopractic care within the last month; unwillingness to postpone other types of manual therapy during the study
Recruitment/selection of patients	Newspaper and radio advertisements
Age, gender and ethnicity	Age - Mean (SD): Active group: 51 (14.2), control 53 (15.2) years. Gender (M:F): 47:64. Ethnicity: 104 White, 6 Black, 1 Hispanic
Further population details	1. Chronicity of pain : Mixed (Subacute or chronic).
Extra comments	Baseline scores (mean SD) for intervention and sham groups respectively - pain disability index: 26.1 (12.0), 26.8 (12.1): RMDQ: 7.4 (3.9), 7.8 (4.6); pain VAS: 34.3 (23.9), 32.3 (20.8)
Indirectness of population	No indirectness
Interventions	(n=54) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Manual: flexion-distraction technique (clinician moves spine in small increments while manually directing inferior-to-superior force against the vertebrae, assisted by movable table sections and manual posterior-to-anterior stabilising pressure); PA force of 80-160 Newtons; table movement approximately 2 inches; maximum 15 repetitions (fewer for higher pain levels). Trigger point therapy: manual ischaemic compression to muscels with localised regions of painful contracted tissue in lumbar, sacral and gluteal musculature; forces 40-75 Newtons for 4-7 seconds, releasing for 3-5 seconds; maximum 3 repetitions. 8 treatments over 3 weeks . Duration 3 weeks. Concurrent medication/care: No other types of manual therapy during study (n=57) Intervention 2: Placebo/Sham - Sham. Sham manipulation (minimise biomechanical force delivered and avoid spinal joints; hand-held instrument set to zero point, delivering only its weight; applied at least 2 inches lateral to the spine and force not to exceed 12 N) and effleurage (applied to low/middle back for 5-10 seconds at 10-20N). 8 treatments over 3 weeks. Duration 3 weeks. Concurrent medication/care: No other types of manual therapy during study
Funding	Academic or government funding (National Center for Complementary and Alternative Medicine)

Study	Hawk 2005[206]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANUAL THERAPY + MASSAGE versus SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain Disability Index at 3 weeks; Group 1: mean -8.8 Not stated (SD 10.12); n=54, Group 2: mean -8.2 Not stated (SD 9.09); n=52; Pain Disability Index Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Questionnaire at 3 weeks; Group 1: mean -1.6 Not stated (SD 3.19); n=54, Group 2: mean -2.1 Not stated (SD 3.31); n=52; Roland Morris Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=579)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention up to 9 months, follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-65 years with current back pain for three or more weeks, with presentation in primary care with low back pain more than three months previously, currently scoring 4 or more on the Roland disability scale

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Exclusion criteria	Clinical indicators of serious spinal disease, current nerve root pain (below knee in dermatomal distribution), previous spinal surgery, pending litigation, previous experience of Alexander technique, perceived inability to walk 100m, history of psychosis or major alcohol misuse.
Recruitment/selection of patients	Recruited from 64 general practices in the South and West of England
Age, gender and ethnicity	Age - Range of means: 45 (11) to 46 (10) years. Gender (M:F): 177:402. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (> 3 months).
Extra comments	Baseline data not usable
Indirectness of population	No indirectness
Interventions	(n=73) Intervention 1: Postural therapies - Alexander technique. Six Alexander Technique lessons taught by registered teachers. Two lessons a week for two weeks, then one lesson a week for two weeks.. Duration 4 weeks. Concurrent medication/care: Not stated (n=73) Intervention 2: Postural therapies - Alexander technique. 24 Alexander Technique lessons taught by registered teachers. Two lessons a week for six weeks, then one lesson a week for six weeks, one fortnightly for eight weeks, two further revision lessons delivered at 7 months and 9 months.. Duration 9 months. Concurrent medication/care: Not stated (n=72) Intervention 3: Individual Aerobic exercises - Walking programme. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up nurse-delivered structured counselling based on the theory of planned behaviour (brief intervention).. Duration 6 weeks. Concurrent medication/care: Not stated (n=75) Intervention 4: Massage. Therapeutic massage. One session a week for six weeks.. Duration 6 weeks. Concurrent medication/care: Not stated (n=72) Intervention 5: Usual care. Usual care - details not specified. Duration 9 months. Concurrent medication/care: No exercise prescription given (n=72) Intervention 6: Massage + exercise prescription - Massage + home exercise prescription. Therapeutic massage. One session a week for six weeks. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention).. Duration 6 weeks. Concurrent medication/care: Not stated

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
	(n=71) Intervention 7: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise + 6 sessions Alexander technique. Six Alexander Technique lessons taught by registered teachers. Two lessons a week for two weeks, then one lesson a week for two weeks. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention).. Duration 6 weeks. Concurrent medication/care: Not stated (n=71) Intervention 8: Combinations of non-invasive interventions - Combined non-invasive interventions. 24 Alexander Technique lessons taught by registered teachers. Two lessons a week for six weeks, then one lesson a week for six weeks, one fortnightly for eight weeks, two further revision lessons delivered at 7 months and 9 months. Prescription from general practitioner for unsupervised home based aerobic exercise (predominantly walking) with follow-up structured counselling based on the theory of planned behaviour (brief intervention).. Duration 9 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (Medical Research Council)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 6 SESSIONS versus MASSAGE + HOME EXERCISE PRESCRIPTION

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 59.73 (SD 24.9355); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 67.53 (SD 22.7325); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 4.08 (SD 2.7); n=56; Von Korff 0-10 (converted from 0-100) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 6.86 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.32 (SD 0.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Number of prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.6 (SD 1.55);

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 6 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 64.63 (SD 23.3291); n=57; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 65.44 (SD 22.9826); n=57; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 3.66 (SD 2.6); n=57; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 6.25 (SD 5.1846); n=57; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.35 (SD 0.83); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.58 (SD 1.26); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 6 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 58.14 (SD 23.2863); n=58, Group 2: mean 65.53 (SD 22.54); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.9 (SD 20.4206); n=58, Group 2: mean 69.79 (SD 22.1589); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 4.3 (SD 2.6); n=58, Group 2: mean 3.11 (SD 2.5); n=56; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Risk of bias: ; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 7.79 (SD 5.2299); n=58, Group 2: mean 5.01 (SD 5.1927); n=56; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.48 (SD 0.94); n=58, Group 2: mean 0.59 (SD 1.02); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 0.64 (SD 1.17); n=58, Group 2: mean 0.68 (SD 1.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 24 SESSIONS versus MASSAGE + HOME EXERCISE PRESCRIPTION

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 59.46 (SD 24.9355); n=56; sf-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 67.53 (SD 22.7325); n=56; sf-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 4.08 (SD 2.7); n=57; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 6.86 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.32 (SD 0.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Number of prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.58 (SD 1.26); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 24 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 64.63 (SD 23.3291); n=57; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 65.44 (SD 22.9826); n=57; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 3.66 (SD 2.6); n=57; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 6.25 (SD 5.1846); n=57; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.35 (SD 0.83); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.58 (SD 1.26); n=57; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ALEXANDER TECHNIQUE: 24 SESSIONS versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 67.93 (SD 22.8075); n=61, Group 2: mean 65.53 (SD 22.54); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 68.54 (SD 23.127); n=61, Group 2: mean 69.79 (SD 22.1589); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.4 (SD 2.6); n=61, Group 2: mean 3.11 (SD 2.5); n=56;

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])

Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 5.09 (SD 5.1933); n=61, Group 2: mean 5.01 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.44 (SD 0.91); n=61, Group 2: mean 0.59 (SD 1.02); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Prescriptions at 1 year; Group 1: mean 1.07 (SD 2.24); n=61, Group 2: mean 0.68 (SD 1.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER versus USUAL CARE

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Median days of back pain in last 4 weeks at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 6 SESSIONS ALEXANDER versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Group 1: mean 64.63 (SD 23.3291); n=57, Group 2: mean 65.53 (SD 22.54); n=56; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Group 1: mean 65.44 (SD 22.9826); n=57, Group 2: mean 69.79 (SD 22.1589); n=56; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	ATEAM trial: Little 2008[329] (Ehrlich 2009[126], Hollinghurst 2009{HOLLINGHURST2009}, Hollinghurst 2008[224])
Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Von Korff pain scale at 1 year; Group 1: mean 3.66 (SD 2.6); n=57, Group 2: mean 3.11 (SD 2.5); n=56; Von Korff 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 1 year; Group 1: mean 6.25 (SD 5.1846); n=57, Group 2: mean 5.01 (SD 5.1927); n=56; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Primary care contacts at 1 year; Group 1: mean 0.35 (SD 0.83); n=57, Group 2: mean 0.59 (SD 1.02); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Priescriptions at 1 year; Group 1: mean 0.58 (SD 1.26); n=57, Group 2: mean 0.68 (SD 1.75); n=56; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + 24 SESSIONS ALEXANDER versus USUAL CARE Protocol outcome 1: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Median days of back pain in last 4 weeks at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Score at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Niemisto 2003[412] (Niemisto 2004[413], Niemistö 2005[411], Riipinen 2005[447])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=204)
Countries and setting	Conducted in Finland; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	24-46 years old; employed (including students and temporary housewives); LBP +/- sciatica for at least 3 months; Oswestry Low Back Pain Disability Questionnaire at least 16%
Exclusion criteria	Malignancy, ankylosing spondylitis, severe osteoporosis, severe osteoarthritis, paralysis, progressive neurological disease, haemophilia, spinal infection, previous spinal operation, vertebral fracture in previous 6 months, severe psychiatric disease, severe sciatica with straight leg raising test <35 degrees or with at least 1 recent motor deficit; pregnancy, severe overweight (BMI >32) or simultaneous spinal rehabilitation or other spinal study
Recruitment/selection of patients	Widely circulated newspaper advertisement
Age, gender and ethnicity	Age - Mean (SD): Combination therapy: 37.3 (5.6), control: 36.7 (5.6) years. Gender (M:F): 94:110. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (> 3 months).
Extra comments	Baseline scores (mean SD) for combination and self management groups, respectively - pain VAS: 59.5 (21.2), 53.3 (21.2); ODI: 29.5 (9.7), 28.8 (9.7): depression: 6.2 (4.3), 5.7 (4.3); health related quality of life: 0.86 (0.071), 0.87 (0.074); Visits to physicians: 3.1 (3.8), 3.0 (2.8); Visits to physiotherapy or other: 9.2 (9.8), 9.4 (9.7).
Indirectness of population	No indirectness
Interventions	(n=102) Intervention 1: Self management - Self-management programmes (including education, advice and reassurance). Physician consultation: 25-page educational booklet on basic anatomy and physiology of the spine, principles of ergonomics for LBP patients and instructions on how to exercise and cope with acute phase of LBP. Clinical findings explained. Patients told that LBP generally has a benign self-limiting course and they could hasten the process by simple regular exercise and avoiding immobility. Individual instructions regarding posture and 3-4 exercises

Study (subsidiary papers)	Niemisto 2003[412] (Niemisto 2004[413], Niemistö 2005[411], Riipinen 2005[447])
	aiming to increase spinal mobility, muscle stretch and/or trunk stability; advised to avoid long-standing static work by performing several counter-movements; when lifting heavy objects they were told to avoid bending and twisting and instead to use their legs; main principle was to encourage patients to treat themselves instead of undergoing passive treatments; 1 session initially, reinforced at 2nd session at 5 month follow up (each session 1 hour). Duration 5 months. Concurrent medication/care: During follow up, patients free to use other health care services for LBP (n=102) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Physician consultation as for usual care group plus 4 x 60-minute evaluation, treatment and exercise sessions over first 4 weeks. Manual therapist: manipulation using muscle energy technique (using voluntary contraction of patient's muscles against distinctly controlled counterforce from a precise position in a specific direction) to correct biomechanical dysfunctions in the lumbar or pelvic segments. Any muscular tension in either biceps femoris, rectus femoris, iliopsoas or gluteus was treated by passively stretching the muscles and teaching autostretching techniques. Stabilising exercises for transverse abdominis muscle. Patients learned to do isometric exercises in daily activities.. Duration 5 months. Concurrent medication/care: During follow up, patients free to use other health care services for LBP
Funding	Academic or government funding (Social Insurance Institute of Finland and Finska Lakarsallskapet)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + MANIPULATION + SELF-MANAGEMENT versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE)

Protocol outcome 1: Quality of life at >4 months
- Actual outcome: HRQoL 15D at 12 months; Group 1: mean 0.89 Not stated (SD 0.071); n=63, Group 2: mean 0.9 Not stated (SD 0.074); n=67; 15D 0-1 Top=High is good outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain VAS at 12 months; Group 1: mean 25.7 mm (SD 23.3); n=96, Group 2: mean 32.2 mm (SD 23.3); n=100; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome: Oswestry Disability Index at 12 months; Group 1: mean 13.7 % (SD 11.6); n=96, Group 2: mean 16.5 % (SD 11.6); n=100; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: Depression at 12 months; Group 1: mean 4.5 Not stated (SD 4.8); n=96, Group 2: mean 5.1 Not stated (SD 4.8); n=100; Finnish depression questionnaire DEPS 0-30 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Niemisto 2003[412] (Niemisto 2004[413], Niemistö 2005[411], Riipinen 2005[447])
Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: Visits to physicians at 12 months; Group 1: mean 2.1 (SD 2.6); n=96, Group 2: mean 2.4 (SD 3.3); n=100; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Visits to physiotherapy or other therapies at 12 months; Group 1: mean 7.6 (SD 7.7); n=96, Group 2: mean 6 (SD 7.3); n=100; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Peterson 2011[431] (Petersen 2015[430])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=350)
Countries and setting	Conducted in Denmark; Setting: Primary care specialist centre
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 12 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, MRI
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-60 years; LBP +/- leg pain for >6 weeks, able to speak and understand Danish, clinical signs of disc-related symptoms
Exclusion criteria	No symptoms; positive non-organic signs; serious pathology suspected on examination or MRI (i.e. severe root involvement [disabling back or leg pain in combination with progressive disturbances in sensibility, muscle strength or reflexes], osteoporosis, severe spondylolistheses, fracture, inflammatory arthritis), cancer or referred pain from viscera; application for disability pension, pending litigation, pregnancy, comorbidity, recent back surgery, language problems or problems with communication including abuse of drugs or alcohol

Study (subsidiary papers)	Peterson 2011[431] (Petersen 2015[430])
Recruitment/selection of patients	Referred from primary care physicians
Age, gender and ethnicity	Age - Mean (SD): McKenzie: 38 (10.4), manipulation: 37 (9.4) years. Gender (M:F): 155:195. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (>6 weeks).
Extra comments	Baseline scores (mean SD) for McKenzie and manipulation groups, respectively - disability RMDQ: 13 (4.8), 13 (5.0); back and leg pain: 30 (11.2), 29 (11.3); general health: 67 (19.8), 65 (18.6); mental health: 65 (20.4), 65 (19.3)
Indirectness of population	No indirectness
Interventions	(n=175) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Individualised McKenzie treatment. An educational booklet describing self care or a lumbar roll for correction of the seated position were sometimes provided at discretion of therapist. Maximum 15 treatments for a period of 12 weeks. Patients were informed thoroughly of the results of the physical assessment, the benign course of back pain and the importance of remaining physically active. Guidance on proper back care was also given. All patients were provided with the Danish version of the Back Book. . Duration 12 weeks. Concurrent medication/care: Manual vertebral mobilisation (including high velocity thrust) not allowed. If considered necessary, instruction in stabilising and strengthening home exercises provided at end of treatment period. All patients educated in self-administered mobilising, stretching, stabilising and/or strengthening exercises; patients instructed to continue the exercises at home or in the gym for minimum 2 months after completion of treatment at the back centre. Patients encouraged not to seek any other kind of treatment for the 2 months period of self-administered exercises. (n=175) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Spinal manipulation by chiropractors including all types of manual techniques including vertebral mobilisation and high velocity thrust as well as myofascial trigger point massage. General mobilising exercises including flexion and extension and stretching were allowed; an inclined wedged pillow for correction of the seated position was available if chiropractor believed this to be indicated. Patients were informed thoroughly of the results of the physical assessment, the benign course of back pain and the importance of remaining physically active. Guidance on proper back care was also given. All patients were provided with the Danish version of the Back Book.. Duration 12 weeks. Concurrent medication/care: If considered necessary, instruction in stabilising and strengthening home exercises provided at end of treatment period. All patients educated in self-administered mobilising, stretching, stabilising and/or strengthening exercises; patients instruced to continue the exercises at home or in the gym for minimum 2 months after completion of treatment at the back centre. Patients encouraged not to seek any other kind of treatment for the 2 months period of self-administered exercises.
Funding	Academic or government funding (Grant, Foundation and Professional Organisational funds)

Study (subsidiary papers)	Peterson 2011[431] (Petersen 2015[430])

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANIPULATION + MASSAGE + EXERCISE (BIOMECH) + SELF-MANAGEMENT versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (MCKENZIE) + SELF-MANAGEMENT

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 general health domain at 2 months follow up after treatment; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 mental health domain at 2 months follow up after treatment; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: SF-36 general health domain at 12 months follow up after treatment; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 mental health domain at 12 months follow up after treatment; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Reduction in pain at 2 months follow up after treatment; Group 1: mean 13 Not stated (SD 12.4); n=161, Group 2: mean 14.4 Not stated (SD 13); n=168; Back and leg pain 0-60 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Reduction in pain at 12 months follow up after treatment; Group 1: mean 12.2 Not stated (SD 13.7); n=163, Group 2: mean 15 Not stated (SD 13.6); n=161; Back and leg pain 0-60 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome: Reduction in disability (RMDQ) at 2 months follow up after treatment; Group 1: mean 5.2 Not stated (SD 5.9); n=161, Group 2: mean 6.7 Not stated (SD 5.8); n=168; Roland Morris Disability Questionnaire 0-23 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome: Reduction in disability (RMDQ) at 12 months follow up after treatment; Group 1: mean 5.6 Not stated (SD 6.5); n=163, Group 2: mean 7.1 Not stated (SD 6.1); n=161; Roland Morris Disability Questionnaire 0-23 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months
- Actual outcome: Contact to health care in previous 2 months at 2 months follow up after treatment; Group 1: 70/160, Group 2: 60/170; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 8: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome: Contact to health care in previous 2 months at 12 months follow up after treatment; Group 1: 89/163, Group 2: 87/162; Risk of bias: High; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Peterson 2011[431] (Petersen 2015[430])
Protocol outcome 9: Responder criteria at Up to 4 months - Actual outcome: "Success" (decrease 5 points or absolute score below 5 points on RMDQ) at 2 months follow up after treatment; Group 1: 95/161, Group 2: 120/168; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 10: Responder criteria at >4 months - Actual outcome: "Success" (decrease 5 points or absolute score below 5 points on RMDQ) at 12 months follow up after treatment; Group 1: 101/163, Group 2: 113/161; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 11: Return to work at Up to 4 months - Actual outcome: Return to work at 2 months follow up after treatment; Group 1: 33/47, Group 2: 40/66; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 12: Return to work at >4 months - Actual outcome: Return to work at 12 months follow up after treatment; Group 1: 41/47, Group 2: 52/66; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months

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Study	Schenk 2003[463]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=25)
Countries and setting	Conducted in USA; Setting: Secondary care outpatients
Line of therapy	Unclear
Duration of study	Intervention time: 3 visits (interval between visitis not stated)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar radiculopathy with or without neurological signs; lumbar posterior derangement (worsened by repeated flexion in standing and flexion in lying); age 21-76 years; subacute LBP (7 days - 7 weeks)

Study	Schenk 2003[463]
Exclusion criteria	Lumbar joint dysfunction
Recruitment/selection of patients	Referred for physiotherapy for lumbar radiculopathy
Age, gender and ethnicity	Age - Mean (range): 43 (21-76) years. Gender (M:F): 10:15. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (Subacute 7 days - 7 weeks).
Extra comments	Baseline scores (mean SD) for exercise and manipulation groups, respectively - pain VAS: 3.9 (1.87), 3.8 (1.48); disability: 27.40 (10.45), 29.5 (16.57).
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. McKenzie exercises (lumbar extension or lumbar extension with hips offset); 5 sets of 10 repetitions of the prescribed exercise. Postural correction; ambulation on treadmill for up to 20 minutes.. Duration 3 visits. Concurrent medication/care: Not stated (n=10) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Mobilisation (passive movement applied to spinal segments based on patients's response to repeated movement and passive mobility testing); 5 sets of 10 repetitions. Postural correction; ambulation on treadmill for up to 20 minutes.. Duration 3 visits. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (MCKENZIE + AEROBIC) + EDUCATION (POSTURAL CORRECTION) versus COMBINED NON-INVASIVE INTERVENTIONS: MANIPULATION + EDUCATION (POSTURAL CORRECTION) + EXERCISE (AEROBIC) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain VAS at After 3 visits; Group 1: mean -2.1 Not stated (SD 2.27); n=15, Group 2: mean -3 Not stated (SD 1.767); n=10; VAS Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry score at After 3 visits; Group 1: mean -9.06 Not stated (SD 11.2); n=15, Group 2: mean -6.2 Not stated (SD 7.43); n=10; Oswestry score Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing,

Study	Schenk 2003[463]
	investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Szulc 2015[511]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Poland; Setting: Intervention given at home and within a clinical setting.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 2 weeks + 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosed by a specialist physician and referred for rehabilitation; all patients were diagnosed with chronic spinal pain persisting for longer than 1 year.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	1) Documented magnetic resonance imaging (MRI) of the spine, 2) confirmed protrusion or bulging in the lumbosacral spine, 3) intermittent lumbosacral pain, 4) projection of pain to the buttock or thigh, 5) unilateral character of the symptoms.
Exclusion criteria	1) confirmed extrusion or sequestration of nucleus pulposus of the spinal disc, 2) symptoms manifesting below the knee, 3) history of spinal surgery, 4) structural disorders of spinal discs in more than 2 spinal segments, 5) evident stenosis of the spinal canal, 6) focal lesions of the spinal cord, and 7) spondylolisthesis.
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Other: mean of 44 years (SD not reported).. Gender (M:F): Not reported.. Ethnicity: Not reported.
Further population details	1. Chronicity of pain : Chronic (>3 months duration)
Extra comments	Baseline values, mean (SD) for massage + ex + self manag, ex + self manag and standart treatment respectively: ODI 24.3(6.78), 28.35(7.82), 31.2(10.01); VAS 6.35(1.6), 6.25(1.71), 5.7(0.92)
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=20) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. One session lasted 30 minutes. On the basis of the McKenzie spinal pain classification, the derangement syndrome was diagnosed in allpatients. The therapy included hyperextension techniques, hyperextension with self-pressure or

Study	Szulc 2015[511]
	pressure applied by therapist, and hyperextensive mobilization. These techniques were applied in the sagittal plane, following the rule of force progression. In addition to this, the patients were asked to self-perform the theraputic procedure at home (5 cycles per day with 2 hour interals, 15 repetitions each). The theraputic protocol included 10 daily sessions, performed during 5 consecutive weekdays. 24 hours following the last theraputic session, the same parameters as at the baseline were determinedby the investigator.. Duration 2 weeks. Concurrent medication/care: Not reported. Comments: N/A (n=20) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Patients were treated with classic massage, laser therapy, and transcutaneous electrical nerve stimulation (TENS) applied to the lumbosacral region. Patients were asked to perform general exercises strengthening spinal and abdominal muscles (once a day at home). The exercises were to be performed for 15 minutes, in a prone, supine, and lateral position. The classical massage lasted 20 minutes. The laser therapy was conducted with a contact technique with Lasertronic LT-2S device. The duration of laser therapy was 80 seconds (2 x40s). The treatment was applied on both sides of the lumbosacral spine. TENS lasted for 15 minutes, frequency 50 Hz, current 20 - 30 mA (subjectively adjusted), duration of a single impluse 50 microseconds. The total time per session = 36min 20 sec + 15min as home exercises once a day.The theraputic protocol included 10 daily sessions, performed during 5 consecutive weekdays. 24 hours following the last theraputic session, the same parameters as at the baseline were determinedby the investigator.. Duration 2 weeks. Concurrent medication/care: Not reported. Comments: None. (n=20) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. Classic McKenzie method enriched with Muscle Energy Technique was implemented. McKenzie protocol was the same as in the other group. A technique of post-isometric relaxation was used at the end off each therapeutic session. It was characterized by the following parameters: 1) time of contraction equal to 7-10 seconds, 2) intensity of contraction corresponding to 20-35%, 3) beginning in the intermediate extent of movement for a given patient, 4) 3 seconds of interval between consecutive contraction phases, 5) 3 repetitions, 6) contraction of antagonist muscle at the terminal phase of the procedure, 7) passive return to the baseline position. The procedure involved relaxation of the erector spinae muscle group and was performed in an anterior and lateral flexion, and in rotation. The therapy involved bilateral parts of the erector spinae so as to balance the muscular tension. The duration of 1 combined session was 40 minutes. Patients treated with the combined method were also asked to exercise at home (5 cycles per day with 2-hour intervals, 15 repetitions each). . Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Ministry of Science and Higher Education for the statutory activity of the Department of Anatomy of the University School of Physical Education in Pozan)

Study	Szulc 2015[511]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BIOMECHANICAL EXERCISE (MCKENZIE) + SELF-MANAGEMENT (UNSUPERVISED EXCERCISE) versus STANDARD TREATMENT (MASSAGE + LASER + TENS) + SELF-MANAGEMENT Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Visual analogue scale (VAS) at 3 months; Group 1: mean 2.1 mm (SD 1.04); n=20, Group 2: mean 5.29 mm (SD 1.39); n=20; Visual analogue scale 0 - 100 mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Revised Oswestry pain questionnaire at 3 months; Group 1: mean 10.05 % (SD 4.38); n=20, Group 2: mean 28.26 % (SD 10.2); n=20; Revised oswestry low back pain disability questionnaire 0 - 100 % Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (SOFT TISSUE TECHNIQUES - MET) + BIOMECHANICAL EXERCISE (MCKENZIE) + SELF MANAGEMENT (UNSUPERVISED EXERCISE) versus BIOMECHANICAL EXERCISE (MCKENZIE) + SELF-MANAGEMENT (UNSUPERVISED EXCERCISE) Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS at 3 months; Group 1: mean 2 (SD 0.96); n=20, Group 2: mean 2.1 (SD 1.04); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Revised ODI at 3 months; Group 1: mean 9.19 (SD 6.02); n=20, Group 2: mean 10.5 (SD 4.38); n=20; revised ODI 0-100 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MANUAL THERAPY (SOFT TISSUE TECHNIQUES - MET) + BIOMECHANICAL EXERCISE (MCKENZIE) + SELF MANAGEMENT (UNSUPERVISED EXERCISE) versus STANDARD TREATMENT (MASSAGE + LASER + TENS) + SELF-MANAGEMENT Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS at 3 months; Group 1: mean 2 (SD 0.96); n=20, Group 2: mean 5.29 (SD 1.39); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Revised ODI at 3 months; Group 1: mean 9.19 (SD 6.02); n=20, Group 2: mean 28.26 (SD 10.2); n=20; revised ODI 0-100 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness	

Study	Szulc 2015[511]
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=1334)
Countries and setting	Conducted in United Kingdom; Setting: UK general practice
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 12 weeks + follow up to 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Between 18 and 65 years; registered for medical care with a participating practice; had consulted with simple low back pain—pain of musculoskeletal origin in the area bounded by the lowest palpable ribs, the gluteal folds, and the posterior axillary lines, including pain referred into the legs provided it was mainly above the knee; score of four or more on the Roland disability questionnaire at randomisation; had experienced pain every day for the 28 days before randomisation or for 21 out of the 28 days before randomisation and 21 out of the 28 days before that; agreed to avoid physical treatments, other than trial treatments, for three months
Exclusion criteria	Aged 65 or over, because the spinal manipulation package could be more hazardous in older people with osteoporosis; possibility of serious spinal disorder, including malignancy, osteoporosis, ankylosing spondylitis, cauda equine compression, and infection; complained mainly of pain below the knee, as clinical outcome was likely to be different; previously had spinal surgery, as clinical outcome was likely to be very different; had another musculoskeletal disorder that was more troublesome than their back pain; had previously attended, or been referred to, a specialised pain management clinic; severe psychiatric or psychological disorder; another medical condition, such

Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])
	as cardiovascular disease, that could interfere with therapy; moderate to severe hypertension (systolic blood pressure > 180 mm Hg or diastolic blood pressure > 105 mm Hg, on at least two separate occasions); taking anticoagulant treatment; taking long term steroids, which might lead to osteoporosis; could not walk 100 m when free of back pain, because exercise would be difficult; could not get up from and down to the floor unaided; had received physical therapy (including acupuncture) in the previous three months; Roland disability questionnaire score of three or less on the day of randomisation; could not read and write fluently in English
Recruitment/selection of patients	In participating practices, research nurses identified patients consulting with back pain, both directly from general practitioners and their staff and by searching computerised records
Age, gender and ethnicity	Age - Mean (SD): 43.1 (11.2) years. Gender (M:F): 585:749. Ethnicity: White 95.7%
Further population details	1. Chronicity of pain : Mixed (At least 4 weeks).
Extra comments	. Baseline scores (mean SD) for self management, exercise + self management, manual + self management and manual + exercise + self management groups, respectively - RDQ: 9.0 (3.9), 9.2 (4.3), 8.9 (4.0), 9 (3.96); SF36 Physical component: 41.0 (6.4), 40.5 (6.7), 40.95 (6.5), 40.75 (6.9); SF36 Mental component: 46.6 (10.4), 45.4 (10.8), 45.25 (10.4), 45.75 (10.05); Von Korff pain: 60.5 (17.6), 60.8 (17.6), 61.5 (19), 60 (17.95); Von Korff disability: 44.9 (21.0), 47.7 (22.6), 46.75 (22.35), 44.96 (21.95)
Indirectness of population	No indirectness
Interventions	(n=338) Intervention 1: Self management - Advice to stay active. "Best care" in general practice: advise continuing normal activities and avoiding rest; given a copy of The Back Book. Duration 12 weeks. Concurrent medication/care: Not stated (n=310) Intervention 2: Individual Biomechanical exercise - Core stability. The authors developed the exercise programme (“back to fitness”) from previous trials. It comprises initial individual assessment followed by group classes incorporating cognitive behavioural principles. They trained physiotherapists with at least two years’ experience since qualification to deliver this programme. Classes ran in local community facilities. Up to 10 people took part in each session. They invited participants to attend up to eight 60 minute sessions over four to eight weeks and a “refresher” class 12 weeks after randomisation. Plus self-management.. Duration 12 weeks. Concurrent medication/care: Not stated (n=353) Intervention 3: Manual therapy - Manual therapy (combination of techniques). Spinal manipulation package—A multidisciplinary group developed a package of techniques representative of those used by the UK chiropractic, osteopathic, and physiotherapy professions. The three professional associations agreed to the use of this package in this trial. Similar numbers of qualified manipulators from each of these professions treated participants. They all had a minimum of two years’ clinical experience and were skilled in a range of manipulative techniques,

Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])
	including high velocity thrusts. Participants randomised to private manipulation received treatment in manipulators' own consultation rooms. Those randomised to NHS manipulation saw the same manipulators in NHS premises. Following initial assessment, manipulators chose from the agreed manual and non-manual treatment options. They agreed to do high velocity thrusts on most patients at least once. The authors invited participants to attend up to eight 20 minute sessions, if necessary, over 12 weeks. Plus self-management. Duration 12 weeks. Concurrent medication/care: Not stated (n=333) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. Combined treatment—The authors invited participants to attend eight sessions of manipulation over six weeks, eight sessions of exercise in the next six weeks, and a refresher class at 12 weeks. Other aspects of treatment were identical to those in the manipulation only or exercise only groups. Plus self-management. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Medical Research Council, NHS)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE (BIOMECH) + SELF-MANAGEMENT versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 Physical component score at 3 months; Group 1: mean 46.35 None (SD 6.63); n=191, Group 2: mean 43.94 None (SD 6.63); n=227; SF-36 Physical component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental component score at 3 months; Group 1: mean 47.24 None (SD 9.26); n=191, Group 2: mean 46.49 None (SD 9.34); n=227; SF-36 Mental component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D at 3 months; Group 1: mean 0.62 (SD 0.262); n=297, Group 2: mean 0.626 (SD 0.249); n=326; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: SF-36 Physical component score at 12 months; Group 1: mean 44.39 None (SD 8.77); n=194, Group 2: mean 42.84 None (SD 8.77); n=221; SF-36 Physical component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental component score at 12 months; Group 1: mean 46.77 None (SD 11.28); n=194, Group 2: mean 46.44 None (SD 11.45); n=221; SF-36 Mental component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D at 12 months; Group 1: mean 0.618 (SD 0.267); n=297, Group 2: mean 0.629 (SD 0.263); n=326; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Modified Von Korff scale: Pain at 3 months; Group 1: mean 44.73 Not stated (SD 24.42); n=204, Group 2: mean 49.32 Not stated (SD 24.42); n=239;

Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])

Modified Von Korff Scale: Pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Modified Von Korff scale: Pain at 12 months; Group 1: mean 41.54 Not stated (SD 26.02); n=200, Group 2: mean 48.44 Not stated (SD 26.21); n=235; Modified Von Korff Scale: Pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome: Roland Disability Questionnaire at 3 months; Group 1: mean 5.47 Not stated (SD 4.35); n=225, Group 2: mean 6.83 Not stated (SD 4.48); n=256; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Modified Von Korff scale: Disability at 3 months; Group 1: mean 29.73 Not stated (SD 23.48); n=205, Group 2: mean 34.73 Not stated (SD 23.65); n=239; Modified Von Korff scale: Disability 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome: Roland Disability Questionnaire at 12 months; Group 1: mean 5.74 Not stated (SD 4.56); n=216, Group 2: mean 6.13 Not stated (SD 4.72); n=248; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Modified Von Korff scale: Disability at 12 months; Group 1: mean 29.73 Not stated (SD 23.88); n=202, Group 2: mean 34.29 Not stated (SD 24.07); n=235; Modified Von Korff scale: Disability 0-100 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 7: Responder criteria at Up to 4 months
- Actual outcome: >30% improvemnt in RMDQ at 3 months; Group 1: 135/225, Group 2: 125/255; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MIXED MODALITY MANUAL THERAPY + SELF-MANAGEMENT versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 Physical component score at 3 months; Group 1: mean 46.56 Not stated (SD 7.24); n=259, Group 2: mean 44.04 Not stated (SD 7.23); n=227; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental component score at 3 months; Group 1: mean 49.64 Not stated (SD 9.01); n=259, Group 2: mean 46.77 Not stated (SD 9.04); n=227; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D at 3 months; Group 1: mean 0.675 (SD 0.261); n=342, Group 2: mean 0.626 (SD 0.249); n=326; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: SF-36 Physical component score at 12 months; Group 1: mean 44.18 Not stated (SD 8.73); n=252, Group 2: mean 42.5 Not stated (SD 8.92); n=221; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental component score at 12 months; Group 1: mean 48.09 Not stated (SD 10.95); n=252, Group 2: mean 46.41 Not stated (SD 11.15); n=221;

Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])

SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D at 12 months; Group 1: mean 0.664 (SD 0.277); n=342, Group 2: mean 0.629 (SD 0.263); n=326; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Modified Von Korff scale: Pain at 3 months; Group 1: mean 40.9 Not stated (SD 24.87); n=275, Group 2: mean 49.59 Not stated (SD 25.04); n=239; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Modified Von Korff scale: Pain at 12 months; Group 1: mean 41.68 Not stated (SD 25.67); n=264, Group 2: mean 47.56 Not stated (SD 25.91); n=235; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Function (disability scores) at Up to 4 months
- Actual outcome: Roland Disability Questionnaire at 3 months; Group 1: mean 5.09 Not stated (SD 4.74); n=287, Group 2: mean 6.66 Not stated (SD 4.8); n=256; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Modified Von Korff scale: Disability at 3 months; Group 1: mean 31.14 Not stated (SD 24.54); n=275, Group 2: mean 35.11 Not stated (SD 24.89); n=239; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Function (disability scores) at >4 months
- Actual outcome: Modified Von Korff scale: Disability at 12 months; Group 1: mean 29.85 Not stated (SD 24.28); n=262, Group 2: mean 35.5 Not stated (SD 24.53); n=235; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Roland Disability Questionnaire at 12 months; Group 1: mean 5.15 Not stated (SD 4.79); n=273, Group 2: mean 6.16 Not stated (SD 4.88); n=248; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 7: Responder criteria at Up to 4 months
- Actual outcome: >30% improvement in RMDQ at 3 months; Group 1: 193/268, Group 2: 125/255; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 8: Responder criteria at >4 months
- Actual outcome: >30% improvement in RMDQ at 12 months; Group 1: 187/275, Group 2: 139/248; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MIXED MODALITY MANUAL THERAPY + EXERCISE (BIOMECH) + SELF-MANAGEMENT versus ADVICE TO STAY ACTIVE

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 Physical component score at 3 months; Group 1: mean 46.46 None (SD 7.3); n=231, Group 2: mean 43.91 None (SD 7.23); n=227; SF-36

Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])
Physical component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental component score at 3 months; Group 1: mean 48.89 None (SD 8.97); n=231, Group 2: mean 46.59 None (SD 8.74); n=227; SF-36 Mental component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: EQ-5D at 3 months; Group 1: mean 0.66 (SD 0.241); n=322, Group 2: mean 0.626 (SD 0.249); n=326; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome: SF-36 Physical component score at 12 months; Group 1: mean 45.11 None (SD 9.51); n=221, Group 2: mean 42.58 None (SD 9.21); n=221; SF-36 Physical component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental component score at 12 months; Group 1: mean 48.01 None (SD 11.14); n=221, Group 2: mean 48.71 None (SD 10.85); n=221; SF-36 Mental component score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: EQ-5D at 12 months; Group 1: mean 0.679 (SD 0.268); n=322, Group 2: mean 0.629 (SD 0.263); n=326; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Modified Von Korff scale: Pain at 3 months; Group 1: mean 40.76 Not stated (SD 24.9); n=246, Group 2: mean 48.96 Not stated (SD 24.7); n=239; Modified Von Korff Scale: Pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Modified Von Korff scale: Pain at 12 months; Group 1: mean 39.68 Not stated (SD 25.83); n=245, Group 2: mean 46.39 Not stated (SD 25.44); n=235; Modified Von Korff Scale: Pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: Roland Disability Questionnaire at 3 months; Group 1: mean 4.84 Not stated (SD 4.5); n=258, Group 2: mean 6.71 Not stated (SD 4.48); n=256; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Modified Von Korff scale: Disability at 3 months; Group 1: mean 29.05 Not stated (SD 23.4); n=246, Group 2: mean 34.56 Not stated (SD 23.2); n=239; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: Roland Disability Questionnaire at 12 months; Group 1: mean 4.72 Not stated (SD 4.65); n=257, Group 2: mean 6.02 Not stated (SD 4.72); n=248; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Modified Von Korff scale: Disability at 12 months; Group 1: mean 28.09 Not stated (SD 24.94); n=246, Group 2: mean 34.8 Not stated (SD 24.53); n=235; Modified Von Korff scale: Disability 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Responder criteria at Up to 4 months

Study (subsidiary papers)	Moffett 2003[375] (Underwood 2004[533], Brealey 2003[47], Ernst 2005[128], Uk beam trial team 2004[532], Froud 2009[155])
- Actual outcome: >30% improvement in RMDQ at 3 months; Group 1: 185/260, Group 2: 125/255; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Responder criteria at >4 months - Actual outcome: >30% improvement in RMDQ at 12 months; Group 1: 180/246, Group 2: 139/248; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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179 # H.9 Acupuncture

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Study	Acupuncture Randomized Trial in Low Back Pain trial: Brinkhaus 2006[50]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=301)
Countries and setting	Conducted in Germany; Setting: Outpatients
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 8 weeks; follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Clinical diagnosis of low back pain (further diagnostic results were not required)
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP >6 months; age 40 to 75 years; average pain intensity 40 or more on 100mm VAS on previous 7 days; only using oral NSAIDs for pain treatment in past 4 weeks
Exclusion criteria	Protrusion or prolapse of 1 or more intervertebral discs with concurrent neurological symptoms; radicular pain; prior vertebral column surgery; infectious spondylopathy; LBP caused by inflammatory, malignant or autoimmune disease; congenital deformation of the spine (except for slight lordosis or scoliosis); osteoporotic compression fracture; spinal

Study	Acupuncture Randomized Trial in Low Back Pain trial: Brinkhaus 2006[50]
	stenosis; spondylolysis or spondylolisthesis; Chinese medicine diagnoses warranting moxibustion; acupuncture in last 12 months
Recruitment/selection of patients	Articles in local newspapers
Age, gender and ethnicity	Age - Mean (SD): 58.8 (9.1) years. Gender (M:F): 96:202. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Chronic LBP >6 month).
Extra comments	Baseline scores - LBP intensity: acupuncture 63.2±13.2, placebo 66.6±15.7, UC 66.1±13.6; back function: acupunture 57.1±18.6, placebo 57.2±17.3±, UC 56.7±20.0; Disability: acupunture 28.9±11.1, placebo 31.5±11.1, UC 31.0±13.3; SF36 physical health: acupuncutre 32.8±8.2, placebo 31.8±8.3, UC 31.6±8.2; SF36 mental health: acupuncture 48.5±10.7, placebo 48±11.1, UC 50.7±11.3; SF36 pain: acupuncuture 35.2±14.8, placebo 32.5±13.1, UC 33.5±14; depression: acupuncture 53±7.7, placebo 53±7.3, UC 51±9
Indirectness of population	No indirectness
Interventions	(n=147) Intervention 1: Acupuncture. 12 sessions x 30 minutes over 8 weeks (usually 2/week for first 4 weeks then 1/week for 4 weeks); semi-standardised; local and distant points including bilaterally at least 4 local points from bladder 20 to 34, bladder 50 to 54, gallbladder 30, governing vessel 3, 4, 5 and 6 and extraordinary points Huatojiaji adn Shiqizhuixia; and at least 2 distant points from small intestine 3, bladder 40, 60 and 62, kidney 3 and 7, gallbladder 31, 34 and 41, liver 3 and governing vessel 14 and 20. Other points including ear and trigger points could be chosen individually. Needle length not defined. Achieve de qi if possible; needles stimulated at least once per session.. Duration 8 weeks. Concurrent medication/care: Allowed oral NSAID if required but not corticosteroids or CNS pain-relieving drugs (n=75) Intervention 2: Placebo/Sham. The number, duration and frequency of the sessions were the same as for the acupuncture group. At least 6 of 10 predefined non-acupuncture points were needled bilaterally using superficial insertion of fine needles (length 20–40mm), not in the area of the lower back where patients were experiencing pain; de qi and manual stimulation of needles were avoided.. Duration 8 weeks. Concurrent medication/care: Allowed oral NSAID if required but not corticosteroids or CNS pain-relieving drugs (n=79) Intervention 3: Usual care - Waiting-list. No acupuncture for 8 weeks. Duration 8 weeks. Concurrent medication/care: Allowed oral NSAID if required but not corticosteroids or CNS pain-relieving drugs
Funding	Other (German social health insurance companies)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM	

Study	Acupuncture Randomized Trial in Low Back Pain trial: Brinkhaus 2006[50]
Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-36 Physical health at 8 weeks; Group 1: mean 40.5 Not stated (SD 9.7); n=140, Group 2: mean 36.2 Not stated (SD 10.3); n=70; SF-36 Physical health Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 8 weeks; Group 1: mean 50.6 Not stated (SD 9.5); n=140, Group 2: mean 51 Not stated (SD 9.8); n=70; SF-36 Mental health Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 pain subscale at 8 weeks; Group 1: mean 58.8 Not stated (SD 22.7); n=140, Group 2: mean 50.7 Not stated (SD 20.1); n=70; SF-36 Pain subscale Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical health at 26 weeks; Group 1: mean 39.3 Not stated (SD 9.9); n=139, Group 2: mean 37.6 Not stated (SD 11.3); n=70; SF-36 Physical health Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical health at 52 weeks; Group 1: mean 38.9 Not stated (SD 10); n=137, Group 2: mean 36.1 Not stated (SD 10.3); n=68; SF-36 Physical health Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 26 weeks; Group 1: mean 49.9 Not stated (SD 10); n=139, Group 2: mean 46.8 Not stated (SD 12.9); n=70; SF-36 Mental health Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 52 weeks; Group 1: mean 50.5 Not stated (SD 10.4); n=137, Group 2: mean 47.2 Not stated (SD 11.9); n=68; SF-36 Mental health Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 pain subscale at 26 weeks; Group 1: mean 53.6 Not stated (SD 22.9); n=139, Group 2: mean 49.6 Not stated (SD 23.6); n=70; SF-36 Pain subscale Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 pain subscale at 52 weeks; Group 1: mean 52.4 Not stated (SD 23.2); n=137, Group 2: mean 44 Not stated (SD 22.9); n=68; SF-36 Pain subscale Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: LBP intensity (VAS 0–100) at 8 weeks; Group 1: mean -28.7 mm (SD 30.3); n=140, Group 2: mean -23.6 mm (SD 31); n=70; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome: LBP intensity (VAS 0–100) at 26 weeks; Group 1: mean 38.4 mm (SD 29.8); n=139, Group 2: mean 42.1 mm (SD 30.3); n=70; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: LBP intensity (VAS 0–100) at 52 weeks; Group 1: mean 39.2 mm (SD 29.2); n=137, Group 2: mean 44.9 mm (SD 30.4); n=68; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome: Back function (FFbH-R score) at 8 weeks; Group 1: mean 66.8 Not stated (SD 18.3); n=140, Group 2: mean 62.9 Not stated (SD 20.3); n=70; Funktionsfragbogen Hannover-Rucken Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Pain Disability Index at 8 weeks; Group 1: mean 18.8 Not stated (SD 13.1); n=140, Group 2: mean 21.5 Not stated (SD 13.2); n=70; Pain Disability Index (German version) Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	

Study	Acupuncture Randomized Trial in Low Back Pain trial: Brinkhaus 2006[50]
	- Actual outcome: Back function (FFbH-R score) at 26 weeks; Group 1: mean 66 Not stated (SD 20.1); n=139, Group 2: mean 64.1 Not stated (SD 22.9); n=70; Funktionsfragebogen Hannover-Rucken Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Back function (FFbH-R score) at 52 weeks; Group 1: mean 66 Not stated (SD 20.4); n=137, Group 2: mean 63.1 Not stated (SD 21.6); n=68; Funktionsfragebogen Hannover-Rucken Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Pain Disability Index at 26 weeks; Group 1: mean 19.3 Not stated (SD 13.9); n=139, Group 2: mean 21.4 Not stated (SD 15.6); n=70; Pain Disability Index (German version) Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Pain Disability Index at 52 weeks; Group 1: mean 19 Not stated (SD 13.4); n=137, Group 2: mean 23 Not stated (SD 15); n=68; Pain Disability Index (German version) Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Depression at 8 weeks; Group 1: mean 48.9 Not stated (SD 9); n=140, Group 2: mean 49.4 Not stated (SD 9.3); n=70; Allgemeine Depressionsskala Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Depression at 26 weeks; Group 1: mean 49.7 Not stated (SD 8.6); n=139, Group 2: mean 50.3 Not stated (SD 10.7); n=70; Allgemeine Depressionsskala Not stated Top=Unclear; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Depression at 52 weeks; Group 1: mean 48.2 Not stated (SD 9.1); n=137, Group 2: mean 50.7 Not stated (SD 9.7); n=68; Allgemeine Depressionsskala Not stated Top=Unclear; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 6: Adverse events (morbidity) at Define - Actual outcome: Serious adverse events at 52 weeks; Group 1: 13/140, Group 2: 4/70; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Adverse effects at 52 weeks; Group 1: 15/140, Group 2: 12/70; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 7: Responder criteria at follow-up - Actual outcome: At least 50% reduction in pain intensity at 8 weeks; Group 1: 76/140, Group 2: 27/70; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus WAITING-LIST Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-36 Physical health at 8 weeks; Group 1: mean 40.5 Not stated (SD 9.7); n=140, Group 2: mean 33.9 Not stated (SD 9.5); n=74; SF-36 Physical health Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 8 weeks; Group 1: mean 50.6 Not stated (SD 9.5); n=140, Group 2: mean 49.4 Not stated (SD 11.5); n=74; SF-36 Mental health Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 pain subscale at 8 weeks; Group 1: mean 58.8 Not stated (SD 22.7); n=140, Group 2: mean 39.9 Not stated (SD 17.8); n=74; SF-36 Pain subscale Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months

Study	Acupuncture Randomized Trial in Low Back Pain trial: Brinkhaus 2006[50]
- Actual outcome: LBP intensity (VAS 0–100) at 8 weeks; Group 1: mean -28.7 mm (SD 30.3); n=140, Group 2: mean -6.9 mm (SD 22); n=74; VAS 0–100mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Back function (FFbH-R score) at 8 weeks; Group 1: mean 66.8 Not stated (SD 18.3); n=140, Group 2: mean 57.7 Not stated (SD 19.9); n=74; Funktionsfragbogen Hannover-Rucken Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain Disability Index at 8 weeks; Group 1: mean 18.8 Not stated (SD 13.1); n=140, Group 2: mean 27.1 Not stated (SD 14.1); n=70; Pain Disability Index (German version) Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Depression at 8 weeks; Group 1: mean 48.9 Not stated (SD 9); n=140, Group 2: mean 49.7 Not stated (SD 10.4); n=74; Allgemeine Depressionsskala Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome: Serious adverse events at 52 weeks; Group 1: 13/140, Group 2: 5/74; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at follow-up - Actual outcome: At least 50% reduction in pain intensity at 8 weeks; Group 1: 76/140, Group 2: 11/74; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Cherkin 2001[80]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=262)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 10 weeks intervention; 52 weeks follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable

Study	Cherkin 2001[80]
Inclusion criteria	Age 20 to 70 years
Exclusion criteria	Symptoms of sciatica, acupuncture or massage for back pain within the past year, back care from a specialist or CAM provider, severe clotting disorders or anticoagulant therapy, cardiac pacemakers, underlying systemic or visceral disease, pregnancy, involvement with litigation or compensation claims for back pain, inability to speak English, severe or progressive neurologic deficits, lumbar surgery within the past 3 years, recent vertebral fracture, serious comorbid conditions, and bothersomeness of back pain rated as less than 4 on a scale from 0 to 10.
Recruitment/selection of patients	Individuals aged 20 to 70 years who visited a primary care physician for low back pain were identified from automated visit data. Six weeks after such visits, these patients were sent letters describing the study, specifying inclusion and exclusion criteria, and asking those interested to return a signed consent form. A research assistant telephoned respondents to answer questions, confirm eligibility, collect baseline data, and randomize those remaining eligible.
Age, gender and ethnicity	Age - Mean (SD): 44.9 (11.5). Gender (M:F): 42% male/58% female. Ethnicity: 84% white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (No further details).
Extra comments	Baseline scores - Roland Disability score: acupunture 12.8±5.3, massage 11.8±4.4, UC 12.0±5.3; bothersomeness: acupunture 6.2±1.8, massage 6.2±1.9, UC 6.1±2.0. Most patients had received treatment for LBP more than 1 year earlier, and most had experienced pain continuously for the past year. On average, patients reported moderately severe symptoms (bothersomeness scale score, 6.2) and dysfunction (Roland Disability Scale score, 12.2). Most were using pain medication (primarily NSAID). 3% of patients had previous experience with acupuncture for back pain, and 16% had previously tried massage. Baseline characteristics were similar across the 3 treatment groups.
Indirectness of population	No indirectness
Interventions	(n=94) Intervention 1: Acupuncture. All patients who received acupuncture were needled and "de qi," a characteristic dull ache, numbness, or tingling sensation associated with needling, was reported for 89%. A mean of 12 needles (range, 5–16) were inserted at each visit, with significant differences among acupuncturists (P<.001). . Duration Up to 10 visits over 10 weeks. Concurrent medication/care: Other commonly used therapies were infrared or other lamp heat (82% of patients), cupping (66%), and electrostimulation of the needles (51%). Acupuncturists recommended exercise for about half of their patients, usually stretching, walking, or swimming. (n=78) Intervention 2: Massage. At the first visit, the most commonly used massage techniques were Swedish (71%), movement reeducation (70%), deep tissue (65%), moist heat or cold (51%), trigger or pressure point (48%), and neuromuscular (45%). Treatments provided at follow-up visits were similar.. Duration Up to 10 visits over 10 weeks. Concurrent medication/care: Massage therapists recommended exercise, typically stretching, at the conclusion of 64% of initial visits. Most massage therapists (59%) also used "body awareness" techniques to help clients become more aware of their physical and kinesthetic sensations, including potential early warning signals of injury.

Study	Cherkin 2001[80]
	(n=90) Intervention 3: Usual care. High-quality and relatively inexpensive educational materials designed for persons with chronic back pain: a book and 2 professionally produced videotapes: a 40-minute videotape on self-management of back pain and a 25-minute videotape demonstrating exercises. These unpublished materials included information about back pain and its treatment, techniques for controlling and preventing pain and for improving quality of life, and suggestions for coping with the emotional and interpersonal problems often accompanying chronic illness.. Duration 10 weeks. Concurrent medication/care: Not stated
Funding	Other (Grants from Group Health Cooperative, The Group Health Foundation, Seattle, Wash, and the John E. Fetzer Institute, Kalamazoo, Mich; and the Agency for Healthcare Research and Quality, Rockville, Md)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus MASSAGE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 10 weeks; Group 1: mean 7.9 (SD 6.8353); n=94, Group 2: mean 6.3 (SD 5.3223); n=78; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 1 year; Group 1: mean 8 (SD 6.8353); n=94, Group 2: mean 6.8 (SD 5.7659); n=78; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Mean number of providers visits at 1 year; Group 1: mean 1.9 (SD 3.7); n=94, Group 2: mean 1 (SD 2.1); n=78; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Number of filled pain medication prescriptions at 1 year; Group 1: mean 4.4 (SD 8.9); n=94, Group 2: mean 2.5 (SD 3.6); n=78; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 10 weeks; Group 1: mean 7.9 (SD 6.8353); n=94, Group 2: mean 8.8 (SD 6.6843); n=90; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 1 year; Group 1: mean 8 (SD 6.8353); n=94, Group 2: mean 6.4 (SD 6.2069); n=90; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Mean number of providers visits at 1 year; Group 1: mean 1.9 (SD 3.7); n=94, Group 2: mean 1.5 (SD 4);

Study	Cherkin 2001[80]
n=90; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Number of filled pain medication prescriptions at 1 year; Group 1: mean 4.4 (SD 8.9); n=94, Group 2: mean 4 (SD 8.6); n=90; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study (subsidiary papers)	Cherkin 2009[81] (Cherkin 2008[82])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=638)
Countries and setting	Conducted in USA; Setting: Integrated health care delivery system
Line of therapy	Unclear
Duration of study	Intervention + follow up: 7 weeks treatment + follow up to 52 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Receiving care for uncomplicated chronic LBP from integrated health care delivery system
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis codes consistent with uncomplicated chronic LBP in prior 3–12 months; severity at least 3 on a 0–10 back pain bothersomeness scale
Exclusion criteria	Specific causes of back pain e.g. cancer, fractures, spinal stenosis, infection; complicated back problem e.g. sciatica, prior back surgery, medico-legal issues; contraindications for acupuncture e.g. coagulation disorder, pacemaker, pregnancy, seizure disorder; conditions making treatment difficult, e.g. paralysis, psychosis; conditions that might confound treatmetn effects or interpretation of results e.g. severe fibromyalgia, rheumatoid arthritis, concurrent care form other providers; <3 months back pain; previous acupuncture
Recruitment/selection of patients	Search of electronic records for diagnosis codes; letters to members without recent visits for back pain; advertised in clinics and newsletters
Age, gender and ethnicity	Age - Mean (SD): 47 (13). Gender (M:F): 38:62. Ethnicity: White 68%; Hispanic 8%; others not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months back pain).
Extra comments	Baseline scores - pain bothersomeness: IA 5±2.4, SA 5±2.3, placebo 4.9±2.3, UC 5.4±2.3; RMDQ: IA 10.8±5.2, SA

Study (subsidiary papers)	Cherkin 2009[81] (Cherkin 2008[82])
	10.8±5.5, placebo 9.8±5.1, UC 10.6±5.2, SF36 physical health: IA 41±9, SA 42±8, placebo 42±8, UC 42±8; SF36 mental health: IA 53±8, SA 54±8, placebo 54±7, UC 53±8
Indirectness of population	No indirectness
Interventions	(n=157) Intervention 1: Acupuncture. Individualised acupuncture, twice weekly for 3 weeks then weekly for 4 weeks; needles 0.25mm diameter and at least 1.5 inches in length; needling depth generally 1–3 cm. Individualised; no constraints on number of needles, depth of insertion or manipulation. Average 10.8 needles (range 5–20) retained for 18 mins (range 15–20 mins). 74 distinct points used, half on the "bladder meridian" that includes points on the back and legs . Duration 7 weeks. Concurrent medication/care: All participants received a self-care book with information on managing flare-ups, exercise, and lifestyle modifications (n=158) Intervention 2: Acupuncture. Standardised acupuncture: 8 acupuncture points (Du 3, Bladder 23-bilateral, low back ashi point, Bladder 40-bilateral, Kidney 3-bilateral) on the low back and lower leg; needled for 20 minutes, stimulation by twirling the needles at 10 minutes and just prior to removal; elicited de qi. Duration 7 weeks. Concurrent medication/care: All participants received a self-care book with information on managing flare-ups, exercise, and lifestyle modifications (n=162) Intervention 3: Placebo/Sham. Simulated acupuncture using a toothpick in a needle guide tube, including tapping and twisting at acupuncture points. Duration 7 weeks. Concurrent medication/care: All participants received a self-care book with information on managing flare-ups, exercise, and lifestyle modifications (n=161) Intervention 4: Usual care. No study-related care, only care (if any) that they and their physicians chose (mostly medications, primary careand physical therapy) . Duration 7 weeks. Concurrent medication/care: All participants received a self-care book with information on managing flare-ups, exercise, and lifestyle modifications
Funding	Academic or government funding (National Institutes of Health and National Center for Complementary and Alternative Medicine)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (IA) at 8 weeks; Group 1: mean 3.4 None (SD 2.7); n=147, Group 2: mean 3 None (SD 2.4); n=159; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome:
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (SA) at 8 weeks; Group 1: mean 3.3 None (SD 2.5); n=152, Group 2: mean 3 None (SD 2.4); n=159; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome:

Study (subsidiary papers)	Cherkin 2009[81] (Cherkin 2008[82])
No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (IA) at 26 weeks; Group 1: mean 3.8 None (SD 2.5); n=143, Group 2: mean 3.5 None (SD 2.7); n=153; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: - Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (SA) at 26 weeks; Group 1: mean 3.7 None (SD 2.6); n=142, Group 2: mean 3.5 None (SD 2.7); n=153; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (IA) at 52 weeks; Group 1: mean 3.7 None (SD 2.6); n=141, Group 2: mean 3.4 None (SD 2.7); n=152; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: - Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (SA) at 52 weeks; Group 1: mean 3.5 None (SD 2.7); n=147, Group 2: mean 3.4 None (SD 2.7); n=152; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (IA) at 8 weeks; Group 2: mean 5.4 Not stated (SD 4.9); n=159; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (SA) at 8 weeks; Group 1: mean 6.3 (SD 5.7); n=152, Group 2: mean 5.4 (SD 4.9); n=159; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (IA) at 26 weeks; Group 1: mean 6.8 Not stated (SD 5.5); n=143, Group 2: mean 6.4 Not stated (SD 6); n=153; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (SA) at 26 weeks; Group 1: mean 6.7 Not stated (SD 5.8); n=142, Group 2: mean 6.4 Not stated (SD 6); n=153; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (IA) at 52 weeks; Group 1: mean 6 Not stated (SD 5.4); n=141, Group 2: mean 6.2 Not stated (SD 5.8); n=152; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (SA) at 52 weeks; Group 1: mean 6 Not stated (SD 5.8); n=147, Group 2: mean 6.2 Not stated (SD 5.8); n=152; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Adverse experience possibly related to treatment (IA) at 52 weeks; Group 1: 6/157, Group 2: 0/162; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Adverse experience possibly related to treatment (SA) at 52 weeks; Group 1: 6/158, Group 2: 0/162; Risk of bias: Low; Indirectness of outcome: No indirectness	

Study (subsidiary papers)	Cherkin 2009[81] (Cherkin 2008[82])

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (IA) at 8 weeks; Group 1: mean 3.4 None (SD 2.7); n=147, Group 2: mean 4.7 None (SD 2.6); n=148; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (SA) at 8 weeks; Group 1: mean 3.3 None (SD 2.5); n=152, Group 2: mean 4.7 None (SD 2.6); n=148; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (IA) at 26 weeks; Group 1: mean 3.8 None (SD 2.5); n=143, Group 2: mean 4.4 None (SD 2.6); n=145; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (SA) at 26 weeks; Group 1: mean 3.7 None (SD 2.6); n=142, Group 2: mean 4.4 None (SD 2.6); n=145; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (IA) at 52 weeks; Group 1: mean 3.7 None (SD 2.6); n=141, Group 2: mean 4.1 None (SD 2.6); n=143; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain bothersomeness (SA) at 52 weeks; Group 1: mean 3.5 None (SD 2.7); n=147, Group 2: mean 4.1 None (SD 2.6); n=143; Pain bothersomeness 0="not at all bothersome" to 10="extremely bothersome" Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (IA) at 8 weeks; Group 1: mean 6.4 Not stated (SD 5.3); n=147, Group 2: mean 8.9 Not stated (SD 6); n=148; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (SA) at 8 weeks; Group 1: mean 6.3 Not stated (SD 5.7); n=152, Group 2: mean 8.9 Not stated (SD 6); n=148; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (IA) at 26 weeks; Group 1: mean 6.8 Not stated (SD 5.5); n=143, Group 2: mean 8.4 Not stated (SD 6); n=145; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (SA) at 26 weeks; Group 1: mean 6.7 Not stated (SD 5.8); n=142, Group 2: mean 8.4 Not stated (SD 6); n=145; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome:

Study (subsidiary papers)	Cherkin 2009[81] (Cherkin 2008[82])
No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (IA) at 52 weeks; Group 1: mean 6 Not stated (SD 5.4); n=141, Group 2: mean 7.9 Not stated (SD 6.5); n=143; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire (SA) at 52 weeks; Group 1: mean 6 Not stated (SD 5.8); n=147, Group 2: mean 7.9 Not stated (SD 6.5); n=143; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Cho 2013[90] (Lee 2010[311])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=130)
Countries and setting	Conducted in South Korea; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks treatmetn and followed up to 24 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, physical and neurological examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18–65 years; nonspecific chronic LBP (at least 3 months); over 5/10 on VAS for bothersomeness of LBP; intact neurological examination
Exclusion criteria	Sciatic pain; pain mainly below knee; serious spinal disorder including malignancy, vertebral fracture, spinal infection, inflammatory spondylitis and cauda equin compression; previous spinal surgery or scheduled surgery that could interfere with treatment effects (e.g. cardiovascular disease, diabetic neuropathy, fibromyalgia, rheumatoid arthritis, dementia, epilepsy); acupuncture of LBP in previous month; conditions that could compromise safety of acupuncture e.g. clotting disroders, anticoagulants, pregnancy, seizures); severe psychiatric or psychological disorder; history of use of cortticosteroids, narcotics, muscle relaxants or herbal medicine to treat LBP
Recruitment/selection of patients	Advertisements in local newspapers, hospital's monthly magazine, hospital's website, bulletin boards

Study (subsidiary papers)	Cho 2013[90] (Lee 2010[311])
Age, gender and ethnicity	Age - Mean (SD): 42.06 (14.04). Gender (M:F): 18:98 (completers). Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months back pain).
Extra comments	Baseline scores - bothersomeness acupuncture 6.44±1.5, sham 6.32±1.14; pain intensity acupuncture 6.52±1.41, sham 6.37±1.18; ODI acupuncture 28.23±10.54, sham 24.17±10.05; SF36 acupuncture 107.72±18.93, sham 110.41, 15.91; BDI acupuncture 11.33±5.51, sham 11.75±8.10
Indirectness of population	No indirectness
Interventions	(n=65) Intervention 1: Acupuncture. 12 sessions (approx twice a week for 6 weeks); individualised: a) GB12, GB26, GB30, GB34, GB41; b) BL23, BL24, BL25, BL37, BL40; or c) ST4, SP13, SP14, GV3, GV4, GV5, GV24, GV26; other points could be used. Needles 40 x 0.25mm, inserted perpendicular to 5–20mm depth, manual stimulation by bidirectional rotation to induce de qi, then left for 15–20 minutes. Duration 6 weeks. Concurrent medication/care: Exercise manual with appropriate postures and exercises for LBP, to be done every day (n=65) Intervention 2: Placebo/Sham. Use of semi-blunt needle on non-acupuncture points without penetration; 8 predefined points on lower back (1 cm below BL39, 1 cm lateral to BL18, 1 cm lateral to BL20, 2 cm above GB30), all bilaterally. Duration 6 weeks. Concurrent medication/care: Exercise manual with appropriate postures and exercises for LBP, to be done every day
Funding	Academic or government funding (Korean Health Industry Development Institute)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 8 weeks; Group 1: mean 0.2 Not stated (SD 0.23); n=57, Group 2: mean 0.16 Not stated (SD 0.13); n=59; SF-36 Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 6 months; Group 1: mean 0.2 Not stated (SD 0.23); n=57, Group 2: mean 0.14 Not stated (SD 0.15); n=59; SF-36 Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Bothersomeness at 8 weeks; Group 1: mean 0.53 cm (SD 0.34); n=57, Group 2: mean 0.35 cm (SD 0.3); n=59; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Intensity at 3 months; Group 1: mean 2.78 cm (SD 2.32); n=57, Group 2: mean 4.06 cm (SD 2.19); n=59; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months

Study (subsidiary papers)	Cho 2013[90] (Lee 2010[311])
- Actual outcome for Overall (acute, chronic) without sciatica: Bothersomeness at 6 months; Group 1: mean 0.56 cm (SD 0.38); n=57, Group 2: mean 0.41 cm (SD 0.39); n=59; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Intensity at 6 months; Group 1: mean 2.79 cm (SD 2.44); n=57, Group 2: mean 3.52 cm (SD 2.53); n=59; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 8 weeks; Group 1: mean 0.42 Not stated (SD 0.39); n=57, Group 2: mean 0.29 Not stated (SD 0.44); n=59; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 6 months; Group 1: mean 0.44 Not stated (SD 0.38); n=57, Group 2: mean 0.24 Not stated (SD 1.1); n=59; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 8 weeks; Group 1: mean 0.39 Not stated (SD 0.56); n=57, Group 2: mean 0.26 Not stated (SD 0.83); n=59; Beck Depression Inventory Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 6 months; Group 1: mean 0.44 Not stated (SD 0.58); n=57, Group 2: mean 0.36 Not stated (SD 0.66); n=59; Beck Depression Inventory Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Coan 1980[95]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: 10–15 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, physical examination and x-rays
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP 6 months or more; no previous acupuncture; ho history if diabetes, infection or cancer; not more than 2 back surgeries

Study	Coan 1980[95]
Exclusion criteria	None apart form above
Recruitment/selection of patients	Public service announcements in newspapers
Age, gender and ethnicity	Age - Mean (range): 47 (18–67) years. Gender (M:F): 23:27. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (<6 months back pain).
Extra comments	Baseline pain score - immediate: 5.5, delayed 4.8
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Acupuncture. Performaed according to classical Oriental meridian theory; in some patients electroacupuncture was used. Duration Mean 11.4 treatments. Concurrent medication/care: Not stated (n=25) Intervention 2: Usual care - Waiting-list. Delayed acupuncture (around 15 weeks after enrolment). Duration 15 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus WAITING-LIST Protocol outcome 1: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Improvement at 4 weeks after end of 6-week treatment period; Group 1: 19/23, Group 2: 5/16; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Edelist 1976[125]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in Canada; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Not clear:

Study	Edelist 1976[125]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Complete orthopaedic investigation
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Improvement had not occurred with conventional therapy including bed rest, analgesics, heat and physiotherapy; disc disease that could not be surgically improved
Exclusion criteria	Not stated
Recruitment/selection of patients	Failure of conventional orthopaedic therapy
Age, gender and ethnicity	Age - --: Not stated. Gender (M:F): Not stated. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Assumed - failed conservative therapy).
Extra comments	No baseline details provided
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Acupuncture. Needels inserted into points a) 3.6 cm lateral to the midline at the level between 4th and 5th lumbar vertebrae, and b) at teh distal margin of the gastrocnemius muscle between medial and lateral heads; manipulated until Te Chi elicited; needles attached to electrical stimulator at 3–10 Hz with intensity (current) patients could tolerate for 30 minutes then removed. At 2-day intervals for 3 treatments. Duration 6 days. Concurrent medication/care: Not stated (n=15) Intervention 2: Placebo/Sham. 2 needles inserted at teh level of L4–5 bilaterally 15 cm lateral to midline and 1 in each leg 10 cm below popliteal fossa, 6 cm lateral to midline (i.e. not at acupuncture points); Te Chi not searched for; electrical stimulation as for true acupuncture group. Duration 6 days. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM Protocol outcome 1: Responder criteria at follow-up - Actual outcome: Global evaluation at Unclear; Group 1: 7/15, Group 2: 6/15; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	GERAC trial: Haake 2007[186] (Haake 2003[187])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=1162)
Countries and setting	Conducted in Germany; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6–9 weeks; follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	18 years or older; chronic LBP at least 6 months; mean Von Korff Chronic Pain Grade score 1 or higher; Hanover Functional Ability Questionnaire <70%; no previous acupuncture treatment for chronic LBP; signed consent; therapy-free for at least 7 days.
Exclusion criteria	Previous spinal surgery; previous spinal fractures, infections or tumorous spondylopathy; sciatica or chronic pain caused by other diseases.
Recruitment/selection of patients	Newspapers, magazines, radio and television
Age, gender and ethnicity	Age - Mean (SD): 50 (15) years. Gender (M:F): 470:692. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores - pain: acupuncture 67.7±13.9, sham 67.8±13.2, UC 67.8±14.6; disability: acupuncture 46.3±14.7, sham 46.3±15.3, UC 46.7±14.5; SF36 physical: acupuncture 31.8±6.8, sham 31.5±6.9, UC 31.6±6.8; SF36 mental: acupuncture 46.6±12.3, sham 46.6±15.3, UC 47.1±11.6
Indirectness of population	No indirectness
Interventions	(n=387) Intervention 1: Acupuncture. 10 x 30-minute sessions, generally 2 per week; 5 additional sessions if, after the 10th session, patients experienced a 10–50% reduction in pain intensity; needles 0.25 x 40mm or 0.35 x 50mm; body needle acupuncture without electrical stimulation or moxibustion; points chosen individually from a prescribed list; 14–20 needles inserted to a depth of 5–40mm; de qi induced by manual stimulation.. Duration 6–9 weeks. Concurrent medication/care: NSAIDs or pain medication up to maximum daily dose (n=387) Intervention 2: Placebo/Sham. 10 x 30-minute sessions, generally 2 per week; 5 additional sessions if, after the 10th session, patients experienced a 10–50% reduction in pain intensity; needles 0.25 x 40mm or 0.35 x 50mm; body needle acupuncture without electrical stimulation or moxibustion; on either side of the lateral part of the back

Study (subsidiary papers)	GERAC trial: Haake 2007[186] (Haake 2003[187])
	and on the lower limbs; standardised; avoiding all known acupuncture points or meridians; 14–20 needles inserted superficially 1–3mm without stimulation. Duration 6–9 weeks. Concurrent medication/care: NSAIDs or pain medication up to maximum daily dose (n=388) Intervention 3: Usual care. Multimodal programme according to German guidelines; included 10 sessions with personal contact with a physician or physiotherapist who administered physiotherapy, exercsie etc. Duration 6–9 weeks. Concurrent medication/care: NSAIDs or pain medication up to maximum daily dose
Funding	Other (German public health insurance companies)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-12 Physical at 6 months; Group 1: mean 41.6 Not stated (SD 10.5); n=373, Group 2: mean 39.5 Not stated (SD 10.1); n=372; SF-12 Physical Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Mental at 6 months; Group 1: mean 50.7 Not stated (SD 11.1); n=373, Group 2: mean 50.9 Not stated (SD 10.8); n=372; SF-12 Mental Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain (Von Korff Scale) at 3 months; Group 1: mean 4.54 (SD 1.94); n=373, Group 2: mean 4.85 (SD 1.95); n=376; CPGS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain (Von Korff Scale) at 6 months; Group 1: mean 40.2 (SD 22.5); n=377, Group 2: mean 43.3 (SD 23); n=376; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up
- Actual outcome: FFbH-R at 6 months; Group 1: mean 66.8 (SD 23.1); n=377, Group 2: mean 62.2 (SD 23); n=376; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: FFbH-R at 3 months; Group 1: mean 65.4 (SD 22.9); n=373, Group 2: mean 61.3 (SD 22.7); n=376; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (morbidity) at Define
- Actual outcome: Serious adverse event unrelated to treatment at 6 months; Group 1: 12/387, Group 2: 12/387; Risk of bias: Low; Indirectness of outcome: No indirectness

Study (subsidiary papers)	GERAC trial: Haake 2007[186] (Haake 2003[187])
	Protocol outcome 6: Responder criteria at follow-up - Actual outcome: Treatment response at 6 months; Group 1: 184/387, Group 2: 171/387; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-12 Physical at 6 months; Group 1: mean 41.6 Not stated (SD 10.5); n=373, Group 2: mean 35.8 Not stated (SD 9.5); n=364; SF-12 Physical Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Mental at 6 months; Group 1: mean 50.7 Not stated (SD 11.1); n=373, Group 2: mean 49.2 Not stated (SD 11.8); n=364; SF-12 Mental Not stated Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (Von Korff Scale) at 3 months; Group 1: mean 45.4 (SD 19.4); n=373, Group 2: mean 54.8 (SD 18.4); n=361; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain (Von Korff Scale) at 6 months; Group 1: mean 40.2 (SD 22.5); n=377, Group 2: mean 52.3 (SD 21.1); n=364; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome: FFbH-R at 6 months; Group 1: mean 66.8 (SD 23.1); n=377, Group 2: mean 55.7 (SD 22.7); n=364; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: FFbH-R at 3 months; Group 1: mean 65.4 (SD 22.9); n=373, Group 2: mean 56 (SD 22); n=361; FFbH-R 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome: Serious adverse event unrelated to treatment at 6 months; Group 1: 12/387, Group 2: 16/387; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at follow-up - Actual outcome: Treatment response at 6 months; Group 1: 184/387, Group 2: 106/387; Risk of bias: Low; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Grant 1999[179] (Grant 1998[178])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks; follow up to 3 months after end of treatment
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 60 or over; back pain at least 6 months
Exclusion criteria	Anticoagulants; systemic corticosteroids; dementia; previous acupuncture or TENS; cardiac pacemaker; other severe concomitant disease; inability of patient or carer to apply TENS machine
Recruitment/selection of patients	GP referral
Age, gender and ethnicity	Age - Mean (range): Acupuncture: 75 (60–90); TENS: 72 (60–83) years . Gender (M:F): 6:54. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores (median and IQ range) - pain: acupuncture 140 (96–161), TENS 101 (75–149)
Indirectness of population	No indirectness
Interventions	(n=32) Intervention 1: Acupuncture. 2 sessions of manual acupuncture weekly for 4 weeks (total 8 treatments); 1.5 inch length, 32 gauge needles; points individualised as in routine clinical practice; average 6 needles (range 2–8); sessions lasted 20 minutes. Duration 4 weeks. Concurrent medication/care: Advised to continue existing medication but not start new analgesics or physical treatment (n=28) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). 50Hz stimulation with intensity adjusted to suit the patient as in routine clinical practice; instructed to use machine at home during the day as required for up to 30 minutes per session to maximum 6 hours per day; seen twice weekly by physiotherapist for 20 minutes. Duration 4 weeks. Concurrent medication/care: Advised to continue existing medication but not start new analgesics or physical treatment
Funding	Academic or government funding (Liberton Hospital Endowment Funds)

Study (subsidiary papers)	Grant 1999[179] (Grant 1998[178])
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Gunn 1980[183]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=56)
Countries and setting	Conducted in Canada; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks + 27.3 weeks follow up (average)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-rays
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP; disabled at least 12 weeks; unresponsive to 8 weeks standard treatment; male
Exclusion criteria	None apart from above
Recruitment/selection of patients	Unresponsive to 8 weeks standard treatment between June 1976 and June 1977
Age, gender and ethnicity	Age - Mean (range): 40.6 (20 to 62) years. Gender (M:F): 100:0. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>12 weeks duration).
Extra comments	No baseline information given
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Acupuncture. Needle insertion at motor points once or twice a week; maximum 15 treatments.

Study	Gunn 1980[183]
	Duration Around 4 weeks. Concurrent medication/care: Standard clinic regimen: physiotherapy, exercise, occupational therapy, industrial assessment (n=27) Intervention 2: Usual care. Standard clinic regimen: physiotherapy, exercise, occupational therapy, industrial assessment. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Return to original or equivalent work at Mean 27.3 weeks; Group 1: 18/29, Group 2: 4/27; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Hasegawa 2014[204] (Hasegawa 2009[203])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=80)
Countries and setting	Conducted in Brazil; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 5 acupuncture sessions; follow up to day 28
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18–65 years; seeking medical assistance for acute non-specific LBP, <30 days, unrelated to specofic aetiological factors; score 4–8 cm on pain scale (0–10 cm)
Exclusion criteria	Secondary diagnosis e.g. spondyloarthropathy, infection, tumour, fracture, complete sciatalgia, previous surgery to spinal column, litigation, changed physical activity or undergone acupuncture or physical therapy in last 3 months,

Study (subsidiary papers)	Hasegawa 2014[204] (Hasegawa 2009[203])
	previous scalp acupuncture; pregnant; contraindication to anti-inflammatory drugs
Recruitment/selection of patients	Recruited from emergency department of University hospital
Age, gender and ethnicity	Age - Mean (SD): Intervention: 47.0 (9.8); sham: 43.9 (10.9) years. Gender (M:F): 29:51. Ethnicity: Caucasian: 47 + non-Caucasian: 33
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<30 days pain).
Extra comments	Baseline scores - pain: acupuncture group 6.55±1.4, sham 6.68±1.44; disability RMDI: AG 3.8±1.88, sham 4.68±2.26; SF36 function: AG 46.40±22.70, sham 55.80±19.20; SF36 physical: AG 18.10±6.5, sham 16.3±26.3; SF36 pain: AG 27.6±7.9, sham 28.8±19.1; SF36 general health: AG 54.2±5.7, sham 56.5±24.9; SF36 vitality: AG 49.4±5.3, sham 47.6±17.3; SF36 social: AG 62.5±34.6, sham 65.9±32.3; SF36 emotional: AG 57.5±41.3, sham 62.5±40.1; SF36 mental health: AG 54.3±22, sham 58.5±19.7
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Acupuncture. Acupuncture using bilateral points D, H and I and kidney, bladder and liver points of Yamamoto's method; mean 10 needles (0.20 x 13mm), inserted at an angle of 15 degrees to a depth of 0.3–0.5 cm, stimulated manually and retained for 20 minutes; 5 sessions of 30 mintues each. Duration Unclear - 5 sessions. Concurrent medication/care: 50mg sodium diclofenac every 8 hours for lumbar pain if needed, but not other medications or therapies (n=40) Intervention 2: Placebo/Sham. Acupuncture using bilateral points D, H and I and kidney, bladder and liver points of Yamamoto's method; mean 10 needles (0.20 x 13mm), inserted at an angle of 15 degrees to a depth of 0.3–0.5 cm, stimulated manually and retained for 20 minutes; 5 non-oenetrating sessions of 30 mintues each (only the handle came into contact with the skin at the same points. Duration Unclear - 5 sessions. Concurrent medication/care: 50mg sodium diclofenac every 8 hours for lumbar pain if needed, but not other medications or therapies
Funding	Academic or government funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role physical domain at 28 days; Group 1: mean 78.8 Not stated (SD 31.8); n=40, Group 2: mean 55.8 Not stated (SD 38.3); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health domain at 28 days; Group 1: mean 66.4 Not stated (SD 22.5); n=40, Group 2: mean 65.2 Not stated (SD 22.8); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function domain at 28 days; Group 1: mean 84 Not stated (SD 19.8); n=40, Group 2: mean

Study (subsidiary papers)	Hasegawa 2014[204] (Hasegawa 2009[203])
70.9 Not stated (SD 22.5); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain domain at 28 days; Group 1: mean 67.8 Not stated (SD 26.1); n=40, Group 2: mean 56.5 Not stated (SD 23.4); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health domain at 28 days; Group 1: mean 69 Not stated (SD 22.9); n=40, Group 2: mean 63.4 Not stated (SD 22.6); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality domain at 28 days; Group 1: mean 69.6 Not stated (SD 23.2); n=40, Group 2: mean 58.8 Not stated (SD 24); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social functioning domain at 28 days; Group 1: mean 89.7 Not stated (SD 17.4); n=40, Group 2: mean 82.5 Not stated (SD 25.9); n=40; Sf-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role emotional domain at 28 days; Group 1: mean 81.7 Not stated (SD 30.1); n=40, Group 2: mean 76.7 Not stated (SD 36.4); n=40; SF-36 0–100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 28 days; Group 1: mean 1.98 cm (SD 2.12); n=40, Group 2: mean 3.38 cm (SD 2.26); n=40; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 28 days; Group 1: mean 4.1 Not stated (SD 4.7); n=40, Group 2: mean 8 Not stated (SD 6.1); n=40; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Inoue 2006[242]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=31)
Countries and setting	Conducted in Japan; Setting: Acupuncture and Moxibustion Centre attached to Meiji University of Oriental Medicine
Line of therapy	Unclear
Duration of study	Intervention time: Immediately after one-off intervention
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica

Study	Inoue 2006[242]
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP only in a limited area, exacerbated by particular postures (extension, lateral bending, rotation of lumbar region or any combination of these movements)
Exclusion criteria	Leg symptoms; patients unable to accurately locate the area of pain; pain not worsened by change in posture; symptoms or x-ray findings indicate need for medication or surgery or suggested an underlying disease
Recruitment/selection of patients	Patients consulting for LBP (new referrals or re-attending)
Age, gender and ethnicity	Age - Mean (SD): Acupuncture: 68 (6); sham 70 (8) years. Gender (M:F): 21:10. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (New referrals or re-attending).
Extra comments	Baseline pain VAS scores - acupuncture 61±11, sham 61±9. All patients had previous experience of acupuncture
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Acupuncture. Needle 40mm long x 0.18mm diameter inserted to depth of 20mm at most painful point and stimulated with "sparrow pecking" method (lifting and thrusting) for 20 s. Duration Single treatment. Concurrent medication/care: Not stated (n=16) Intervention 2: Placebo/Sham. Therapist tapped the end of a guide tube on the skin at the most painful point without a needle, then acted as though they were inserting a needle there. Duration Single treatment. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at Immediately after single treatment; Group 1: mean 47 mm (SD 7); n=15, Group 2: mean 55 mm (SD 13); n=16; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Itoh 2009[245]

Study	Itoh 2009[245]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in Japan; Setting: Secondary care outpatients
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 5 weeks + follow up to 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Outpatients aged 60 or over; LBP at least 6 months; no radiation of LBP; normal neurological findings of lumbosacral nerve including deep tendon reflexes, plantar response, voluntary muscle action, straight leg raising and sensory function; not receiving acupuncture for more than 6 months
Exclusion criteria	Major trauma or systemic disease; receiving conflicting or ongoing co-interventions. Patients under drug treatment were included if there had been no change in medication or dosage for 1 month or longer
Recruitment/selection of patients	Recruited from Meiji Univeristy of Oriental Medicine Hospital
Age, gender and ethnicity	Age - Range: 61 to 81 years. Gender (M:F): 12:20. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores - pain intensity VAS: TENS 63.8±16.5, acupuncture 60.0±19.8, A+TENS 62.3±12.2, UC 63.7±19.0; RMDQ: TENS 8.2±4.1, acupuncture 7.9±3.1, A+TENS 6.8±1.2, UC 9.0±4.9
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Acupuncture. Acupuncture only: treatment for 15 minutes; BL23, BL25, BL32, BL40, BL60, GB30 and GB34; needles 0.2mm x 40mm inserted to depth of 10mm; "sparrow pecking" (alternate pulling and pushing of needle) to de qi; manipulation stopped and needles retained further 10 minutes. Duration 5 weeks. Concurrent medication/care: No co-interventions (except drugs at stable doses) (n=8) Intervention 2: Acupuncture. Acupuncture plus TENS: TENS: Treatment for 15 minutes; amplitude-modulated frequency of 122Hz (beat frequency) generated by two sinusoidal waves of 4.0 and 4.122Hz (feed frequency); electrodes placed at point with most tenderness and the near side of the point; intensity adjusted to tingling sensation of 2–3 times the patient's sensory threshold. Then acupuncture treatment for 15 minutes; BL23, BL25, BL32, BL40, BL60, GB30 and GB34; needles 0.2mm x 40mm inserted to depth of 10mm; "sparrow pecking" (alternate pulling and pushing of needle) to de qi; manipulation stopped and needles retained further 10 minutes.. Duration 5 weeks.

Study	Itoh 2009[245]
	Concurrent medication/care: No co-interventions (except drugs at stable doses) (n=8) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: Treatment for 15 minutes; amplitude-modulated frequency of 122Hz (beat frequency) generated by two sinusoidal waves of 4.0 and 4.122Hz (feed frequency); electrodes placed at point with most tenderness and the near side of the point; intensity adjusted to tingling sensation of 2–3 times the patient's sensory threshold. Duration 5 weeks. Concurrent medication/care: No co-interventions (except drugs at stable doses) (n=8) Intervention 4: Usual care. No specific treatment except topical poultice containing methylsalicylic acid if necessary. Duration 5 weeks. Concurrent medication/care: No co-interventions (except drugs at stable doses)
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS at 10 weeks; Group 1: mean 43.3 mm (SD 25.7); n=7, Group 2: mean 58 mm (SD 23.7); n=6; VAS 0–100mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 6.7 Not stated (SD 4.8); n=7, Group 2: mean 7.5 Not stated (SD 3.6); n=6; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS at 10 weeks; Group 1: mean 43.3 mm (SD 25.7); n=7, Group 2: mean 58.1 mm (SD 28.9); n=7; VAS 0–100mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 6.7 Not stated (SD 4.8); n=7, Group 2: mean 7.7 Not stated (SD 4.6); n=7; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Study	Itoh 2009[245]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 58 mm (SD 23.7); n=6; VAS 0–100m Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 7.5 Not stated (SD 3.6); n=6; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Kennedy 2008[273]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=48)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4–6 weeks; follow up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Full clinicla assessment
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Adults able to give consent; age 18–70; current episode of non-specific LBP (below lowest ribs, above inferior gluteal fold), with or without referred pain/radiation to lower extremities of up to 12 weeks duration
Exclusion criteria	Pain >12 weeks; red flags; contraindiciations to acupuncture; previous acupuncture; conflicting or ongoing treatment
Recruitment/selection of patients	Patients currently on the waitin glist for physiotherapy through referral by GP
Age, gender and ethnicity	Age - Mean (SD): Acupuncture: 46.5 (11.4); sham 44.6 (10.8). Gender (M:F): 23:25. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Up to 12 weeks duration).
Extra comments	Baseline scores - RMDQ: acupuncture 12.7±1.1, sham 12.8±1.1; pain average: acupuncture 56.2±5.7, sham 62.6±4; pain worst: acupuncture 76.4±4.5, sham 73.8±4.1, sham 52.5±6.1

Study	Kennedy 2008[273]
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Acupuncture. Western medical approach; unilateral or bilateral points chosen to effect analgesia according to each person's pain from a set range commonly used in LBP (GV3, GV4, BL23, BL25, GB29, GB30, GB31, GB34, BL36, BL40, BL56, BL60); 3–12 treatments over 4–6 weeks; once or twice a week depending on pain severity and availability of appointments; 8–13 needles stimulated manually every 5 min until de qi achieved, or for 30s using an even technique; needles retained 30 min per treatment; needles 0.25mm x 40mm. Duration 4–6 weeks. Concurrent medication/care: Continue normal activities; avoid other forms of treatment apart from routine physician management and analgesics. Advice to remain active (Back Book) (n=24) Intervention 2: Placebo/Sham. Western medical approach; unilateral or bilateral points chosen to effect analgesia according to each person's pain from a set range commonly used in LBP (GV3, GV4, BL23, BL25, GB29, GB30, GB31, GB34, BL36, BL40, BL56, BL60); 3–12 treatments over 4–6 weeks; once or twice a week depending on pain severity and availability of appointments; non-penetrating sham needles that only touched the skin; 30 min per treatment; guide tube 0.3mm x 40mm. Duration 4–6 weeks. Concurrent medication/care: Continue normal activities; avoid other forms of treatment apart from routine physician management and analgesics. Advice to remain active (Back Book)
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 3 months; Group 1: mean 26.5 Not stated (SD 24.4); n=22, Group 2: mean 40.7 Not stated (SD 26.3); n=18; VAS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 5 Not stated (SD 4.7); n=22, Group 2: mean 7.7 Not stated (SD 6.4); n=18; Roland Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kwon 2007[296]

Study	Kwon 2007[296]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in South Korea; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray, CT
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar or lumbosacral pain 3 months or longer; >20 years old; LBP chief complaint; normal neurological examination (lumbosacral nerve function, deep tendon reflexes, plantar response, voluntary muscle activation, sensory function); consent
Exclusion criteria	Potential lumbar disease (e.g. spinal tumour, infection, lumbar fracture); other diseases (e.g. bleeding disorder, dementia, epilepsy, beurogenic disorder, systemic disease; lanned lumbar surgery; acupunture within last 6 months; current systemic corticosteroids, narcotics, anticoagulants, muscle relaxants; invovlement of any legal problem related to LBP; refusal to be randomised
Recruitment/selection of patients	Hospital homepages and posters
Age, gender and ethnicity	Age - --: Not stated. Gender (M:F): 17:30. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores - pain: acupuncture 52.24±19.76, sham 51.28±21.42; function: acupuncture 6.32±3.86, sham 6.76±4.75
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Acupuncture. 3 sessions of manual acupuncture weekly for 4 weeks (12 sessions total); manual stimulation once in 20 minutes by reinforcing and reducing (lifting and thrusting the needles) until de qi; needles 0.25mm x 40mm inserted to depth of 25–30mm; points chosen as in routine clinical practice; points on back, hand and legs (SI 3, BL 62, BL 60, BL 40, CV 4, BL 23, BL 52, CV 2, GB 30. Duration 4 weeks. Concurrent medication/care: Not stated (n=25) Intervention 2: Placebo/Sham. Sham acupuncture: 3 sessions minimal acupuncture for 4 weeks (12 sessions total); manual stimulation not used; 20 minute treatment period; no de qi; needles 0.25mm x 40mm inserted into non-acupuncture points (10–20mm away from acupoints used in acupuncture group); depth 1–2mm. Duration 4

Study	Kwon 2007[296]
	weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Acupuncture, Moxibustion and Meridian Research Project of Korea Institute of Oriental Medicine)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 4 weeks; Group 1: mean 33 mm (SD 15.75); n=25, Group 2: mean 35.52 mm (SD 15.22); n=25; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 4 weeks; Group 1: mean 5.16 Not stated (SD 4.86); n=25, Group 2: mean 4.92 Not stated (SD 4.83); n=25; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome: Adverse effects at 4 weeks; Group 1: 1/25, Group 2: 2/25; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Lehmann 1986[317]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=54)
Countries and setting	Conducted in USA; Setting: Orthopaedic clinic
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 weeks intervention + follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic disabling LBP; demonstrate at least minimal levels of motivation; level of disability warrants in-patient

Study	Lehmann 1986[317]
	treatment; patients apply for admission; admitted to in-patient unit rehabilitation programme
Exclusion criteria	Candidates for lumbar surgery; LBP <3 months; pregnant; osteomyelitis of spine; discitis; tumour; ankylosing spondylitits; vertebral fracturs; structural scoliosis
Recruitment/selection of patients	Patients with chronic disabling LBP screened in orthopaedic clinic
Age, gender and ethnicity	Age - Mean (range): 40 (25 to 55) years. Gender (M:F): 46:17. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	No baseline scores reported
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Acupuncture. Electroacupuncture; twice weekly; biphasic wave at 2–4Hz, increased to patient's level of tolerance; visible muscle contractions usually occured; stimulation loci were along the inner and outer bladder meridian if pain lateral (sciatica); hoku point and additional points usually stimulated according to patient's pattern of pain; other aches and pains often treated concomitantly. Duration 3 weeks. Concurrent medication/care: Not stated (n=18) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS over centre of pain; in patients with significant leg pain, stimulation also over related nerve trunk; daily except weekends for 3 weeks; pulse width 250/sec, frequency 60Hz; stimulated with live battery then intensity reduced until patient could not feel sensation (subthreshold intensity), continued with live battery. Duration 3 weeks. Concurrent medication/care: Not stated (n=18) Intervention 3: Placebo/Sham. TENS over centre of pain; in patients with significant leg pain, stimulation also over related nerve trunk; daily except weekends for 3 weeks; pulse width 250/sec, frequency 60Hz; stimulated with live battery then intensity reduced until patient could not feel sensation (subthreshold intensity), continued with dead battery (sham TENS). Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (NIHR grants)
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define; Responder criteria at follow up

Study	Leibing 2002[318]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=131)
Countries and setting	Conducted in Germany; Setting: Secondary care: orthopaedic outpatients
Line of therapy	Unclear
Duration of study	Intervention + follow up: 12 weeks intervention + follow up to 9 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18–65 years; non-radiating LBP for at least 6 months
Exclusion criteria	Abnormal neurological status; concomitant severe disease; psychiatric illness; current psychotherapy; pathological lumbosacral anterior-posterior and lateral x-rays (excpet for minor degenerative changes); rheumatic inflammatory disease; planned hospitalisation; refusal of participation; relocation
Recruitment/selection of patients	Consecutive sample
Age, gender and ethnicity	Age - Mean (SD): 48.1 (9.7) years. Gender (M:F): 55:76. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores - pain: acupuncture 4.8±1.8, sham 5.3±1.8, UC 5.4±1.9; pain disability: acupuncture 25.2±13.4, sham 25.5±10.4, UC 24.9±13.7; HADS: acupuncture 12.7±7.9, sham 12.5±6.7, UC 16.2±8.2
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Acupuncture. 20 sessions, each 30 minutes, over 12 weeks; 1st 2 weeks: sessions 5 times a week; next 10 weeks, once a week. Combined traditional body- and ear-acupuncture; 20 fixed body points (9 bilateral, 2 single) and 6 on ear (alternately on one ear) needled; depth depended on location of points and body build (10–30mm); manually stimulated until de qi lasting 5–20s; body needles (0.3mm x 40mm) in situ 30 minutes; ear needles (0.23mm thickness, small or medium) not stimulated; left in situ 1 week. . Duration 12 weeks. Concurrent medication/care: Standardised active physiotherapy of 26 sessions (each 30 minutes) over 12 weeks. Continue existing medication; not start new analgesic or treatment (n=45) Intervention 2: Placebo/Sham. 20 sessions, each 30 minutes, over 12 weeks; 1st 2 weeks: sessions 5 times a week; next 10 weeks, once a week. Combined traditional body- and ear-acupuncture; needles inserted superficially 10–20mm distant to acupuncture points, outside meridians; not stimulated; body needles (0.3mm x 40mm) in situ 30 minutes; ear needles (0.23mm thickness, small or medium) not stimulated; left in situ 1 week. . Duration 12 weeks.

Study	Leibing 2002[318]
	Concurrent medication/care: Standardised active physiotherapy of 26 sessions (each 30 minutes) over 12 weeks. Continue existing medication; not start new analgesic or treatment (n=46) Intervention 3: Usual care. Standardised active physiotherapy of 26 sessions (each 30 minutes) over 12 weeks. Duration 12 weeks. Concurrent medication/care: Continue existing medication; not start new analgesic or treatment
Funding	Academic or government funding (Ministry of Education, Science, Research and Technology, Federal Republic of Germany)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain severity at 12 weeks; Group 1: mean -2.7 cm (SD 2.2); n=40, Group 2: mean -2.1 cm (SD 2.2); n=45; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain severity at 9 months; Group 1: mean -1.7 cm (SD 1.8); n=40, Group 2: mean -1.8 cm (SD 2.2); n=45; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Pain disability Index at 12 weeks; Group 1: mean -13.9 Not stated (SD 15); n=40, Group 2: mean -9.7 Not stated (SD 10.5); n=45; Pain Disability Index 0–70 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain Disability Index at 9 months; Group 1: mean -9 Not stated (SD 12.5); n=40, Group 2: mean -8.5 Not stated (SD 11.3); n=45; Pain Disability Index 0–70 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: HADS at 12 weeks; Group 1: mean -4 Not stated (SD 5.8); n=40, Group 2: mean -1.4 Not stated (SD 4.7); n=45; HADS 0–42 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: HADS at 9 months; Group 1: mean -3.6 Not stated (SD 4.8); n=40, Group 2: mean -2.1 Not stated (SD 5.2); n=45; HADS 0–42 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain severity at 12 weeks; Group 1: mean -2.7 cm (SD 2.2); n=40, Group 2: mean -1 cm (SD 1.7); n=46;

Study	Leibing 2002[318]
VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain severity at 9 months; Group 1: mean -1.7 cm (SD 1.8); n=40, Group 2: mean -0.9 cm (SD 2); n=46; VAS 0–10 cm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Pain Disability Index at 12 weeks; Group 1: mean -13.9 Not stated (SD 15); n=40, Group 2: mean -2.6 Not stated (SD 7.8); n=46; Pain Disability Index 0–70 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain Disability Index at 9 months; Group 1: mean -9 Not stated (SD 12.5); n=40, Group 2: mean -2.3 Not stated (SD 10); n=46; Pain Disability Index 0–70 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: HADS at 12 weeks; Group 1: mean -4 Not stated (SD 5.8); n=40, Group 2: mean -1.2 Not stated (SD 3.8); n=46; Pain Disability Index 0–42 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: HADS at 9 months; Group 1: mean -3.6 Not stated (SD 4.8); n=40, Group 2: mean -1.3 Not stated (SD 5.5); n=46; HADS 0–42 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Liu 2010[330]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=69)
Countries and setting	Conducted in China; Setting: Secondary care outpatients
Line of therapy	Unclear
Duration of study	Intervention time: 5 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable

Study	Liu 2010[330]
Inclusion criteria	Acute LBP, restricted movements or accompanied with radiating leg pain; duration <2 weeks; no history of back pain in past 4 weeks
Exclusion criteria	Lumbar trauma, spine-derived pain (tumour, inflammation, infection, fracture, cauda equina syndrome); muscular weakness, sensory paralysis, weakness or hyperfunction of tendon reflex; history of peptic ulcer; recent medical history of NSAID or anticoagulant; allergic to NSAIDs; severe abnormal function of heart, liver or kidney
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Range of means: 35 (8.95) to 38.17 (10.21) between groups. Gender (M:F): 40:29. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<2 weeks pain).
Extra comments	Baseline scores - pain NRS: acupuncture 6.25±1.07, combi 6.66±0.97, drug 5.98±0.87; RMDQ: acupuncture 10.85±2.92, combi 12.72±2.37, drug 11.87±2.80
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Acupuncture. Acupuncture only: The patient stood, was asked to bend, extend and rotate the waist within tolerance; Ex-UE 7 and BL40 punctured with needles 0.3mm diameter x 40mm length. Patietn sat or lay prone and adjunct points punctured: SI 3, BL62 for pain in Governor Vessl; SI 6, BL 60 for pain in Bladder meridian; TE5, GB 41 and GB 34 for pain in Gallbladder meridian or Belt Vessel. Needles retained 30 minutes; manipulated every 10 minutes; once daily for 5 days. Duration 5 days. Concurrent medication/care: Not stated (n=25) Intervention 2: Acupuncture. Acupuncture plus diclofenac: The patient stood, was asked to bend, extend and rotate the waist within tolerance; Ex-UE 7 and BL40 punctured with needles 0.3mm diameter x 40mm length. Patietn sat or lay prone and adjunct points punctured: SI 3, BL62 for pain in Governor Vessl; SI 6, BL 60 for pain in Bladder meridian; TE5, GB 41 and GB 34 for pain in Gallbladder meridian or Belt Vessel. Needles retained 30 minutes; manipulated every 10 minutes; once daily for 5 days. Duration 5 days. Concurrent medication/care: Diclofenac sodium orally 50mg twice a day (n=20) Intervention 3: Non-steroidal anti-inflammatory drugs - Diclofenac. Diclofenac sodium orally 50mg twice a day. Duration 5 days. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus DICLOFENAC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Numerical Rating Scale (NRS) at 5 days; Group 1: mean 2.65 Not stated (SD 1.22); n=24, Group 2: mean 3.02 Not stated (SD 1.56); n=20; NRS 0–10

Study	Liu 2010[330]
Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 5 days; Group 1: mean 6.45 Not stated (SD 2.44); n=24, Group 2: mean 6.25 Not stated (SD 2.99); n=20; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus DICLOFENAC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Numerical Rating Scale (NRS) at 5 days; Group 1: mean 1.74 Not stated (SD 1.12); n=25, Group 2: mean 3.02 Not stated (SD 1.56); n=20; NRS 0–10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 5 days; Group 1: mean 4.44 Not stated (SD 2.57); n=25, Group 2: mean 6.25 Not stated (SD 2.99); n=20; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Marignan 2014[359]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=12)
Countries and setting	Conducted in France; Setting: not reported
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate intervention and follow-up
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP >2 years. No pain or analgesic mediction used for past 3 months, no sleeping pills used for ≥1 month. No lesions in lumbar spine. No evidence OA, no cortisone injection for ≥1 year, ≥3 fingers of shoulder tilting.

Study	Marignan 2014[359]
Exclusion criteria	None reported
Recruitment/selection of patients	random selection
Age, gender and ethnicity	Age - Range: 30–40 years. Gender (M:F): 100% male. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>2 years pain).
Extra comments	Baseline details not reported
Indirectness of population	Serious indirectness: All male patients recruited
Interventions	(n=6) Intervention 1: Acupuncture. Verum auriculotherapy (ear acupuncture). Maximum of 5 specific points stimulated in each ear pavillion. Stimulation produced by electrical current with manual needling for a duration of 30 seconds for each point. If shoulder tilt remained after a point was treated, another point was found and treated. Patient told to stand and ambulate for 1 minute after treatment.. Duration Immediate. Concurrent medication/care: None reported (n=6) Intervention 2: Placebo/Sham. As for the acupuncture arm, but at points utside the therapeutic ones.. Duration Immediate. Concurrent medication/care: None reported
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS) 0–10 at Immediate; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Meng 2003[370]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=55)
Countries and setting	Conducted in USA; Setting: Primary sites of recruitment were the private surgeries and clinics of the Hospital for Special Surgery, an orthopaedic and rheumatic disease referral centre, and the New York-Presbyterian Hospital

Study	Meng 2003[370]
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic non-specific LBP for at least 12 weeks; if associated buttock.leg pain, back pain must be the chief complaint; age 60 years and over; imaging (x-ray, CT or MRI) of lumbar spin in last year
Exclusion criteria	Spinal tumour, infection or fracture; bleeding diathesis; epilepsy; cardiac arrhythmia or pacemaker; dementia; any serious active medical condition that precluded safe participation (i.e. MI in last 3 months); neurological involvement (loss of senstion or reflexes or motor weakness); planned or scheduled lumbar surgery; history of lumbar surgery; signficant psychiatric disability; inflammatory arthriris; prior use of acupuncture for back pain; current use of systemic corticosteroids, muscle relaxants, narcotic medications, anticoagulants; epidural steroid injections in last 3 months; involved in litigation related to back pain; refusal to be randomised
Recruitment/selection of patients	Screened by physical examination by physician
Age, gender and ethnicity	Age - Mean (SD): Acupuncture: 72 (5); control: 70 (6) years . Gender (M:F): 22:33. Ethnicity: Caucasian: acupunture 28, control 19; African-American: 1 and 4; Hispanic 2 and 1
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>12 weeks pain).
Extra comments	Baseline scores - RDQ: acupuncture 9.8±3.6, control 11.8±5.3, pain VAS: acupuncture 1.6±1, control 1.7±1
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Acupuncture. Acupuncture twice a week for 5 weeks; 30-gauge needles with electrical stimulation at 4–6 Hz with a pulse duration of 0.5ms; de qi responses; 10–14 needles per session, removed after 20 minutes; 10 local points: UB23, UB24, UB25 and UB28 bilaterally and Du3 and Du4 (midline), plus up to 4 additional needles if buttock or leg pain selected from UB36, 54, 37 and 40 and GB31 and 31.. Duration 5 weeks. Concurrent medication/care: Standard therapy: NSAIDs, aspirin and non-narcotic analgesics allowed; patients asked to stay on same medications and not start new ones. Allowed to continue back exercsies, i.e. physical therapy or home exercise regimen. Narcotic medications, muscle relaxants, TENS, epidural steroid injections and trigger point injections were not allowed. (n=24) Intervention 2: Usual care. Standard therapy: NSAIDs, aspirin and non-narcotic analgesics allowed; patients asked to stay on same medications and not start new ones. Allowed to continue back exercsies, i.e. physical therapy or home exercise regimen. Narcotic medications, muscle relaxants, TENS, epidural steroid injections and trigger point

Study	Meng 2003[370]
	injections were not allowed.. Duration 5 weeks. Concurrent medication/care: None apart from above
Funding	Academic or government funding (New York Chapter of the Arthritis Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Roland Disability Questionnaire at 6 weeks; Group 1: mean -3.3 Not stated (SD 3.7); n=31, Group 2: mean -0.6 Not stated (SD 2.7); n=24; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Molsberger 2002[379]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=186)
Countries and setting	Conducted in Germany; Setting: Rehabilitation hospital in-patients
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 weeks intervention + follow up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP 6 weeks or longer; average pain score 50mm or more on 100mm VAS in last week; age 20–60 years; ability to communicate in German; no sciatica or othe rneurological disorders; no history of disc or spin surgery; no systemic bone or joint disorders (e.g. rheumatoid arthritis); no previous treatment with acupuncture; no overt psychiatric illness; no pregnancy; not dependent on regular intake of analgesics; no incapacity for work longer than 6 months preceding the trial; not currently awaiting decision on application for pension or disability benefits
Exclusion criteria	None apart from above
Recruitment/selection of patients	Consecutive inpatietns of a rehabilitation hospital

Study	Molsberger 2002[379]
Age, gender and ethnicity	Age - Mean (SD): 50 (7) years. Gender (M:F): 97:89. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>6 weeks duration).
Extra comments	Baseline scores - pain intensity: acupuncture 68±17, sham 64±11, UC 67±14
Indirectness of population	No indirectness
Interventions	(n=65) Intervention 1: Acupuncture. 12 acupuncture treatments ; 3/week; each 30 minutes; local points: urinary bladder 23, 25, gallbladder 30; distal points: urinary bladder 40, 60 and gallbladder 34; additionally up to 4 ah shi points; insertion 1–10 cm; manipulation mild to strong; de qi achieved. Duration 4 weeks. Concurrent medication/care: Conventional conservative orthopaedic therapy (n=61) Intervention 2: Placebo/Sham. 12 sham acupuncture treatments ; 3/week; each 30 minutes; 10 needles applied superficially (<1 cm) at non-acupuncture points of the lumbar region (5 on either side of the back). Duration 4 weeks. Concurrent medication/care: Conventional conservative orthopaedic therapy (n=60) Intervention 3: Usual care. Conventional conservative orthopaedic therapy: standardised daily physiotherapy, physical exercise, back school, mud packs, infra-red heat therapy; on demand they received 50mg diclofenac three times a day. Duration 4 weeks. Concurrent medication/care: None apart from above
Funding	Academic or government funding (German Ministry of Education, Science and Research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity at 3 months; Group 1: mean 23 mm (SD 20); n=47, Group 2: mean 43 mm (SD 23); n=41; VAS 0–100mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Responder (pain relief at least 50%) at 3 months; Group 1: 36/47, Group 2: 12/41; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity at 3 months; Group 1: mean 23 mm (SD 20); n=47, Group 2: mean 52 mm (SD 19); n=36; VAS 0–100mm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Molsberger 2002[379]
Protocol outcome 2: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Responder (pain relief at least 50%) at 3 months; Group 1: 36/47, Group 2: 5/36; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Muller 2005[396] (Giles 2003[169])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=115)
Countries and setting	Conducted in Australia; Setting: Secondary care multidisciplinary spinal pain unit
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 9 weeks; follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History and examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic (>13 weeks) "mechanical" spinal pain syndromes; at least 17 years of age; only those who received exclusively their randomly allocated treatment regimen during the 9-week treatment period were included
Exclusion criteria	nerve root involvement, spinal anomalies other than sacralization or lumbarization, pathological conditions other than mild to moderate osteoarthrosis, greater than a grade 1 spondylolisthesis of L5 on SI, previous spinal surgery, or leg length inequality of >9 mm with postural scoliosis
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Median (IQR): 39 (29–46) years. Gender (M:F): 33:29. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>13 weeks pain).
Extra comments	Baseline scores (median, IQ range) - pain VAS: manipulation 5 (3–8), acupunture 6 (4.3–8), medication 5 (3–7);

Study (subsidiary papers)	Muller 2005[396] (Giles 2003[169])
	Oswestry Back Pain Index: manipulation 24 (10–32), acupunture 27 (18–41), medication 28 (20–42); SF36: manipulation 57 (38–67), acupuncture 46 (32–56), medication 39 (25–65)
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Acupuncture. Acupuncture was performed using sterile HWATO Chinese Acupuncture Guide Tube Needles (50 mm long; 0.25-mm gauge) for 20-minute appointments. For each patient, 8 to 10 needles were placed in local paraspinal intramuscular maximum pain areas, and approximately 5 needles were placed in distal acupuncture point meridians according to the "near and far technique (upper limb, lower limb, or scalp). Once patients could satisfactorily tolerate the needles, needle agitation was performed by turning or 'flicking' the needles at approximately 5-minute intervals. Two 20-minute office visits per week defined this intervention until patients became asymptomatic or achieved a status of feeling that they had achieved acceptable pain relief.. Duration 9 weeks. Concurrent medication/care: None (n=43) Intervention 2: Paracetamol. Medication patients were normally given celecoxib (Celebrex) (200 to 400 mg/d; 27 patients) unless celecoxib had previously been tried; the next drug of choice was rofecoxib (Vioxx) (12,5 to 25 mg/d; 11 patients), followed by acetaminophen (paracetamol) (500-mg tablets 2–6 per day; 5 patients). These doses were typical of those used in daily practice and conformed to the MIMS Australia (www.mims,com,au) pharmaceutical product information publication and to the manufacturer's Consumer Medicine Information leaflet. In addition, doses were related to patients' weight with the severity of symptoms playing a minor role. In 4 cases where celecoxib was prescribed at 200 mg/d, the medical physician increased the dose to 400 mg/d, when indicated by symptoms at review and if there had been no adverse reaction. Because all patients had already tried some form of medication, it was necessary to have a choice of 3 drugs from which to choose one that had not already been tried by a patient. Additional fortnightly 20-minute office visits defined this intervention until patients became asymptomatic or achieved a status of feeling that they had achieved acceptable pain relief.. Duration 9 weeks. Concurrent medication/care: None (n=36) Intervention 3: Manual therapy - Manipulation. High-velocity low-amplitude spinal manipulative thrust to a joint was performed as judged safe and usual treatment by the treating chiropractor for the spinal level of involvement to mobilize the spinal joints at that level. Two 20-minute office visits per week defined this intervention until patients became asymptomatic or achieved a status of feeling that they had achieved acceptable pain relief. Duration 9 weeks. Concurrent medication/care: None
Funding	Academic or government funding (Queensland State Gevernment Health Department)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus MANIPULATION (HIGH VELOCITY LOW AMPLITUDE)	

Study (subsidiary papers)	Muller 2005[396] (Giles 2003[169])
Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-36 at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Shin 2013[474] (Lee 2012[313], Shin 2011[475])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=58)
Countries and setting	Conducted in South Korea; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Single intervention and follow up to 24 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray and MRI
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute LBP (<4 weeks); experiencing discomfort walking and requiring assistance such as wheelchairs or stretchers; age 20 to 60 years; with or without radiating pain to the limb; Oswestry Disability Index 60% or more (severe disability)
Exclusion criteria	Serious disease that could cause LBP (e.g. cancer, vertebral fracture, spinal infection); chronic disease that could interfere with effect of treatmetn or interpretation of results (e.g. cardiovascular disease, diabetic neuropathy, fibromyalgia); progressive neurological deficit or severe neurological symptoms; contraindications to acupuncture (e.g. haemorrhagic disease, blood coagulation disorders); current intake of corticosteroids, immunosuppressants,

Study (subsidiary papers)	Shin 2013[474] (Lee 2012[313], Shin 2011[475])
	psychiatric medicine; GI side effects after taking NSAIDs; current treatment for GI disease; pregnancy; reluctance to accept treatments or imaging in the study
Recruitment/selection of patients	Recruited from 2 hospitals
Age, gender and ethnicity	Age - Mean (SD): 38.31 (7.97) years. Gender (M:F): 34:24. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<4 weeks pain).
Extra comments	Baseline scores - pain NRS: acupuncture 8.33±1.91, injection 8.12±1.63; ODI: acupuncture 85.72±10.46, injection 88.34± 7.71
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Acupuncture. Motion style acupuncture: 40mm x 0.25mm needles inserted to depth of 10–15mm at GV16 and bilaterally at LR2 and LI 11; no maniuplation or de qi but manual stimulation of needle at GV16. With the needles in place, patient assisted to walk with gradual withdrawal of support; once walking unaided, needles removed and patient walks for further 1–2 minutes; average 20 minutes per session; 1 session only. Duration 1 session only. Concurrent medication/care: Advice to remain active if possible within the range of non-aggravation of symptoms (n=29) Intervention 2: Non-steroidal anti-inflammatory drugs - Diclofenac. Intramuscular injection diclofenac sodium 75mg in gluteal region. Duration 1 treatment only. Concurrent medication/care: Advice to remain active if possible within the range of non-aggravation of symptoms
Funding	Academic or government funding (Jaseng Medical Foundation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus DICLOFENAC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: LBP numerical rating scale at 4 weeks; Group 1: mean 6.41 Not stated (SD 2.45); n=29, Group 2: mean 4.91 Not stated (SD 2.94); n=29; NRS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: LBP numerical rating scale at 24 weeks; Group 1: mean 6.64 Not stated (SD 2.47); n=29, Group 2: mean 6.84 Not stated (SD 1.9); n=29; NRS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Oswestry Disability Index at 4 weeks; Group 1: mean 62.72 Not stated (SD 21.88); n=29, Group 2: mean 45.84 Not stated (SD 29.58); n=29; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry Disability Index at 24 weeks; Group 1: mean 73.23 Not stated (SD 20.24); n=29, Group 2: mean 80.83 Not stated (SD 13.58); n=29; Oswestry

Study (subsidiary papers)	Shin 2013[474] (Lee 2012[313], Shin 2011[475])
Disability Index Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Inpatient care for acute LBP at 24 weeks; Group 1: 19/29, Group 2: 27/29; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Duration of inpatient care for acute LBP at 24 weeks; Group 1: mean 12.58 days (SD 8.24); n=29, Group 2: mean 17.96 days (SD 12.17); n=29; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study (subsidiary papers)	Thomas 2006[516] (Thomas 1999[515], Thomas 2007[517])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=241)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 months treatment + follow up to 24 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 to 65 years; non-specific LBP for 4–52 weeks
Exclusion criteria	Current acupuncture treatment; possible spinal disease (e.g. carcinoma); severe or progressive motor weakness; prolapsed central disc; past spinal surgery; bleeding disorders (e.g. haemophilia); pending litigation
Recruitment/selection of patients	Assessed as suitable for primary care management by GP
Age, gender and ethnicity	Age - Mean (SD): Acupuncture: 42.0 (10.8); control: 44.0 (10.4) years. Gender (M:F): 94:145. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (4–52 weeks duration).
Extra comments	Baseline scores - SF36 pain: acupuncture 30.8±16.2, UC 30.4±18; ODI disability: acupuncture 33.7±15.4, UC 31.4±14.2; McGill present pain: acupuncture 2.64±1, UC 2.7±1
Indirectness of population	No indirectness

Study (subsidiary papers)	Thomas 2006[516] (Thomas 1999[515], Thomas 2007[517])
Interventions	(n=160) Intervention 1: Acupuncture. Up to 10 individualised acupuncture sessions over 3 months. Duration 3 months. Concurrent medication/care: Not stated (n=81) Intervention 2: Usual care. NHS treatment according to GP assessment of need. Duration 3 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (UK NHS Executive health technology programme)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-36 Pain at 12 months; Group 1: mean 64 Not stated (SD 25.6); n=147, Group 2: mean 58.3 Not stated (SD 22.2); n=68; SF-36 Pain 0–100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: McGill Present Pain Index at 12 months; Group 1: mean 1.43 Not stated (SD 1.1); n=35, Group 2: mean 1.53 Not stated (SD 0.9); n=57; McGill Present Pain Index 0 to 5 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Oswestry Pain Disability Index at 12 months; Group 1: mean 20.6 Not stated (SD 19.3); n=134, Group 2: mean 19.6 Not stated (SD 15.4); n=57; Oswestry Pain Disability Index 0–100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Tsukayama 2002[528]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in Japan; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks

Study	Tsukayama 2002[528]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP without sciatica; at least 2 week history; >20 years old
Exclusion criteria	Radiculopathy or neuropathy in lower extremity; fracture, tumour, infection or internal disease; other general health problems; other conflicting or ongoing treatments
Recruitment/selection of patients	Recruited by distributing leaflets in city centre
Age, gender and ethnicity	Age - Mean (SD): Electroacupunture: 47 (10); TENS: 43 (13) years. Gender (M:F): 3:16. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>2 weeks duration).
Extra comments	Baseline scores - JOA (back pain profile recommended by Japanese Orthopaedic Association): EA 16.3±2.3, TENS 15.6±3.7
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Acupuncture. Treated twice a week for 2 weeks (4 sessions total); points selected for tenderness and muscle bands on lower back and buttock; 4 points bilaterally (8 in all); most frequently used were BL23 and BL26.; needles 0.20mm x 50mm or 0.24mm x 60mm (chosen for patient's stature and volume of subcutaneous fat); needles inserted into muscles (mean depth around 20mm); electro-stimulation with frequency 1 Hz applied for 15 minutes; intensity adjusted to maximum comfortable level and muscle contraction observed; press tack needles (1.3mm long) inserted after electroacupuncture at 4 of teh 8 chosen points in each session and left in situ.. Duration 2 weeks. Concurrent medication/care: Not stated (n=10) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Gel type disposable electrodes 20 x 30mm used for 8 points; electrostimulation as for electroacupuncture group; intensity adjusted to maximum comfortable level; muscle contraction observed; after each session, poultice contining methyl salicylate, menthol and antihistamine prescribed to be applied at home in between treatments, to the low back. Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Foundation for Training and Licensure Examination in Anma-Massage-Acupressure, Acupuncture and Moxibustion, and Tsukuba College of Technology)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months

Study	Tsukayama 2002[528]
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 2 weeks; Group 1: mean 56 mm (SD 9.6); n=9, Group 2: mean 72 mm (SD 9.6); n=10; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Back pain profile recommended by Japanese Orthopaedic Association (JOA score): 2 of 6 categories used (subjective symptoms and restriction of daily activities) at 17 days; Group 1: mean 2.222 Points (SD 0.6); n=9, Group 2: mean 0.802 Points (SD 1.3); n=10; JOA (only categories Ia [low back pain], Ic [gait] and III [restriction of ADL] used out of 6 categories in all in the scale) 0–20 points Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Adverse events at 2 weeks; Group 1: 3/10, Group 2: 3/10; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Vas 2012[544]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=275)
Countries and setting	Conducted in Spain; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 weeks treatmetn + follow up to 48 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	New episode (first in last 6 months) non-specific LBP with or without referred or radicular pain; initiated <2 weeks previously; no prior experience of acupuncture; age 18 to 65 years; infomred consent
Exclusion criteria	>1 absence from work for LBP in previous 6 months; specific pathology causing LBP; generalised dermatopathologies;

Study	Vas 2012[544]
	treatment with dicoumarol anticoagulants; pregnancy; inability or unwillingness to complete questionnaire or answer questions
Recruitment/selection of patients	Recruited by GPs
Age, gender and ethnicity	Age - Range of means: 41.2 (12.0) to 44.0 (9.4) between 4 groups. Gender (M:F): 114:161. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<2 weeks duration (new episode in last 6 months)).
Extra comments	Baseline scores - pain intensity: acupuncture 72.4±14.9, sham 71.5±18.3, placebo 68.3±19.5, UC 69.5±18.0; RMQ: acupuncture 13.4±4.6, sham 12.6±6.3, placebo 14.1±5.2, UC 12.4±5.1
Indirectness of population	No indirectness
Interventions	(n=68) Intervention 1: Acupuncture. Five 20-minute sessions over 2 weeks; individualised points seleted on teh basis of pain characteristics and location and puntured following criteria of traditional Chinese medicine. Duration 2 weeks. Concurrent medication/care: Conventional treatment (analgesics, NSAIDs, myorelaxant drugs, posture recommendations) (n=68) Intervention 2: Placebo/Sham. Sham acupuncture: non-specific points selected, punctured as for true acupuncture group. Duration 2 weeks. Concurrent medication/care: Conventional treatment (analgesics, NSAIDs, myorelaxant drugs, posture recommendations) (n=69) Intervention 3: Placebo/Sham. Placebo acupuncture: points selected and momentary pressure applied with semiblunted needle fitted with guide tube. Duration 2 weeks. Concurrent medication/care: Conventional treatment (analgesics, NSAIDs, myorelaxant drugs, posture recommendations) (n=70) Intervention 4: Usual care. Conventional treatment (analgesics, NSAIDs, myorelaxant drugs, posture recommendations). Duration 2 weeks. Concurrent medication/care: None apart from above
Funding	Academic or government funding (Spanish Ministry of Health and Consumer Affairs (Carlos III Institute) and Andalusian Public Health System)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Continuing pain from initial LBP episode; true versus placebo at 3 months; Group 1: 5/51, Group 2: 11/51; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: Continuing pain from initial LBP episode; true versus sham at 3 months; Group 1: 5/51, Group 2: 8/58; Risk of bias: High; Indirectness of outcome: No

Study	Vas 2012[544]
indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Continuing pain from initial LBP episode; true versus placebo at 12 months; Group 1: 0/51, Group 2: 3/49; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Continuing pain from initial LBP episode; true versus sham at 12 months; Group 1: 0/51, Group 2: 7/53; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Occupational incapacity due to LBP; true versus placebo at 3 months; Group 1: 0/39, Group 2: 1/36; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Occupational incapacity due to LBP; true versus sham at 3 months; Group 1: 0/39, Group 2: 2/47; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Occupational incapacity due to LBP; true versus placebo at 12 months; Group 1: 4/39, Group 2: 4/34; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Occupational incapacity due to LBP; true versus sham at 12 months; Group 1: 4/39, Group 2: 0/43; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome: Side effects (pain after treatment); true versus placebo at 3 weeks; Group 1: 3/68, Group 2: 2/69; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Side effects (pain after treatment); true versus sham at 3 weeks; Group 1: 3/68, Group 2: 3/69; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome: Clinically relevant improvement in Roland Morris Questionnaire (35% or more improvement); true versus placebo at 3 weeks; Group 1: 50/68, Group 2: 45/69; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Clinically relevant improvement in Roland Morris Questionnaire (35% or more improvement); true versus sham at 3 weeks; Group 1: 50/68, Group 2: 51/68; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Continuing pain from initial LBP episode; true versus usual care at 3 months; Group 1: 5/51, Group 2: 10/60; Risk of bias: High; Indirectness of outcome: No indirectness	

Study	Vas 2012[544]
	Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Continuing pain from initial LBP episode; true versus usual care at 12 months; Group 1: 0/51, Group 2: 0/57; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Occupational incapacity due to LBP; true versus usual care at 3 months; Group 1: 0/39, Group 2: 0/50; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Occupational incapacity due to LBP; true versus usual care at 12 months; Group 1: 4/39, Group 2: 8/48; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome: Clinically relevant improvement in Roland Morris Questionnaire (35% or more improvement); true versus usual care at 3 weeks; Group 1: 50/68, Group 2: 31/70; Risk of bias: Low; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Weiss 2013[564]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=156)
Countries and setting	Conducted in Germany; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 weeks + follow up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination

Study	Weiss 2013[564]
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP with duration of at leat 6 months and age 25–75
Exclusion criteria	Contraindictions to acupuncture e.g. anticoagulation with phenprocoumon or warfarin, coagulation disorders or thrombocytopenia, poor fluency in German language, insufficient adherence, recent surgical treatment, herniated veterbal discs.
Recruitment/selection of patients	Recruited from inpatient rehabilitation programme
Age, gender and ethnicity	Age - Mean (SD): 50.7 (7.7) years. Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores - SF36 physical function: acupuncture 71.2±17.7, control 69.8±19; SF36 physical role: acupuncture 60.1±37.7, control 53.3±39; SF36 bodily pain: acupuncture 41.2±17.7, control 36±20; SF36 general health: acupuncture 55.2±17, control 55.6±19.1, SF36 vitality: acupuncture 53.2±21.7, control 50.8±26.9; SF36 social: acupuncture 77.9±22.4, control 76.5±22.7; SF36 emotional: acupuncture 89.4±26.7, control 86±29.4; SF36 mental: acupuncture 67.3±22, control 64.7±22.5
Indirectness of population	No indirectness
Interventions	(n=79) Intervention 1: Acupuncture. Acupuncture twice weekly; points chosens individually; needles 0.25 x 25mm or 0.25 x 13mm; duration of session 30–40 minutes; Tuina massage and magnet lamp additionally used at discretion of Traditional Chinese Medicine physicians; patients advised to rest for 30 minutes after sessions. Duration 3 weeks. Concurrent medication/care: Standardised 21-day inpatient rehabilitation programme according to current guidelines (n=77) Intervention 2: Usual care. Standardised 21-day inpatient rehabilitation programme according to current guidelines. Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36 Physical function at 3 months; Group 1: mean -3.6 % (SD 22); n=74, Group 2: mean -11.8 % (SD 18.6); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical role at 3 months; Group 1: mean -1.6 % (SD 45.3); n=74, Group 2: mean -13.3 % (SD 35.7); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Study	Weiss 2013[564]
- Actual outcome: SF-36 Bodily pain at 3 months; Group 1: mean 8.3 % (SD 27); n=74, Group 2: mean 3.8 % (SD 21.7); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 3 months; Group 1: mean -2 % (SD 18.3); n=74, Group 2: mean -9.4 % (SD 18.6); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Vitality at 3 months; Group 1: mean 2.8 % (SD 19.3); n=74, Group 2: mean -7.3 % (SD 22.6); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social functioning at 3 months; Group 1: mean -0.8 % (SD 22.2); n=74, Group 2: mean -8 % (SD 26.1); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Emotional role at 3 months; Group 1: mean -10.7 % (SD 36.5); n=74, Group 2: mean -24.1 % (SD 45.1); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 3 months; Group 1: mean -1.5 % (SD 21.4); n=74, Group 2: mean -6.1 % (SD 21.2); n=69; SF-36 0–100% Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Responder criteria at follow-up - Actual outcome: Improvement in pain on sitting/standing at 3 months; Group 1: 47/74, Group 2: 25/69; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Improvement in pain on bearing loads <5kg at 3 months; Group 1: 20/74, Group 2: 11/69; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Improvement in pain on bearing loads 10kg or more at 3 months; Group 1: 39/74, Group 2: 19/69; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Improvement in pain on walking at 3 months; Group 1: 27/74, Group 2: 16/69; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Improvement in frequency of prickling in hands or feet at 3 months; Group 1: 23/74, Group 2: 9/69; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Witt 2006[576]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=3093)
Countries and setting	Conducted in Germany
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months

Study	Witt 2006[576]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Clinical diagnosis of chronic low back pain with disease duration of more than 6 months; age > 18 years.
Exclusion criteria	Protrusion or prolapse of one or more intervertebral discs with concurrent neurologic symptoms; prior vertebral column surgery; infectious spondylopathy; low back pain caused by inflammatory, malignant, or autoimmune disease; congenital deformation of the spine, except for slight lordosis or scoliosis; compression fracture caused by osteoporosis; spinal stenosis; and spondylolysis or spondylolisthesis.
Recruitment/selection of patients	Patients insured by one of the participating social health insurance funds were recruited after they contacted a participating physician because of chronic low back pain.
Age, gender and ethnicity	Age - Mean (SD): 52.9 (13.7). Gender (M:F): 43% male/57% female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores - Back function score (FFbH-R): acupuncture 61.8±21.0, UC 63.3±20.8; Back pain score: acupuncture 25.5±12.3, UC 25.0±12.1; SF36 Physical component: acupuncture 34.3±9.0, UC 34.6±9.6; SF36 Mental component: acupuncture 43.3±10.3, UC 43.5±10.1. The study also includes a non-randomised acupuncture group (8537 patients). Outcomes for this group have not been extracted.
Indirectness of population	No indirectness
Interventions	(n=1549) Intervention 1: Acupuncture. Only needle acupuncture (with disposable one-time needles and manual stimulation) was allowed.. Duration Maximum of 15 acupuncture sessions. 3 months. . Concurrent medication/care: The patients allowed to use additional conventional treatments as needed. (n=1544) Intervention 2: Usual care - Waiting-list. Waiting list.. Duration 3 months. Concurrent medication/care: The patients allowed to use additional conventional treatments as needed.
Funding	Other (This study was funded by a number of German social health insurance funds)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus WAITING-LIST

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36 Physical component score at 3 months; Group 1: mean 7 (SD 9.7094); n=1451, Group 2: mean 2.3 (SD 9.5028); n=1390; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental component score at 3 months; Group 1: mean 2.4 (SD 9.7094); n=1451, Group 2: mean 0.3 (SD 9.5028); n=1390; Risk of bias: High;

Study	Witt 2006[576]
Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Back function loss (FFbH-R) at 3 months; Group 1: mean 33.3 (SD 36.8958); n=1451, Group 2: mean 11.3 (SD 34.21); n=1390; 100 - Hannover Functional Ability Questionnaire (FFbH-R) 0–100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Back pain loss (Low Back Pain Rating Scale) at 3 months; Group 1: mean 37 (SD 34.9539); n=1451, Group 2: mean 9.8 (SD 294.533); n=1390; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Prescription of analgesic at 3 months; Group 1: 316/1451, Group 2: 306/1390; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Yun 2012[582]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=187)
Countries and setting	Conducted in China; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 7 weeks + follow up to 48 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP at least 3 months
Exclusion criteria	Specific causes e.g. cancer, fractures, spinal stenosis, infection; complicated problem e.g. sciatica, scoliosis >40 degrees, chronic spondylitis, prior back surgery, medicolegal issues; C/I to acupuncture e.g. coagulation disorders, pacemakers, pregnancy, seizures; conditions making treatment difficult (e.g. paralysis, psychoses) or confounding treatment or interpretation (e.g. severe fibromyalgia, rheumatoid arthritis, concurrent care form other providers); previous acupuncture
Recruitment/selection of patients	Recruited by letter and telephone call

Study	Yun 2012[582]
Age, gender and ethnicity	Age - Mean (SD): 34 (11) years. Gender (M:F): 144:33. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores - VAS: HA 6.1±1.8, SA 6.3±2, UC 6.1±1.7; RMDQ: HA 11±2.9, SA 10.7±3, UC 10.8±3; SF36 physical: HA 42±11, SA 40±12, UC 42±11; SF36 mental: HA 37±11, SA 38±10, UC 40±10
Indirectness of population	No indirectness
Interventions	(n=64) Intervention 1: Acupuncture. Hegu acupuncture: 18 treatments: every other day for 3 weeks then twice weekly for 4 weeks; points used: Du 3, Bl 23 bilateral, low back ashi point, Bl 40 bilateral, K3 bilateral; needles 0.25mm; depth 1–3mm; acupuncturist gripped needle, quickly pricked the skin, inserted the needle slowly until tightness felt, twirled and drew back the needle so the tip was still just under the skin, pressed the skin under the acupressure point, inserted the needle upward following the meridian until tightness felt, twirled and drew back again; pressed the skin above the acupressure point, inserted the needle downward following the meridian until tightness felt, twirled and drew back again; inserted straight until de qi; 3 penetrations in different directions like a claw; needle left in 20 minutes; repeated after 10 minutes; needle twirled and removed after another 10 mintues.. Duration 7 weeks. Concurrent medication/care: Massage and physical therapy. Self-care book with information about managing flare-ups, exercise and lifestyle modification. (n=60) Intervention 2: Acupuncture. Standardised acupuncture: 18 treatments: every other day for 3 weeks then twice weekly for 4 weeks; points used: Du 3, Bl 23 bilateral, low back ashi point, Bl 40 bilateral, K3 bilateral; needles 0.25mm; depth 1–3mm; all points needled for 20 minutes with stimulation by twirling at 10 minutes and just prior to removal.. Duration 7 weeks. Concurrent medication/care: Massage and physical therapy. Self-care book with information about managing flare-ups, exercise and lifestyle modification. (n=63) Intervention 3: Usual care. Mostly massage, physical therapy and medication (mostly NSAIDs). Duration 7 weeks. Concurrent medication/care: Self-care book with information about managing flare-ups, exercise and lifestyle modification
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus ACUPUNCTURE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS at 8 weeks; Group 1: mean 4.6 Not stated (SD 1.3); n=64, Group 2: mean 5 Not stated (SD 1.4); n=60; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Study	Yun 2012[582]
Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 48 weeks; Group 1: mean 3.5 Not stated (SD 1); n=64, Group 2: mean 3.9 Not stated (SD 1.1); n=60; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 8 weeks; Group 1: mean 5.7 Not stated (SD 1.7); n=64, Group 2: mean 6.6 Not stated (SD 1.5); n=60; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 48 weeks; Group 1: mean 5.3 Not stated (SD 1.6); n=64, Group 2: mean 6.5 Not stated (SD 1.7); n=60; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: LBP disappeared and no difficulty in movement (cure) or pain relieved but slight discomfort (effective) at 8 weeks; Group 1: 43/64, Group 2: 38/60; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: LBP disappeared and no difficulty in movement (cure) or pain relieved but slight discomfort (effective) at 48 weeks; Group 1: 56/64, Group 2: 46/60; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 8 weeks; Group 1: mean 4.6 Not stated (SD 1.3); n=64, Group 2: mean 5.6 Not stated (SD 1.6); n=63; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 48 weeks; Group 1: mean 3.5 Not stated (SD 1); n=64, Group 2: mean 4.5 Not stated (SD 1.2); n=63; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 8 weeks; Group 1: mean 5.7 Not stated (SD 1.7); n=64, Group 2: mean 8.8 Not stated (SD 2.4); n=63; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 48 weeks; Group 1: mean 5.3 Not stated (SD 1.6); n=64, Group 2: mean 7.6 Not stated (SD 2.2); n=63; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up	

Study	Yun 2012[582]
- Actual outcome for Overall (acute, chronic) without sciatica: LBP disappeared and no difficulty in movement (cure) or pain relieved but slight discomfort (effective) at 8 weeks; Group 1: 43/64, Group 2: 29/63; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: LBP disappeared and no difficulty in movement (cure) or pain relieved but slight discomfort (effective) at 48 weeks; Group 1: 56/64, Group 2: 36/63; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 8 weeks; Group 1: mean 5 Not stated (SD 1.4); n=60, Group 2: mean 5.6 Not stated (SD 1.6); n=63; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 48 weeks; Group 1: mean 3.9 Not stated (SD 1.1); n=60, Group 2: mean 4.5 Not stated (SD 1.2); n=63; VAS 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 8 weeks; Group 1: mean 6.6 Not stated (SD 1.5); n=60, Group 2: mean 8.8 Not stated (SD 2.4); n=63; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 48 weeks; Group 1: mean 6.5 Not stated (SD 1.7); n=60, Group 2: mean 7.6 Not stated (SD 2.2); n=63; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: LBP disappeared and no difficulty in movement (cure) or pain relieved but slight discomfort (effective) at 8 weeks; Group 1: 38/60, Group 2: 29/63; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: LBP disappeared and no difficulty in movement (cure) or pain relieved but slight discomfort (effective) at 48 weeks; Group 1: 46/60, Group 2: 36/63; Risk of bias: Low; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Yun 2012[581]
Study type	RCT (Patient randomised; Parallel)

Study	Yun 2012[581]
Number of studies (number of participants)	1 (n=236)
Countries and setting	Conducted in China; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks + follow up to 24 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18–70 years; at least 1 primary care visit for LBP in last 3–12 months; non-specific LBP; severity at least 3 on 0–10 VAS
Exclusion criteria	Previous acupuncture; LBP <3 months; bothersomeness <3 on 0–10 scale; specific causes (metastatic cancer, discitis, herniated disc, vertebral fracture, spinal infection, osteitis condensans, severe/progressive scoliosis, spinal stenosis, spondylolisthesis, ankylosing spondylitis; complicated back problem (e.g. sciatica, back surgery in past 3 years); other disabling chronic conditions that might confound treatment or interpretation of data (e.g. disabling heart or lung disease, diabetic neuropathy, active hepatitis, fibromyalgia, rheumatoid arthritis); contraindications to acupuncture or safety not confirmed (clotting disorders, on anticoagulants, pacemaker, pregnancy, seizures); medico-legal issues (seeking/receiving compensation/litigation for back pain); conditions making consent or treatment difficult (paralysis, inability to lie prone for 45 minutes, major psychoses, dementia, scheduling conflicts, severe vision or hearing problems, lack of transportation, unable to speak or read English)
Recruitment/selection of patients	Recruited via letters
Age, gender and ethnicity	Age - Mean (SD): 33 (11) years. Gender (M:F): 165:71. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores - SF36 physical: BPA 41±11, SA 43±12, UC 42±11; SF36 mental: BPA 42±11, SA 40±10, UC 40±10; VAS: BPA 6.1±1.6; SA 6.1±1.8, UC 6.1±1.7; RMDQ: BPA 11.8±3, SA 12.0±3.3, UC 11.8±3.1
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Acupuncture. Back pain acupoint on back of hand (same side as back pain) plus standard points (Du 3, UB 23 bilateral, low back ashi, UB40 bilateral, Ki 3) bilateral; every other day for 4 weeks; needles 0.25mm diameter; depth 1–3 cm; inserted until de qi; needled for 20 minutes with stimulation at 10 minutes and just prior to removal. Duration 4 weeks. Concurrent medication/care: Massage, physical therapy, self care book with information on managing flare-ups, exercise and lifestyle modification

Study	Yun 2012[581]
	(n=82) Intervention 2: Acupuncture. Standard points (Du 3, UB 23 bilateral, low back ashi, UB40 bilateral, Ki 3) bilateral; every other day for 4 weeks; needles 0.25mm diameter; depth 1–3 cm; inserted until de qi; needled for 20 minutes with stimulation at 10 minutes and just prior to removal. Duration 4 weeks. Concurrent medication/care: Massage, physical therapy, self care book with information on managing flare-ups, exercise and lifestyle modification (n=74) Intervention 3: Usual care. Mostly massage and physical therapy. Duration 4 weeks. Concurrent medication/care: Continued medication (ibuprofen); self care book with information on managing flare-ups, exercise and lifestyle modification
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus ACUPUNCTURE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS bothersomeness at 4 weeks; Group 1: mean 4.5 Not stated (SD 1.5); n=80, Group 2: mean 5.2 Not stated (SD 1.8); n=82; VAS bothersomeness 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS bothersomeness at 24 weeks; Group 1: mean 3.6 Not stated (SD 1.1); n=80, Group 2: mean 4.1 Not stated (SD 1.4); n=82; VAS bothersomeness 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 4 weeks; Group 1: mean 6.7 Not stated (SD 2.2); n=80, Group 2: mean 7.6 Not stated (SD 2.9); n=82; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 24 weeks; Group 1: mean 5.6 Not stated (SD 1.9); n=80, Group 2: mean 6.7 Not stated (SD 2); n=82; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Effective (cure = LBP disappeared and no difficulty in movement, or effective = pain relieved but slight discomfort) at 4 weeks; Group 1: 51/80, Group 2: 47/82; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Effective (cure = LBP disappeared and no difficulty in movement, or effective = pain relieved but slight discomfort) at 24 weeks; Group 1: 59/80, Group 2: 57/82; Risk of bias: ; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE

Study	Yun 2012[581]
	Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS bothersomeness at 4 weeks; Group 1: mean 4.5 Not stated (SD 1.5); n=80, Group 2: mean 5.8 Not stated (SD 2.1); n=74; VAS bothersomeness 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS bothersomeness at 24 weeks; Group 1: mean 3.6 Not stated (SD 1.1); n=80, Group 2: mean 4.9 Not stated (SD 1.6); n=74; VAS bothersomeness 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 4 weeks; Group 1: mean 6.7 Not stated (SD 2.2); n=80, Group 2: mean 9.5 Not stated (SD 2.7); n=74; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 24 weeks; Group 1: mean 5.6 Not stated (SD 1.9); n=80, Group 2: mean 7.7 Not stated (SD 2.3); n=74; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Effective (cure = LBP disappeared and no difficulty in movement, or effective = pain relieved but slight discomfort) at 4 weeks; Group 1: 51/80, Group 2: 32/74; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Effective (cure = LBP disappeared and no difficulty in movement, or effective = pain relieved but slight discomfort) at 24 weeks; Group 2: 41/74; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS bothersomeness at 4 weeks; Group 1: mean 5.2 Not stated (SD 1.8); n=82, Group 2: mean 5.8 Not stated (SD 2.1); n=74; VAS bothersomeness 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS bothersomeness at 24 weeks; Group 1: mean 4.1 Not stated (SD 1.4); n=82, Group 2: mean 4.9 Not stated (SD 1.6); n=74; VAS bothersomeness 0–10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 4 weeks; Group 1: mean 7.6 Not stated (SD 2.9); n=82, Group 2: mean 9.5 Not stated (SD 2.7); n=74; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Study	Yun 2012[581]
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 24 weeks; Group 1: mean 6.7 Not stated (SD 2); n=82, Group 2: mean 7.7 Not stated (SD 2.3); n=74; Roland Morris Disability Questionnaire 0–23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Effective (cure = LBP disappeared and no difficulty in movement, or effective = pain relieved but slight discomfort) at 4 weeks; Group 1: 47/82, Group 2: 32/74; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Effective (cure = LBP disappeared and no difficulty in movement, or effective = pain relieved but slight discomfort) at 24 weeks; Group 1: 57/82, Group 2: 41/74; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Zaringhalam 2010[584]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=84)
Countries and setting	Conducted in Iran; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 5 weeks + follow up to 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar or lumbrosacral pain for 6 months or longer, no radiation of LBP, normal neurological signs of lumboosacral nerves, no acupuncture treatment in past 6 months, absense of significant pathology, stable health, ongoing pain
Exclusion criteria	Majour trauma, conflicting or ongoing cointreventions, prior use of acupuncture for LBP in past 6 months, refusal to be randomised, protusion or prolapse of one or more intervetebral discs with concurrent neurological symptoms, prior vertebral column surgery, infectious spondylopathy
Recruitment/selection of patients	Recruited through newspapers or contacted trial research centre; screened by qualified musculoskeletal physiotherapist

Study	Zaringhalam 2010[584]
Age, gender and ethnicity	Age - Range of means: 54.2 (5.4) to 55.1 (3.3) years. Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores - RDQ: AC 9.6±3.9, AC+drug 9.5±2.8, drug 9.8±4.2, control 9.7±4.4; VAS: AC 64.3±17.8, AC+drug 64.6±16.8, drug 64.5±18.3, control 64.5, 19.3
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Acupuncture. Acupuncture twice a week for 5 weeks; 30-gauge needles (0.2mm x 40mm); electrical stimulation at 4–6 Hz with pulse duration 0.5ms; inserted to dull pain or de qi; 10–12 needles bilaterally at Bl23, BL25, BL28, BL32, BL60, GB30, and GB34; left in place 20–25 minutes.. Duration 5 weeks. Concurrent medication/care: Advised to maintain normal lifestyle and not start new medications (n=21) Intervention 2: Acupuncture. Acupuncture twice a week for 5 weeks; 30-gauge needles (0.2mm x 40mm); electrical stimulation at 4–6 Hz with pulse duration 0.5ms; inserted to dull pain or de qi; 10–12 needles bilaterally at Bl23, BL25, BL28, BL32, BL60, GB30, and GB34; left in place 20–25 minutes. Plus baclofen 30mg/day orally (15mg bd). Duration 5 weeks. Concurrent medication/care: Advised to maintain normal lifestyle and not start new medications (n=21) Intervention 3: Usual care. Baclofen 30mg/day orally (15mg bd). Duration 5 weeks. Concurrent medication/care: Advised to maintain normal lifestyle and not start new medications (n=21) Intervention 4: Usual care - Waiting-list. Control = no treatment for chronic pain. Duration 5 weeks. Concurrent medication/care: Advised to maintain normal lifestyle and not start new medications
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus WAITING-LIST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 50.1 mm (SD 20.3); n=20, Group 2: mean 64.2 mm (SD 25.5); n=20; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 7.2 Not stated (SD 3.1); n=20, Group 2: mean 9.9 Not stated (SD 4.6); n=20; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Study	Zaringhalam 2010[584]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 47.3 mm (SD 14.1); n=20, Group 2: mean 63.7 mm (SD 24.4); n=20; VAS 0–100mm Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at 10 weeks; Group 1: mean 5.8 Not stated (SD 0.58); n=20, Group 2: mean 9.5 Not stated (SD 4.1); n=20; Roland Morris Disability Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.2.1 Combined interventions – acupuncture adjunct

Study	Hunter 2012[230]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=52)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 12 week intervention + follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic (3 months or more) or recurrent (3 or more episodes in 12 months) LBP of mechanical origin; age 18–65

Study	Hunter 2012[230]
	years; no spinal surgery in last 12 months, deemed suitable for exercise programme or acupuncture by GP; willing to attend for 6-week treatment programme; fluent in written and verbal English; access to telephone for follow up support; low or moderate activity level on international Physical Activity Questionnaire
Exclusion criteria	Rx cLBP in past 3 mo; red flags for spinal pathology; radicular pain of nerve root compression; severe spinal stenosis, spondylolisthesis/fibromyalgia; history of systemic/inflammatory disease e.g. rheumatoid arthritis; concomitant medical condition contraindicating acupuncture; prior auricular acupuncture; confounding conditions; RTA causing LBP; psychological/psychiatric illness; multiple body/ear piercings; fear of needles
Recruitment/selection of patients	GP referral, physiotherapy waiting list
Age, gender and ethnicity	Age - Mean (SD): 42.8 (12.4) years. Gender (M:F): 19:32. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (Chronic or recurrent).
Extra comments	Baseline scores (mean, 95% CI) - Owestry Disability Questionnaire: exercise 22.93 (18.22, 27.64), E+A 25.51 (21.75, 29.27); VAS intensity: exercise 4.93 (3.98, 5.87), E+A 4.23 (3.17, 5.29); EQ-5D: exercise 0.67 (0.57, 0.76), E+A 0.68 (0.60, 0.76)
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Supervised group exercise, 1 hour per week for 6 weeks (strengthening, flexibility and cardiovascular; the exercise followed a group-based format based on the Back to Fitness program as used in the UK BEam trial; it is underpinned by CBT principles designed to change participants behaviour by modifying their attitude to their LBP. During classes, physiotherapist used these principles to identify and combat illness behaviour, and to address fear-avoidance); Self-management (unsupervised exercise for 6 weeks; education - the Back Book); Manual auricular acupuncture using stud needles (1.80 x 0.26mm), inserted into 3 specific points, left in for 48 hours . Duration 6 weeks. Concurrent medication/care: Advised to continue normal daily activities and medication. Access to telephone support helpline during the unsupervised exercise period (n=28) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Supervised group exercise, 1 hour per week for 6 weeks (strengthening, flexibility and cardiovascular; the exercise followed a group-based format based on the Back to Fitness program as used in the UK BEam trial; it is underpinned by CBT principles designed to change participants behaviour by modifying their attitude to their LBP. During classes, physiotherapist used these principles to identify and combat illness behaviour, and to address fear-avoidance); Self-management (unsupervised exercise for 6 weeks; education - the Back Book) . Duration 12 weeks. Concurrent medication/care: Advised to continue normal daily activities and medication. Access to telephone support helpline during the unsupervised exercise period

Study	Hunter 2012[230]
Funding	Academic or government funding (Research and Development Office, Northern Ireland, Strategic Priority Funding and Department for Employment and Learning, Northern Ireland)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI (ACUPUNCTURE + EXERCISE + SELF-MANAGEMENT) versus COMBI (EXERCISE + SELF-MANAGEMENT) Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: EQ-5D at 3 months; Group 1: mean 0.05 Not stated (SD 0.38); n=24, Group 2: mean 0.11 Not stated (SD 0.19); n=27; EQ-5D Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: EQ-5D at 6 months; Group 1: mean 0.18 Not stated (SD 0.15); n=24, Group 2: mean 0.07 Not stated (SD 0.26); n=27; EQ-5D weighted health index Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: LBP intensity at 3 months; Group 1: mean -0.93 Not stated (SD 2.62); n=24, Group 2: mean -2.12 Not stated (SD 2.94); n=27; VAS 0–10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: LBP intensity at 6 months; Group 1: mean -2.08 Not stated (SD 2.4); n=24, Group 2: mean -1.79 Not stated (SD 3.33); n=27; VAS 0–10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 3 months; Group 1: mean -6.1 Not stated (SD 9.33); n=24, Group 2: mean -7.46 Not stated (SD 11.82); n=27; Oswestry Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 6 months; Group 1: mean -10.67 Not stated (SD 11.76); n=24, Group 2: mean -6.67 Not stated (SD 12.47); n=27; Oswestry Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or

Study	Hunter 2012[230]
	health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Itoh 2009[245,246]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in Japan; Setting: Secondary care outpatients
Line of therapy	Unclear
Duration of study	Intervention + follow up: 5 weeks intervention + follow up to 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar or lumbosacral LBP 6 months or longer; no radiation of pain; age 60 or older; normal neurological findings of lumbosacral nerve including deep tendon reflexes, plantar response, voluntary muscle action, straight leg raising and sensory function; not receiving acupuncture for >6 months
Exclusion criteria	Major trauma or systemic disease; receiving conflicting or ongoing co-interventions
Recruitment/selection of patients	Recruited from Meiji University of Oriental Medicine Hospital
Age, gender and ethnicity	Age - Mean (SD): 61–81 years. Gender (M:F): 12:20. Ethnicity: Not stated
Further population details	1. Acute pain: Not applicable / Not stated / Unclear (Chronic). 2. Pain severity: (Baseline pain intensity: TENS: 63.8 (16.5); acupuncture: 60.0 (19.8); acupuncture + TENS: 62.3 (12.2); control: 63.7 (19.0).). 3. Risk assessment for chronicity: Not applicable / Not stated / Unclear (Already chronic). 4. Structural pathology: Not applicable / Not stated / Unclear
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Usual care. No specific treatment except allowed to use topical poultice containing methylsalicylic acid. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 2: Acupuncture. Acupunture 15 minutes at BL23, BL25, BL32, BL40, BL60, GB30, GB34;needles

Study	Itoh 2009[245,246]
	0.2mm x 40mm inserted to depth 10mmusing "sparrow pecking" technique until de qi, then 10 more minutes, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS for 15 minutes; amplitude-modulated frequency of 122Hz (beat frequency) generated by two medium frequency sinusoidal waves (4.0 and 4.122kHz (feed frequency); 2 electrodes 809mm2 and 5688mm2 placed at the point with the most tenderness and the near side of that point; intensity adjusted to tingling sensation 2–3 times the subject's sensory threshold, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. 15 minutes of TENS then 15 minutes of acupuncture, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + TENS versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at ≤4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 58.1 mm (SD 28.9); n=7; VAS 0–100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at ≤4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 7.7 Not stated (SD 4.6); n=7; Roland Morris Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + TENS versus ACUPUNCTURE

Protocol outcome 1: Pain severity (VAS/NRS) at ≤4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 43.3 mm (SD 25.7); n=7; VAS 0–100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at ≤4 months

Study	Itoh 2009[245,246]
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 6.7 Not stated (SD 4.8); n=7; Roland Morris Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + TENS versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) Protocol outcome 1: Pain severity (VAS/NRS) at ≤4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 58 mm (SD 23.7); n=6; VAS 0–100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at ≤4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 7.5 Not stated (SD 3.6); n=6; Roland Morris Questionnaire 0–24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Adverse events (morbidity) at Define; Function (disability scores) at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤4 months; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at > 4 months; Adverse event (mortality) at ≤4 months; Adverse event (mortality) at > 4 months; Responder criteria at ≤4 months; Responder criteria at > 4 months; Return to work at ≤4 months; Return to work at > 4 months

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Study	Yip 2004[579,579]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=61)
Countries and setting	Conducted in Hong Kong (China); Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 weeks + follow up 1 week
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable

Study	Yip 2004[579,579]
Inclusion criteria	Age 18 or above with non-specific LBP for most days in last 4 weeks; had not received acupunture, physiotherapy or manipulative therapy in the past week; could understand the explanation of the study, complete the interview and comprehend the instructions
Exclusion criteria	LBP cuased by specific entities e.g. infection, metastates, neoplasm, osteoporosis, fractures, spine deformity or prolapsed intervertebral disc; had undergone surgery or had dislocation, fracture, neurological deficits, spinal diseases, varicose vein, blood dyscrasia, cancer or systemic disorder; pregnant; allergic to natural lavendar aromatic oil; had a wound at any of the acupoints at the back or on the lower limb; had had a surgical intervention in last 3 months
Recruitment/selection of patients	Notices on bulletin boards
Age, gender and ethnicity	Age - Other: Mean (SEM) 45.81 (19.10) years. Gender (M:F): 9:52. Ethnicity: Not stated
Further population details	1. Acute pain : Not applicable / Not stated / Unclear 2. Pain severity: (Baseline pain severity: Intervention: 6.38 (0.22), control 5.7 (0.37) on 0–10 scale). 3. Risk assessment for chronicity: Not applicable / Not stated / Unclear 4. Structural pathology: No clear structural pathology (Exclusion criterion).
Indirectness of population	No indirectness
Interventions	(n=32) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. 8-session acupoint stimulation for relaxation with 5 pairs of medium-sized (2.5 cm) electrode pads (7.69 Hz at 0,05mA) on bilateral acupoints LI 10, LI 11, SI 10, TW 15 and BL 10; followed by acupressure massage with natural aromatic 3% lavendar oil with grape seed oil as the base, light-medium finger press on 8 fixed acupoints for 2 minutes each (4 bilateral points: UB 22, UB 23, UB 25 and UB 40); 35–40 minute sessions, 8 times over 3 weeks; deqi confirmed (clients felt sore, heavy, numb, distended and/or warm); appropriate pressure just before unpleasant/unbearable feelings. Duration 3 weeks. Concurrent medication/care: "Conventional treatment" not further defined (n=29) Intervention 2: Usual care. "Conventional treatment" not further defined. Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + MASSAGE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at ≤4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Current pain at 4 weeks; Group 1: mean 0.61 Proportion of baseline value (SD 0.06); n=27, Group 2: mean 0.99 Proportion of baseline value (SD 0.294); n=24; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Yip 2004[579,579]
Protocol outcomes not reported by the study	Quality of life at ≤4 months; Quality of life at > 4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at ≤4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤4 months; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at > 4 months; Adverse event (mortality) at ≤4 months; Adverse event (mortality) at > 4 months; Responder criteria at ≤4 months; Responder criteria at > 4 months; Return to work at ≤4 months; Return to work at > 4 months

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H210 Electrotherapies

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Study	Alayat 2014[3]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=72)
Countries and setting	Conducted in Saudi Arabia; Setting: Home-based exercises
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 4 weeks + 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: pre-diagnosed in Al-Noor Hospital
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Male patients with a history of chronic LBP for at least 1 year, and age between 20 and 50 years.
Exclusion criteria	Patients with a history of spinal surgery, degenerative disc disease, disc herniation, spine fracture, spondylosis, spinal stenosis, neurological deficits, abnormal laboratory findings and systemic and psychiatric illnesses were excluded.
Recruitment/selection of patients	Referred to the study from the orthopaedic department and recruited from the rehabilitation department of Al-Noor Hospital, Makkah, Saudi Arabia
Age, gender and ethnicity	Age - Mean (range): 31.54-33.50. Gender (M:F): 100% male. Ethnicity: Not stated

Study	Alayat 2014[3]
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>1 year).
Extra comments	Baseline (mean±SD): VAS - 8.35±0.88 (HILT group) 8.21±1.1 (PL + EX group), RDQ - 15.4±1.19 (HILT group) 15.63±1.56 (PL + EX group), MODQ - 35.55±3.62 (HILT group) 34.5±2.93 (PL + EX group)
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Electrotherapy - Laser therapy. Patients recieved pulsed Nd:YAG laser treatment, produced by a HIRO 3 device. Apparatus provided pulsed emission (1,063 nm), very high peak power (3 kW), a high level of fluency/energy density (510-1,780 mJ/cm), a brief duration (120-150 µs), a low frequency (10-40 Hz), a duty cycle of about 0.1%, a probe diameter of 0.5 cm and a spot szoe of 0.2cm2. Total energy dose of 3,000 J was administered through 3 phases of treatment. Initial phase was performed with fast manual scanning for a total of 1,400 J, the laser fluency was set to 3 successive subphases of 610, 710, and 810 mJ/cm^2 for a total of 1,400 J. Intermediate phase applied the handpiece to the 8 paravertebral points with 25 J, for a total of 610 mJ/cm^2. Final phase was the same as the initial phase, except that slow manual scanning was used. Application time for all phases was approximately 15 minutes. HILT was applied for a total of 12 treatment sessions over 4 consecutive weeks (3 sessions per week).. Duration 4 weeks. Concurrent medication/care: None given (n=24) Intervention 2: Self-management - Unsupervised exercise. For placebo laser treatment, the patient attended the physical therapy clinic 3 times weekly for 4 weeks and received sham laser before applying exercises. Exercise program was carried out at home, performed 2 times daily. No special equipment or gym or fitness facility needed. The exercises included stretching, strengthening, mobilising, coordinating, and stabilising the abdominal, back, and pelvic muscles and were personalised to each patient's clinical finding. Taught how to perform exercises by physiotherapist. Family member confirmed that the participant carried out the exercises at home. Duration 4 weeks. Concurrent medication/care: None given
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY (HILT) versus UNSUPERVISED EXERCISE + PLACEBO LASER

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS at 12 weeks; Group 1: mean 5.65 (SD 1.04); n=20, Group 2: mean 3.71 (SD 1.3); n=24; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Roland Disability Questionnaire (RDQ) at 12 weeks; Group 1: mean 7.35 (SD 1.5); n=20, Group 2: mean 6.92 (SD 0.78); n=24; Risk of bias: Low; Indirectness of outcome: No indirectness

Study	Alayat 2014[3]
- Actual outcome: Modified Oswestry Disability Questionnaire (MODQ) at 4 weeks; Group 1: mean 17.25 (SD 3.14); n=20, Group 2: mean 16.41 (SD 3.01); n=24; Risk of bias:; Indirectness of outcome: No indirectness - Actual outcome: Modified Oswestry Disability Questionnaire (MODQ) at 12 weeks; Group 1: mean 19.05 (SD 2.96); n=20, Group 2: mean 18.75 (SD 3.07); n=24; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Ansari 2006[11]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=15)
Countries and setting	Conducted in Iran; Setting: Rehabilitation Faculty
Line of therapy	Unclear
Duration of study	Intervention time: 3-4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, physical and neurological examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-65 years; non-radiating non-specific low back pain >3 months
Exclusion criteria	Abnormal neurological status, concomitant severe disease, psychiatric illness, current psychotherapy, pathological lumbosacral X-rays (except for minor degenerative changes), rheumatic inflammatory disease, planned hospitalisation, addiction to any kind of substance and alcohol use, any contraindication to ultrasound therapy, refusal of participation
Recruitment/selection of patients	Screened by orthopaedic surgeon
Age, gender and ethnicity	Age - Range of means: 26.4 (11.26) placebo and 35.5 (13.8) intervention. Gender (M:F): 7:3 completers. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline Functional Rating Index: US group: 56.5 (20.35), placebo: 46.95 (14.38)
Indirectness of population	No indirectness
Interventions	(n=7) Intervention 1: Electrotherapy - Ultrasound therapy. Ultrasound intensity (spatial average, temporal average [SATA]) 1.5w/cm^2 on a continuous mode; frequency 1MHz; 10 sessions, 3 days per week, every other day; applicator (effective radiation area [ERA]: 5cm2) applied with circular movement on low back region indicated by patient as site of pain; total treatment time = planned average local exposure time x tissue area/ERA of applicator. Duration 3-4 weeks. Concurrent medication/care: Continue existing treatment but not start any new analgesic or treatment, no exercise programme (n=8) Intervention 2: Placebo/Sham. No details. Duration 3-4 weeks. Concurrent medication/care: Continue existing treatment but not start any new analgesic or treatment, no exercise programme
Funding	Academic or government funding (Tehran University of Medical Sciences)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ULTRASOUND THERAPY versus PLACEBO/SHAM Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Functional Rating Index at 3-4 weeks; Group 1: mean 34.5 % (SD 13.5); n=5, Group 2: mean 39.9 % (SD 16.5); n=5; Functional Rating Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Ay 2010[20]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=80)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, lumbar MRI, ESR, CRP
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised: Acute (<3 months) and chronic (>3 months) pain
Inclusion criteria	Acute or chronic low back pain caused by lumbar disc herniation
Exclusion criteria	Neurological deficits, spondylosis, spinal stenosis, spondylolisthesis and inflammatory, infectious or malignant diseases of the vertebra; previous spinal surgery; pregnancy
Recruitment/selection of patients	Department of Physical and Rehabilitation Medicine
Age, gender and ethnicity	Age - Range of means: 45.55 (15.66) to 54.75 (15.02) years. Gender (M:F): 34:46. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (Acute and chronic patients; randomised separately).
Extra comments	Baseline scores (mean SD) for laser acute, sham acute, laser chronic, sham chronic groups, respectively- pain VAS: 6.70±2.15, 6.15±2.39, 6.0±2.29, 6.60±2.25; patient global assessment: 6.45±2.25, 5.70±2.27, 5.65±2.13, 6.05±2.62; physician's global assessment 6.60±2.28, 6.15±2.32, 5.80±1.98, 6.30±2.51; RDQ: 13.20±6.45, 12.60±5.79, 15.10±5.41, 15.60±5.38; Modified ODQ: 19.8±8.25, 20.8±9.44, 23.90±7.51, 24.65±10.04
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Electrotherapy - Laser therapy. Acute LBP: Gallium-aluminium-aresenide infrared laser, wavelength 850nm, power output 100mV, continuous wave, 0.07cm2 spot area applied at 2-4 points over both sides of the paraspinal tissues of the disk spaces; 4 minutes at each point; acute LBP (n=20): pulse frequency 16Hz; 15 sessions, 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: All groups received hot-pack therapy for 20 minutes (n=20) Intervention 2: Placebo/Sham. Acute LBP: Placebo laser applied on the same area for the same period without turning device on. Duration 3 weeks. Concurrent medication/care: All groups received hot-pack therapy for 20 minutes (n=20) Intervention 3: Electrotherapy - Laser therapy. Chronic LBP: Gallium-aluminium-aresenide infrared laser,

	wavelength 850nm, power output 100mV, continuous wave, 0.07cm2 spot area applied at 2-4 points over both sides of the paraspinal tissues of the disk spaces; 4 minutes at each point; chronic LBP (n=20): pulse frequency 155Hz; 15 sessions, 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: All groups received hot-pack therapy for 20 minutes (n=20) Intervention 4: Placebo/Sham. Chronic LBP: Placebo laser applied on the same area for the same period without turning device on. Duration 3 weeks. Concurrent medication/care: All groups received hot-pack therapy for 20 minutes
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain VAS: acute LBP at 3 weeks; Group 1: mean 2.7 cm (SD 1.49); n=20, Group 2: mean 2 cm (SD 1.37); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Pain VAS: chronic LBP at 3 weeks; Group 1: mean 2.65 cm (SD 1.42); n=20, Group 2: mean 2.65 cm (SD 1.46); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Disability Questionnaire: acute LBP at 3 weeks; Group 1: mean 7.2 None (SD 5.57); n=20, Group 2: mean 6.95 None (SD 4.22); n=20; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Disability Questionnaire: chronic LBP at 3 weeks; Group 1: mean 8.4 None (SD 4.24); n=20, Group 2: mean 10.95 None (SD 5.63); n=20; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Modified Oswestry Disability Questionnaire: acute LBP at 3 weeks; Group 1: mean 11.6 None (SD 8.29); n=20, Group 2: mean 12.1 None (SD 7.93); n=20; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Modified Oswestry Disability Questionnaire: chronic LBP at 3 weeks; Group 1: mean 14.3 None (SD 7.4); n=20, Group 2: mean 18.45 None (SD 9.52); n=20; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Basford 1999[24]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=61)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 4 weeks intervention + 1 month follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosis by physician experienced in musculoskeletal diseases; history, physical and neurological examination, lumbar spine x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Otherwise healthy individuals aged 18-70 years; non-radiating musculoskeletal LBP >30 days' duration; women required to be post-menopausal or practising effective birth control; no previous treatment in last 30 days; normal neurological examination, normal lower extremity muscle strength and straight leg raising
Exclusion criteria	Litigation or workman's compensation issues pending; previous surgery; steroids in last 30 days; radicular pain, pain extending below buttocks, changes in bowel or bladder function or lower extremity strength or sensation
Recruitment/selection of patients	Recruited with announcements in institutional newsletter and local paper and by referral from local physicians and chiropractors
Age, gender and ethnicity	Age - Range of means: Laser: 47.8 years; placebo 48.2 years. Gender (M:F): 31:28 completers. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>30 days duration (unclear max duration)).
Extra comments	Baseline: Maximal pain in last 24 hours: laser 35.2, placebo 37.4; Oswestry score: laser 21, placebo 25
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Electrotherapy - Laser therapy. Irradiation for 90 seconds at 8 symmetrical points on lumbosacral spine (L2 to S3), 3 times a week for 4 weeks; 1.06microm neodymium:yttrium-aluminium-garnet laser; 542mW/cm^2; 2.5cm diameter applicator. Duration 4 weeks. Concurrent medication/care: Not stated (n=30) Intervention 2: Placebo/Sham. "Irradiation" for 90 seconds at 8 symmetrical points on lumbosacral spine (L2 to S3), 3 times a week for 4 weeks; 1.06microm neodymium:yttrium-aluminium-garnet laser; inactive probes; 2.5cm diameter applicator. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Study funded by industry (LaserBiotherapy, Inc., Dallas, TX)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Maximal pain in last 24 hours at 1 month follow-up after 4 weeks treatment; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswetry Disability Questionnaire at 1 month follow-up after 4 weeks treatment; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Bertocco 2002[38]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=21)
Countries and setting	Conducted in Italy; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Obese females, chronic LBP, on hypocaloric diet
Exclusion criteria	Protruded or herniated discs, active neurological signs, lumbar spine surgery, pain <6 months, total hip or knee prosthesis
Recruitment/selection of patients	Auxetic Division
Age, gender and ethnicity	Age - Mean (SD): Exercise group: 50.5 (13.6); physical therapy: 49.3 (8.4) years. Gender (M:F): All female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline pain: exercise group: 44.3, physical therapy group: 37.5 (no SDs given)
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Individual Biomechanical exercise - Core stability. Exercises for position, strength and mobility. Duration 3 weeks. Concurrent medication/care: All walked 1 hour per day, 5 days a week for 3 weeks (n=10) Intervention 2: Electrotherapy - Laser therapy. Laser and ultrasound-like therapy; no further details. Duration 3 weeks. Concurrent medication/care: All walked 1 hour per day, 5 days a week for 3 weeks
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus CORE STABILITY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Charlusz 2010[75]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=94)
Countries and setting	Conducted in Poland; Setting: Day rehabilitation centre
Line of therapy	Unclear
Duration of study	Not clear:
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 24-75 years; Diagnosis of lumbosacral pain syndromes.
Exclusion criteria	Not stated
Age, gender and ethnicity	Age - Range: 24-75 years. Gender (M:F): 56% Male/ 44% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	A third group (n=32) was treated with vacuum therapy combined with Ultra Reiz currents - data not extracted.
Indirectness of population	No indirectness
Interventions	(n=35) Intervention 1: Electrotherapy - Laser therapy. A series of 10 low energy laser therapy procedures. The lumbosacral spine was exposed to laser irradiation of 808 nm wave lenght and a surface density of 540 mW/cm^2 in the continuous wave mode. The scanning method was used and the dose was 12 J/cm^2 to a surface of 100 cm^2 (10x10 cm).. Duration 10 sessions. Concurrent medication/care: Not stated (n=27) Intervention 2: Electrotherapy - Ultrasound therapy. Power: 1W/cm^2. Frequency: 1Mhz. Probe of an effective radiation area of 4.1 cm^2 and a beam non-uniformity ratio of 4.5. The continuous mode was used with dynamic insonation during 3-minute procedures.. Duration Not stated. Concurrent medication/care: Not stated
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus ULTRASOUND THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain intensity (VAS) at Not stated; Group 1: mean 4 (SD 1.83); n=35, Group 2: mean 4.37 (SD 2.62); n=27; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cheing 1999[76]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in China; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 1 session only
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 to 50 years; LBP for at least 6 months; daily pain; stable flexion reflex over an hour of recording; baseline pain intensity >30% over 3 consecutive days
Exclusion criteria	Pregnancy, neuromuscular or neurological disorders, muscle atrophy in lower extremities, history of back surgery, consistent sciatica symptom, pacemaker, spondylolisthesis >1cm
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): TENS: 34.7 (9.1); sham: 28.2 (7.2) years, p=0.039. Gender (M:F): 21:9. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months back pain).
Extra comments	Baseline LBP measured on 20cm VAS, then this was set to "100%" for both groups for comparison of later measurements (as percentage of baseline value)
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Stimulation given in continuous trains of 140 microsec square pulses at 80 Hz; 2 surface electrodes 16.5 x 3.2cm each placed on same level over lumbosacral region (L4-S2) paraspinally; intensity adjusted to produce a tingling sensation approximately 2-3 times sensory threshold. Duration Single session 1 hour only. Concurrent medication/care: No physiotherapy or medication allowed for previous 2 weeks (n=15) Intervention 2: Placebo/Sham. As for TENS group but internal circuit disconnected. Duration Single session 1 hour only. Concurrent medication/care: No physiotherapy or medication allowed for previous 2 weeks
Funding	Academic or government funding (Fonds de la Recherche en Sante du Quebec)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (% of baseline) at After single 1 hour session; Group 1: mean 63.11 % (SD 31.2); n=15, Group 2: mean 96.73 % (SD 23.1); n=15; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Deyo 1990[112]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=145)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 4 weeks + follow-up 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain of at least 3 months' duration.
Exclusion criteria	History of cancer, the use of corticosteroids or anticoagulant agents, maximal pain above vertebra T-12, age over 70 or under 18 years, the use of a cardiac pacemaker, known heart disease, severe coexisting disease, or a previously unevaluated neurologic deficit; factors that would impair follow-up, including the inability to keep twice-weekly appointments, plans to move within 3 months, inaccessibility by telephone, and inability to speak English; candidates who had previously used TENS, and those seeking or receiving disability compensation
Recruitment/selection of patients	Newspaper advertising in San Antonio
Age, gender and ethnicity	Age - Range of means: 48.1 to 53.7 years. Gender (M:F): 52:73. Ethnicity: 66% of the subjects were white, 31% Mexican American, 2% black, and 1% belonged to other ethnic or racial groups
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores (mean) for TENS, TENS+exercise, sham TENS and sham TENS+exercise groups, respectively - pain: 39.9, 43.1, 37.9, 44.2; modified Sickness Impact Profile score: 7.7, 11, 10.3, 11.3; Zung Depression score: 32.4, 34.6, 35.2, 36.2
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS was performed with Epix 982 units (EMPI Corp., St. Paul), each with 4 round, carbon-impregnated rubber electrodes 5.5 cm in diameter; undertaken at least 3 times a day for 45-minute periods. The subjects in the TENS groups received conventional high frequency TENS for 2 weeks (80 to 100 pulses per second at an amplitude setting of 30) and were then instructed in acupuncture-like TENS (2 to 4 pulses per second at an amplitude setting of 100). The modulated-Pulse Rate mode was used for all stimulation. In this mode, the device automatically and periodically alters the rate of stimulation to reach an average of the specified frequency in each second. After trying acupuncture-like TENS, the subjects selected the mode they preferred for the last 2 weeks of treatment. The electrodes were initially placed over the area of most

	severe pain, and they were then moved as necessary to optimize pain relief. For subjects with sciatica, electrodes were placed on the leg as well as the back.. Duration 4 weeks. Concurrent medication/care: The treatments were administered for 4 weeks, during which the subjects were asked to make twice-weekly visits. At these visits, all the subjects received moist-heat treatment (hot packs), adjustments in the placement of the TENS electrodes, and written and oral advice concerning lifting, standing, and resting positions. The authors also loaned the subjects electric heating pads for home use and advised them to apply the pads to painful areas for 10 minutes twice a day (n=36) Intervention 2: Placebo/Sham. Sham TENS: The subjects in the sham TENS groups received identical instructions and similar adjustments in the placement of the electrodes. Duration 4 weeks. Concurrent medication/care: The treatments were administered for 4 weeks, during which the subjects were asked to make twice-weekly visits. At these visits, all the subjects received moist-heat treatment (hot packs), adjustments in the placement of the TENS electrodes, and written and oral advice concerning lifting, standing, and resting positions. The authors also loaned the subjects electric heating pads for home use and advised them to apply the pads to painful areas for 10 minutes twice a day (n=37) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS + exercise: uniform set of 12 sequential exercises. Three initial relaxation exercises were followed by 9 exercises designed to improve the flexibility of the spine, hip, and lower extremities. These included leg-stretching and "bend-sitting" exercises. The subjects began with the 3 relaxation exercises and were advised to add a new exercise each day until they were performing all 12. Every day each exercise was performed in sequence, with 2 or 3 repetitions, and the sequence was then performed in reverse order.. Duration 4 weeks. Concurrent medication/care: The treatments were administered for 4 weeks, during which the subjects were asked to make twice-weekly visits. At these visits, all the subjects received moist-heat treatment (hot packs), adjustments in the placement of the TENS electrodes, and written and oral advice concerning lifting, standing, and resting positions. The authors also loaned the subjects electric heating pads for home use and advised them to apply the pads to painful areas for 10 minutes twice a day (n=36) Intervention 4: Placebo/Sham. Sham TENS + exercise. Duration 4 weeks. Concurrent medication/care: The treatments were administered for 4 weeks, during which the subjects were asked to make twice-weekly visits. At these visits, all the subjects received moist-heat treatment (hot packs), adjustments in the placement of the TENS electrodes, and written and oral advice concerning lifting, standing, and resting positions. The authors also loaned the subjects electric heating pads for home use and advised them to apply the pads to painful areas for 10 minutes twice a day
Funding	Academic or government funding (Robert Wood Johnson Foundation, by a Multipurpose Arthritis Centre Grant (1 P060-AM 35605) from the National Institutes of Health, and by the Northwest Health Services Research and Development Field Program, Seattle Veterans Affairs Medical Centre, Seattle)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 4 weeks; Mean Mean difference -2.3 (95%CI -9.6 to 4.9) VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Sickness Impact Profile at 4 weeks; Mean Mean difference -0.5 (95%CI -2.2 to 1.3) Sickness Impact Profile Not stated Top=Unclear; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Number of visits to other healthcare providers at 4 weeks; Mean Mean difference -0.08 (95%CI -0.033 to 0.25); Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Djavid 2007[117]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=41)
Countries and setting	Conducted in Iran; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 6 weeks + follow-up at week 12
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 20-60 years; LBP at least 12 weeks; able to give informed consent, understand instructions and cooperate with treatment
Exclusion criteria	Degenerative disc disease, disc herniation, fracture, spondylosis, spinal stenosis, neurological deficit, abnormal laboratory findings, systemic or psychiatric illness, pregnancy
Recruitment/selection of patients	Recruited from patients referred by local physicians to the clinic of an Occupational Medicine department
Age, gender and ethnicity	Age - Mean (SD): Laser: 38 (7); placebo: 36 (10) years. Gender (M:F): 27:10 (completers). Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>12 weeks pain).
Extra comments	Baseline pain: Laser: 6.2 (1.6)cm, placebo 6.3 (2.0)cm; Oswestry Disability Index: laser: 34.0 (9.7), placebo: 31.8 (7.9)
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Electrotherapy - Laser therapy. Gallium-Aluminium-Arsenide laser; wavelength 810nm; 50mW; continuous wave; 0.2211cm2 spot area; 8 points in paravertebral region (L2 to S2-S3) irradiated; dose 27J/cm^2; treatment time 20 minutes; twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Exercise: first session with physiotherapist then exercises at home (n=20) Intervention 2: Placebo/Sham. Sham laser - as for laser group but inactive probes. Duration 6 weeks. Concurrent medication/care: Exercise: first session with physiotherapist then exercises at home
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 weeks; Group 1: mean 2.4 cm (SD 1.4); n=19, Group 2: mean 4.3 cm (SD 1.6); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 12 weeks; Group 1: mean 16.8 None (SD 3.7); n=19, Group 2: mean 24.1 None (SD 5.2); n=18; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Durmus 2013[122]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP at least 3 months; female
Exclusion criteria	Acute radicular signs or symptoms, radiographic evidence of inflammatory disease of spine, tumour, spondylolysis, spondylolisthesis or sacroiliitis; serious medical conditions for which exercise contraindicated; neuromuscular or dermatologic disease involving lumbar or abdominal area; exercise programme that might increase muscle strength in last 6 months; pacemaker or implanted defibrillator; contracture; previous trauma; history of spinal surgery; pregnancy; severe structural deformity
Recruitment/selection of patients	Department of Physical Medicine and Rehabilitation
Age, gender and ethnicity	Age - Range of means: 48.7 (8.88) to 54.65 (8.79) years. Gender (M:F): All female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	. Baseline scores for exercise, ultrasound and phonopheresis groups respectively - pain: 6.1±1.99, 5.55±1.27, 6.8±1.82; ODQ: 13.75±6.71, 12.75±4.56, 16.55±3.99; physical funtion: 73.25±12.6, 70±13.3, 76.75±11.1; mental health: 56.6±10.1, 58.4±10.8, 64.05±14.2; pain: 65.50±17.69, 58.65±16.23, 62.1±20.86; general health: 50.25±14.46, 51.75±15.24, 55±12.97; social function: 58.85±14.39, 54.45±13.57, 52.25±19.17; physical role: 60.65±31.2, 56.25±33.3, 57.5±34.5; emotional role: 62.55±26.9, 61.3±29.2, 54.65±31.1; energy: 53.5±2.7, 55.75±14, 59.25±10.9
Indirectness of population	No indirectness
Interventions	(n=22) Intervention 1: Electrotherapy - Ultrasound therapy. Ultrasound: 1 MHz frequency, 1.5 W/cm^2 intensity; trandsucer head area 5cm, ERA 4 cm, BNR 1:5; slow circular movements over paravertebral low back region; duration 10 minutes; 3 days a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Exercise: 60 minute back and abdominal exercises (motion, flexibility, strengthening, posture, dynamic body balance, coordination, relaxation) with warm-up and cool-down period 10 minutes stretching exercises 3 days a week (n=22) Intervention 2: Usual care. Exercise: 60 minute back and abdominal exercises (motion, flexibility,

	strengthening, posture, dynamic body balance, coordination, relaxation) with warm-up and cool-down period 10 minutes stretching exercises 3 days a week. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ULTRASOUND THERAPY versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical function domain at 6 weeks; Group 1: mean 87 % (SD 11.4); n=20, Group 2: mean 89.75 % (SD 11.1); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health domain at 6 weeks; Group 1: mean 73.4 % (SD 12.2); n=20, Group 2: mean 74.1 % (SD 10.1); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 pain domain at 6 weeks; Group 1: mean 77.2 % (SD 11.44); n=20, Group 2: mean 77.45 % (SD 12.48); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 general health domain at 6 weeks; Group 1: mean 61 % (SD 16.59); n=20, Group 2: mean 66.75 % (SD 14.26); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 social function domain at 6 weeks; Group 1: mean 84.35 % (SD 12.01); n=20, Group 2: mean 86.1 % (SD 13.09); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical role limitation domain at 6 weeks; Group 1: mean 96.75 % (SD 8.1); n=20, Group 2: mean 90.75 % (SD 15.2); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 emotional role limitation domain at 6 weeks; Group 1: mean 96.05 % (SD 9.91); n=20, Group 2: mean 89.05 % (SD 18.5); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 energy domain at 6 weeks; Group 1: mean 69 % (SD 15.09); n=20, Group 2: mean 72.5 % (SD 10.4); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 weeks; Group 1: mean 1.35 cm (SD 1.3); n=20, Group 2: mean 3.05 cm (SD 1.5); n=20; Pain VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 6 weeks; Group 1: mean 4.95 Not stated (SD 3.31); n=20, Group 2: mean 5.55 Not stated (SD 3.76); n=20; Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up

- Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 6 weeks; Group 1: mean 3.9 Not stated (SD 2.86); n=20, Group 2: mean 4.65 Not stated (SD 4.28); n=20; Beck Depression Inventory 0-63 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Fiore 2011[136]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in Italy; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, CT or MRI
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP at least 3 weeks (subacute or chronic); lumbar pain at rest, pain during movements of the spine, absence of sciatica
Exclusion criteria	Anaesthetic or corticosteroid injections in last 4 weeks, radicular pain, osteoporosis, surgery or previous fracture of spine, spinal stenosis, history of acute trauma, known osteoarthritis, myofascial pain syndrome, inflammatory rheumatic disease, systemic lupus erythematosus, diabetes mellitus type I or II, thyroid dysfunction, obesity, pacemaker, neurological pathology, anxious-depressive syndromes
Recruitment/selection of patients	Consecutive outpatients attending Department of Physical Medicine and Rehabilitation, University of Foggia
Age, gender and ethnicity	Age - Mean (SD): 51.2 (6.0) years; range 25-65 years. Gender (M:F): 11:19. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>3 weeks pain).
Extra comments	Baseline median VAS: laser 7 (range 7-8), ultrasound 7 (range 6-8); baseline Oswestry Disability Questionnaire: laser: 28 (IQR 24-30), US: 28 (26-30)
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Electrotherapy - Laser therapy. 15 sessions (5 days a week for 3 weeks); high-intensity laser therapy: neodymium YAG laser; high power peak 1KW, wavelength 1064nm, maximum energy for single impulse of 150mJ, average power 6W, fluency 760mJ/cm^2; duration of single impulses <150ms; standard handpiece with fixed spacers used to ensure same distance to skin and 90 degrees to the zone to be treated with bright spot diameter 5mm. 3 phases of treatment: 1) fast manual scanning 100cm2/30s on zones of muscular contracture, transversely and longitudinally with patient prone; total dose energy 1200J; 2) applying fixed handpiece vertically on trigger points to pain reduction 70-80%; mean dose energy 200J; 3) slow manual scanning 100cm2/60s on same areas to total dose energy 1200J. Total treatment time approx 10 minutes. Duration 3 weeks. Concurrent medication/care: No other physical therapy; instructed to avoid analgesic/anti-inflammatory drugs and abstain from painful activities involving the lumbar spine

	(n=15) Intervention 2: Electrotherapy - Ultrasound therapy. Continuous ultrasound for 10 minutes; frequency 1MHz, intensity 2W/cm^2, duty cycle 100%; transducer head area 5.8cm2, effective radiating area 4.6cm2; transducer head applied over lumbar and dorsal muscles with slow circular movements, covering area approx 150cm2. Duration 3 weeks. Concurrent medication/care: No other physical therapy; instructed to avoid analgesic/anti-inflammatory drugs and abstain from painful activities involving the lumbar spine
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus ULTRASOUND THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry LBP Disability Questionnaire at 3 weeks; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Fuentes 2014[157]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=117)
Countries and setting	Conducted in Canada; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: Single treatment only
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific LBP at least 3 months; mild-moderate disability (Oswestry Disability Index 60% or less); pain intensity 3-8 points on numerical rating scale (PI-NRS) ranging from 0-10; age 18-65 years
Exclusion criteria	Contraindications to electrotherapy, neurological problems (central or peripheral, e.g. sciatica), concomitant physical therapy or chiropractic treatment, previous electrotherapy
Recruitment/selection of patients	Recruited from local community by widely circulated poster advertisement
Age, gender and ethnicity	Age - Mean (SD): 30 (6.8), range 19-65 years. Gender (M:F): 46:71. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline Pain Intensity (PI-NRS): group 1: 4.01 (0.91), group 2: 4.09 (0.10), group 3: 4.03 (0.92), group 4: 4.10 (0.12), NS
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Electrotherapy - Interferential therapy. AL: Interferential therapy: 1 x 30-minute session; intensity of current at strong but comfortable sensory level; amplitude-modulated frequency 0 Hz. Duration 1 session only. Concurrent medication/care: Limited (5 minute) interaction with therapist (brief introduction to purpose of treatment); therapist left the room, returned at 15 and 30 minutes (n=29) Intervention 2: Placebo/Sham. SL: Same protocol as AL group but no current applied. Duration 1 session only. Concurrent medication/care: Limited (5 minute) interaction with therapist (brief introduction to purpose of treatment); therapist left the room, returned at 15 and 30 minutes (n=29) Intervention 3: Electrotherapy - Interferential therapy. AE: Interferential therapy: 1 x 30-minute session; intensity of current at strong but comfortable sensory level; amplitude-modulated frequency 0 Hz. Duration 1 session only. Concurrent medication/care: Enhanced therapeutic interaction: for 10 minutes, patient questioned about

	symptoms, lifestyle, cause of LBP, active listening, tone of voice, non-verbal behaviour, empathy; therapist styed in the room during the entire treatment, verbal interaction encouraged; few words of encouragement given at the end (n=29) Intervention 4: Placebo/Sham. SE: Same protocol as AE group but no current applied. Duration 2 session only. Concurrent medication/care: Enhanced therapeutic interaction: for 10 minutes, patient questioned about symptoms, lifestyle, cause of LBP, active listening, tone of voice, non-verbal behaviour, empathy; therapist styed in the room during the entire treatment, verbal interaction encouraged; few words of encouragement given at the end
Funding	Academic or government funding (Physiotherapy Foundation of Canada through the Ortho Canada Research Award and the Department of Physical Therapy, University of Alberta, through the Thesis Research Operating Grant Program)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERFERENTIAL THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain Intensity-Numerical Rating Scale (PI-NRS) at After 1 session only; Group 1: mean -1.83 cm (SD 0.85); n=30, Group 2: mean -1.03 cm (SD 0.65); n=29; PI-NRS Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERFERENTIAL THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain Intensity-Numerical Rating Scale (PI-NRS) at After 1 session only; Group 1: mean -3.13 cm (SD 0.97); n=29, Group 2: mean -2.22 cm (SD 0.75); n=29; PI-NRS Not stated Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Goren 2010[176]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=34)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, MRI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Clinical symptoms and signs consistent with lumbar spinal stenosis; pain including back/leg; standing or walking leg discomfort; age >18 years; duration of symptoms >3 months; onset of neurogenic claudication with maximum 15 minutes walk on treadmill (speed 3km/hr and 0 degree incline); MRI confirmation of at least 1 spinal stenosis within 1 year - midsagittal diameter 11.5mm or less, or planimetrically assessed cross-sectional dural area <100mm3
Exclusion criteria	Past or present movement disorder and orthopaedic problems that might affect ability to ambulate; moderate-severe arthritis of knee or hip that might severely compromise ambulation; past or present lower extremity peripheral vascular disease or vascular claudication; previous lumbar spinal stenosis surgery; serious concomitant medical illness (i.e. heart disease, renal failure) that might impair ambulation assessment; another specific spinal disorder (e.g. ankylosing spondylitis, neoplasm, infection, metabolic diseases or severe osteoporosis); major or progressive neurological deficit; contraindications for ultrasound; malignancy
Recruitment/selection of patients	Department of Physical Medicine and Rehabilitation
Age, gender and ethnicity	Age - Mean (SD): Ultrasound: 57.40 (12.69), sham: 49.13 (11.77) years. Gender (M:F): 9:21. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline back pain: US: 5.53 (1.96); sham 6.20 (2.60); leg pain: 5.80 (2.90) and 6.33 (3.33); Oswestry Disability Index: 25.46 (7.70) and 26.90 (10.19)
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Electrotherapy - Ultrasound therapy. 10 minutes of 1 MHz, 1.5 W/cm2 intensity continuous ultrasound on lumbar paravertebral region, 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Exercise in Rehabilitation Department: stretching and strengthening plus low-intensity cycling, 5 days a week for 3 weeks (n=17) Intervention 2: Placebo/Sham. As for active US group but US in off mode. Duration 3 weeks. Concurrent

	medication/care: Exercise in Rehabilitation Department: stretching and strengthening plus low-intensity cycling, 5 days a week for 3 weeks
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ULTRASOUND THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 weeks; Group 1: mean -2.2 cm (SD 2.83); n=15, Group 2: mean -1.94 cm (SD 2.86); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 3 weeks; Group 1: mean -1.47 cm (SD 3.02); n=15, Group 2: mean -2.47 cm (SD 3.75); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index at 3 weeks; Group 1: mean -3.94 Not stated (SD 7.2); n=15, Group 2: mean -7.8 Not stated (SD 10.26); n=15; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Treadmill test total ambulation at 3 weeks; Group 1: mean 94.3 seconds (SD 173.9); n=15, Group 2: mean 114.94 seconds (SD 212.4); n=15; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Treadmill test time to first symptoms at 3 weeks; Group 1: mean 104.33 seconds (SD 188.09); n=15, Group 2: mean 131.7 seconds (SD 163.71); n=15; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Paracetamol use at 3 weeks; Group 1: mean 8.33 Number of tablets (time period not specified) (SD 15.1); n=15, Group 2: mean 16 Number of tablets (time period not specified) (SD 22.47); n=15; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study (subsidiary papers)	Grant 1999[179] (Grant 1998[178])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in United Kingdom; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 4 weeks + follow-up 3 months after end of treatment
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, spine x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 60 years or over; back pain at least 6 months
Exclusion criteria	Treatment with anticoagulants or systemic corticosteroids; dementia; previous treatment with acupuncture or TENS; pacemaker; other severe concomitant disease; inability of patient or carer to apply TENS machine
Recruitment/selection of patients	GP referral
Age, gender and ethnicity	Age - Median (range): TENS: 72 (60-83); acupuncture: 75 (60-90) years. Gender (M:F): 6:54. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline median (IQR) VAS: acupuncture: 140 (98-161), TENS: 101 (78-149), p=0.089; Nottingham Health Profile (NHP): acupuncture 76.7 (41.9-89.5), TENS 50.1 (26.3-80.3), p=0.064; tablets consumed in previous week: acupuncture: 28 (13-42), TENS 42 (28-64), p=0.10
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). 50Hz stimulation; intensity adjusted to suit the patient; patient given own machine to use at home; instructed to use it during the day as required for up to 30 minutes per session to maximum 6 hours per day; also seen twice-weekly by physiotherapist. Duration 4 weeks. Concurrent medication/care: Advised to continue existing medication but not start new analgesics of physical treatments for duration of trial (n=32) Intervention 2: Acupuncture. 2 sessions manual acupunture weekly for 4 weeks (total 8 sessions); 32 gauge needles, 1.5 inch length with guide tube; points chosen for individual patients (only on the back); 6 needles on average per treatmnet (range 2-8); treatment session 20 minutes. Duration 4 weeks. Concurrent medication/care: Advised to continue existing medication but not start new analgesics of physical treatments for duration of trial
Funding	Academic or government funding (Trustees of the Liberton Hospital Endowment Funds)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus ACUPUNCTURE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 4 months; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Nottingham Health Profile pain subscale at 4 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Tablets consumed in previous week at 4 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Gur 2003[184]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=75)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 4 weeks intervention + 1 month follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, radiology
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP at least 1 year; age 20-50 years; not pregnant; no previous spinal srugery
Exclusion criteria	Neurological deficits, abnormal laboratory findings, systemic and psychiatric illness
Recruitment/selection of patients	Admitted to Dicle University Faculty of Medicine Physical Medicine and Rehabilitation Department
Age, gender and ethnicity	Age - Mean (SD): Laser + exercise: 35.2 (10.51) range 20-50 years; exercise only: 36.4 (9.83) range 21-50 years; laser only: 35.4 (11.2) range 22-49 years. Gender (M:F): 15:35. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>1 year).
Extra comments	Baseline pain VAS: laser + exercise: 6.2 (2.1), exercise only: 6.5 (1.6), laser only: 6.1 (1.9); Roland Disability Questionnaire laser + exercise: 17.8 (4.6), exercise only: 15.1 (4.2) laser only: 16.3 (3.9); Modified Oswestry Disability Questionnaire laser + exercise: 32.4 (10.6), exercise only: 30.5 (12.3), laser only: 33.1 (11.8)
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Electrotherapy - Laser therapy. Gallium-arsenide laser; 5 times a week for 4 weeks; standardised fields; 4 minutes per point; energy 1J/cm2 (10.1cm2 energy density, 2.1kHz pulse frequency, 10W diode power, 4.2mW average power, 1cm2 surface) at each point; total stimulation time 30 minutes. Duration 4 weeks. Concurrent medication/care: Lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups given 2 sessions a day; total 40 sessions in 4 weeks; first session with physiotherapist then continued at home by patient (n=25) Intervention 2: Usual care. Exercise only. Duration 4 weeks. Concurrent medication/care: Exercises as for laser + exercise group: Lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups given 2 sessions a day; total 40 sessions in 4 weeks; first session with physiotherapist then continued at home by patient

	(n=25) Intervention 3: Individual Biomechanical exercise - Stretching. Lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups given 2 sessions a day; total 40 sessions in 4 weeks; first session with physiotherapist then continued at home by patient. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 8 weeks; Group 1: mean 1.8 Not stated (assume cm) (SD 1.2); n=25, Group 2: mean 2.9 Not stated (assume cm) (SD 1.3); n=25; VAS Not stated (assume 0-10) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Roland Disability Questionnaire at 8 weeks; Group 1: mean 6.3 Not stated (SD 3.5); n=25, Group 2: mean 5.5 Not stated (SD 3.2); n=25; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Modified Oswestry Disability Questionnaire at 8 weeks; Group 1: mean 14.8 % (SD 8.6); n=25, Group 2: mean 13.6 % (SD 7.2); n=25; Modified Oswestry Disability Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus STRETCHING

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 8 weeks; Group 1: mean 1.9 Not stated (assume cm) (SD 1.4); n=25, Group 2: mean 2.9 Not stated (assume cm) (SD 1.3); n=25; VAS Not stated (assume 0-10) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Roland Disability Questionnaire at 8 weeks; Group 1: mean 6.6 Not stated (SD 2.9); n=25, Group 2: mean 5.5 Not stated (SD 3.2); n=25; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Modified Oswestry Disability Questionnaire at 8 weeks; Group 1: mean 16.7 % (SD 7.6); n=25, Group 2: mean 13.6 % (SD 7.2); n=25; Modified Oswestry Disability Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Herman 1994[217]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=58)
Countries and setting	Conducted in Canada; Setting: Within an existing Workers' Compensation Board back program at a teaching hospital in Hamilton, Ontario
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Work-related low back injury of musculoskeletal or fibromyalgic origin; 3-10 weeks duration; able to tolerate exercise and TENS and provide consent
Exclusion criteria	Pregnancy; objectively determined pathology of the spine; previous spinal surgeries; cardiac disease or pacemaker; concurrent interventions (e.g. chiropractic or additional physical therapy); toxification by narcotic analgesics psychiatric illness; prior experience with TENS; contraindications to TENS
Recruitment/selection of patients	Referred by a physician
Age, gender and ethnicity	Age - Mean (SD): TENS: 36.7 (11.5), sham: 41.7 (11.4) years. Gender (M:F): 46:12. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (3-10 weeks duration).
Extra comments	Baseline Pain VAS: TENS: 42.7 (23.3), sham: 47.9 (21.3)mm; Roland Disability Score: TENS: 12.5 (5.1); sham: 14.3 (5.2) items
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: positive electrode at C7; negative electrodes bilaterally: 1 pair over the intervertebral foramina at L2-L3, 2.5-3cm from midline; 2nd pair at the more tenderpoint of where the sciatic nerve exists from the greater sciatic foramen or over the sciatic nerve one third of the distance from the greater trochanter to the sacral hiatus; 3rd pair in the popliteal fossa at the bifurcation of the sciatic nerve. 15 minutes high frequency (200Hz) with intensity that produces strong but comfortable tingling sensation but no muscle twitches then 15 minutes of acupuncture-like 4 pulses/sec, producing very strong sensation and local muscle twitches. Duration 4 weeks. Concurrent medication/care: Back rehabilitation programme: hydrotherapy, mobility exercises, strengthening exercises, cardiovascular fitness training on cycle ergometer (n=29) Intervention 2: Placebo/Sham. Sham TENS. Duration 4 weeks. Concurrent medication/care: Back rehabilitation

	programme: hydrotherapy, mobility exercises, strengthening exercises, cardiovascular fitness training on cycle ergometer
Funding	Academic or government funding (National Health and Welfare Canada)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 4 weeks; Group 1: mean 35.8 mm (SD 27.7); n=15, Group 2: mean 35.9 mm (SD 27); n=26; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Roland Disability Score at 4 weeks; Group 1: mean 8.9 Not stated (SD 5); n=15, Group 2: mean 9.9 Not stated (SD 6.4); n=26; Roland Disability Score 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hsieh 2002[228]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=133)
Countries and setting	Conducted in China; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Single intervention + 1 week follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP (acute, subacute or chronic)
Exclusion criteria	Any treatment in previous week, carcinoma, previous operation on back (e.g. laminectomy), pregnancy, bleeding disorder, ankylosing spondylitis, infectious disease, unable to take oral medication (e.g. gastric or duodenal ulcer, refusing medication)
Recruitment/selection of patients	Department of Physical Medicine and Rehabilitation
Age, gender and ethnicity	Age - Range: 16 to 79 years. Gender (M:F): 44:89. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (Acute, subacute or chronic).
Extra comments	Baseline Pain VAS: group 1: 4.90 (2.17), group 2: 5.53 (1.97), group 3: 5.55 (1.89); Quebec Back Pain Disability Scale: Group 1: 33.65 (18.63), group 2: 32.73 (17.76), group 3: 28.72 (16.47)
Indirectness of population	No indirectness
Interventions	(n=53) Intervention 1: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS: needles inserted into acupuncture points bilateral B23 and B25; needles 0.25mm diameter x 50mm length; patients felt "teh chi"; 2 bipolar leads from electrical generator connected to 2 pairs of needles (right B23 with left B25 adn right B25 with left B23); 10mV, alternating 3- and 15-Hz stimulation pulses; intensity raised to level neither painful nor unbearable; stimulation lasted 15 minutes. Duration 1 single treatment only. Concurrent medication/care: Medication including NSAID (diclofenac potassium) and muscle relaxant (mephenoxalone) and antacid (Wellpine) + educational material (n=49) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS - cutaneous electrode pads on the same acupoints as for PENS and connected to the same generator. Duration 1 single treatment only. Concurrent medication/care: Medication including NSAID (diclofenac potassium) and muscle relaxant (mephenoxalone) and antacid (Wellpine) + educational material

	(n=31) Intervention 3: Usual care. Medication including NSAID (diclofenac potassium) and muscle relaxant (mephenoxalone) and antacid (Wellpine) + educational material. Duration 2-3 days. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS) versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 1 week; Group 1: mean -1.8 cm (SD 2.44); n=53, Group 2: mean -2 cm (SD 1.94); n=49; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Quebec Back Pain Disability Scale at 1 week; Group 1: mean -16.07 Not stated (SD 15.37); n=53, Group 2: mean -13.6 Not stated (SD 14.95); n=49; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS) versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 1 week; Group 1: mean -1.8 cm (SD 2.44); n=53, Group 2: mean -1.75 cm (SD 2.2); n=31; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Quebec Back Pain Disability Scale at 1 week; Group 1: mean -16.07 Not stated (SD 15.37); n=53, Group 2: mean -14.45 Not stated (SD 16.16); n=31; Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 1 week; Group 1: mean -2 cm (SD 1.94); n=49, Group 2: mean -1.75 cm (SD 2.2); n=31; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Quebec Back Pain Disability Scale at 1 week; Group 1: mean -13.6 Not stated (SD 14.95); n=49, Group 2: mean -14.45 Not stated (SD 16.16); n=31;

Quebec Back Pain Disability Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hurley 2001[231]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 1 week + follow-up 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 to 65 years; LBP +/- pain radiating to 1 or both lower limbs for 1-3 months with no previous episodes in last 6 months
Exclusion criteria	Pacemaker or indwelling stimulator; breaks in skin or lack of normal skin sensation under area where electrodes were to be placed; epilepsy; pregnancy; previous spinal surgery or vertebral fracture; known medical, neurological or musculoskeletal disorders; or reflex and/or motor signs of nerve root compression
Recruitment/selection of patients	Recruited from staff and students of the university and patients referred by general practitioners for physiotherapy at acute hospital
Age, gender and ethnicity	Age - Mean (SD): 34.6 (11.7) years. Gender (M:F): 28:32. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (1-3 months).
Extra comments	Baseline median (IQR) McGill Pain Questionnaire: Interferential (painful area) 11.5 (11.8); interferential (spinal nerve) 14.0 (12.5); control 15.5 (14.7); Roland-Morris Disability Questionnaire: Interferential (painful area) 5.5 (6.3); interferential (spinal nerve) 9.0 (8.0); control 5.0 (4.5); EQ-5D: Interferential (painful area) 0.69 (0.14); interferential (spinal nerve) 0.76 (0.17); control 0.69 (0.20)
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Electrotherapy - Interferential therapy. Painful area interferential therapy: standardised stimulation; carrier frequency 3.85 Hz, 140 Hz constant; pulse duration 130 micros; current amplitude gradually increased until subject reported first mild tingling sensation then strong but comfortable sensation; increased to maintain continuous intensity; for 30 minutes; 2 electrodes 45 x 102mm; unilaterally or bilaterally at peripheries of LBP painful area; in subjects with unilateral pain, cathode at proximal extent and anode at distal extent; bilateral pain: paraspinal application of cathode and anode at lateral limits of painful area parallel to vertebral column; 2-3 times per week for 1 week. Duration 1 week. Concurrent medication/care: The Back Book patient education encouraging early return to normal activities and participation in low impact activities such as walking, swimming and cycling.

	(n=20) Intervention 2: Usual care. The Back Book patient education encouraging early return to normal activities and participation in low impact activities such as walking, swimming and cycling.. Duration 1 week. Concurrent medication/care: Not stated (n=22) Intervention 3: Electrotherapy - Interferential therapy. Spinal nerve interferential therapy: standardised stimulation; carrier frequency 3.85 Hz, 140 Hz constant; pulse duration 130 micros; current amplitude gradually increased until subject reported first mild tingling sensation then strong but comfortable sensation; increased to maintain continuous intensity; for 30 minutes; 2 electrodes 45 x 102mm; midpoint of electrodes placed lateral to the intervertebral foramen of the target spinal nerve, parallel to the vertebral column; for unilateral symptoms, proximal cathode placed 2cm lateral to intervertebral foramen and distal anode 2cm further laterally; bilateral: paraspinal application of of cathode and anode parallel to vertebral column at level of intervertebral foramen of paraspinal target spinal nerves. Duration 1 week. Concurrent medication/care: The Back Book patient education encouraging early return to normal activities and participation in low impact activities such as walking, swimming and cycling.
Funding	Academic or government funding (Society of Orthopaedic Medicine (UK) and Manipulation Association of Chartered Physiotherapists Churchill Livingstone Award)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERFERENTIAL THERAPY versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: EQ-5D at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: McGill Pain Questionnaire at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland-Morris Disability Questionnaire at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hurley 2004[232]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=240)
Countries and setting	Conducted in Irish Republic; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 8 weeks + follow-up to 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged 18-65 yrs with acute LBP (duration: 4-12 weeks) with or without pain irradiation to the buttock or legs
Exclusion criteria	Previous spinal surgery, motor vehicle accident, systemic disease, concurrent medical or musculoskeletal conditions, contraindication to manual therapy, psychiatric illness, lack of fluency in English, RMDQ < 4 points, pregnancy
Recruitment/selection of patients	Recruited following referral by physicians to physiotherapy departments in the (government-funded) National Health Service in Northern Ireland
Age, gender and ethnicity	Age - Range of means: 39.6 (11.6) to 40.5 (11.3) years. Gender (M:F): 125:115. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (4-12 weeks duration).
Extra comments	Baseline scores (mean SD) for manual therapy, inferential therapy and combined therapy groups, respectively - average back pain: 52.08±24.49, 52.06±24.93, 49.84±28.91; EQ5D: 0.51±0.3, 0.52±0.28, 0.54±0.28; SF36 physical functioning: 50.64±20.75, 55.65±21.17, 51.46±24.61; RMDQ: 10.7±4.86, 9.04±4.45, 10.41±5.01
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Electrotherapy - Interferential therapy. Interferential therapy: Omega Inter 4150 portable IFT unit (freq: 3.85 kHz, beat freq: 140 Hz, 130 microsec), spinal nerve root electrode placement method via 2 Reply 658 carbon silicone self-adhesive electrodes 50 x100 mm. Duration 8 weeks. Concurrent medication/care: Co-interventions not reported (n=80) Intervention 2: Manual therapy - Maitland Technique. Mobilisation/manipulation techniques that passively move an intervertebral joint within or beyond its existing ROM described by Maitland. Duration 8 weeks. Concurrent medication/care: Co-interventions not reported (n=80) Intervention 3: Manual therapy - Maitland Technique. Maitland + intererential: Mobilisation/manipulation techniques that passively move an intervertebral joint within or beyond its existing ROM described by Maitland,

	followed by interferential therapy. Duration 8 weeks. Concurrent medication/care: Co-interventions not reported
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERFERENTIAL THERAPY versus MAITLAND TECHNIQUE Protocol outcome 1: Quality of life at follow-up - Actual outcome: EQ-5D at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness - Actual outcome: SF-36 physical functioning at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MAITLAND TECHNIQUE + INTERFERENTIAL THERAPY versus MAITLAND TECHNIQUE Protocol outcome 1: Quality of life at follow-up - Actual outcome: EQ-5D at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness - Actual outcome: SF-36 physical functioning at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Itoh 2009[245]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in Japan; Setting: Secondary care outpatients
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 5 weeks intervention + follow-up to 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar or lumbosacral LBP 6 months or longer; no radiation of pain; age 60 or older; normal neurological findings of lumbosacral nerve including deep tendon reflexes, plantar response, voluntary muscle action, straight leg raising and sensory function; not receiving acupuncture for >6 months
Exclusion criteria	Major trauma or systemic disease; receiving conflicting or ongoing co-interventions
Recruitment/selection of patients	Recruited from Meiji University of Oriental Medicine Hospital
Age, gender and ethnicity	Age - Range: 61-81 years. Gender (M:F): 12:20. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline pain intensity: TENS: 63.8 (16.5); acupuncture: 60.0 (19.8); acupuncture + TENS: 62.3 (12.2); control: 63.7 (19.0). Roland-Morris: TENS: 8.2 (4.1); acupuncture: 7.9 (3.1); acupuncture + TENS: 6.8 (1.2); control: 9.0 (4.9)
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Usual care. No specific treatment except allowed to use topical poultice containing methylsalicylic acid. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 2: Acupuncture. Acupunture 15 minutes at BL23, BL25, BL32, BL40, BL60, GB30, GB34;needles 0.2mm x 40mm inserted to depth 10mmusing "sparrow pecking" technique until de qi, then 10 more minutes, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS for 15 minutes; amplitude-modulated frequency of 122Hz (beat frequency) generated by 2 medium frequency sinusoidal waves (4.0 and 4.122kHz) (feed frequency); 2 electrodes 809mm2 and 5688mm2 placed at the point with the most tenderness

	and the near side of that point; intensity adjusted to tingling sensation 2-3 times the subject's sensory threshold, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 4: Acupuncture. 15 minutes of TENS then 15 minutes of acupuncture, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 58 mm (SD 23.7); n=6, Group 2: mean 58.1 mm (SD 28.9); n=7; Pain VAS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 10 weeks; Group 1: mean 7.5 points (SD 3.6); n=6, Group 2: mean 7.7 points (SD 4.6); n=7; Roland-Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus ACUPUNCTURE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 58 mm (SD 23.7); n=6, Group 2: mean 43.3 mm (SD 25.7); n=7; Pain VAS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 10 weeks; Group 1: mean 7.5 points (SD 3.6); n=6, Group 2: mean 6.7 points (SD 4.8); n=7; Roland-Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE PLUS TENS versus ACUPUNCTURE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 43.3 mm (SD 25.7); n=7; Pain VAS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 10 weeks; Group 1: mean 6.5 points (SD 1.6); n=6, Group 2: mean 6.7 points (SD 4.8); n=7; Roland-Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Jarzem 2005[249]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=349)
Countries and setting	Conducted in Canada; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosed by physician
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Continuous low back pain for 3 months without leg symptoms, age 18-70 years; able to make required visits over treatment period
Exclusion criteria	Maximal pain above T12; previous use of TENS; seeking disability compensation; history of cancer, corticosteroid or anticoagulant use; implanted pacemaker; sciatica; concomitant physiotherapy or chiropractic therapy; recent surgery (previous 3 months); onset of major illness; pregnancy
Recruitment/selection of patients	Referred by surgeon
Age, gender and ethnicity	Age - Mean (SD): 45.1 years (no SD reported). Gender (M:F): 162:162. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline Roland Disability Score: Sham: 10.3 (5.1); conventional: 11.3 (5.3); acupuncture: 9.9 (5.6); biphasic: 10.5 (5.2).
Indirectness of population	No indirectness
Interventions	(n=93) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Conventional TENS (threshold just below muscle twitching); electrode placement individualised; used at home for mean of 188 minutes/day. Duration 3 months. Concurrent medication/care: Not stated (n=81) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Acupuncture TENS (threshold just below muscle twitching); electrode placement individualised; used at home for mean of 188 minutes/day. Duration 3 months. Concurrent medication/care: Not stated (n=86) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Biphasic TENS (threshold just below muscle twitching); electrode placement individualised; used at home for mean of 188 minutes/day. Duration 3 months. Concurrent medication/care: Not stated

	(n=89) Intervention 4: Placebo/Sham. Sham TENS. Duration 3 months. Concurrent medication/care: Not stated
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) CONVENTIONAL versus PLACEBO/SHAM Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Score at 3 months; Group 1: mean 9.9 Not stated (SD 5.9); n=84, Group 2: mean 9.7 Not stated (SD 5.8); n=83; Roland-Morris Disability Score Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) ACUPUNCTURE versus PLACEBO/SHAM Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Score at 3 months; Group 1: mean 9 Not stated (SD 6.1); n=78, Group 2: mean 9.7 Not stated (SD 5.8); n=83; Roland-Morris Disability Score Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) BIPHASIC versus PLACEBO/SHAM Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Score at 3 months; Group 1: mean 9.1 Not stated (SD 5.7); n=79, Group 2: mean 9.7 Not stated (SD 5.8); n=83; Roland-Morris Disability Score Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Klein 1990[284]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in USA; Setting: Secondary Care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP at least 1 year; age 21-55 years; not pregnant; no prior back surgery; not more than 10 pounds overweight; not involved in litigation or disability claims; straight leg raising and sciatica tension signs normal or negative
Exclusion criteria	Acute exacerbation of chronic pain; reflex asymmetry, loss of sensation, focal weakness
Recruitment/selection of patients	Department of Medical Orthopaedics
Age, gender and ethnicity	Age - Mean (SD): Laser: 44.1 (7.9) years; placebo 41.3 (10.7) years. Gender (M:F): 5:15. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>1 year duration).
Extra comments	Baseline pain scores (0-7.5cm scale) laser 3.0 (1.2) vs. placebo 3.3 (1.1); disability 5.4 (3.3) vs. 5.9 (2.6)
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Electrotherapy - Laser therapy. Gallium-arsenide class I multihead pulsed-output infrared laser; frequency 1000Hz; pulse width 200nanoseconds; wavelength 904 nanometers; standardised fields including L4 to L5 and L5 to S1 apophyseal capsules, dorsolumbal fascia and interspinous ligaments, gluteal fascia and posterior sacro-iliac ligaments; 10 2W laser heads in a 12cm linear array which permits simultaneous point stimulation of 1cm2 of tissue at each of the 10 sites; stimulation time 4 minutes at each point; energy 1.3j/cm2; 20 minutes total stimulation time; treated 3 times a week for 4 weeks. Duration 4 weeks. Concurrent medication/care: All patients had standardised home exercise programme of 50 full-forward flexion exercises (standing) and 25 extension exercises twice daily; wlk briskly 20 minutes each day; 2 sets of knee flexion coupled with hip abduction exercises each day (n=10) Intervention 2: Placebo/Sham. As for laser group but inactivated laser. Duration 4 weeks. Concurrent medication/care: All patients had standardised home exercise programme of 50 full-forward flexion exercises (standing) and 25 extension exercises twice daily; wlk briskly 20 minutes each day; 2 sets of knee flexion coupled with hip abduction exercises each day

Funding	Academic or government funding (Santa Barbara Cottage Hospital and Sansum Medical Research Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS (0-7.5cm) at 4 weeks; Group 1: mean 1.7 cm (SD 1.4); n=10, Group 2: mean 2.1 cm (SD 1.2); n=10; Pain VAS 0-7.5cm Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 4 weeks; Group 1: mean 3.6 Not stated (SD 2.1); n=10, Group 2: mean 2.9 Not stated (SD 1.3); n=10; Roland-Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kofotolis 2008[289]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=92)
Countries and setting	Conducted in Greece; Setting: Secondary care rehabilitation setting
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 4 weeks and follow-up 8 weeks after end (i.e. week 12 altogether)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Women with chronic back pain; unsuccessful resting periods for 6 months; had received some form of therapeutic treatment; LBP with at least one of the following: a) during and/or after activity; b) during and/or after sitting; c) during climbing stairs
Exclusion criteria	History of surgery or sciatica or spinal abnormalities on x-ray (i.e. spondylolysis or spondylolisthesis or lumbar scoliosis >10 degrees) or other injuries of the trunk, or muscle and tendon ruptures; previous rhythmic stabilisation or TENS
Recruitment/selection of patients	Referred for treatment of chronic low back pain
Age, gender and ethnicity	Age - Mean (SD): 40.5 (6.7) years. Gender (M:F): All women. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores for UC, UC+TENS, TENS, and placebo groups, respectively - pain: 2.1 (0.8), 1.9 (0.6), 2.3 (0.4) 2.1 (0.7); Oswestry Index: 17.1 (2.5), 17.4 (2.2), 18.3 (2.3), 15.7 (4.7)
Indirectness of population	No indirectness
Interventions	(n=23) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: 120 Z unit; pulse duration 200microseconds; frequency 4 Hz; strong but comfortable stimulation; 4 rubber electrodes 2cm x 3cm applied on the fascia thoracolumbaliis and 10cm proximal to this along midline of muscle (i.e. directly over site of pain); 40-45 minutes; 5 times a week for 4 weeks. Duration 4 weeks. Concurrent medication/care: Not stated (n=23) Intervention 2: Placebo/Sham. Placebo TENS - as for TENS but electricity disconnected. Duration 4 weeks. Concurrent medication/care: Not stated (n=23) Intervention 3: Usual care. Alternating trunk flexion-extension against resistance for 10 seconds, 3 sets of 15 repetitions; rest 30 seconds and 60 seconds after completion of 15 repetitions for each pattern and between sets; 5 times a week. Duration 4 weeks. Concurrent medication/care: Not stated

	(n=23) Intervention 4: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS 20 minutes plus 5 minutes rest plus 20 minutes exercises as for usual care group. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain severity at 8 weeks post-treatment; Group 1: mean -0.31 Not stated (SD 0.07); n=23, Group 2: mean 0.19 Not stated (SD 0.04); n=21; Borg verbal rating pain scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -2.1 Not stated (SD 0.63); n=23, Group 2: mean 0.1 Not stated (SD 0.5); n=21; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) PLUS USUAL CARE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain severity at 8 weeks post-treatment; Group 1: mean -0.47 Not stated (SD 0.09); n=21, Group 2: mean -0.92 Not stated (SD 0.17); n=23; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean -7.1 Not stated (SD 1.49); n=23; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Konstantinovic 2010[292]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=546)
Countries and setting	Conducted in Serbia and Montenegro; Setting: Secondary care (inpatient or outpatient)
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, MRI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute (<4 weeks) LBP and unilateral radiculopathy (typical dermatomal pain radiating beyond the knee, evoked by stretching sciatic nerve and worsening on Valsalva manoeuvre, and signs of nerve root dysfunction such as sensory, motor and reflex impairments) caused by prolapsed intervertebral disc
Exclusion criteria	No response to initial contact; red flag symptoms; diabetes mellitus, neurological problems or cancer; pregnant; treated surgically for same problem; oral corticosteroids or steroid injections for any reason in previous month
Recruitment/selection of patients	Rehabilitation Clinic
Age, gender and ethnicity	Age - Range of means: 41.87 (9.22) to 44.84 (9.22) years. Gender (M:F): 231:315. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<4 weeks pain).
Extra comments	Baseline scores (median, IQR) for groups A, B and C, respectively - back pain: 66 (60-69), 67 (62.5 to 70), 65 (60 to 67); leg pain: 78.5 (76.4; 80.6), 78 (75; 80.5), 76 (70; 78.1) Oswestry: 32 (31; 33), 31 (30; 32), 32 (31; 34): physical: 10 (9; 10), 10 (9; 11), 10 (9; 11); mental: 12 (11; 14), 11.5 (11; 12), 12 (11; 14)
Indirectness of population	No indirectness
Interventions	(n=182) Intervention 1: Electrotherapy - Laser therapy. Group A: Laser: wavelength 904nm (red); frequency 5000 (units not stated; assume Hz); power output 100mW; spot size 1cm; power density 20mW/cm2; energy 3J/point; energy density 3J/cm2 on each point; treatment time 150s on each point; 4 points; daily energy delivered 12J; total energy delivered 180J; probe held stationary in skin contact; 2.5 and 3.5cm laterally of the spinous process of the involved nerve root (L4 or L5 or S1)and one distal-level segment; 5 times weekly for 15 treatments. Duration 3 weeks. Concurrent medication/care: Nimesulide 200mg/day (n=182) Intervention 2: Usual care. Group B: Nimesulide 200mg/day. Duration 3 weeks. Concurrent medication/care: Not stated

	(n=182) Intervention 3: Placebo/Sham. Group C: Sham laser. Duration 3 weeks. Concurrent medication/care: Nimesulide 200mg/day
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-12 Physical at 3 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-12 Mental at 3 weeks; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 weeks; Group 1: mean -29.97 mm (SD 6.69); n=182, Group 2: mean -20.81 mm (SD 6.08); n=182; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 3 weeks; Group 1: mean -43.81 mm (SD 5.78); n=182, Group 2: mean -21.33 mm (SD 6.03); n=182; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability score: improvement = switch from moderate to minimal disability category at 3 weeks; Group 1: 151/182, Group 2: 33/182; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-12 Physical at 3 weeks; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-12 Mental at 3 weeks; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 weeks; Group 1: mean -29.97 mm (SD 6.69); n=182, Group 2: mean -15.69 mm (SD 5.99); n=182; VAS 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 3 weeks; Group 1: mean -43.81 mm (SD 5.78); n=182, Group 2: mean -16.54 mm (SD 5.65); n=182; VAS 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability score: improvement = switch from moderate to minimal disability category at 3 weeks;

Group 1: 151/182, Group 2: 98/182; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Krammer 2015[295]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=40)
Countries and setting	Conducted in New Zealand
Line of therapy	Unclear
Duration of study	Intervention time: 1 week
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: By physiotherapist during examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients over the ageof 18 suffering from acute non-specific LBP with or without leg pain that has been present for 6 weeks or less
Exclusion criteria	Cauda equina symptoms or known presence of tumour, metabolic disease, rheumatoid arthritis, osteoporosis, prolonged history of steroid use, signs consistent with nerve root compression, spinal fracture, history of lumbar spine surgery, current pregnancy, cardiac pacemaker, cardioverter defibrillator, neuro-stimulator or any active medical device or metallic implant within the area of the lower back
Recruitment/selection of patients	Recruited from the University of Otago, School of Physiotherapy Clinic and provided with treatment. Participants were assessed against the inclusion/exclusion criteria during a routine physiotherapy examination.
Age, gender and ethnicity	Age - Mean (range): 30.2-35.7. Gender (M:F): 1/1. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<6 weeks pain).
Extra comments	Baseline (mean±SD): ODI - 35.60±15.39 (PEME group) 35.20±20.82 (Placebo group), PSFS - 4.10±1.21 (PEME group) 3.99±1.75 (Placebo group), NPRS - 5.00±1.39 (PEME group) 4.91±1.92 (Placebo group)
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Participants were asked to wear the pulsed electromagnetic energy (PEME) device continuously for the first 7 days. The device atenna was placed over the site of LBP and kept in place by a comfortable elastic Velcro wrap worn around the waist. Duration 1 week. Concurrent medication/care: Educated on the use of the device by their physiotherapist and received typical physiotherapy treatment as deemed necessary. Participants received physiotherapy treatment twice per week for up to 4 weeks. (n=20) Intervention 2: Usual care. The placebo device did not emit a radiofrequency electromagnetic field but was otherwise identical to the active device.. Duration 1 week. Concurrent medication/care: Educated on the use of the

	device by their physiotherapist and received typical physiotherapy treatment as deemed necessary. Participants received physiotherapy treatment twice per week for up to 4 weeks.
Funding	Study funded by industry (BioElectronics Corporation, 4539 Metropolitan Court, Frederick, MD 21704 I.)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) - PEME versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Patient Specific Functional Scale (PSFS) at 4 weeks; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Numeric Pain Rating Scale (NPRS) at 4 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: ODI at 4 weeks; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Lehmann 1986[317]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=53)
Countries and setting	Conducted in USA; Setting: Inpatients at rehabilitation programme
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 3 week intervention + 6 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic disabling LBP (>3 months); at least minimal level of motivation; level of disability warrants expense of inpatient treatment; with or without previous lumbar surgery
Exclusion criteria	Candidates for lumbar surgery; LBP <3 months: pregnancy; osteomyelitis of spine; discitis, tumour; ankylosing spondylitis; vertebral fracture; structural scoliosis
Recruitment/selection of patients	Orthopaedic clinic
Age, gender and ethnicity	Age - Mean (range): 40 (25 to 55) years. Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline Low Back Pain Rating Scale around 50 on a 0-100 scale for each group (shown graphically); scale includes items for pain, impairment and medication use
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: electrodes attached and stimulated with live battery; intensity reduced to no sensation; 5 times weekly for 3 weeks; pulse width 250/sec; frequency 60 Hz; points over the centre of back pain; in patients with leg pain, stimulation also over related nerve trunk. Duration 3 weeks. Concurrent medication/care: All patients took part in a comprehnesive multidisciplinary educational programme and twice daily exercise training sessions (n=18) Intervention 2: Placebo/Sham. Sham TENS: electrodes attached and stimulated with live battery; intensity reduced to no sensation; live battery replaced with dead battery; 5 times weekly for 3 weeks. Duration 3 weeks. Concurrent medication/care: All patients took part in a comprehnesive multidisciplinary educational programme and twice daily exercise training sessions (n=17) Intervention 3: Acupuncture. Electroacupuncture; twice-weekly; biphasic wave frequency 2-4 Hz; increased to

	patient's level of tolerance; visible muscle contractions usually occurred; stimulation loci along inner and outer bladder meridian if pain was lateral (sciatica); Hoku point and additional points usually stimulated according to patient's pattern of pain; other aches and pains often treated concomitantly to LBP. Duration 3 weeks. Concurrent medication/care: All patients took part in a comprehensive multidisciplinary educational programme and twice daily exercise training sessions
Funding	Academic or government funding (NIHR grant)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Return to work at 6 months; Group 1: 11/18, Group 2: 8/18; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus ACUPUNCTURE Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Return to work at 6 months; Group 1: 11/18, Group 2: 9/17; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Licciardone 2013{LICCIARDONE2013B} (Licciardone 2012[324], Licciardone 2012[323], Licciardone 2013[325], Licciardone 2014[322])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=455)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 8 weeks + follow-up to 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Adult (aged 21 to 69 years) nonpregnant individuals with LBP at least 3 months
Exclusion criteria	Red flags, low back surgery in last year; workers' compensation benefits in the past 3 months; ongoing litigation involving back problems; angina or congestive heart failure symptoms with minimal activity, history of a stroke, or transient ischemic attack in the past year; implanted biomedical devices (e.g. pacemaker, artificial joints); active bleeding or infection in the lower back, or other conditions impeding protocol implementation; use of corticosteroids in the past month; or use of manual treatment (OMT or manual therapies delivered by chiropractors or physical therapists) or UST in the past 3 months or more than 3 times in the past year; high probability of lumbar radiculopathy, a specific cause of low back pain and a relative contraindication to OMT (2 x 2 factorial design)
Recruitment/selection of patients	Newspaper advertisements, community agencies, and medical clinics (excluding those providing osteopathic manual therapy)
Age, gender and ethnicity	Age - Median (IQR): 41 (29-51) years. Gender (M:F): 171:284. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores (median IQR) - pain: US 44 (29-60), sham: 44 (23 to 61); RMDQ: US 5 (3-10), sham 5 (3-9); SF36 general health: US 72 (56-85), sham 67 (52-82)
Indirectness of population	No indirectness
Interventions	(n=233) Intervention 1: Electrotherapy - Ultrasound therapy. Ultrasound: 10 cm2 applicator at an intensity of 1.2 W/cm2 and frequency of 1 MHz in continuous mode. Conductivity gel was used to enhance absorption and produce deep muscle thermal effects. About 150 to 200 cm2 of the lower back were treated. Six treatments over 8 weeks. Duration 8 weeks. Concurrent medication/care: Patients could self-initiate low back pain co-treatments, such as non-prescription drugs and complementary and alternative medicine therapies. Patients could also independently receive low back pain usual care (any co-treatments except OMT, other manual therapies, or UST) at any time from physicians

	not associated with the study. 2 x 2 factorial design, so half the patients in each group also received orthopaedic manual treatment (OMT) and the other half sham treatment. (n=222) Intervention 2: Placebo/Sham. Sham UST was delivered in the same manner at a subtherapeutic intensity (0.1 W/cm2). Duration 8 weeks. Concurrent medication/care: Patients could self-initiate low back pain co-treatments, such as non-prescription drugs and complementary and alternative medicine therapies. Patients could also independently receive low back pain usual care (any co-treatments except OMT, other manual therapies, or UST) at any time from physicians not associated with the study. 2 x 2 factorial design, so half the patients in each group also received orthopaedic manual treatment (OMT) and the other half sham treatment.
Funding	Academic or government funding (National Institutes of Health–National Centre for Complementary and Alternative Medicine (K24-AT002422) and the Osteopathic Heritage Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ULTRASOUND THERAPY versus PLACEBO/SHAM Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General Health Scale at 12 weeks; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 12 weeks; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Moderate (>30%) pain reduction at 12 weeks; Group 1: 128/233, Group 2: 120/222; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Lombotens trial trial: Buchmuller 2012[59]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=236)
Countries and setting	Conducted in France; Setting: Pain centres
Line of therapy	Unclear
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged over 18 years; covered by national health insurance policy, consulted pain centre in previous week for chronic (>3 months) LBP graded 50 or more on a VAS, with or without radicular pain
Exclusion criteria	Previously treated with TENS; surgery for radiculopathy in last 3 months; pain < 3 months; bilateral radiculopathy; acute or non-stabilised radicular syndrome (sciatalgia, cruralgia); surgery planned in next 6 months; pacemaker; other non-pharmacological treatment planned (physiotherapy, acupuncture, mesotherapy, manipulation, corset, psychological support); LBP symptomatic of another condition (i.e. compressed fracture or progressive inflammatory, neoplastic or infectious condition); life expectancy <3 months; articular or foraminal infiltrations planned during study period; ongoing medico-legal dispute
Recruitment/selection of patients	21 French pain centres
Age, gender and ethnicity	Age - Mean (SD): 53 (13) years. Gender (M:F): 88:148. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline medain (range) Roland-Morris Disability Scale score: TENS: 15 (3-24), sham: 15 (5-22); Baseline VAS (mean SD): TENS 63 (15), sham 66 (17); Maximum VAS (mean SD): TENS 85 (12), 85 (12)
Indirectness of population	No indirectness
Interventions	(n=117) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Continuous stimulation at 80-100Hz, wave durations 50-100 microseconds plus bursts of 1-4Hz, wave durations 100-400microseconds. If no radicular pain: 2 electrodes placed on healthy skin on each side to the painful area. For those with radicular pain, 2 electrodes spanning the painful area of the back and 2 on the trajectory of the nerve involved in the radiculopathy. Intensity increased to painful tingling (or 25mA if no sensation perceived by patient), then intensity further increased until tolerable impulses perceived or up to 30mA. Stimulation continued for 1 hour. Self-administered by patient; instructed to complete 4 x 1-hour sessions per day for 3 months. Duration 3 months. Concurrent medication/care: Not stated

	(n=119) Intervention 2: Placebo/Sham. As for TENS group but no electrical current delivered. Duration 3 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (Direction Generale de la Sante (Ministere de la Sante et des Sports), Fondation CNP Assurances, Institut UPSA Douleurs)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36: physical summary score at 3 months; Group 1: mean 35.3 % (SD 7.3); n=91, Group 2: mean 34.3 % (SD 7.8); n=83; SF-36 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36: psychological summary score at 3 months; Group 1: mean 39.3 % (SD 12.4); n=91, Group 2: mean 39.1 % (SD 11.1); n=83; SF-36 Mental summary score 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS: improvement of 50% or more from baseline at 3 months; Group 1: 26/104, Group 2: 7/104; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Roland-Morris Disability Questionnaire: improvement of 4 points (median 15 at baseline) at 3 months; Group 1: 29/110, Group 2: 28/112; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up
- Actual outcome: Dallas score anxiety and depression at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Marchand 1993[358]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=42)
Countries and setting	Conducted in Canada; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 10 weeks + follow-up 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 to 60 years; chronic LBP >6 months
Exclusion criteria	Scoliosis >15 degrees; important loss of sensibility and reflex indicating root compression and surgical indication; collapse of >3 lumbar vertebrae; spondylolisthesis >1cm; obesity (weight >20% over normal weight curve; important psychological problems
Recruitment/selection of patients	Medical referral and advertisements in local newspaper
Age, gender and ethnicity	Age - Range of means: 35.08 (7.38) to 37.25 (8.18) years. Gender (M:F): 20:22. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline data presented as graph
Indirectness of population	No indirectness
Interventions	(n=14) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS; frequency 100Hz; square wave 125 micros pulses; low-intensity (clear but unpainful paraesthesia); treatment time 30 minutes; twice a week for 10 weeks. Duration 10 weeks. Concurrent medication/care: Not stated (n=12) Intervention 2: Placebo/Sham. Placebo TENS: as for TENS but current disconnected. Duration 10 weeks. Concurrent medication/care: Not stated (n=16) Intervention 3: Usual care - Waiting list. No treatment waiting list control. Duration 10 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain intensity VAS at 6 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Melzack 1983[369]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=41)
Countries and setting	Conducted in Canada; Setting: Secondary Care
Line of therapy	Unclear
Duration of study	Intervention time: Up to 5 weeks (mean 3 weeks)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP; ambulatory; sufficiently intelligent to understand instructions
Exclusion criteria	Not stated
Recruitment/selection of patients	Referred to Physiotherapy Department of Montreal General Hospital
Age, gender and ethnicity	Age - Mean (SD): 46.3 years (SD not stated). Gender (M:F): 19:22. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline data not reported
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS; one electrode at centre of painful area on back and the other electrode on lateral aspect of thigh; frequency 4 to 8 Hz; intensity raised until reported as unpleasant, then reduced to tolerable level; twice a week for 30 minutes. Until a) 10 treatments or b) patient considered pain sufficiently relieved to no longer need/want therapy or c) pain not helped and patient requested another form of standard physical therapy or d) therapist judged patient's condition worse. Duration Mean 5.1 sessions. Concurrent medication/care: Standard exercises for LBP (n=21) Intervention 2: Massage. Massage: 4 suction cups placed on skin, kept in place with mild negative pressure; attached to apparatus producing slowly varying changes in pressure for constant gentle massage. Until a) 10 treatments or b) patient considered pain sufficiently relieved to no longer need/want therapy or c) pain not helped and patient requested another form of standard physical therapy or d) therapist judged patient's condition worse. Duration Mean 5.6 sessions. Concurrent medication/care: Not stated
Funding	Academic or government funding (Natural Sciences and Engineering Research Council of Canada)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus MASSAGE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: McGill Pain Rating Index at 3 weeks; Group 1: mean -69.5 % (SD 7.5); n=20, Group 2: mean -37.2 % (SD 6.4); n=21; McGill Pain Rating Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: McGill Present Pain Intensity at 3 weeks; Group 1: mean -80.8 % (SD 10.1); n=20, Group 2: mean -40.9 % (SD 6.9); n=21; McGill Present Pain Intensity 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Responder criteria at follow-up - Actual outcome: Pain relief >50% based on McGill Pain Rating Index at 3 weeks; Group 1: 17/20, Group 2: 8/21; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	NCT01017913 trial: Facci 2011[131]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=150)
Countries and setting	Conducted in Brazil; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	>18 years old; seeking treatment for chronic (>3 months) non-specific LBP (with or without leg pain)
Exclusion criteria	Specific cause detectable e.g. infection, neoplasm, metastasis, osteoporosis, rheumatoid arthritis, fracture, inflammatory process; LBP <3 months; receiving treatment for pain (except for medicines); pregnancy; vertebral column surgery in last 3 months; contraindication to electrotherapy (e.g. skin lesions, abnormal sensitivity, infectious and blood diseases, pacemaker); inability to answer questionnaires; fibromyalgia; psychiatric problems; declined participation or unwilling to follow protocol for 2 weeks
Recruitment/selection of patients	Recruited from waiting list at Cesumar (Centro Universitario de Maringa), Brazil
Age, gender and ethnicity	Age - Range of means: 45.32 (17.05) to 49.63 (15.52) years. Gender (M:F): 41:109. Ethnicity: White 134; Black 16
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline pain: TENS: 46.5 (28.6)mm, IFC: 56.6 (24.9)mm, waiting list control 69.4 (25.6)mm, p<0.01. Baseline Roland-Morris Disability Questionnaire: TENS: 13.36 (5.41), IFC: 14.22 (4.79), control: 15.41 (5.45), p=0.15
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). 10 sessions over 2 weeks; stimulation for 30 minutes using strong but comfortable intensity adjusted to each person's sensitivity; 4 electrodes (5 x 5 cm) placed over T12 and S1 lines; TENS frequency 20 Hz, pulse width 330ms, 2 channels. Duration 2 weeks. Concurrent medication/care: All patients received guidance about vertebral column care (n=50) Intervention 2: Electrotherapy - Interferential therapy. 10 sessions over 2 weeks; stimulation for 30 minutes using strong but comfortable intensity adjusted to each person's sensitivity; 4 electrodes (5 x 5 cm) placed over T12 and S1 lines; interferential current base frequency 4000Hz, modulation frequency range 20 Hz, delta F 10 Hz, slope 1/1, quadripolar mode. Duration 2 weeks. Concurrent medication/care: All patients received guidance about vertebral column care

	(n=50) Intervention 3: Usual care - Waiting list. Waiting list control. Duration 2 weeks. Concurrent medication/care: All patients received guidance about vertebral column care
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus WAITING LIST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Questionnaire Pain Intensity Index at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Questionnaire Pain Rating Index at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Questionnaire Number of Words Chosen at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Roland-Morris Disability Questionnaire at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERFERENTIAL THERAPY versus WAITING LIST

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Questionnaire Pain Intensity Index at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Questionnaire Pain Rating Index at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Questionnaire Number of Words Chosen at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Roland-Morris Disability Questionnaire at 2 weeks; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	NTR2251 trial: Ebadi 2012[124]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Iran; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 4 weeks treatment + 1 month follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific activity-limiting chronic (>3 months) LBP; age 18-60 years
Exclusion criteria	Nerve root symptoms, systemic disease or specific conditions such as neoplasm, fractures, spondylolisthesis, spondylosis, spinal stenosis, ankylosing spondylitis, previous low back surgery; medication for specific psychological problems; pregnancy
Recruitment/selection of patients	Recruited from 3 university hospitals of Tehran University of Medical Sciences
Age, gender and ethnicity	Age - Mean (SD): 34.7 (12.6) years. Gender (M:F): 30:18. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline pain: ultrasound: 46.6 (17.7)mm, placebo 49 (16)mm; Functional Rating index: U/S: 40.8 (14.6), placebo: 43.9 (16.9)
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Electrotherapy - Ultrasound therapy. Ultrasound; 10 sessions (3 times a week every other day); continuous mode; frequency 1MHz; intensity 1.5W/cm2; slow circular movements applied using transducer head over painful paravertebral low back region; average local exposure time 1 minute; effective radiating area of transducer gead 5cm2. Duration 4 weeks. Concurrent medication/care: Semi-supervised exercise programme: pamphlet describing exercise programme (stretching and strengthening) with figures, checked by therapist at each treatment session; patients asked to perform exercises daily during 4 weeks ultrasound treatment plus 1 month after. Requested not to take pain medication or participate in other exercise or treatment programme. (n=25) Intervention 2: Placebo/Sham. Placebo ultrasound - therapist moved applicator at the same rate and pressure as for active treatment but with no ultrasound applied. Duration 4 weeks. Concurrent medication/care: Semi-supervised exercise programme: pamphlet describing exercise programme (stretching and strengthening) with figures, checked by therapist at each treatment session; patients asked to perform exercises daily during 4 weeks

	ultrasound treatment plus 1 month after. Requested not to take pain medication or participate in other exercise or treatment programme.
Funding	Academic or government funding (Research Deputy, Tehran University of Medical Sciences)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ULTRASOUND THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 2 months; Group 1: mean 27.7 mm (SD 14.4); n=21, Group 2: mean 25.5 mm (SD 9.9); n=18; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Functional Rating Index at 2 months; Group 1: mean 22.8 None (SD 7.8); n=21, Group 2: mean 30.5 None (SD 11.9); n=18; Functional Rating Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Pope 1994[436]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=150)
Countries and setting	Conducted in USA; Setting: Spine research centre
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Ages 18-55 years; general good health; LBP 3 weeks to 6 months; free from LBP for minimum 3 weeks
Exclusion criteria	Pregnancy; sciatica; neurological deficit, loss of sensation, strength and reflex; prior vertebral fracture, tumour, infection or spondyloarthropathy; prior back surgery; Davenport weight index >33; prior manual therapy for this episode of back pain
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): 32 years (no SD stated). Gender (M:F): 93:57. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (3 weeks - 6 months duration).
Extra comments	Baseline pain score not reported
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Manual therapy - Manipulation. Manipulation 3 times a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Not stated (n=30) Intervention 2: Massage. Soft tissue massage for 15 minutes, 3 times a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Not stated (n=30) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS:, max 91 mA, 8 hours a day, on for a minimum of 1 hour at a time; once a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Not stated (n=30) Intervention 4: Orthotics and appliance - Belt/corsets. Lumbo-sacral corset during waking hours except while bathing; 3 times a day, once a week of 3 weeks. Duration 3 weeks. Concurrent medication/care: Not stated

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus MANIPULATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean -9.6 mm (SD 30); n=20, Group 2: mean -24.1 mm (SD 27); n=43; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus MASSAGE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean -9.6 mm (SD 30); n=20, Group 2: mean -17.2 mm (SD 25.1); n=20; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus BELT/CORSETS Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean -9.6 mm (SD 30); n=20, Group 2: mean -15.9 mm (SD 27); n=24; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Soriano 1998[496]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=85)
Countries and setting	Conducted in Argentina; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	>60 years; LBP >3 months
Exclusion criteria	Any suspicion of cancer, osteomyelitis, gout, Paget's disease or collagen disease; symptoms or signs of neurological deficits in lower limbs; use of long acting corticoids within previous 30 days; washout period of 5 days for NSAIDs
Recruitment/selection of patients	Department of Internal and Therapeutic Medicine
Age, gender and ethnicity	Age - Mean (SD): Laser: 63.20, sham 64.33 (no SDs given). Gender (M:F): 32:39. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline pain: Group A (laser): 7.9; group B (sham): 8.1
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Electrotherapy - Laser therapy. Pulsed gallium-arsenide laser, wavelength 904nm, pulse frequency 10,000 Hz, pulse width 200nsec, peak power 20W, average power 40mW, spot size 150micom2, angle of divergence 6 degrees, dose 4J/cm2 per point; points separated by 2 cm; 5 sessions a week for 2 weeks. Duration 2 weeks. Concurrent medication/care: No analgesic drugs or physical therapy allowed (n=42) Intervention 2: Placebo/Sham. Deactivated laser. Duration 2 weeks. Concurrent medication/care: No analgesic drugs or physical therapy allowed
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus PLACEBO/SHAM

Protocol outcome 1: Responder criteria at follow-up

- Actual outcome for Overall (acute, chronic) without sciatica: Pain relief >60% at 2 weeks; Group 1: 27/38, Group 2: 12/33; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Thompson 2008[518]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=58)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention = single treatment + follow-up 1 week
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP at least 1 year and no more than 12 years; age 20 to 80 years
Exclusion criteria	Any back surgery evidence of neuropathic or sympathetically mediated pain and unacceptable side effects when previously treated with TENS
Recruitment/selection of patients	Referred to Newcastle Pain Management Unit
Age, gender and ethnicity	Age - Mean (SD): TENS 46.2 (12.3) years vs. sham 43.1 (11.4) years. Gender (M:F): 26:32. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>1 year <12 years duration).
Extra comments	Baseline mean VAS scores in the week before treatment: TENS: 5.398 (1.768), sham: 5.037 (2.188)
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: frequency either 1.66 or 2.20 kHz; pulse duration each half wave 4 micros; output voltage 60 or 80V negative half wave + 80V positive half wave; one electrode on the back overlying the spinous process of the 1st thoracic vertebra, the other overlying the 12th thoracic vertebra. Duration Single treatment. Concurrent medication/care: Continue usual dose regimen of opioid analgesic and/or non-opioid analgesic (usually NSAID) provided dosage kept constant and within BNF guidelines (n=29) Intervention 2: Placebo/Sham. Sham TENS: as for TENS but current inactivated. Duration Single treatment. Concurrent medication/care: Continue usual dose regimen of opioid analgesic and/or non-opioid analgesic (usually NSAID) provided dosage kept constant and within BNF guidelines
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 1 week; Group 1: mean -0.173 cm (SD 1.039); n=29, Group 2: mean 0.02 cm (SD 0.986); n=29; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Topuz 2004[521]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 19-70 years; LBP at least 3 months; ambulatory; sufficiently intelligent to carry out instructions
Exclusion criteria	History of cancer, use of corticosteroids or anticoagulants, pacemaker, prior lumbar spine surgery, heart disease, severe coexisting disease, vertebral fracture, spinal infection, spinal tumour, severe orthopaedic abnormalities or presence of nerve root irritation; previously used any therapeutic electrical stimulation modality
Recruitment/selection of patients	Recruited consecutively from outpatient clinic of Physical Medicine and Rehabilitation Department
Age, gender and ethnicity	Age - Range of means: 37.92 (14.49) to 50.13 (11.97) years. Gender (M:F): 19:41. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	. Baseline (mean SD) for placebo, conventional TENS, low freqTENS, PENS groups, respectively - pain: 5.75±1.35, 6.53±1.18, 6.86±1.24, 7±1.47; ODI: 16.16±5.78, 20±6.52, 20±7.86, 22.07±9.1; Physical function: 63.30±13.87, 50.33±18.94, 46.93±19.64, 52.69±24.46; Social functioning: 68.33±13.7, 58.33±24.39, 7.5±20.7, 6.92±19.31; Physical role limitations: 27.08±37.62, 18.33±38.84, 6.66±11.44, 24.35±33.23; Emotional role limitations: 55.28±35.95, 51.08±37.51, 33.3±25.19, 35.86±31.78; General mental health: 61±13.86, 65.33±11.17, 63±14.02, 67.38±10.17; Vitality: 60.41±14.21, 66.33±11.41, 9±19.01, 62.69±13.16; Bodily pain: 46.16±14.03, 41.53±17.81, 34.66±10.64, 42.26±18.15; General health:59.83±12.37, 57.8±18.04, 49.86±18.23, 45.84±15.29
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Conventional TENS: symmetric biphasic rectangular pulses, 100micros duration; 4 electrodes 2 x 2cm bilaterally over most painful lumbar region; 80 Hz; current intensity increased to patient's perception of paraesthesia; 20 minutes, 5 times a week for 2 weeks. Duration 2 weeks. Concurrent medication/care: Not stated (n=15) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). Low frequency TENS: symmetric biphasic rectangular pulses, 100micros duration; 4 electrodes 2 x 2cm bilaterally over most painful lumbar

	region; 4 Hz; current intensity increased to maximum tolerated amplitude without muscle contractions; 20 minutes, 5 times a week for 2 weeks. Duration 2 weeks. Concurrent medication/care: Not stated (n=15) Intervention 3: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS: unipolar square wave pulses with 100micros duration; 4 Hz; current intensity increased to maximum tolerated amplitude to produce highest electrical "tapping" sensation without muscle contraction; 4 32-guage acupuncture-like needle electrodes place symmetrically into soft tissue to depth 2-4cm over most painful lumbar region; 20 minutes, 5 times a week for 2 weeks. Duration 2 weeks. Concurrent medication/care: Not stated (n=15) Intervention 4: Placebo/Sham. Electrodes placed as for TENS but no electrical stimulation applied. Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) CONVENTIONAL versus PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS)

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 2 weeks; Group 1: mean 15.66 (SD 22.42); n=15, Group 2: mean 24.23 (SD 19.02); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 2 weeks; Group 1: mean 10.83 (SD 13.25); n=15, Group 2: mean 20 (SD 11.72); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 2 weeks; Group 1: mean 36.1 (SD 42.91); n=15, Group 2: mean 39.1 (SD 33.91); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 2 weeks; Group 1: mean 11.1 (SD 24.11); n=15, Group 2: mean 46.16 (SD 28.98); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 2 weeks; Group 1: mean 5.06 (SD 6.67); n=15, Group 2: mean 6.15 (SD 5.06); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 2 weeks; Group 1: mean 4.66 (SD 7.89); n=15, Group 2: mean 12.3 (SD 10.72); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 2 weeks; Group 1: mean 12.73 (SD 12.8); n=15, Group 2: mean 18.8 (SD 11.05); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health perception at 2 weeks; Group 1: mean 7.6 (SD 12.07); n=15, Group 2: mean 21.32 (SD 14.53); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Current pain VAS at 2 weeks; Group 1: mean -2.8 cm (SD 2); n=15, Group 2: mean -3.61 cm (SD 1.98); n=13; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Activity pain VAS at 2 weeks; Group 1: mean -2.5 cm (SD 1.45); n=15, Group 2: mean -4.07 cm (SD 1.75); n=13; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Low Back Pain Outcome Scale at 2 weeks; Group 1: mean 13.55 (SD 9.63); n=15, Group 2: mean 15.38 (SD 12.95); n=13; Low Back Pain Outcome Scale 0-75 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 2 weeks; Group 1: mean -6.6 (SD 5.7); n=15, Group 2: mean -9.53 (SD 4.85); n=13; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) CONVENTIONAL versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 2 weeks; Group 1: mean 15.66 (SD 22.42); n=15, Group 2: mean -3.75 (SD 13.33); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 2 weeks; Group 1: mean 10.83 (SD 13.25); n=15, Group 2: mean -6.87 (SD 17.02); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 2 weeks; Group 1: mean 36.1 (SD 42.91); n=15, Group 2: mean -16.66 (SD 35.88); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 2 weeks; Group 1: mean 11.1 (SD 24.11); n=15, Group 2: mean -22.26 (SD 32.82); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 2 weeks; Group 1: mean 5.06 (SD 6.67); n=15, Group 2: mean -2.33 (SD 10.98); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 2 weeks; Group 1: mean 4.66 (SD 7.89); n=15, Group 2: mean 0.41 (SD 9.87); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 2 weeks; Group 1: mean 12.73 (SD 12.8); n=15, Group 2: mean -2.25 (SD 6.38); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health perception at 2 weeks; Group 1: mean 7.6 (SD 12.07); n=15, Group 2: mean -2.91 (SD 6.03); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Current pain VAS at 2 weeks; Group 1: mean -2.8 cm (SD 2); n=15, Group 2: mean 0.16 cm (SD 1.11); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

- Actual outcome for Overall (acute, chronic) without sciatica: Activity pain VAS at 2 weeks; Group 1: mean -2.5 cm (SD 1.45); n=15, Group 2: mean -0.16 cm (SD 0.83); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Low Back Pain Outcome Scale at 2 weeks; Group 1: mean 13.55 (SD 9.63); n=15, Group 2: mean 8.33 (SD 5.86); n=12; Low Back Pain Outcome Scale 0-75 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 2 weeks; Group 1: mean -6.6 (SD 5.7); n=15, Group 2: mean 2.16 (SD 3.29); n=12; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) LOW FREQUENCY versus PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS)

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 2 weeks; Group 1: mean 17.6 (SD 13.78); n=15, Group 2: mean 24.23 (SD 19.02); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 2 weeks; Group 1: mean 11.66 (SD 11.9); n=15, Group 2: mean 20 (SD 11.72); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias:; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 2 weeks; Group 1: mean 35 (SD 28.03); n=15, Group 2: mean 39.1 (SD 33.91); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias:; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 2 weeks; Group 1: mean 31.1 (SD 29.46); n=15, Group 2: mean 46.16 (SD 28.98); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 2 weeks; Group 1: mean 6.86 (SD 7.6); n=15, Group 2: mean 6.15 (SD 5.06); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 2 weeks; Group 1: mean 6.86 (SD 9.07); n=15, Group 2: mean 12.3 (SD 10.72); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 2 weeks; Group 1: mean 14.73 (SD 7.77); n=15, Group 2: mean 18.8 (SD 11.05); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health perception at 2 weeks; Group 1: mean 10.33 (SD 11.53); n=15, Group 2: mean 21.32 (SD 14.53); n=13; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Current pain VAS at 2 weeks; Group 1: mean -2.6 cm (SD 1.4); n=15, Group 2: mean -3.61 cm (SD 1.98); n=13; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Activity pain VAS at 2 weeks; Group 1: mean -2.15 cm (SD 1.18); n=15, Group 2: mean -4.07 cm (SD 1.75); n=13; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Low Back Pain Outcome Scale at 2 weeks; Group 1: mean 12.8 (SD 7); n=15, Group 2: mean 15.38 (SD 12.95); n=13; Low Back Pain Outcome Scale 0-75 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 2 weeks; Group 1: mean -7.73 (SD 4.26); n=15, Group 2: mean -9.53 (SD 4.85); n=13; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) LOW FREQUENCY versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 2 weeks; Group 1: mean 17.6 (SD 13.78); n=15, Group 2: mean -3.75 (SD 13.33); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 2 weeks; Group 1: mean 11.66 (SD 11.9); n=15, Group 2: mean -6.87 (SD 17.02); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 2 weeks; Group 1: mean 35 (SD 28.03); n=15, Group 2: mean -16.66 (SD 35.88); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 2 weeks; Group 1: mean 31.1 (SD 29.46); n=15, Group 2: mean -22.26 (SD 32.82); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 2 weeks; Group 1: mean 6.86 (SD 7.6); n=15, Group 2: mean -2.33 (SD 10.98); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 2 weeks; Group 1: mean 6.86 (SD 9.07); n=15, Group 2: mean 0.41 (SD 9.87); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 2 weeks; Group 1: mean 14.73 (SD 7.77); n=15, Group 2: mean -2.25 (SD 6.38); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health perception at 2 weeks; Group 1: mean 10.33 (SD 11.53); n=15, Group 2: mean -2.91 (SD 6.03); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Current pain VAS at 2 weeks; Group 1: mean -2.6 cm (SD 1.4); n=15, Group 2: mean 0.16 cm (SD 1.11); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Activity pain VAS at 2 weeks; Group 1: mean -2.15 cm (SD 1.18); n=15, Group 2: mean -0.16 cm (SD 0.83); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Low Back Pain Outcome Scale at 2 weeks; Group 1: mean 12.8 (SD 7); n=15, Group 2: mean 8.33 (SD 5.86); n=12; Low Back Pain Outcome Scale 0-75 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 2 weeks; Group 1: mean -7.73 (SD 4.26); n=15, Group 2: mean 2.16 (SD 3.29); n=12; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS) versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 2 weeks; Group 1: mean 24.23 (SD 19.02); n=13, Group 2: mean -3.75 (SD 13.33); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 2 weeks; Group 1: mean 20 (SD 11.72); n=13, Group 2: mean -6.87 (SD 17.02); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 2 weeks; Group 1: mean 39.1 (SD 33.91); n=13, Group 2: mean -16.66 (SD 35.88); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 2 weeks; Group 1: mean 46.16 (SD 28.98); n=13, Group 2: mean -22.26 (SD 32.82); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 2 weeks; Group 1: mean 6.15 (SD 5.06); n=13, Group 2: mean -2.33 (SD 10.98); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 2 weeks; Group 1: mean 18.8 (SD 11.05); n=13, Group 2: mean -2.25 (SD 6.38); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health perception at 2 weeks; Group 1: mean 21.32 (SD 14.53); n=13, Group 2: mean -2.91 (SD 6.03); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 2 weeks; Group 1: mean 12.3 (SD 10.72); n=13, Group 2: mean 0.41 (SD 9.87); n=12; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Current pain VAS at 2 weeks; Group 1: mean -3.61 cm (SD 1.98); n=13, Group 2: mean 0.16 cm (SD 1.11); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Activity pain VAS at 2 weeks; Group 1: mean -4.07 cm (SD 1.75); n=13, Group 2: mean -0.16 cm (SD 0.83); n=12; VAS 0-10 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Low Back Pain Outcome Scale at 2 weeks; Group 1: mean 15.38 Not stated (SD 12.95); n=13, Group 2: mean 8.33 Not stated (SD 5.86); n=12; Low Back Pain Outcome Scale 0-75 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 2 weeks; Group 1: mean -9.53 Not stated (SD 4.85); n=13, Group 2: mean 2.16 Not stated (SD 3.29); n=12; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events

	(morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Tsukayama 2002[528]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in Japan; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP without sciatica; LBP at least 2 weeks; over 20 years old
Exclusion criteria	Radiculopathy or neuropathy in lower extremity, fracture, tumour, infection or internal disease, other general health problems; other conflicting or ongoing treatments
Recruitment/selection of patients	Recruited by distributing leaflets in central area of Tsukuba city; assessed by orthopaedic physician
Age, gender and ethnicity	Age - Mean (SD): Acupuncture 47 (10), TENS 43 (13). Gender (M:F): 3:16. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (>2 weeks pain).
Extra comments	Baseline data shown graphically
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Acupuncture. Electroacupuncture: twice a week for 2 weeks; 4 points bilaterally (8 in all), most often used points were BL23 and BL26; needles 0.20mm diameter and 60mm in length or 0.24mm diameter and 60mm length (according to patient's stature and volume of subcutaneous fat; average insertion depth 20mm; electrical stimulation frequency 1Hz applied for 15 minutes; intensity adjusted to maximum comfortable level; muscle contraction observed; press tack needles inserted after acupuncture at 4 points (typically left superficially for several days).. Duration 2 weeks. Concurrent medication/care: Not stated (n=10) Intervention 2: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: electrodes 20 x 30mm used for 8 points; electrostimulation as for acupuncture group; after each treatment, a poultice containing methyl salicylic acid, menthol and antihistamine applied at home in between treatments to low back region. Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Foundation for Training and Licensure Examination in Anma-Massag-Acupressure, Acupuncture and Moxibustion, and Tsukuba College of Technology)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ACUPUNCTURE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain relief scale (VAS) at 2 weeks; Group 1: mean 56 % of baseline (SD 30); n=10, Group 2: mean 72 % of baseline (SD 32.7); n=10; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Japanese Orthopaedic Association score (JOA): subjective symptoms and activities of daily living at 2 weeks; Group 1: mean 2.222 points (SD 2.54); n=10, Group 2: mean 0.802 points (SD 0.91); n=10; JOA 0-20 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Unlu 2008[535]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 3 weeks, follow-up 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray, MRI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute LBP and leg pain due to lumbar disc herniation; sciatic or femoral neuralgia symptoms <3 months duration; age 20-60 years; herniation of one or more lumbar discs verified by MRI, consistency in pattern of pain complaint, neurologic and radiologic findings
Exclusion criteria	Pregnant, previous spinal surgery, abnormal laboratory findings and systemic and psychiatric illness
Recruitment/selection of patients	Recruited sequentially as they presented to the Physical Medicine and Rehabilitation Clinic
Age, gender and ethnicity	Age - Mean (range): 44.5 (20-60) years. Gender (M:F): 18:42. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<3 months duration).
Extra comments	Baseline LBP VAS: traction: 58.2 (18.1), laser: 54.0 (17.0), ultrasound: 51.7 (18.7); radicular pain VAS: traction: 59.6 (15.4), laser: 53.1 (25.9), ultrasound: 56.0 (15.3); Roland Disability Questionnaire: traction: 14.2 (4.3), laser: 12.5 (5.0), ultrasound: 13.4 (4.5); Modified Oswestry Disability Questionnaire traction: 19.3 (5.3), laser: 18.4 (7.1), ultrasound: 19.6 (6.4)
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Manual therapy - Traction. Standard motorised traction therapy system; 15 minutes per session: intermittent hold 30 s, rest 10 s, traction force increased until patient indicated that tolerance for pulling was reached, minimum 35% and maximum 50% of total body weight; position: 90 degrees hip flexion and 90 degrees knee flexion; 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Co-interventions not allowed (n=20) Intervention 2: Electrotherapy - Ultrasound therapy. Ultrasound 1MHz; 5cm2 sound head; intensity 1.5W/cm2; continuous mode; to right and left sides of lumbar region posteriorly; small continuous circular movements 8 minutes; 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Co-interventions not allowed (n=20) Intervention 3: Electrotherapy - Laser therapy. Laser Gal-Al-As diode laser; power 50mV, wavelength 830nm;

	diameter of laser beam at treatment point 1mm; over both sides of disc spaces where herniation detected on MRI; stimulation time 4 minutes at each point; dose at each point 1J; 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Co-interventions not allowed
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ULTRASOUND THERAPY versus TRACTION

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 months; Group 1: mean 26.9 mm (SD 15.2); n=20, Group 2: mean 31.3 mm (SD 16.4); n=20; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Radicular pain VAS at 3 months; Group 1: mean 25.2 mm (SD 13.9); n=20, Group 2: mean 29.5 mm (SD 16.7); n=20; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Disability Questionnaire at 3 months; Group 1: mean 8.6 Not stated (SD 6); n=20, Group 2: mean 8.9 Not stated (SD 4); n=20; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Modified Oswestry Disability Questionnaire at 3 months; Group 1: mean 14.4 Not stated (SD 5.9); n=20, Group 2: mean 14.9 Not stated (SD 4.9); n=20; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY versus TRACTION

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 months; Group 1: mean 30 mm (SD 16.8); n=20, Group 2: mean 31.3 mm (SD 16.4); n=20; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Radicular pain VAS at 3 months; Group 1: mean 23.6 mm (SD 17.7); n=20, Group 2: mean 29.5 mm (SD 16.7); n=20; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Roland Disability Questionnaire at 3 months; Group 1: mean 6.7 Not stated (SD 4.5); n=20, Group 2: mean 8.9 Not stated (SD 4); n=20; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Modified Oswestry Disability Questionnaire at 3 months; Group 1: mean 13.6 Not stated (SD 6.2); n=20, Group 2: mean 14.9 Not stated (SD 4.9); n=20; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Vallone 2014[538]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=100)
Countries and setting	Conducted in Italy; Setting: San Martino University Medical School in Genoa, Italy
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Medical history, examinations, imaging, consultations
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific LBP of > 6 months' duration and age > 18 years
Exclusion criteria	Nerve root symptoms, systemic diseases and specific conditions revealed by MRI, including neoplasm, fracture, spondylolisthesis, spondylolysis, spinal stenosis, ankylosing spondylitis, previous low back surgery or prolapsed disc, medication for specifc psychological problems or pregnancy
Recruitment/selection of patients	Reviewed all patients seen from 2011 to 2015 at San Martino University Medical School in Genoa, Italy who had LBP
Age, gender and ethnicity	Age - Range: 24-89. Gender (M:F): 43%/57%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 6 months duration).
Extra comments	Baseline (mean±SD): VAS - 6.36±1.52 (Exercise/usual care group), 6.64±1.77 (Laser group)
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Electrotherapy - Laser therapy. Nine treatment sessions, thrice weekly on alternate days. At each session a series of standardised fields including 6 spots in the paravertebral region (L2 to S2-S3) were irradiated by a single laser probe in stationary contact mode (total energy 1200 J per point).. Duration 3 weeks. Concurrent medication/care: Exercise program including posterior pelvic tilts, situps, bridging, quadruped exercises, hip and knee muscle stretching. Instructed to perform the exercises daily, the stretching before the strengthening. After completion of all treatment sessions patients were asked to continue exercising daily at home for a further 3 weeks. (n=50) Intervention 2: Usual care. Exercise program including posterior pelvic tilts, situps, bridging, quadruped exercises, hip and knee muscle stretching. Instructed to perform the exercises daily, the stretching before the strengthening. After completion of all treatment sessions patients were asked to continue exercising daily at home for a further 3 weeks.. Duration 3 weeks. Concurrent medication/care: Sham - applications of the laser therapy were delivered by the same handpiece, the therapist moved the handpiece at the same rate and pressure as for the intervention group

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LASER THERAPY - DIODE LASER versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS at 3 weeks; Group 1: mean 2.68 (SD 1.92); n=50, Group 2: mean 4.08 (SD 1.4); n=50; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Weiner 2003[560]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=34)
Countries and setting	Conducted in USA; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 6 weeks + follow-up 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	English-speaking, community dwelling adults aged 65 or older with chronic LBP (daily or almost every day for previous 3 months) of at least moderate intensity; over 24 on MMSE
Exclusion criteria	Prominent radicular pain; pacemaker; anticoagulation; spinal pathology other than osteoarthritis; active non-musculoskeletal pain or non-lumbosacral musculoskeletal pain interfering with activity; neurological disorder affecting neuropsychological testing; >2 alcoholic drinks per day; severe visual or hearing impairment; conditions making repetitive lifting unsafe (e.g. unstable angina)
Recruitment/selection of patients	Recruited via newspaper advertisement
Age, gender and ethnicity	Age - Mean (SD): PENS 74.1 (4.6); sham 73.5 (5.7) years. Gender (M:F): 16:18. Ethnicity: 33 White + 1 African-American
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Daily or almost every day for previous 3 months).
Extra comments	Baseline: McGill Pain Questionnaire: PENS 13.06 (1.31), Sham 12.24 (1.69); Roland Disability: PENS 12.63 (1.13), Sham 11.24 (1.47): Multidisciplinary pain inventory: PENS 3.21 (0.25), sham 3.28 (0.28); pain interference: PENS 3.52 (0.57), sham 3.3 (0.37); gertiatric depression: PENS 6.81 (1.73), sham 5 (1.09)
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS: frequency 2 to 200Hz guided by protocol; intensity below pain threshold; sessions 30 minutes; twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Physical therapy: physical reconditioning, management of pain flares, strestching, education (n=17) Intervention 2: Placebo/Sham. Sham PENS as for PENS but no electrical stimulation. Duration 6 weeks. Concurrent medication/care: Physical therapy: physical reconditioning, management of pain flares, strestching, education

Funding	Academic or government funding (USPHS Research Grant form National Institutes of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS) versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 3 months; Group 1: mean 6.19 Not stated (SD 3.6); n=17, Group 2: mean 11.82 Not stated (SD 7.8); n=17; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Multidisciplinary Pain Inventory at 3 months; Group 1: mean 2.16 Not stated (SD 1.2); n=17, Group 2: mean 3.1 Not stated (SD 0.66); n=17; Multidisciplinary Pain Inventory Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Scale at 3 months; Group 1: mean 9.25 Not stated (SD 4.45); n=17, Group 2: mean 12.18 Not stated (SD 4.99); n=17; Roland Disability Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain Interference Scale at 3 months; Group 1: mean 2.61 Not stated (SD 1.07); n=17, Group 2: mean 2.97 Not stated (SD 1.53); n=17; Pain Interference Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 3 months; Group 1: mean 4.11 Not stated (SD 3.59); n=17, Group 2: mean 5.41 Not stated (SD 5.65); n=17; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Weiner 2008[559]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 6 weeks + follow-up 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Community dwelling older adults (age 65 or older) with LBP every day or almost every day of moderate intensity or greater for 3 months or more; English-speaking
Exclusion criteria	Red flags; prominent radicular pain; back surgery; spinal pathology other than degenerative disease; pain outside lower back more severe than back pain; conditions making PENS unsafe (pacemaker, anticoagulation); absolute contraindications to exercise (uncontrolled arrhythmia, third degree heart block, recent ECG changes, unstable angina, acute MI or CHF); medical instability (class III or IV CHF, oxygen dependence, recurrent falls, uncontrolled hypertension, inability to stand independently); severe uncorrected visual or hearing impairment; acute illness or pain; neurological or psychiatric disorder that could interfere with pain reporting (e.g. uncontrolled thought disorder, Alzheimer's disease, prior stroke, substance abuse)
Recruitment/selection of patients	Outpatient research facility attached to Older Adult Pain Management Program at University of Pittsburgh
Age, gender and ethnicity	Age - Range of means: 73.3 (6.0) to 74.3 (6.4) years. Gender (M:F): 86:114. Ethnicity: 89.5% white; others not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores for PENS, PENS+exercise, sham, sham+exercise groups, respectively - McGill Pain Questionnaire: 13.4±8.5, 12.2±6.6, 10.7±6.2, 12 (8); Roland Disability: 10.5±4.1, 10.2±3.8, 10.5±5.2, 11±5.4; average pain VAS: 2.5±0.9, 2.4±0.8, 2.3±0.8, 2.4±0.9; SF-36 physical health: 60.4±28.7, 51.0±27.4, 56.3±26, 46.6±28.1; SF-36 mental health: 88.8±14.3, 90.5±10.3, 90.9±9.7, 85.9±18.6; geriatric depression: 4.4±4.6, 4.1±4.6, 4.4±4.1, 5.3±4.8
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS: 32-gauge 40mm needles placed just below skin into subcutaneous fascia, approx. 15mm depth; 10 needles per session placed bilaterally at T12, L3, L5, S2 and the motor point for the piriformis muscle; electrical stimulation 30 minutes; frequency determined by response to previous session; amplitude set to perceived stimulus of moderate intensity, adjusted to continuous perceptibility; 2 needles at T12 with transient high frequency electrical stimulation as for sham

	PENS; twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 2: Placebo/Sham. Sham PENS: needles placed as for PENS but stimulation applied only to 2 T12 needles; frequency 100Hz for 5 minutes then switched off for remaining time to 30 minutes. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 3: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS + exercise (strength and flexibility plus aerobic components): duration up to 30 minutes, plus home exercise programme: flexibility i.e. stretches, 3 repetitions, 3 times a day, plus walking: 3 times a week, increased up to 30 minutes per day beyond routine activities. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 4: Mixed exercise - Biomechanical + aerobics. Exercise (strength and flexibility plus aerobic components): duration up to 30 minutes, plus home exercise programme: flexibility i.e. stretches, 3 repetitions, 3 times a day, plus walking: 3 times a week, increased up to 30 minutes per day beyond routine activities. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Centre for Complementary and Alternative Medicine and the National Institute on Agine, National Institutes of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS) versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 6 months; Group 1: mean -1.8 Not stated (SD 15.5); n=47, Group 2: mean 1.2 Not stated (SD 11.3); n=48; SF-36 Mental Not stated Top=Unclear; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 6 months; Group 1: mean -5.9 Not stated (SD 21); n=47, Group 2: mean 5.1 Not stated (SD 24.7); n=48; SF-36 Physical Not stated Top=Unclear; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.4 Not stated (SD 7.4); n=47, Group 2: mean -3.3 Not stated (SD 7.4); n=48; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 months; Group 1: mean -0.5 Not stated (SD 1.1); n=47, Group 2: mean -0.6 Not stated (SD 0.8); n=48; Pain VAS Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.2); n=47, Group 2:

mean -3 Not stated (SD 4.7); n=48; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean 0.5 Not stated (SD 3); n=47, Group 2: mean -0.4 Not stated (SD 2.7); n=48; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias:; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS) + EXERCISE versus BIOMECHANICAL + AEROBIC Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean 1.5 Not stated (SD 13.9); n=44; SF-36 Mental Not stated Top=Unclear; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean 8.5 Not stated (SD 27.4); n=44; SF-36 Physical Not stated Top=Unclear; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.1 Not stated (SD 7.1); n=44; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.6 Not stated (SD 1.1); n=44; Pain VAS Not stated Top=High is poor outcome; Risk of bias:; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -2.8 Not stated (SD 5.3); n=44; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean -0.1 Not stated (SD 3); n=44; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Werners 1999[565]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=147)
Countries and setting	Conducted in Germany; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 3 weeks + follow-up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP severe enough to warrant seeking the help of an orthopaedic general practitioner
Exclusion criteria	Age <20 or >60 years; previous surgery; significant medical condition; spinal disorder on x-ray
Recruitment/selection of patients	Recruited sequentially as they presented at the clinic
Age, gender and ethnicity	Age - Mean (SD): Interferential: 38.3 (9.4), traction: 39.2 (9.5). Gender (M:F): 79:68. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear
Extra comments	Baseline pain VAS: interferential: 49.7 (13.3); traction: 50.6 (15.1); Oswestry Disability Questionnaire: interferential: 29.7 (15.1), traction: 29.5 (14.8)
Indirectness of population	No indirectness
Interventions	(n=74) Intervention 1: Electrotherapy - Interferential therapy. Interferential therapy: frequency moves up and down between 30-60Hz; 2 electrodes paravertebrally with cathode in pain area; 6 sessions over 2-3 weeks. Duration 2-3 weeks. Concurrent medication/care: Not stated (n=73) Intervention 2: Manual therapy - Traction. Traction: standard motorised traction system (10-20kg) and massage wheels moving up and down the spine to provide maximum comfort to patients. Duration 2-3 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INTERFERENTIAL THERAPY versus TRACTION

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months

- Actual outcome: Pain VAS at 3 months; Group 1: mean 42 mm (SD 12.8); n=38, Group 2: mean 39.2 mm (SD 13.5); n=43; VAS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index at 3 months; Group 1: mean 21.1 Not stated (SD 14.6); n=61, Group 2: mean 21.7 Not stated (SD 14.7); n=67; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.101 Combinations of interventions – electrotherapy adjunct

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Study	Alayat 2014[3]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=72)

Study	Alayat 2014[3]
Countries and setting	Conducted in Saudi Arabia
Line of therapy	Not applicable
Duration of study	Intervention + follow-up: 4 weeks + 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: pre-diagnosed in Al-Noor Hospital
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Male patients with a history of chronic LBP for at least 1 year, age between 20 and 50 years. Patients with a previous history of low back pain episodes and radiographic findings positive for mild pathology were allowed to participate
Exclusion criteria	Patients with a history of spinal surgery, degenerative disc disease, disc herniation, spine fracture, spondylosis, spinal stenosis, neurological deficits, abnormal laboratory findings and systemic and psychiatric illnesses
Recruitment/selection of patients	Referred to the study from the orthopaedic department and recruited from the rehabilitation department of Al-Noor Hospital, Makkah, Saudi Arabia
Age, gender and ethnicity	Age - Mean (SD): 32.81 (4.48). Gender (M:F): 72/72 males. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 1 year duration).
Extra comments	Baseline characteristics for HILT+EX, PLACEBO HILT + EX, HILT ONLY groups, mean (SD): VAS 8.36(0.95), 8.21(1.1), 8.35(0.88); RDQ 15.46(1.17), 15.63(1.56), 15.4(1.19); MODQ 34.11(3.14), 34.5(2.93), 35.55(3.62)
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Combination of 1) Electrotherapy: pulsed Nd:YAG laser treatment, produced by a HIRO 3 device. Apparatus provided pulsed emission (1,063 nm), very high peak power (3 kW), a high level of fluency/energy density (510-1,780 mJ/cm), a brief duration (120-150 µs), a low frequency (10-40 Hz), a duty cycle of about 0.1%, a probe diameter of 0.5 cm and a spot size of 0.2cm2. A handpiece waas positioned in contact with and perpendicular to the treated area, with the patient in the prone position. Scanning was performed transversely and longitudinally in the lower back area of L1-L5 and S1, to cover the fasciae, sacral ligaments, ileum, latissimus dorsi, obliquus externus abdominis, and the upper part of the gluteus maximus. Total energy dose of 3,000 J was administered through 3 phases of treatment. Initial phase was performed with fast manual scanning for a total of 1,400 J, the laser fluency was set to 3 successive subphases of 610, 710, and 810 mJ/cm^2 for a total of 1,400 J. Intermediate phase applied the handpiece to the 8 paravertebral points with 25 J, for a total of 610 mJ/cm2. Final phase was the same as the initial phase, except that slow manual scanning was used. Application time for all phases was approximately 15 minutes. HILT was applied for a total of 12 treatment sessions over 4 consecutive weeks (3 sessions per week). 2) Self-management: home-based exercise program performed after the end of HILT therapy. The program was designed to be easily carried out at home, with

Study	Alayat 2014[3]
	no need of special equipment. Exercises included strengthening, stretching, mobilising, coordinating and stabilising the abdominal back and pelvic muscles and were personalised for each patients. Participants were taugth by a physiotherapist to perform exercises correctly on a first session. A family member confirmed that the participant carried out the exercises at home. Exercises were to be performed 2 times daily for 4 weeks. Duration 8 weeks. Concurrent medication/care: Not stated (n=24) Intervention 2: Self-management - Unsupervised exercise. Home-based exercise program, designed to be easily carried out at home, with no need of special equipment. Exercises included strengthening, stretching, mobilising, coordinating and stabilising the abdominal back and pelvic muscles and were personalised for each patients. Participants were taugth by a physiotherapist to perform exercises correctly on a first session. A family member confirmed that the participant carried out the exercises at home. Exercises were to be performed 2 times daily for 4 weeks. Duration 8 weeks. Concurrent medication/care: Not stated (n=20) Intervention 3: Electrotherapy - Laser therapy. Electrotherapy: pulsed Nd:YAG laser treatment, produced by a HIRO 3 device. Apparatus provided pulsed emission (1,063 nm), very high peak power (3 kW), a high level of fluency/energy density (510-1,780 mJ/cm), a brief duration (120-150 µs), a low frequency (10-40 Hz), a duty cycle of about 0.1%, a probe diameter of 0.5 cm and a spot size of 0.2cm2. A handpiece waas positioned in contact with and perpendicular to the treated area, with the patient in the prone position. Scanning was performed transversely and longitudinally in the lower back area of L1-L5 and S1, to cover the fasciae, sacral ligaments, ileum, latissimus dorsi, obliquus externus abdominis, and the upper part of the gluteus maximus. Total energy dose of 3,000 J was administered through 3 phases of treatment. Initial phase was performed with fast manual scanning for a total of 1,400 J, the laser fluency was set to 3 successive subphases of 610, 710, and 810 mJ/cm2 for a total of 1,400 J. Intermediate phase applied the handpiece to the 8 paravertebral points with 25 J, for a total of 610 mJ/cm2. Final phase was the same as the initial phase, except that slow manual scanning was used. Application time for all phases was approximately 15 minutes. HILT was applied for a total of 12 treatment sessions over 4 consecutive weeks (3 sessions per week).. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI: ELECTROTHERAPY (HILT LASER) + SELF-MANAGEMENT (UNSUPERVISED EXERCISE) versus SELF-MANAGEMENT (UNSUPERVISED EXERCISE) + PLACEBO LASER THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS pain score at 12 weeks; Group 1: mean 2.64 (SD 1.25); n=28, Group 2: mean 3.71 (SD 1.3); n=24; VAS pain score 0-10 Top=High is poor outcome;

Study	Alayat 2014[3]
Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: RDQ at 12 weeks; Group 1: mean 5.5 (SD 1.17); n=28, Group 2: mean 6.92 (SD 0.78); n=24; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: MODQ at 12 weeks; Group 1: mean 15.14 (SD 4.3); n=28, Group 2: mean 18.75 (SD 3.07); n=24; MODQ 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI: ELECTROTHERAPY (HILT LASER) + SELF-MANAGEMENT (UNSUPERVISED EXERCISE) versus ELECTROTHERAPY (HILT LASER THERAPY) Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS pain score at 12 weeks; Group 1: mean 2.64 (SD 1.25); n=28, Group 2: mean 5.65 (SD 1.04); n=20; VAS pain score 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: RDQ at 12 weeks; Group 1: mean 5.5 (SD 1.17); n=28, Group 2: mean 7.35 (SD 1.5); n=20; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: MODQ at 12 weeks; Group 1: mean 15.14 (SD 4.3); n=28, Group 2: mean 19.05 (SD 2.96); n=20; MODQ 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Djavid 2007[117]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=61)

Study	Djavid 2007[117]
Countries and setting	Conducted in Iran; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 6 weeks + follow-up at week 12
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 20 to 60 years; LBP minimum 12 weeks; ability to give informed consent, understand instructions, and cooperate with treatment
Exclusion criteria	Degenerative disc disease, disc herniation, fracture, spondylosis, spinal stenosis, neurological deficits, abnormal laboratiry findings, systemic or psychiatric illness, pregnancy
Recruitment/selection of patients	Recruited from patients referred by local physicians to the clinic of an Occupational Medicine department
Age, gender and ethnicity	Age - Mean (SD): Laser + exercise: 38 (7); placebo laser + exercise: 36 (10); laser only: 40 (10) years. Gender (M:F): 34:19. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (Minimum 12 weeks duration).
Extra comments	Baseline scores for laser, laser+exercise and exercise groups, respectively (mean SD) - 7.3 (1.7), 6.2 (1.6), 6.3 (2); ODI: 33.0 (8.4), 34 (9.7), 31.8 (7.9)
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Gallium-Aluminium-Arsenide laser; wavelength 810nm; 50mW; continuous wave; 0.2211cm2 spot area; 8 points in paravertebral region (L2 to S2-S3) irradiated; dose 27J/cm^2; treatment time 20 minutes; twice a week for 6 weeks. Exercise: first session with physiotherapist then exercises at home; exercises included strengthening, stretching, mobilising, coordination and stabilising of the abdominal, back, pelvic and lower limb muscles, dependent on the clinical findings.. Duration 6 weeks. Concurrent medication/care: Not stated (n=20) Intervention 2: Individual Biomechanical exercise - Core stability. Sham laser - as for laser group but inactive probes. Exercise: first session with physiotherapist then exercises at home; exercises included strengthening, stretching, mobilising, coordination and stabilising of the abdominal, back, pelvic and lower limb muscles, dependent on the clinical findings.. Duration 6 weeks. Concurrent medication/care: Not stated (n=20) Intervention 3: Electrotherapy - Laser therapy. Gallium-Aluminium-Arsenide laser; wavelength 810nm; 50mW; continuous wave; 0.2211cm2 spot area; 8 points in paravertebral region (L2 to S2-S3) irradiated; dose 27J/cm^2;

Study	Djavid 2007[117]
	treatment time 20 minutes; twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus CORE STABILITY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 12 weeks; Group 1: mean 2.4 cm (SD 1.4); n=19, Group 2: mean 4.3 cm (SD 1.6); n=18; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry Disability Index at 12 weeks; Group 1: mean 16.8 Not stated (SD 3.7); n=19, Group 2: mean 24.1 Not stated (SD 5.2); n=18; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus LASER THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 12 weeks; Group 1: mean 2.4 cm (SD 1.4); n=19, Group 2: mean 4.4 cm (SD 2); n=16; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry Disability Index at 12 weeks; Group 1: mean 16.8 Not stated (SD 3.7); n=19, Group 2: mean 20.8 Not stated (SD 4.4); n=16; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Durmus 2010[123]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=68)
Countries and setting	Conducted in Turkey; Setting: Outpatient department
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Female patients; LBP at least 3 months
Exclusion criteria	Acute radicular signs/symptoms; radiographic evidence of inflammatory disease affecting spine, tumour, spondylolysis, spondulolisthesis, sacroiliitis; serious medical conditions for which exercise would be contraindicated; neuromuscular or dermatologic disease involving lumbar or abdominal area; had exercise programme that may increase muscle strength in last 6 months; cardiac pacemaker or defibrillator; contracture; previous trauma; history of spinal surgery; pregnancy; severe structural deformity
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Range of means: 47.05 (12.46) to 49.00 (7.87) years. Gender (M:F): All female. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 3 months).
Extra comments	. Baseline scores (mean SD) for TENS+exercise, ultrasound+exercise, and exercise groups, respectively - ODQ: 28.40 (5.30), 26.26 (4.65), 26.40 (5.94); pain disability index: 15.35 (9.18), 14.47 (11.27), 14.65 (9.08); depression: 7.35 (4.69), 6.52 (3.37), 8.00 (6.48); Physical function (median, range): 77.5 (50–90), 75.0 (35–85), 77.5 (60–100); Mental health (mean SD): 56.25 (15.04), 58.31 (11.10), 59.20 (11.05); Pain (median, range): 49.5 (11–77), 44.0 (44–88), 52.0 (44–88); general health (mean SD): 48.75 (14.09), 51.05 (15.32), 52.75 (17.53); Social function (median, range): 55.0 (33–88), 55.0 (44–88), 56.0 (33–88); Physical role limitation (median, range): 75.0 (0–100), 50.0 (0–100), 62.5 (0–100); Emotional role limitation (median, range): 66.0 (0–100), 66.0 (0–100), 66.0 (0–100); Energy (mean SD): 54.75 (11.86), 54.73 (13.69), 54.70 (13.26)
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Electrical stimulation (patient prone 15 minutes; 4 electrodes placed on L2-L4 level over erector spinae muscles bulks motor points; symmetric biphasic wave applied: frequency 50Hz, 50ms of phase time; intensity for each patient at apparent muscle contraction (60-130mA); 10s contraction + 10s relaxation). Plus exercise: group exercise programme of 45

Study	Durmus 2010[123]
	minutes back and abdominal exercises, with warm-up and cool-down period of 5 minutes stretching exercises 3 days a week. 4 exercises: 1. Motion, flexibility and back strengthening exercises of the cervical, thoracic and lumbar spine; stretching of the erector spine muscle, hamstring muscles, pelvic muscles and abdominal muscles: pelvic tilt, knee to chest, lower abdominal exercises, cat and camel, back extension exercises. 2. Special exercises to correct mobility of the spine and hip joints, activate the stabilising muscles of the spine and increase flexibility of the lower limb muscles. 3. Functional exercises to improve postural control, dynamic body balance and coordination. 4. Progressive relaxation exercises to normalise muscle tension.. Duration 6 weeks. Concurrent medication/care: Not stated (n=21) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Continuous ultrasound; 1MHz frequency; 1W/cm^2 intensity, transducer head with area 5cm, ERA 4cm BNR 1:5; slow circular movements applied by transducer head over paravertebral low back region; treatment duration 10 minutes. Plus exercise: group exercise programme of 45 minutes back and abdominal exercises, with warm-up and cool-down period of 5 minutes stretching exercises 3 days a week. 4 exercises: 1. Motion, flexibility and back strengthening exercises of the cervical, thoracic and lumbar spine; stretching of the erector spine muscle, hamstring muscles, pelvic muscles and abdominal muscles: pelvic tilt, knee to chest, lower abdominal exercises, cat and camel, back extension exercises. 2. Special exercises to correct mobility of the spine and hip joints, activate the stabilising muscles of the spine and increase flexibility of the lower limb muscles. 3. Functional exercises to improve postural control, dynamic body balance and coordination. 4. Progressive relaxation exercises to normalise muscle tension.. Duration 6 weeks. Concurrent medication/care: Not stated (n=23) Intervention 3: Group biomechanical exercise - Core stabilisation. Exercise: group exercise programme of 45 minutes back and abdominal exercises, with warm-up and cool-down period of 5 minutes stretching exercises 3 days a week. 4 exercises: 1. Motion, flexibility and back strengthening exercises of the cervical, thoracic and lumbar spine; stretching of the erector spine muscle, hamstring muscles, pelvic muscles and abdominal muscles: pelvic tilt, knee to chest, lower abdominal exercises, cat and camel, back extension exercises. 2. Special exercises to correct mobility of the spine and hip joints, activate the stabilising muscles of the spine and increase flexibility of the lower limb muscles. 3. Functional exercises to improve postural control, dynamic body balance and coordination. 4. Progressive relaxation exercises to normalise muscle tension.. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus CORE STABILISATION Protocol outcome 1: Quality of life at Up to 4 months	

Study	Durmus 2010[123]
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 6 weeks; Group 1: mean 78.7 Not stated (SD 12.81); n=20, Group 2: mean 71.75 Not stated (SD 10.96); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Pain at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health at 6 weeks; Group 1: mean 70.4 Not stated (SD 20.67); n=20, Group 2: mean 64.25 Not stated (SD 15.99); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Energy at 6 weeks; Group 1: mean 83.8 Not stated (SD 12.75); n=20, Group 2: mean 67.75 Not stated (SD 14.09); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Pain at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain Disability Index at 6 weeks; Group 1: mean 5.15 Not stated (SD 4.89); n=20, Group 2: mean 6.5 Not stated (SD 4.62); n=20; Pain Disability Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 6 weeks; Group 1: mean 6.8 % (SD 2.52); n=20, Group 2: mean 8.4 % (SD 3.99); n=20; Oswestry Disability Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 6 weeks; Group 1: mean 3.35 Not stated (SD 3.15); n=20, Group 2: mean 4.85 Not stated (SD 3.85); n=20; Beck Depression Inventory 0-63 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ULTRASOUND + EXERCISE versus CORE STABILISATION Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 6 weeks; Group 1: mean 73.05 Not stated (SD 12.49); n=19, Group 2: mean 71.75 Not stated (SD 10.96); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health at 6 weeks; Group 1: mean 65.52 Not stated (SD 16.9); n=19, Group 2: mean 64.25 Not stated (SD 15.99); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Durmus 2010[123]
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical role limitation at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Emotional role limitation at 6 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Energy at 6 weeks; Group 1: mean 68.68 Not stated (SD 15.44); n=19, Group 2: mean 67.75 Not stated (SD 14.09); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain Disability Index at 6 weeks; Group 1: mean 6.21 Not stated (SD 4.23); n=19, Group 2: mean 6.5 Not stated (SD 4.62); n=20; Pain Disability Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Questionnaire at 6 weeks; Group 1: mean 8.68 % (SD 3.37); n=19, Group 2: mean 8.4 % (SD 3.99); n=20; Oswestry Disability Questionnaire 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 6 weeks; Group 1: mean 3.94 Not stated (SD 2.93); n=19, Group 2: mean 4.85 Not stated (SD 3.85); n=20; Beck Depression Inventory 0-63 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	NTR2251 trial: Ebadi 2012[124]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Iran; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 4 weeks treatment + 1 month follow-up

Study	NTR2251 trial: Ebadi 2012[124]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific activity-limiting chronic (>3 months) LBP; age 18-60 years
Exclusion criteria	Nerve root symptoms, systemic disease or specific conditions such as neoplasm, fractures, spondylolisthesis, spondylosis, spinal stenosis, ankylosing spondylitis, previous low back surgery; medication for specific psychological problems; pregnancy
Recruitment/selection of patients	Recruited from 3 university hospitals of Tehran University of Medical Sciences
Age, gender and ethnicity	Age - Mean (SD): 34.7 (12.6) years. Gender (M:F): 30:18. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Extra comments	Baseline scores (mean SD) for ultrasound and placebo ultrasound groups, respectively - pain VAS: 46.6 (17.7), 49 (16); functional rating index: 40.8 (14.6), 43.9 (16.9). NTR2251
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Ultrasound; 10 sessions (3 times a week every other day); continuous mode; frequency 1MHz; intensity 1.5W/cm^2; slow circular movements applied using transducer head over painful paravertebral low back region; average local exposure time 1 minute; effective radiating area of transducer head 5cm2. Plus semi-supervised exercise programme: pamphlet describing exercise programme (stretching and strengthening) with figures, checked by therapist at each treatment session; patients asked to perform exercises daily during 4 weeks ultrasound treatment plus 1 month after. Duration 4 weeks. Concurrent medication/care: Requested not to take pain medication or participate in other exercise or treatment programme. (n=25) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Placebo ultrasound - therapist moved applicator at the same rate and pressure as for active treatment but with no ultrasound applied. Plus semi-supervised exercise programme: pamphlet describing exercise programme (stretching and strengthening) with figures, checked by therapist at each treatment session; patients asked to perform exercises daily during 4 weeks ultrasound treatment plus 1 month after.. Duration 4 weeks. Concurrent medication/care: Requested not to take pain medication or participate in other exercise or treatment programme.
Funding	Academic or government funding (Research Deputy, Tehran University of Medical Sciences)

Study	NTR2251 trial: Ebadi 2012[124]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ULTRASOUND + EXERCISE + SELF-MANAGEMENT versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE + SELF-MANAGEMENT Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 2 months; Group 1: mean 27.7 mm (SD 14.4); n=21, Group 2: mean 25.5 mm (SD 9.9); n=18; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Functional Rating Index at 2 months; Group 1: mean 22.8 None (SD 7.8); n=21, Group 2: mean 30.5 None (SD 11.9); n=18; Functional Rating Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Goren 2010[176]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=34)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, MRI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Clinical symptoms and signs consistent with lumbar spinal stenosis; pain including back/leg; standing or walking leg discomfort; age >18 years; duration of symptoms >3 months; onset of neurogenic claudication with maximum 15 minutes walk on treadmill (speed 3km/hr and 0 degree incline); MRI confirmation of at least 1 spinal stenosis within 1 year - midsagittal diameter 11.5mm or less, or planimetrically assessed cross-sectional dural area <100mm3

Study	Goren 2010[176]
Exclusion criteria	Past or present movement disorder and orthopaedic problems that might affect ability to ambulate; moderate-severe arthritis of knee or hip that might severely compromise ambulation; past or present lower extremity peripheral vascular disease or vascular claudication; previous lumbar spinal stenosis surgery; serious concomitant medical illness (i.e. heart disease, renal failure) that might impair ambulation assessment; another specific spinal disorder (e.g. ankylosing spondylitis, neoplasm, infection, metabolic diseases or severe osteoporosis); major or progressive neurological deficit; contraindications for ultrasound; malignancy
Recruitment/selection of patients	Department of Physical Medicine and Rehabilitation
Age, gender and ethnicity	Age - Mean (SD): Ultrasound: 57.40 (12.69), sham: 49.13 (11.77); control: 53.06 (13.50) years. Gender (M:F): 13:32. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Extra comments	Baseline scores for ultrasound + exercise, sham ultrasound + exercise and control groups, respectively (mean SD) - back pain VAS: 5.53±1.96, 6.2±2.6, 5.26±3.36; leg pain VAS: 5.8±2.9, 6.33±3.33, 6.6±2.8; ODI: 25.46±7.7, 26.9±10.19, 32.2±9.6;
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Ultrasound: 10 minutes of 1 MHz, 1.5 W/cm^2 intensity continuous ultrasound on lumbar paravertebral region, 5 days a week for 3 weeks. Exercise in Rehabilitation Department: stretching and strengthening plus low-intensity cycling, 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Instructed not to take NSAIDs or muscle relaxants but allowed maximum of 500mg paracetamol 3 times a day in case of intense pain (n=17) Intervention 2: Mixed exercise - Biomechanical + aerobics. As for active US group but US in off mode. Exercise in Rehabilitation Department: stretching and strengthening plus low-intensity cycling, 5 days a week for 3 weeks. Duration 3 weeks. Concurrent medication/care: Instructed not to take NSAIDs or muscle relaxants but allowed maximum of 500mg paracetamol 3 times a day in case of intense pain (n=16) Intervention 3: Waiting list - Waiting list control. No treatment/no exercise until after study completion. Duration 3 weeks. Concurrent medication/care: Instructed not to take NSAIDs or muscle relaxants but allowed maximum of 500mg paracetamol 3 times a day in case of intense pain
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ULTRASOUND + EXERCISE versus BIOMECHANICAL +

Study	Goren 2010[176]
AEROBIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 weeks; Group 1: mean -2.2 cm (SD 2.83); n=15, Group 2: mean -1.94 cm (SD 2.86); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 3 weeks; Group 1: mean -1.47 cm (SD 3.02); n=15, Group 2: mean -2.47 cm (SD 3.75); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index at 3 weeks; Group 1: mean -3.94 Not stated (SD 7.2); n=15, Group 2: mean -7.8 Not stated (SD 10.26); n=15; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Using analgesic - paracetamol tablet at 3 weeks; Group 1: mean 8.33 Number of tablets (time period not specified) (SD 15.1); n=15, Group 2: mean 16 Number of tablets (time period not specified) (SD 22.47); n=15; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ULTRASOUND + EXERCISE versus WAITING LIST CONTROL Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 3 weeks; Group 1: mean -2.2 cm (SD 2.83); n=15, Group 2: mean 0.4 cm (SD 1.68); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 3 weeks; Group 1: mean -1.47 cm (SD 3.02); n=15, Group 2: mean 0.53 cm (SD 1.59); n=15; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index at 3 weeks; Group 1: mean -3.94 Not stated (SD 7.2); n=15, Group 2: mean -3.6 Not stated (SD 11.66); n=15; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Using analgesic - paracetamol tablet at 3 weeks; Group 1: mean 8.33 Number of tablets (time period not specified) (SD 15.1); n=15, Group 2: mean 30.6 Number of tablets (time period not specified) (SD 27.75); n=15; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Goren 2010[176]
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Gur 2003[184]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=75)
Countries and setting	Conducted in Turkey; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, radiology
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP for at least 1 year diagnosed clinically and radiologically; admitted to Dicle University, Faculty of Medicine, Physical Medicine and Rehabilitation Department between May 1999 and March 2000; age 20-50 years
Exclusion criteria	Pregnancy, previous spinal surgery, neurological deficits, abnormal laboratory findings, systemic or psychiatric illness
Recruitment/selection of patients	Admitted to Dicle University, Faculty of Medicine, Physical Medicine and Rehabilitation Department between May 1999 and March 2000
Age, gender and ethnicity	Age - Range of means: 35.2 (10.51) to 36.4 (9.83) years. Gender (M:F): 22:53. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 1 year).
Extra comments	Baseline scores (mean SD) for laseer+exerise, laser and exercise groups, respectively - pain VAS: 6.2±2.1, 6.5±1.6, 6.1±1.9; Roland Disability Questionnaire: 17.8±4.6, 15.1±4.2, 16.3±3.9; modified oswestry: 32.4±10.6, 30.5±12.3, 33.1±11.8
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Gallium-

Study	Gur 2003[184]
	arsenide laser; 5 times a week for 4 weeks, over standardised fields including L4 to L5 and L5 to S1 apophyseal capsules, dorsolumbar fascia and interspinous ligaments, as well as gluteal fascia, posterior sacro-iliac ligaments, hamstrings and gastro-soleus muscles of which pain points were palpated from the low back to the foot. Stimulation time of 4 minutes used for each point, producing energy of approximately 1J/cm^2 (10.1cm2 energy density, 2.1kHz pulse frequency, 10W diode power, 4.2mW average power, 1cm2 surface) at each point; 30 minutes total stimulation time. Plus: lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups; 2 sessions a day; 40 sessions total for 4 weeks; 1st session with physio, then exercises done at home. Duration 4 weeks. Concurrent medication/care: Not stated (n=25) Intervention 2: Electrotherapy - Laser therapy. Gallium-arsenide laser; 5 times a week for 4 weeks, over standardised fields including L4 to L5 and L5 to S1 apophyseal capsules, dorsolumbar fascia and interspinous ligaments, as well as gluteal fascia, posterior sacro-iliac ligaments, hamstrings and gastro-soleus muscles of which pain points were palpated from the low back to the foot. Stimulation time of 4 minutes used for each point, producing energy of approximately 1J/cm^2 (10.1cm2 energy density, 2.1kHz pulse frequency, 10W diode power, 4.2mW average power, 1cm2 surface) at each point; 30 minutes total stimulation time.. Duration 4 weeks. Concurrent medication/care: Not stated (n=25) Intervention 3: Individual Biomechanical exercise - Core stability. Lumbar flexion and extension, knee flexion, hip adduction exercises and strength exercises of extremity muscle groups; 2 sessions a day; 40 sessions total for 4 weeks; 1st session with physio, then exercises done at home. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus LASER THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS at 4 weeks; Group 1: mean 1.8 Not stated (SD 1.2); n=25, Group 2: mean 1.9 Not stated (SD 1.4); n=25; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome: Roland Disability Questionnaire at 4 weeks; Group 1: mean 6.3 Not stated (SD 3.5); n=25, Group 2: mean 6.6 Not stated (SD 2.9); n=25; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Modified Oswestry Disability Questionnaire at 4 weeks; Group 1: mean 14.8 Not stated (SD 8.6); n=25, Group 2: mean 16.7 Not stated (SD 7.6); n=25;

Study	Gur 2003[184]
Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE versus CORE STABILITY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 4 weeks; Group 1: mean 1.8 Not stated (SD 1.2); n=25, Group 2: mean 2.9 Not stated (SD 1.3); n=25; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland Disability Questionnaire at 4 weeks; Group 1: mean 6.3 Not stated (SD 3.5); n=25, Group 2: mean 5.5 Not stated (SD 3.2); n=25; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Modified Oswestry Disability Questionnaire at 4 weeks; Group 1: mean 14.8 Not stated (SD 8.6); n=25, Group 2: mean 13.6 Not stated (SD 7.2); n=25; Modified Oswestry Disability Questionnaire 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Gyulai 2015[185]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=25)
Countries and setting	Conducted in Hungary; Setting: Rheumatologic Rehabilitation Department of the Hospitaller Brothers of St. John of God, Budapest, Hungary
Line of therapy	Unclear
Duration of study	Follow-up (post intervention): 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall

Study	Gyulai 2015[185]
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with chronic non-specific low back pain with nonseverely reduced mobility; males and females of 20-80 years of age; non-specific low back pain for at least 12 weeks; palpable tenderness of the paravertebral muscles and/or painful limited mobility of the lumbar spine; low back pain VAS score of at least 30 mm on a 100 mm scale during exercise; no systemic or local steroid therapy or physical therapy or balneotherapy within 2 months prior to the study (physiotherapy was allowed)
Exclusion criteria	Acute low back pain; organic neurological deficit associated with lower back pain; underlying cause is likely to be vertebral compression fracture caused by osteoporosis or other factors; underlying malignancy; pain caused by inflammatory spine conditions; spondylolisthesis (grade 2 or higher); pregnancy
Recruitment/selection of patients	50 patients with chronic low back pain who had been hospitalised for 3 weeks at the Rheumatologic Rehabilitation Department of the Hospitaller Brothers of St. John of God, Budapest, Hungary
Age, gender and ethnicity	Age - Range: 20-80 years. Gender (M:F): 2/23. Ethnicity:
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 12 weeks).
Extra comments	Baseline characteristics not reported
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Combination of 1) Electrotherapy: BEMER (Bio-Electro-Magnetic-Energy-Regulation) therapy for 15 sessions, 20 mins each. The device was a BEMER International AG product, with mattress with therapy unit (B.Body), flexible, intensive, small surface unit (B.PAD) and B.SPOT (intensive, spot-like unit) and B.LIGHT unit (light therapy unit). The B. Box professional control units have 10 different levels of intensity and 3 predefined programme. The intensity levels are applied during general full body surface treatment according to the basic programme, while programmes P1-P3 are usued gradually to achieve the 'deep effect' during targeted treatments (Parameters: mattress applicator B.Body Pro 7-35 mTesla, intensive applicator B.PAD 60-100 mTesla, or mattress applicator B.Body Pro intensity levels 2-3-4-10, intensive applicator B.PAD intensity levels 6-7-8-9-10 and using vascular motion signal configuration) + TENS therapy on low back, 15 mins every day; 2) Exercise: individual exercises + group exercises, 30 minutes + aerobic exercises (aquagym), 30 minutes every other day; 3) Manual therapy: underwater whirpool massage, 10 minutes. Duration 15 weeks follow-up. Concurrent medication/care: Background treatment not stated. Comments: Only data for patient completing at least 12 sessions were analysed (n=25) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Combination of 1) Electrotherapy: Placebo BEMER therapy + TENS therapy on low back, 15 mins every day; 2) Exercise: individual exercises + group exercises, 30 minutes + aerobic exercises (aquagym), 30 minutes every other day; 3) Manual therapy:

Study	Gyulai 2015[185]
	underwater whirpool massage, 10 minutes. Duration 15 weeks follow-up. Concurrent medication/care: Not stated
Funding	Equipment / drugs provided by industry (Devices were made available by BEMER Medical Technic Ltd. for the completion of the study and were subsequently donated to the hospital. Neither the hospital nor the study doctors received any other support in relation to the study.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBI: ELECTROTHERAPY (BEMER + TENS) + EXERCISE + MANUAL (MASSAGE) versus COMBI: ELECTROTHERAPY (PLACEBO BEMER + TENS) + EXERCISE + MANUAL (MASSAGE)

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 Physical functioning at 15 weeks; Group 1: mean -1.18 (SD 5.66); n=13, Group 2: mean -1.03 (SD 4.11); n=13; SF-36 Physical functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role physical at 15 weeks; Group 1: mean -4.99 (SD 11.55); n=14, Group 2: mean 0.64 (SD 10.25); n=14; SF-36 Role physical 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Bodily pain at 15 weeks; Group 1: mean -6.45 (SD 6.28); n=15, Group 2: mean -2.44 (SD 7.93); n=18; SF-36 Bodily pain 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health at 15 weeks; Group 1: mean -3.57 (SD 4.24); n=12, Group 2: mean -2.17 (SD 5.57); n=14; SF-36 General health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality at 15 weeks; Group 1: mean -5.35 (SD 6.54); n=10, Group 2: mean 0.25 (SD 6.64); n=12; SF-36 Vitality 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning at 15 weeks; Group 1: mean -1.54 (SD 10.11); n=13, Group 2: mean -0.56 (SD 10.3); n=18; SF-36 Social functioning 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role emotional at 15 weeks; Group 1: mean -5.36 (SD 19.31); n=13, Group 2: mean -1.86 (SD 14.76); n=15; SF-36 Role emotional 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health at 15 weeks; Group 1: mean -4.36 (SD 7.28); n=9, Group 2: mean -3.84 (SD 7.84); n=15; SF-36 Mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical component summary at 15 weeks; Group 1: mean -2.99 (SD 5.57); n=6, Group 2: mean -2.06 (SD 5.05); n=10; SF-36 Physical component summary 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental component summary at 15 weeks; Group 1: mean -9.97 (SD 2.68); n=6, Group 2: mean -1.31 (SD 10.13); n=10; SF-36 Mental component summary 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Resting VAS at 15 weeks; Group 1: mean 1.594 (SD 2.298); n=18, Group 2: mean 0.874 (SD 1.728); n=19; Resting VAS pain score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Gyulai 2015[185]
- Actual outcome: Exercise VAS at 15 weeks; Group 1: mean 1.544 (SD 2.267); n=18, Group 2: mean 1.126 (SD 2.09); n=19; Exercise VAS pain score 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: ODI at 15 weeks; Group 1: mean 5.87 (SD 9.91); n=18, Group 2: mean 4.68 (SD 14.74); n=18; ODI 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Hurley 2004[232]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=240)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 5 weeks + follow-up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-65 years; referred by GP for treatment of LBP (4-12 weeks duration) with or wihtout pain radiating to buttock and/or one or both lower limbs
Exclusion criteria	Not stated
Recruitment/selection of patients	Recruited from NHS (Northern Ireland) hospital physiotherapy departments
Age, gender and ethnicity	Age - Mean (SD): 40 (11.6) years. Gender (M:F): 96:144. Ethnicity: Not stated

Study	Hurley 2004[232]
Further population details	1. Chronicity of pain : Acute (<3 months duration) (4-12 weeks).
Extra comments	. Baseline scores (mean SD) for manipulation, interential, and combined groups, respectively - average back pain VAS: 52.08±24.49, 52.06±24.93, 49.84±28.91; McGill pain: 15.85±9.12, 17.44±9.93, 16.28±10.02; EQ5D: 0.51±0.3, 0.52±0.28, 0.54±0.28; physical functioning: 50.64±20.75, 55.65±21.17, 51.46±24.61; role physical: 10.9±22.65, 17.72±31.3, 13.61±28.53; bodily pain: 27.12±13.91, 30.57±16.02, 28.97±16.07; general health: 67.48±18.48, 68.24±16.48, 65.06±20.92; vitality: 39.17±17.23, 45.44±19.63, 43.33±21.6; social functioning: 52.65±24.70, 60.92±25.58, 56.33±27.14; role emotional: 44.02±45.74, 48.52±46.16, 43.46±46.03; mental health: 64±18.78, 66.43±18.68, 64.94±17.88
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Manual therapy - Manipulation. Any mobilisation or manipulation technique for the lumbar spine that passively moves an intervertebral joint within or beyond its existing range of movement.. Duration Mean 5 (SD 2.3) weeks. Concurrent medication/care: Participants requested to continue normal activities and avoid other forms of treatment for the duration of the study, apart from routine physician management and analgesics. All subjects received the Back Book from the phsyiotherapists, who reinforced its message of early return to normal activities and participation in low impact activities such as walking, swimming and cycling. (n=80) Intervention 2: Electrotherapy - Interferential therapy. Omega Inter 4150 portable interferential therapy units used to deliver standardised IFT stimulation parameters: carrier frequency 3.85kHz, beat frequency 140 Hz, pulse duration 130 microseconds, treatmetn time 30 minutes using spinal nerve root placement with carbon silicone electrodes 50 x 100mm.. Duration Mean 5 (SD 2.3) weeks. Concurrent medication/care: Participants requested to continue normal activities and avoid other forms of treatment for the duration of the study, apart from routine physician management and analgesics. All subjects received the Back Book from the phsyiotherapists, who reinforced its message of early return to normal activities and participation in low impact activities such as walking, swimming and cycling. (n=80) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. Manipulation + interferential therapy as for the other 2 groups: manipulation before interferential therapy.. Duration Mean 5 (SD 2.3) weeks. Concurrent medication/care: Participants requested to continue normal activities and avoid other forms of treatment for the duration of the study, apart from routine physician management and analgesics. All subjects received the Back Book from the phsyiotherapists, who reinforced its message of early return to normal activities and participation in low impact activities such as walking, swimming and cycling.
Funding	Academic or government funding (Society of Orthopaedic Medicine, Manipulation Association of Chartered

Study	Hurley 2004[232]
	Physiotherapists, TensCare Ltd (loan of interferential therapy portable units))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANIPULATION + ELECTROTHERAPY versus MANIPULATION

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: EQ-5D at 5 weeks; Group 1: mean 0.15 Not stated (SD 0.414); n=66, Group 2: mean 0.16 Not stated (SD 0.405); n=63; EQ-5D Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning at 5 weeks; Group 1: mean 14.31 Not stated (SD 21.14); n=66, Group 2: mean 15.26 Not stated (SD 21.26); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role physical at 5 weeks; Group 1: mean 30.01 Not stated (SD 41.66); n=66, Group 2: mean 28.58 Not stated (SD 41.71); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Bodily pain at 5 weeks; Group 1: mean 22.2 Not stated (SD 23.42); n=66, Group 2: mean 22.89 Not stated (SD 23.89); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health at 5 weeks; Group 1: mean 1.02 Not stated (SD 16.99); n=66, Group 2: mean -1.25 Not stated (SD 16.81); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality at 5 weeks; Group 1: mean 7.21 Not stated (SD 19.48); n=66, Group 2: mean 8.17 Not stated (SD 19.24); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning at 5 weeks; Group 1: mean 15.39 Not stated (SD 25.7); n=66, Group 2: mean 15.56 Not stated (SD 25.72); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role emotional at 5 weeks; Group 1: mean 22.05 Not stated (SD 44.35); n=66, Group 2: mean 10.2 Not stated (SD 43.9); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health at 5 weeks; Group 1: mean 6.35 Not stated (SD 16.37); n=66, Group 2: mean 3.89 Not stated (SD 15.59); n=63; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: EQ-5D at 12 months; Group 1: mean 0.25 Not stated (SD 0.182); n=51, Group 2: mean 0.15 Not stated (SD 0.368); n=52; EQ-5D Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning at 12 months; Group 1: mean 21.4 Not stated (SD 24.41); n=51, Group 2: mean 9.36 Not stated (SD 24.47); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role physical at 12 months; Group 1: mean 49.1 Not stated (SD 45.73); n=51, Group 2: mean 36.9 Not stated (SD 45.81); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Bodily pain at 12 months; Group 1: mean 36.4 Not stated (SD 26.23); n=51, Group 2: mean 23.81 Not stated (SD 25.2); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Hurley 2004[232]
- Actual outcome: SF-36 General health at 12 months; Group 1: mean 0.74 Not stated (SD 20.22); n=51, Group 2: mean -2.53 Not stated (SD 20.42); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Vitality at 12 months; Group 1: mean 16.4 Not stated (SD 20.95); n=51, Group 2: mean 11.23 Not stated (SD 20.97); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social functioning at 12 months; Group 1: mean 24.2 Not stated (SD 35.52); n=51, Group 2: mean 24.4 Not stated (SD 35.87); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role emotional at 12 months; Group 1: mean 29.5 Not stated (SD 40.08); n=51, Group 2: mean 21.3 Not stated (SD 39.73); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 12 months; Group 1: mean 10.3 Not stated (SD 18.4); n=51, Group 2: mean 4.72 Not stated (SD 18.4); n=52; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 5 weeks; Group 1: mean -24.69 mm (SD 25.28); n=66, Group 2: mean -19.88 mm (SD 25.1); n=63; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: McGill Pain Questionnaire Pain Rating Index at 5 weeks; Group 1: mean -6.64 Not stated (SD 10.57); n=66, Group 2: mean -5.12 Not stated (SD 10.53); n=63; McGill Pain Questionnaire Pain Rating Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Group 1: mean -25.7 mm (SD 27.33); n=51, Group 2: mean -18.2 mm (SD 27.4); n=52; VAS Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: McGill Pain Questionnaire Pain Rating Index at 12 months; Group 1: mean -9.22 Not stated (SD 11.3); n=51, Group 2: mean -6.38 Not stated (SD 11.22); n=52; McGill Pain Questionnaire Pain Rating Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris Disability Questionnaire at 5 weeks; Group 1: mean -4.65 Not stated (SD 4.77); n=66, Group 2: mean -4.53 Not stated (SD 4.86); n=63; Roland-Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Group 1: mean -6.5 Not stated (SD 5.1); n=51, Group 2: mean -4.71 Not stated (SD 5.15); n=52; Roland-Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MANIPULATION + ELECTROTHERAPY versus INTERFERENTIAL THERAPY Protocol outcome 1: Quality of life at Up to 4 months	

Study	Hurley 2004[232]
- Actual outcome: EQ-5D at 5 weeks; Group 1: mean 0.15 Not stated (SD 0.414); n=66, Group 2: mean 0.16 Not stated (SD 0.411); n=65; EQ-5D Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical functioning at 5 weeks; Group 1: mean 14.31 Not stated (SD 21.14); n=66, Group 2: mean 10.62 Not stated (SD 21.18); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role physical at 5 weeks; Group 1: mean 30.01 Not stated (SD 41.66); n=66, Group 2: mean 31.37 Not stated (SD 41.75); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Bodily pain at 5 weeks; Group 1: mean 22.2 Not stated (SD 23.42); n=66, Group 2: mean 22.68 Not stated (SD 22.42); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 5 weeks; Group 1: mean 1.02 Not stated (SD 16.99); n=66, Group 2: mean -0.87 Not stated (SD 16.66); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Vitality at 5 weeks; Group 1: mean 7.21 Not stated (SD 19.48); n=66, Group 2: mean 6.32 Not stated (SD 19.13); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social functioning at 5 weeks; Group 1: mean 15.39 Not stated (SD 25.7); n=66, Group 2: mean 12.51 Not stated (SD 25.91); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role emotional at 5 weeks; Group 1: mean 22.05 Not stated (SD 44.35); n=66, Group 2: mean 18.03 Not stated (SD 42.98); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 5 weeks; Group 1: mean 6.35 Not stated (SD 16.37); n=66, Group 2: mean 1.54 Not stated (SD 16.25); n=65; SF-36 Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome: EQ-5D at 12 months; Group 1: mean 0.25 Not stated (SD 0.182); n=51, Group 2: mean 0.2 Not stated (SD 0.378); n=55; EQ-5D Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical functioning at 12 months; Group 1: mean 21.4 Not stated (SD 24.41); n=51, Group 2: mean 11.71 Not stated (SD 24.78); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role physical at 12 months; Group 1: mean 49.1 Not stated (SD 45.73); n=51, Group 2: mean 37.7 Not stated (SD 46.16); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Bodily pain at 12 months; Group 1: mean 36.4 Not stated (SD 26.23); n=51, Group 2: mean 30.4 Not stated (SD 25.16); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 12 months; Group 1: mean 0.74 Not stated (SD 20.22); n=51, Group 2: mean -2.69 Not stated (SD 19.86); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Vitality at 12 months; Group 1: mean 16.4 Not stated (SD 20.95); n=51, Group 2: mean 9.4 Not stated (SD 20.43); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social functioning at 12 months; Group 1: mean 24.2 Not stated (SD 35.52); n=51, Group 2: mean 16.1 Not stated (SD 35.57); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role emotional at 12 months; Group 1: mean 29.5 Not stated (SD 40.08); n=51, Group 2: mean 18.7 Not stated (SD 39.35); n=55; SF-36 Not	

Study	Hurley 2004[232]
stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 12 months; Group 1: mean 10.3 Not stated (SD 18.4); n=51, Group 2: mean 0.84 Not stated (SD 17.97); n=55; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 5 weeks; Group 1: mean -24.69 mm (SD 25.28); n=66, Group 2: mean -21.38 mm (SD 25.29); n=65; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: McGill Pain Questionnaire Pain Rating Index at 5 weeks; Group 1: mean -6.64 Not stated (SD 10.57); n=66, Group 2: mean -5.87 Not stated (SD 10.69); n=65; McGill Pain Questionnaire Pain Rating Index Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Group 1: mean -25.7 mm (SD 27.33); n=51, Group 2: mean -26.5 mm (SD 27.6); n=55; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: McGill Pain Questionnaire Pain Rating Index at 12 months; Group 1: mean -9.22 Not stated (SD 11.3); n=51, Group 2: mean -8.32 Not stated (SD 11.35); n=55; McGill Pain Questionnaire Pain Rating Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris Disability Questionnaire at 5 weeks; Group 1: mean -4.65 Not stated (SD 4.77); n=66, Group 2: mean -3.56 Not stated (SD 4.94); n=65; Roland-Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Group 1: mean -6.5 Not stated (SD 5.1); n=51, Group 2: mean -4.9 Not stated (SD 4.92); n=55; Roland-Morris Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Itoh 2009[245]
Study type	RCT (Patient randomised; Parallel)

Study	Itoh 2009[245]
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in Japan; Setting: Secondary care outpatients
Line of therapy	Unclear
Duration of study	Intervention + follow-up: 5 weeks intervention + follow-up to 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lumbar or lumbosacral LBP 6 months or longer; no radiation of pain; age 60 or older; normal neurological findings of lumbosacral nerve including deep tendon reflexes, plantar response, voluntary muscle action, straight leg raising and sensory function; not receiving acupuncture for >6 months
Exclusion criteria	Major trauma or systemic disease; receiving conflicting or ongoing co-interventions
Recruitment/selection of patients	Recruited from Meiji University of Oriental Medicine Hospital
Age, gender and ethnicity	Age - Mean (SD): 61-81 years. Gender (M:F): 12:20. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (6 months or longer).
Extra comments	Baseline scores (mean SD) for TENS, acupuncture, combined and control groups, respectively - pain intensity: 63.8 (16.5), 60.0 (19.8), 62.3 (12.2), 63.7 (19.0); RMDQ: 8.2 (4.1), 7.9 (3.1), 6.8 (1.2), 9.0 (4.9)
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Usual care. No specific treatment except allowed to use topical poultice containing methylsalicylic acid. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 2: Acupuncture. Acupunture 15 minutes at BL23, BL25, BL32, BL40, BL60, GB30, GB34;needles 0.2mm x 40mm inserted to depth 10mmusing "sparrow pecking" technique until de qi, then 10 more minutes, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 3: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS for 15 minutes; amplitude-modulated frequency of 122Hz (beat frequency) generated by 2 medium frequency sinusoidal waves (4.0 and 4.122kHz) (feed frequency); 2 electrodes 809mm2 and 5688mm2 placed at the point with the most tenderness and the near side of that point; intensity adjusted to tingling sensation 2-3 times the subject's sensory threshold, once

Study	Itoh 2009[245]
	a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer (n=8) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. 15 minutes of TENS then 15 minutes of acupuncture, once a week. Duration 5 weeks. Concurrent medication/care: Allowed to continue medication if no change in dose for 1 month or longer
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + TENS versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 58.1 mm (SD 28.9); n=7; VAS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 7.7 Not stated (SD 4.6); n=7; Roland-Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + TENS versus ACUPUNCTURE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 43.3 mm (SD 25.7); n=7; VAS 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 6.7 Not stated (SD 4.8); n=7; Roland-Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ACUPUNCTURE + TENS versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 10 weeks; Group 1: mean 49.2 mm (SD 10.3); n=6, Group 2: mean 58 mm (SD 23.7); n=6; VAS

Study	Itoh 2009[245]
0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Questionnaire at 10 weeks; Group 1: mean 6.5 Not stated (SD 1.6); n=6, Group 2: mean 7.5 Not stated (SD 3.6); n=6; Roland-Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Kofotolis 2008[289]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=92)
Countries and setting	Conducted in Greece; Setting: Secondary care rehabilitation setting
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 4 weeks and follow-up 8 weeks after end (i.e. week 12 altogether)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Women with chronic back pain; unsuccessful resting periods for 6 months; had received some form of therapeutic treatment; LBP with at least one of the following: a) during and/or after activity; b) during and/or after sitting; c) during climbing stairs
Exclusion criteria	History of surgery or sciatica or spinal abnormalities on x-ray (i.e. spondylolysis or spondylolisthesis or lumbar scoliosis >10 degrees) or other injuries of the trunk, or muscle and tendon ruptures; previous rhythmic stabilisation or TENS
Recruitment/selection of patients	Referred for treatment of chronic low back pain
Age, gender and ethnicity	Age - Mean (SD): 40.5 (6.7) years. Gender (M:F): All women. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (6 months).
Extra comments	Baseline scores (mean SD) for exercise, TENS + exercise, TENS and placebo groups, respectively - pain: 2.1±0.8, 1.9±0.6, 2.3±0.4, 2.1±0.7; ODI: 17±1.8, 17±2.2, 18±2.3, 17±1.4
Indirectness of population	No indirectness
Interventions	(n=23) Intervention 1: Electrotherapy - Transcutaneous electrical nerve stimulation (TENS). TENS: 120 Z unit; pulse duration 200microseconds; frequency 4 Hz; strong but comfortable stimulation; 4 rubber electrodes 2cm x 3cm applied on the fascia thoracolumbaliis and 10cm proximal to this along midline of muscle (i.e. directly over site of pain); 40-45 minutes; 5 times a week for 4 weeks. Duration 4 weeks. Concurrent medication/care: Not stated (n=23) Intervention 2: Placebo/Sham - Sham. Placebo TENS - as for TENS but electricity disconnected. Duration 4 weeks. Concurrent medication/care: Not stated (n=23) Intervention 3: Individual Biomechanical exercise - Core stability. Alternating trunk flexion-extension against resistance for 10 seconds, 3 sets of 15 repetitions; rest 30 seconds and 60 seconds after completion of 15 repetitions for each pattern and between sets; 5 times a week. Duration 4 weeks. Concurrent medication/care: Not stated

	(n=23) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. TENS 20 minutes plus 5 minutes rest plus 20 minutes exercises as for exercise group. Duration 4 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity at 8 weeks post-treatment; Group 1: mean -0.47 None (SD 0.09); n=21, Group 2: mean -0.31 None (SD 0.07); n=23; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean -2.1 Not stated (SD 0.63); n=23; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus SHAM TENS

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity at 8 weeks post-treatment; Group 1: mean -0.47 None (SD 0.09); n=21, Group 2: mean 0.19 None (SD 0.04); n=21; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean 0.1 Not stated (SD 0.5); n=21; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: TENS + EXERCISE versus CORE STABILITY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain severity at 8 weeks post-treatment; Group 1: mean -0.47 None (SD 0.09); n=21, Group 2: mean -0.92 None (SD 0.17); n=23; Borg verbal pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months

- Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Index at 8 weeks post-treatment; Group 1: mean -3.7 Not stated (SD 1.27); n=21, Group 2: mean -7.1 Not stated (SD 1.49); n=23; Oswestry Index 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	**Vallone 2014[538]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=100)
Countries and setting	Conducted in Italy; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks

Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, MRI, x-rays, ESR, blood count, C-reactive protein
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific LBP >6 months; age >18 years
Exclusion criteria	Nerve root symptoms, systemic disease and specific conditions revealed by MRI including neoplasm, fracture, spondylolisthesis, spondylolysis, spinal stenosis, ankylosing spondylitis, previous low back surgery, prolapsed disc; medication for specific psychological problems; pregnancy
Recruitment/selection of patients	Record review for people consulting with first time LBP in previous 2 years
Age, gender and ethnicity	Age - Median (range): 68 (24-89) years. Gender (M:F): 43:57. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>6 months).
Extra comments	Baseline scores (mean SD) for exercise + education and laser + exercise + education groups, respectively - pain VAS: 6.36 (1.52), 6.64 (1.77)
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. 9 treatment sessions, thrice weekly on alternate days; posterior pelvic tilts, situps, bridging, quadruped exercises, posterior hip and knee muscle stretching. 2-3 stretches of all muscles per day; hold stretches 20 seconds unless painful. Strengthening exercises: began with 5 repetitions, increased to 3 sets of 10 repetitions. Patients received illustrated pamphlet describing exercises. Advised to be active throughout the day and to walk at least 15 minutes before exercising as a warm-up. Then home exercise daily for a further 3 weeks. Sham laser as for laser group but laser light not activated.. Duration 3 weeks. Concurrent medication/care: Requested not to take any pain medication during study period and not to engage in any other exercise or treatment programme. (n=50) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise as for exercise group plus laser: 980nm GaAlAs laser; handpiece 32cm2 spot size; peak power 20W; fluence 37.5J/cm^2; irradiation time 1 minute per spot in continuous wave mode; total irradiation energy 1200J per spot over painful paravertebral low back area in a series of spots L2 to S2-3.. Duration 3 weeks. Concurrent medication/care: Requested not to take any pain medication during study period and not to engage in any other exercise or treatment programme.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: LASER + EXERCISE (BIOMECH) + EDUCATION	

versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (BIOMECH) + EDUCATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean -3.96 cm (SD 2.2); n=50, Group 2: mean -2.32 cm (SD 1.78); n=50; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	**Weiner 2008[559]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 6 weeks + follow-up 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Community dwelling older adults (age 65 or older) with LBP every day or almost every day of moderate intensity or greater for 3 months or more; English-speaking
Exclusion criteria	Red flags; prominent radicular pain; back surgery; spinal pathology other than degenerative disease; pain outside lower back more severe than back pain; conditions making PENS unsafe (pacemaker, anticoagulation); absolute contraindications to exercise (uncontrolled arrhythmia, third degree heart block, recent ECG changes, unstable angina, acute MI or CHF); medical instability (class III or IV CHF, oxygen dependence, recurrent falls, uncontrolled hypertension, inability to stand independently); severe uncorrected visual or hearing impairment; acute illness or pain; neurological or psychiatric disorder that could interfere with pain reporting (e.g. uncontrolled thought disorder, Alzheimer's disease,

Study	Weiner 2008[559]
	prior stroke, substance abuse)
Recruitment/selection of patients	Outpatient research facility attached to Older Adult Pain Management Program at University of Pittsburgh
Age, gender and ethnicity	Age - Range of means: 73.3 (6.0) to 74.3 (6.4) years. Gender (M:F): 86:114. Ethnicity: 89.5% white; others not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Electrotherapy - Percutaneous electrical nerve stimulation (PENS). PENS: 32-gauge 40mm needles placed just below skin into subcutaneous fascia, approx. 15mm depth; 10 needles per session placed bilaterally at T12, L3, L5, S2 and the motor point for the piriformis muscle; electrical stimulation 30 minutes; frequency determined by response to previous session; amplitude set to perceived stimulus of moderate intensity, adjusted to continuous perceptibility; 2 needles at T12 with transient high frequency electrical stimulation as for sham PENS; twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 2: Placebo/Sham - Sham. Sham PENS: needles placed as for PENS but stimulation applied only to 2 T12 needles; frequency 100Hz for 5 minutes then switched off for remaining time to 30 minutes. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. PENS + exercise (strength and flexibility plus aerobic components): duration up to 30 minutes, plus home exercise programme: flexibility i.e. stretches, 3 repetitions, 3 times a day, plus walking: 3 times a week, increased up to 30 minutes per day beyond routine activities. Duration 6 weeks. Concurrent medication/care: Not stated (n=50) Intervention 4: Mixed exercise - Biomechanical + aerobics. Exercise (strength and flexibility plus aerobic components): duration up to 30 minutes, plus home exercise programme: flexibility i.e. stretches, 3 repetitions, 3 times a day, plus walking: 3 times a week, increased up to 30 minutes per day beyond routine activities + sham PENS. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Centre for Complementary and Alternative Medicine and the National Institute on Agine, National Institutes of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PENS + EXERCISE (BIOMECH + AEROBIC) versus PERCUTANEOUS ELECTRICAL NERVE STIMULATION (PENS)

Protocol outcome 1: Quality of life at Up to 4 months

Study	Weiner 2008[559]
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 weeks; Group 1: mean -0.3 Not stated (SD 11.4); n=45, Group 2: mean 1.5 Not stated (SD 12); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 weeks; Group 1: mean 3.9 Not stated (SD 25.8); n=45, Group 2: mean -1.1 Not stated (SD 20.7); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean -1.8 Not stated (SD 15.5); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean -5.9 Not stated (SD 21); n=47; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean -4.1 Not stated (SD 8.2); n=45, Group 2: mean -2.9 Not stated (SD 9.2); n=47; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 weeks; Group 1: mean -0.7 Not stated (SD 0.9); n=45, Group 2: mean -0.7 Not stated (SD 1.1); n=47; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.4 Not stated (SD 7.4); n=47; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.5 Not stated (SD 1.1); n=47; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 weeks; Group 1: mean -2.6 Not stated (SD 4.6); n=45, Group 2: mean -2.6 Not stated (SD 4.5); n=47; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -2.1 Not stated (SD 4.2); n=47; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 weeks; Group 1: mean -0.4 Not stated (SD 2.6); n=45, Group 2: mean 0.3 Not stated (SD 3.2); n=47; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	

Study	Weiner 2008[559]
Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean 0.5 Not stated (SD 3); n=47; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PENS + EXERCISE (BIOMECH + AEROBIC) versus SHAM PENS Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 weeks; Group 1: mean -0.3 Not stated (SD 11.4); n=45, Group 2: mean -0.1 Not stated (SD 10.8); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 weeks; Group 1: mean 3.9 Not stated (SD 25.8); n=45, Group 2: mean 5.9 Not stated (SD 23.8); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean 1.2 Not stated (SD 11.3); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean 5.1 Not stated (SD 24.7); n=48; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean -4.1 Not stated (SD 8.2); n=45, Group 2: mean -2.3 Not stated (SD 6.3); n=48; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 weeks; Group 1: mean -0.7 Not stated (SD 0.9); n=45, Group 2: mean -0.6 Not stated (SD 0.7); n=48; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.3 Not stated (SD 7.4); n=48; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.6 Not stated (SD 0.8); n=48; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 weeks; Group 1: mean -2.6 Not stated (SD 4.6); n=45, Group 2: mean -2.7 Not stated (SD 3.8); n=48; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	

Study	Weiner 2008[559]
Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -3 Not stated (SD 4.7); n=48; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 weeks; Group 1: mean -0.4 Not stated (SD 2.6); n=45, Group 2: mean -0.2 Not stated (SD 2.8); n=48; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean -0.4 Not stated (SD 2.7); n=48; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: PENS + EXERCISE (BIOMECH + AEROBIC) versus EXERCISE (BIOMECHANICAL + AEROBIC) + SHAM PENS Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 weeks; Group 1: mean -0.3 Not stated (SD 11.4); n=45, Group 2: mean 2.8 Not stated (SD 13.7); n=44; SF-36 Mental health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 weeks; Group 1: mean 3.9 Not stated (SD 25.8); n=45, Group 2: mean 6.9 Not stated (SD 22.7); n=44; SF-36 Physical health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health composite score at 6 months; Group 1: mean -0.2 Not stated (SD 13.7); n=45, Group 2: mean 1.5 Not stated (SD 13.9); n=44; SF-36 Mental health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical health composite score at 6 months; Group 1: mean 4.4 Not stated (SD 25.3); n=45, Group 2: mean 8.5 Not stated (SD 27.4); n=44; SF-36 Physical health composite score Not stated Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 weeks; Group 1: mean -4.1 Not stated (SD 8.2); n=45, Group 2: mean -3.1 Not stated (SD 7.9); n=44; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 weeks; Group 1: mean -0.7 Not stated (SD 0.9); n=45, Group 2: mean -0.6 Not stated	

Study	Weiner 2008[559]
(SD 1.2); n=44; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: McGill Pain Questionnaire at 6 months; Group 1: mean -3.8 Not stated (SD 8.9); n=45, Group 2: mean -3.1 Not stated (SD 7.1); n=44; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain in last week at 6 months; Group 1: mean -0.6 Not stated (SD 1.1); n=45, Group 2: mean -0.58 Not stated (SD 1.1); n=44; Pain thermometer Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 weeks; Group 1: mean -2.6 Not stated (SD 4.6); n=45, Group 2: mean -3 Not stated (SD 7.9); n=44; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 6 months; Group 1: mean -2.1 Not stated (SD 4.3); n=45, Group 2: mean -2.8 Not stated (SD 5.3); n=44; Roland Disability Questionnaire Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 7: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 weeks; Group 1: mean -0.4 Not stated (SD 2.6); n=45, Group 2: mean -0.3 Not stated (SD 3.2); n=44; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 8: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Geriatric Depression Scale at 6 months; Group 1: mean -0.1 Not stated (SD 2.2); n=45, Group 2: mean -0.1 Not stated (SD 3); n=44; Geriatric Depression Scale Not stated Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Yeung 2003[578]
Study type	RCT (Patient randomised; Parallel)

Study	Yeung 2003[578]
Number of studies (number of participants)	1 (n=52)
Countries and setting	Conducted in Hong Kong (China); Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow-up: Intervention 4 weeks + follow-up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, imaging
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP with or without radiation, 6 months or more; age 18-75 years
Exclusion criteria	Structural deformity (ankylosing spondylitits, scoliosis); lower limb fracture; tumours; spinal infection; cauda equina syndrome; pregnancy; spinal cord compression; inability to keep appointments; acupuncture in last 6 months; physiotherapy in last 3 months
Recruitment/selection of patients	Recruited from medical officer in charge of outpatient clinic of Department of Orthopaedics and Traumatology
Age, gender and ethnicity	Age - Mean (SD): Exercise: 55.6 (10.4), exercise + electroacupuncture: 50.4 (16.3) years. Gender (M:F): 9:43. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (6 months or more).
Extra comments	Baseline scores (mean SD) for execise and exercise + electroacupuncture groups, respectively - NRS average pain: 5.88±1.84, 6.38±1.77; Aberdeen LBP scale: 32.49±13.79, 35.32±11.72; analgesic consumption (number of participants): 26/26, 25/26
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Standard group exercise programme: hourly session each week for 4 weeks: warm-up stretching back muscles 10 minutes; back extension x 15 repetitions x 3 times with rest between (progress adding arm weight); abdominal exercise x 15 repetitions x 3 times with rest between (progress by repositioning arms); cool-down stretching back muscles x 10 minutes. Advised on spinal anatomy and body mechanics, back care and postural correction, lifting and ergonomic advice, behavioural modification and home exercises (15 minutes per day). Duration 4 weeks. Concurrent medication/care: Patients were asked not to undergo any other types of therapy for LBP during the study (n=26) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. As for exercise group plus electroacupuncture 3 times a week for 4 weeks; needles size 30 (0.3mm diameter x 40mm long) inserted into UB23, UB25, UB40 and SP6, on the side of worse pain, manipulated until te chi, then needle coupled to

Study	Yeung 2003[578]
	electric stimulator at frequency 2 Hz for 30 minutes; intensity set at level the patient could tolerate, often with evoked visible muscle contractions; biphasic waveform (positive wave in the square form and negative wave in the triangular form with 0.5ms pulse width to the 4 acupoints in 2 pairs, i.e. UB23/UB25 and UB40/SP6.. Duration 4 weeks. Concurrent medication/care: Patients were asked not to undergo any other types of therapy for LBP during the study
Funding	Academic or government funding (Hong Kong Polytechnic University Area of Strategy Development Fund, Tung Wah Board Fund)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: ELECTROACUPUNCTURE + EXERCISE (BIOMECH) + EDUCATION + HOME EXERCISE versus COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (BIOMECH) + EDUCATION + HOME EXERCISE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (NRS) at 3 months; Group 1: mean 3.46 Not stated (SD 2.18); n=24, Group 2: mean 5.27 Not stated (SD 2.31); n=25; NRS 0-10 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Aberdeen LBP scale at 3 months; Group 1: mean 19.86 Not stated (SD 10.12); n=24, Group 2: mean 25.82 Not stated (SD 13.11); n=25; Aberdeen LBP scale 0-100 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome: Analgesic consumption at 3 months; Group 1: 2/26, Group 2: 4/26; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

H.11 Psychological interventions

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Study	Banth 2015[22]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=88)
Countries and setting	Conducted in Iran; Setting: physiotherapy centres
Line of therapy	Mixed line
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: LBP but not exclude sciatica (LBP with/without sciatica)
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 30–45 years, Being under medical treatments like physiotherapy and medicine, Medical problem-history of Non-specific chronic LBP and persisting pain for at least 6 months, Language – Persian, Gender – female, Qualification - educated at least up to high school, Consent and willingness to alternative and complementary therapies for pain management
Exclusion criteria	History of spine surgery, Combination with other chronic disease, Psychotherapy in the last 2 years excluded, Unavailability in next 3 months
Recruitment/selection of patients	not reported
Age, gender and ethnicity	Age - Range: 30-45 years. Gender (M:F): Define. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months duration).
Extra comments	Pain (McGill): mindfulness = 26.1 (SD 5.4), UC = 26.7 (SD 4.4); QoL SF12 mental component (0-100): mindfulness = 23.4 (SD 4.0), UC = 22.4 (SD 3.8); QoL SF12 physical component (0-100): mindfulness = 20.8 (SD 4.6), UC = 19.95 (SD 3.5).
Indirectness of population	No indirectness
Interventions	(n=39) Intervention 1: Psychological therapies - Mindfulness. Conducted in a private physiatrist clinic near to physiotherapy centres. A MBSR program administered one session per week for explaining techniques, practice, and feedback and share their experience for 8 weeks beside 30–45 min' daily home practice. The intervention was conducted in 3 small groups included 7–9 participants in each group. Sessions took 8 weeks, and each session lasted for 90 min. Meditation transformed the patients' awareness through the techniques of breathing and mindfulness. .

Study	Banth 2015[22]
	Duration 8 weeks. Concurrent medication/care: None reported (n=48) Intervention 2: Usual care. Not offered any type of intervention in the research project. Underwent the normal routines in healthcare including physiotherapy and medicine. Duration 8 weeks. Concurrent medication/care: None reported
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MINDFULNESS versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-12 Physical composite at 8 weeks; Group 1: mean 25 (SD 2); n=39, Group 2: mean 21.2 (SD 3.3); n=48; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Mental composite at 8 weeks; Group 1: mean 28.4 (SD 5.2); n=39, Group 2: mean 23.5 (SD 3.7); n=48; SF-12 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (McGill) 0-78 at 8 weeks; Group 1: mean 16.37 (SD 3.8); n=39, Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Carpenter 2012[70]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=164)
Countries and setting	Conducted in USA; Setting: Home based (no face to face contact with assessors)
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 week intervention,
Method of assessment of guideline condition	Inadequate method of assessment/diagnosis: Self-identified as having had non-cancer related lower back pain
Stratum	Overall

Study	Carpenter 2012[70]
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 21 years or older who: 1)were self-identified as having had non-cancer related lower back pain for at least 6 months, 2) reported an average pain rating of 4 or above for the past week (0-10 scale) 3) had access to a computer with audio capabilities, an internet connection and a working email account, 4) could read and write in English, and 5) had not participated in a multidisciplinary program or cognitive behavioural approaches for chronic pain within the past 3 years.
Exclusion criteria	Not stated.
Recruitment/selection of patients	Recruitment was via internet bulletin boards and advertisements in mainstream and alternative newspapers in cities chosen for ethnic diversity. The advertisements noted that people with lower back pain could earn up to $135 for testing an online workbook and completing assessments. People were screened by phone.
Age, gender and ethnicity	Age - Mean (SD): 42.5 (10.3). Gender (M:F): 83% female. Ethnicity: 23% minority ethnic groups
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 6 months pain).
Extra comments	Baseline scores (mean SD) - RMDQ: cognitive behavioural approaches 16.3 (5.3), UC 17.1 (4.7); Average pain: cognitive behavioural approaches 5.2 (1.5), UC 5.7 (1.7).. 86% reported that they were currently using medications, 55% reported having received an opioid, 31% surgery, 28% injections, 75% physical therapy, 26% psychotherapy. Baseline mean pain 5.5 (1.6). Due to a preponderance of participants in their twenties and thirties, mid-way through the study, the minimum age for eligibility was raised to 40 years old in order to recruit a sample more representative of the general chronic pain population.
Indirectness of population	No indirectness
Interventions	(n=70) Intervention 1: Psychological therapies - cognitive behavioural approaches. The Wellness Workbook - an on-line self-help intervention consisting of a mind/body treatment rationale, pain education and cognitive behavioural approaches techniques including cognitive restructuring, stress management, relaxation training, mindfulness and vales-based behavioural activation. Asked to complete 2 chapters online per week.. Duration 3 weeks. Concurrent medication/care: Not stated. (n=71) Intervention 2: Usual care - Waiting-list. Wait list control group - who were informed they would receive access to the wellness workbook in 3 weeks.. Duration 3 weeks. Concurrent medication/care: Not stated.
Funding	Academic or government funding (National Institute of Arthritis and Musculoskeletal and Skin Diseases)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus WAITING-LIST	

Study	Carpenter 2012[70]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS average pain at 3 weeks; Group 1: mean 5.2 (SD 1.5); n=63, Group 2: mean 5.7 (SD 1.7); n=68; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 3 weeks; Group 1: mean 13.5 (SD 5.8); n=63, Group 2: mean 16.3 (SD 5.2); n=68; Roland-Morris disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Fordyce 1986[137]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=107)
Countries and setting	Conducted in USA; Setting: Outpatients department
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-reported
Stratum	Overall
Subgroup analysis within study	Unclear
Inclusion criteria	Current complaint of LBP originating within last 10 days. No previous LBP significantly limiting activities for >10 days in last year. No treatment in last 9 months for LBP
Exclusion criteria	none listed
Recruitment/selection of patients	patients recruited from outpatient departments and A&E.
Age, gender and ethnicity	Age - Mean (SD): Intervention 34.3 (11.93), Control 31.42 (10.92). Gender (M:F): 1:1.5 female: male . Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Pain originating in the last 10 days).
Extra comments	Baseline data not given

Study	Fordyce 1986[137]
Indirectness of population	No indirectness
Interventions	(n=57) Intervention 1: Psychological therapies - Behavioural therapy. Interventions on a time contingent basis- Analgesia prescribed at fixed times and prescription not renewable, Activity prescribed of specified intervals, with determined and fixed exercise content. Return visit set at 2 weeks. . Duration 2 weeks . Concurrent medication/care: not specified Comments: Poor description of interventions, no examples or specification of who giving intervention or of defined content and analgesia used. (n=50) Intervention 2: Usual care. Intervention on a pain contingent basis. Analgesia prescribed as required and repeat prescriptions allowed; activities limits decided by patient on when pain subsided sufficiently, and the exercises prescribed wither to be undertaken according to how much pain was being experienced. Repeat visits to clinician allowed as required, but always at start and 2 weeks. Duration 2 weeks . Concurrent medication/care: Not mentioned. Comments: Poor description of interventions, no examples or specification of who giving intervention or of defined content and analgesia used.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BEHAVIOURAL THERAPY versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain drawings scale at 9-12 months; Group 1: mean 1.98 (SD 2.46); n=56, Group 2: mean 3.06 (SD 2.45); n=49; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Claimed impairment at 9-12 months; Group 1: mean 4.84 (SD 3.2); n=55, Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome: Number of medications now taken at 9-12 months; Group 1: mean 0.29 (SD 0.29); n=55, Group 2: mean 0.56 (SD 0.74); n=48; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Number of hospitalisations at 9-12 months; Group 1: mean 0.56 (SD 1.17); n=55, Group 2: mean 0.88 (SD 1.38); n=48; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Number of treatment visits at 9-12 months; Group 1: mean 0.38 (SD 0.83); n=55, Group 2: mean 0.52 (SD 1.05); n=48; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Estimated medication costs in last 30/7 at 9-12 months; Group 1: mean 0.52 (SD 1.13); n=55, Group 2: mean 0.94 (SD 1.4); n=48; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Fordyce 1986[137]
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

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Study	Gohner 2006[172]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=47)
Countries and setting	Conducted in Germany
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific subacute (between 7 days and 7 weeks) back pain over 18 years who had not received physiotherapy in the last two years.
Exclusion criteria	Osteoporosis, inflammatory conditions, cardiac problems, cancer, prolapsed disc and or neurological symptoms, scoliosis and fractures of the spine. Patients scoring in the stages 2-4 on the pain questionnaire.
Recruitment/selection of patients	physiotherapy practices
Age, gender and ethnicity	Age - Mean (SD): 36.38 (11.85). Gender (M:F): 1:1.2 Male:Female . Ethnicity:
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (7 days - 7 weeks (Acute/subacute pain)).
Extra comments	Baseline scores (mean SD) - pain intensity: cognitive behavioural approaches 5.12 (2.27), control 4.23 (2.21).
Indirectness of population	No indirectness
Interventions	(n=27) Intervention 1: Psychological therapies - cognitive behavioural approaches. 3 x cognitive behavioural approaches sessions lasting 50 minutes. Duration 6-8 weeks. Concurrent medication/care: standardised physiotherapy

Study	Gohner 2006[172]
	(n=27) Intervention 2: Usual care not reported. Duration 6-8 weeks. Concurrent medication/care: standardised physiotherapy program
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity at 8 weeks ; Group 1: mean 3.04 (SD 1.7); n=26, Group 2: mean 2.91 (SD 2.02); n=25; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain intensity at 6 months ; Group 1: mean 1.96 (SD 1.4); n=25, Group 2: mean 1.98 (SD 1.9); n=22; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Jellema 2005[250]
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=314)
Countries and setting	Conducted in Netherlands; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: 52 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-65 years, non-specific low back pain of less than 12 weeks' duration or an exacerbation of persisting low back pain, and sufficient knowledge of the Dutch language.
Exclusion criteria	Low back pain caused by specific pathological conditions, low back pain currently treated by another healthcare

Study	Jellema 2005[250]
	professional, and pregnancy.
Recruitment/selection of patients	We invited general practitioners to participate through a leaflet and by telephone. A researcher (PJ) visited general practitioners who showed interest, informed them about the study's aim and procedures, and invited them to participate for a period of eight months. We asked participating general practitioners to select 10 consecutive patients who consulted them for low back pain.
Age, gender and ethnicity	Age - Mean (SD): Intervention: 43.0 (7.2); control: 45.7 (7.4). Gender (M:F): 70% Male/ 30% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<12 weeks duration).
Extra comments	Baseline scores (mean SD) - RMDQ: cognitive behavioural approaches 11.7 (5.4), UC 12.2 (5.0); pain severity: cognitive behavioural approaches 4.9 (2.0), UC 4.8 (2.0); general health (SF-36): cognitive behavioural approaches 2.7 (0.8), UC 2.8 (0.8)
Indirectness of population	No indirectness
Interventions	(n=143) Intervention 1: Psychological therapies - cognitive behavioural approaches. Exploration phase: the GP explored the presence of psychological prognostic factors by asking standardised questions. Information phase: The GP provided general information on the cause, course, and possibilities of treatments of low back pain and included the patient's cognitions, emotions and behaviour. Self care phase: The general practitioner and patient set specific goals on resuming activities or work and discussed time contingent use of analgesic drugs, and the doctor gave the patient a booklet based on the Back Book.. Duration 52 weeks. Concurrent medication/care: Not stated. (n=171) Intervention 2: Usual care. The guideline for low back pain of the Dutch College of General Practitioners advises a wait and see policy for acute low back pain, with analgesics and gradual uptake of activities, and provides general recommendations on reactivation and home exercises. For subacute low back pain (> 6 weeks), the guideline advises referral for exercise therapy, physiotherapy, or manual therapy in the case of persistent functional disability. Explicit guidance on psychosocial factors is lacking.. Duration 52 weeks. Concurrent medication/care: Not stated
Funding	Other (The Netherlands Organization for Health Research and Development, the Hague)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: Perceived general ealth (SF-36) at 13 weeks; Group 1: mean 2.6 (SD 0.8); n=143, Group 2: mean 2.6 (SD 0.8); n=171; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: Perceived general ealth (SF-36) at 52 weeks; Group 1: mean 2.7 (SD 0.9); n=143, Group 2: mean 2.7 (SD 0.8); n=171; Risk of bias: High; Indirectness

Study	Jellema 2005[250]
of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain severity during day at 13 weeks; Other: Median (IQR). cognitive behavioural approaches: 0 (0-3); Control: 1 (0-3); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain severity during day at 52 weeks; Other: Median (IQR). cognitive behavioural approaches: 0 (0-3); Control: 0 (0-2); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Functional disability (RMDQ) at 13 weeks; Other: Median (IQR). cognitive behavioural approaches: 2 (0-6); Control: 2 (0-5); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Functional disability (RMDQ) at 52 weeks; Other: Median (IQR). cognitive behavioural approaches: 1 (0-4); Control: 1 (0-4); Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Kole-snijders 1999[291]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=148)
Countries and setting	Conducted in Netherlands; Setting: Outpatient rehabilitation centre.
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks treatment, 6 and 12 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Interviews with a rehabilitation physician.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain for at least 6 months, age between 18 and 65 years, a discrepancy between objective findings and pain complaints, and cooperation of the spouse (or a relative or close friend) to participate in a weekly spouse training program.
Exclusion criteria	Illiteracy, pregnancy, involvement in litigation concerning social disability income, alcohol or drug abuse, serious

Study	Kole-snijders 1999[291]
	psychopathology (e.g. antisocial personality disorder, psychosis or organic brain damage) and specific medical disorders requiring medical treatment or rendering patients unable to participate in the program.
Recruitment/selection of patients	Patients referred by their GP or by a medical specialist. Inclusion criteria were checked by interviews with a rehabilitation physician, a psychologist, and a social worker.
Age, gender and ethnicity	Age - Mean (SD): 39.8 (9.1). Gender (M:F): 54:94. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months duration).
Extra comments	Mean pain duration at baseline 9.8 years (SD 8.7), 39% had received back surgery. Other baseline data not reported.. Patients who withdrew were replaced by non-randomised patients from a waiting list with the same age and gender.
Indirectness of population	No indirectness
Interventions	(n=59) Intervention 1: Psychological therapies - cognitive behavioural approaches. Operant behavioural treatment and cognitive coping skills training. Duration 8 weeks. Concurrent medication/care: No concurrent interventions took place during the program. Health care use during the follow-up was monitored by means of a cost diary. (n=58) Intervention 2: Psychological therapies - Behavioural therapy. Active control: Operant behavioural therapy and group discussions. Duration 8 weeks. Concurrent medication/care: No concurrent interventions took place during the program. Health care use during the follow-up was monitored by means of a cost diary. (n=31) Intervention 3: Usual care - Waiting-list. Waiting list - no treatment. Duration 8 weeks. Concurrent medication/care: No concurrent interventions took place during the program. Health care use during the follow-up was monitored by means of a cost diary.
Funding	Academic or government funding (Investigative Medicine Fund of the Dutch Insurance Council)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus BEHAVIOURAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain intensity VAS at 8 weeks; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: McGill Pain Questionnaire Pain Rating Index at 8 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: BDI at 8 weeks; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up;

Study	Kole-snijders 1999[291]
	Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Leeuw 2008[316]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=85)
Countries and setting	Conducted in Netherlands
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Back pain for at least 3 months that was not caused by serious spinal injury, age between 18 and 65 years, the presence of a sufficient level of disability (Roland Disability Questionnaire (RDQ) > 3),and the presence of at least moderate fear of movement/(re)injury (Tampa Scale for Kinesiophobia > 33).
Exclusion criteria	illiteracy, pregnancy, substance abuse interfering with treatment, involvement in any litigation concerning the patients ability to work or disability income, specific medical disorders or cardiovascular diseases preventing participation in physical exercise, and serious psychopathology.
Recruitment/selection of patients	Patients recruited by referral physicians from outpatient departments. An advertisement in local newspapers.
Age, gender and ethnicity	Age - Mean (SD): 45.32 (9.45). Gender (M:F): Define. Ethnicity: not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline scores (mean, SD) - Functional disability QBPDS (0–100): cognitive behavioural approaches 53.61 ± 11.63, behavioural 51.88 ± 13.54; Pain intensity, MPQ (0–100): cognitive behavioural approaches 52.54 ± 12.77, behavioural 54.66 ± 11.88; Functional disability, RDQ (0–24): cognitive behavioural approaches 15.23 ± 3.64, behavioural 14.27 ± 3.44; Depressive symptoms, BDI (0–63): cognitive behavioural approaches 12.75 ± 7.46, behavioural 9.50 ± 7.30.
Indirectness of population	No indirectness
Interventions	(n=42) Intervention 1: Psychological therapies - cognitive behavioural approaches. Exposure in vivo (cognitive therapy, education, engaging in fear-provoking activities) for approximately 16 sessions. Duration not stated. . Concurrent medication/care: prescribed medication previous to taking part in experiment.

Study	Leeuw 2008[316]
	(n=43) Intervention 2: Psychological therapies - Behavioural therapy. Operant graded activity (positive reinforcement of healthy behaviours, education, activity quotas). Duration Not stated . Concurrent medication/care: prescribed medication previous to taking part in experiment.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus BEHAVIOURAL THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: pain intensity at post treatment ; Group 1: mean 43.72 (SD 21.24); n=41, Group 2: mean 44.07 (SD 22.86); n=36; MPQ VAS 1-100 Top=--; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: pain intensity at 6 months ; Group 1: mean 41.15 (SD 22.26); n=38, Group 2: mean 40.45 (SD 22.25); n=35; MPQ VAS 1-100 Top=--; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Functional disability at 6 months ; Group 1: mean 39 (SD 20.93); n=38, Group 2: mean 41.94 (SD 19.29); n=35; Quebec back pain disability scale 1-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Functional disability RMDQ at 6 months ; Group 1: mean -6.34 (SD 5.75); n=38, Group 2: mean -4.23 (SD 5.6); n=35; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Linden 2014[327]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=107)
Countries and setting	Conducted in Germany; Setting: Inpatients at orthopaedic department
Line of therapy	Unclear

Study	Linden 2014[327]
Duration of study	Intervention time: 21 days
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall: with/without sciatica (study just says LBP and has not excluded sciatica)
Subgroup analysis within study	Not applicable
Inclusion criteria	Back pain for at least 6 months.
Exclusion criteria	Excluded if currently applying for early retirement
Recruitment/selection of patients	Referred for inpatient treatment by health or pension insurance because their ability to work is endangered
Age, gender and ethnicity	Age - Mean (SD): 50 (8). Gender (M:F): 32%/68%. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months pain).
Extra comments	Pain (VAS 0-10): cognitive behavioural approaches = 6.04 (1.3) and UC = 5.86 (1.8). Pain disability index (PDI, 0-70): cognitive behavioural approaches = 21.43 (10.5) and UC = 21.8 (13.7)
Indirectness of population	No indirectness
Interventions	(n=53) Intervention 1: Psychological therapies - cognitive behavioural approaches. cognitive behavioural approaches: 3 group sessions per week, each was 90 minutes. Designed in reference to the GRIP and the pain and illness management programme from Geissner et al1994, with additional cognitive behavioural approaches interventions which aim at stress reduction and problem solving, self-monitoring, pain management, change in dysfunctional cognitions, reduction of avoidance behaviour, and wellbeing therapy. First session = reporting on their experience of pain and coping, and educated on the Gate-Control-Concept. Second session = educated to work with a pain diary, and education / training to reduce pain by positive imaginations. Third session = education on correct movements in daily activities, psych focus of the Fear Avoidance Model. Fourth and fifth sessions = focus on dysfunctional cognitions, attention focus and positive exoeriences following a bhavioral analytic model. Sixth session = increased activities and looking for pleasurable activities and identify avoidance behaviour. Also educated on how to solve problems in their life following principles of behavior therapy. The therapist was a physician with training in cognitive behavioural approaches. Duration 21 days. Concurrent medication/care: UC: general orthopaedic inpatient treatment (regularly seen by physicians, got medication as needed and participated on a daily basis in sport therapy and physiotherapy, balneotherapy, massages, or electrotherapy. They also got occupational therapy to support their reintegration in work. There were also general patient education sessions with information on how to understand adn cope with the illness. (n=50) Intervention 2: Usual care. UC: general orthopaedic inpatient treatment (regularly seen by physicians, got medication as needed and participated on a daily basis in sport therapy and physiotherapy, balneotherapy, massages,

Study	Linden 2014[327]
	or electrotherapy. They also got occupational therapy to support their reintegration in work. There were also general patient education sessions with information on how to understand and cope with the illness. Duration 21 days. Concurrent medication/care: Just the UC
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS 0-10) at 21 days; Group 1: mean 3.06 (SD 1.6); n=53, Group 2: mean 4.1 (SD 2.2); n=50; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Pain disability Index (PDI, 0-70) at 21 days; Group 1: mean 19.94 (SD 12.1); n=53, Group 2: mean 21.14 (SD 14.8); n=50; PDI 0-70 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Menzel 2006[371]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in USA; Setting: Outpatients department
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self-reported
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	History of back pain in the past year. Working as a nurse or HCA, with >80% time providing care. Work at least 30 hours.

Study	Menzel 2006[371]
Exclusion criteria	Modified working duties
Recruitment/selection of patients	Posters, Emails, and in person requests
Age, gender and ethnicity	Age - Mean (SD): 40.3. Gender (M:F): Not defined. . Ethnicity: not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (History of pain in last year).
Extra comments	Baseline scores (mean SD) - pain VAS: cognitive behavioural approaches 48.75 (31.09), control 36.00 (26.04). No other baseline scores reported.
Indirectness of population	--
Interventions	(n=16) Intervention 1: Usual care - Waiting-list. Waiting list control. Duration 6 weeks. Concurrent medication/care: Not commented on (n=16) Intervention 2: Psychological therapies - cognitive behavioural approaches. cognitive behavioural approaches, 6 x 1 hour sessions . Duration 6 weeks. Concurrent medication/care: Not described
Funding	Academic or government funding (American association of occupational health nurses foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity at 6 weeks ; Group 1: mean 37.25 (SD 24.43); n=8, Group 2: mean 45 (SD 26.75); n=10; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Disability at 6 weeks ; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Mood -depression at 6 weeks ; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Mood - anxiety at 6 weeks ; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Morone 2008[387]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=37)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 week intervention, follow-up at 3 months
Method of assessment of guideline condition	Inadequate method of assessment/diagnosis: Self-report
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 65 or older, had intact cognition (min-mental status exam at least 23), had chronic low back pain, defined as moderate pain occurring daily or almost every day for at least the previous three months, and spoke English.
Exclusion criteria	Had previously participated in a mindfulness meditation program, and had 'red flags' suggestive of serious underlying illness (e.g. malignancy, infection, unexplained fever, weight loss or recent trauma) causing their pain.
Recruitment/selection of patients	Recruitment was through an adult pain clinic, flyers posted around the University; medical center and newspaper adverts. Eligibility was determined by self-report from a checklist reviewed with potential participants over the telephone.
Age, gender and ethnicity	Age - Mean (range): 75 (65-84). Gender (M:F): 16/21. Ethnicity: Majority Caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months duration).
Extra comments	Baseline scores (mean SD) for mindfulness and usual care groups respectively - pain McGill: 15.5 ± 10.0, 15.2 ± 7.0; SF36 pain: 35.5 ± 6.0, 35.7 ± 7.2; RMDQ: 11.5 ± 3.7, 11.8 ± 4.6; SF36 Physical function: 42.0 ± 10.9, 45.1 ± 9.5; SF36 Physical Health: 41.4 ± 8.7, 41.2 ± 6.8; SF36 global health: 40.4 ± 9.0, 40.3 ± 10.4; SF36 mental health: 41.7 ± 11.3, 40.8 ± 13.7
Indirectness of population	No indirectness
Interventions	(n=19) Intervention 1: Psychological therapies - Mindfulness. 8 weekly 90 minute mindfulness meditation sessions and meditation homework assignments. Duration 8 weeks. Concurrent medication/care: Not stated (n=18) Intervention 2: Usual care - Waiting-list. No intervention. Duration 8 weeks. Concurrent medication/care: Not stated. Comments: Swapped over to mindfulness group at 8 weeks

Study	Morone 2008[387]
Funding	Academic or government funding (NIH)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MINDFULNESS versus WAITING-LIST Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF36 pain scale at 8 weeks; Group 1: mean 39.9 (SD 7.7); n=19, Group 2: mean 38.8 (SD 8.3); n=18; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF36 physical function scale at 8 weeks; Group 1: mean 45.7 (SD 9.2); n=19, Group 2: mean 44.5 (SD 10.1); n=18; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF36 physical health composite at 8 weeks; Group 1: mean 43.9 (SD 8.4); n=19, Group 2: mean 42.9 (SD 9); n=18; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF36 global health composite at 8 weeks; Group 1: mean 44.7 (SD 8.9); n=19, Group 2: mean 42.9 (SD 10.7); n=18; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF36 mental health composite at 8 weeks; Group 1: mean 45.7 (SD 10.3); n=19, Group 2: mean 43.2 (SD 12.4); n=18; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: McGill Pain questionnaire at 8 weeks; Group 1: mean 13.7 (SD 7.9); n=19, Group 2: mean 15.7 (SD 9.1); n=18; McGill Pain 0-78 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris Disability Questionnaire at 8 weeks; Group 1: mean 9.4 (SD 5.1); n=19, Group 2: mean 10.6 (SD 5.3); n=18; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Morone 2009[388]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=35)
Countries and setting	Conducted in USA

Study	Morone 2009[388]
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 week intervention, 4 month follow-up
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain of at least 3 months duration and of at least moderate intensity according to a vertical verbal descriptor scale (pain thermometer), age at least 65 years, and intact cognition (Mini-Mental Status Exam score at least 24).
Exclusion criteria	Non-English speaking, previous participation in a mindfulness meditation program, serious hearing or vision impairment that would preclude responding to questionnaires or participating in the meditation program, medical instability from heart or lung disease, multiple recent falls or inability to stand independently, pain caused by an acute injury in the previous 3 months, and underlying red flags of serious underlying illness such as recent unexplained weight loss, fever, or sudden worsening of back pain.
Recruitment/selection of patients	Recruitment was done through local newspaper advertisements, posted flyers and brochures in the Medical Centre. People were then screened over the telephone.
Age, gender and ethnicity	Age - Mean (SD): 75.5 (6.65). Gender (M:F): 13/22. Ethnicity: Majority Caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months duration).
Extra comments	Baseline scores only reported in graphical form. The most common cause of low back pain was osteoarthritis (n=19). The majority of patients used non-opioid analgesics to treat their back pain.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Psychological therapies - Mindfulness. Mindfulness meditation delivered weekly for 90 mins (1 hour meditation and 30 mins discussion) including three methods of mindfulness meditation: 1) the body scan, where in a lying position, the participant is guided to place their attention non-judgementally on each area of the body from the toes to the top of the head; 2) sitting practice, where the participant is guided to focus their attention on breathing while sitting on a chair; and 3) walking meditation, where the participant is guided in mindful slow walking with focused attention on body sensation and/or breathing. . Duration 8 weeks. Concurrent medication/care: Not stated. (n=20) Intervention 2: Placebo/Sham. Active control: Controlled for time, group size and facilitator time. Included lectures, group discussion, and homework assignments based on the health topics discussed. Subjects were given materials to promote participation and retention in the program including the use of a Nintendo DS 'Brain Age' game

Study	Morone 2009[388]
	and encouraged to do this as daily homework as well as homework assignments from the book 'Keep your brain alive'. Each class had 45-60mins lecture by a health professional and 30-45 mins class of brain exercise and discussion. . Duration 8 weeks. Concurrent medication/care: Not stated.
Funding	Academic or government funding (NIH)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MINDFULNESS versus PLACEBO/SHAM Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF36 at 4 months; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity - McGill Pain Questionnaire at 4 months; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: RMDQ at 4 months; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Newcomer 2008[406]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=220)
Countries and setting	Conducted in USA; Setting: At private residence.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	--
Stratum	Overall: vermont disability prediction questionnaire <0.48>, Age >45 YO<.
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	LBP maximal between L1 and the gluteal folds lasting less then 3 months,

Study	Newcomer 2008[406]
Exclusion criteria	Subjects with osteoporosis, a spondyloparthopathy, previous lumbar surgery, a neurological deficit on examination suggestive of nerve root compression or cauda equina syndrome, or systemic disease thought to be the cause of the LBP. Pregnant women. Multiple musculoskeletal problems. No access to videocassette recorder. Requiring surgery at any point during study, or if developing musculoskeletal problems and seeing a physician for this problem separately.
Recruitment/selection of patients	Recruited to attendees of spine centres, sports medicine centres, employee health centre, and outpatient physical medicine and rehabilitation departments.
Age, gender and ethnicity	Age - Mean (SD): experimental arm 40.4 (10.9), control arm 37.9 (11.8). Gender (M:F): 1:1.9 Male:Female . Ethnicity: not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (defined as acute >3 months onset. Does not specify if recurrent episode.).
Extra comments	Baseline scores (mean SD) - Pain and Impairment Relationship Scale: cognitive behavioural approaches 40.6±11.6, control 41.2±11.5; ODI: cognitive behavioural approaches 25.2±14.9, control 26.1±17.9
Indirectness of population	No indirectness
Interventions	(n=110) Intervention 1: Psychological therapies - cognitive behavioural approaches. Videotape given with education component and elements targeting beliefs and self-management skills. Lasting 20 minutes. to be watched at home at least once every 3 months. . Duration 1 year. Concurrent medication/care: 'usual care' for LBP. Comments: The video is said to be a cognitive behavioural approaches intervention but does not involve any mention of restructing negative cognitions, or setting behavioural exercises. It is describe as having education, including didactive, and peer modelling. (n=110) Intervention 2: Placebo/Sham. 20 minute video using traditional education approach emphasizing information and technical skills. To be watched at home at least once every three months. Duration 1 year. Concurrent medication/care: 'usual care' for LBP
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain and impairment relationship scale at 12 months; Group 1: mean 8.4 (SD 12.2); n=59, Group 2: mean 7.5 (SD 12.8); n=59; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up

Study	Newcomer 2008[406]
- Actual outcome: Oswerty Disability scale at 12 months; Group 1: mean 15 (SD 14.8); n=59, Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Nouwen 1983[414]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in Netherlands; Setting: EMG measurement took place in a sound-proof, electrically shielded chamber. Feedback sessions were held in a therapy room at the Department of Clinical Psychology of the Free University.
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks (15 sessions)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain with clinical signs of contracted erector spinae musculature; EMG levels of the m. erector spinae >5microV when in standing position; pain history of at least 6 months; no indications that the pain was caused by spinal or other organic disturbances; not treated in any way for back pain for at least 3 months prior to the study; not obese; age between 20 and 55 years
Exclusion criteria	Not sated
Recruitment/selection of patients	Newspaper article
Age, gender and ethnicity	Age - Mean (SD): Experimental: 42.1 (9.1); control: 45.5 (9.3). Gender (M:F): 50% Male/ 50% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months pain).
Extra comments	Baseline pain level: experimental 15.82 (9.39); control: 18.35 (11.77). The patients were asked not to use medication during the experimental period.
Indirectness of population	--
Interventions	(n=10) Intervention 1: Psychological therapies - Behavioural therapy. Each treatment session was divided into 3

Study	Nouwen 1983[414]
	stages, separated by 2.5 min break in which the patient were allowed to sit down: the first stage consisted of 7.5 min of EMG recording without feedback (pre-treatment), the second, 15 min of biofeedback (treatment), during which the patients were told to reduce EMG activity without changing posture, and the third, 7.5 min of EMG recoding without feedback (post-treatment). Duration 3 weeks (15 sessions). Concurrent medication/care: Not stated (n=10) Intervention 2: Usual care - Waiting-list. Patients were told that 9 weeks of measurement were required before treatment could be given. Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BEHAVIOURAL THERAPY versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 3 weeks; Group 1: mean 14.34 (SD 8.55); n=10, Group 2: mean 19.14 (SD 15.63); n=10; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Sanderson 2012[457]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=47)
Countries and setting	Conducted in USA; Setting: Not reported.
Line of therapy	Unclear
Duration of study	Not clear: 3 months follow-up (also states both groups monitored for 10 weeks)
Method of assessment of guideline condition	Unclear method of assessment/diagnosis: Not stated.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18 and 70 and have low back pain as their primary pain site. Additionally, pain must have been present

Study	Sanderson 2012[457]
	for a minimum of 3 months.
Exclusion criteria	A history of drug abuse or dependency within the past 5 years, presence of any medical condition where opioids were contraindicated, or psychosis.
Recruitment/selection of patients	Unclear.
Age, gender and ethnicity	Age - Mean (SD): 48.23 (9.89). Gender (M:F): 27:20. Ethnicity: 81% Caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (Minimum 3 months pain).
Extra comments	Baseline pain scores (mean SD): cognitive behavioural approaches 74.73 (18.47), usual care 80.24 (17.81). All patients were on opioids, though the opioid medication varied according to individual prescriptions. There was no significant difference in terms of short- and long-active medication usage at baseline or follow-up.
Indirectness of population	No indirectness
Interventions	(n=23) Intervention 1: Psychological therapies - cognitive behavioural approaches. Brief individualised cognitive behavioural approaches and opioid medication. Length of therapy varied across patients, each session was 1 hour in length performed by therapists trained in cognitive behavioural approaches for chronic pain. Each session consisted of a combination of skill and homework review, as well as new skill acquisitions. Skills were taught according to individual needs; including ways to conceptualize pain (gate control theory); psychoeducation; pleasant activity scheduling; and examining the relationship between thoughts, feelings, and behaviours that may have been maintaining or exacerbating the patient's pain. Patients were also taught adaptive coping skills, such as activity pacing, and a variety or relaxation techniques. Duration Up to 10 weeks. Concurrent medication/care: Opioid medication. Comments: n per group not stated, assumed 23 each arm (1 patient unaccounted for) (n=23) Intervention 2: Usual care. Opioid medications. Duration Up to 10 weeks. Concurrent medication/care: Opioid medications (otherwise not stated). Comments: n per group not stated, assumed 23 each arm (1 patient unaccounted for)
Funding	Academic or government funding (National Institute for Nursing Research)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Usual pain at 3 months; Group 1: mean 68.08 (SD 19.19); n=23, Group 2: mean 61.76 (SD 26.84); n=23; Patient centred outcomes questionnaire 'usual pain' 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up;

Study	Sanderson 2012[457]
	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Siemonsma 2013[478]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=156)
Countries and setting	Conducted in Netherlands; Setting: Outpatient rehabilitation centre.
Line of therapy	Unclear
Duration of study	Not clear: 18 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18-70 years; non-specific low back pain with or without radiation to the legs for at least 3 months; current episode of back pain lasting less than 5 years; presence of activity limitations (RMDQ score >3); no previous multidisciplinary treatment for chronic low back pain; no involvement in litigation concerning low back pain; absence of serious psychological or psychiatric problems; no substance abuse interfering with treatment; not being pregnant; being able to fill in questionnaires without help; and providing written informed consent.
Exclusion criteria	Not stated apart from the converse of the inclusion criteria.
Recruitment/selection of patients	Patients were invited to participate by a letter (and a screening questionnaire) sent prior to their first consultation in an outpaitent rehabilitation centre.
Age, gender and ethnicity	Age - Mean (SD): 46.35 (12). Gender (M:F): 69/87. Ethnicity: Not reported
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months pain).
Extra comments	Baseline scores for cognitive therapy and control groups, respectively - function RDQ (mean SD): 12.2 (4.2), 12.7 (4.7); QBPDS (mean 95% CI): 40.4 (37.6 to 43.1), 40.3 (35.8 to 44.8); pain VAS (mean SD): 55.7 (21.6), 55.8 (20.8); depression (median, 25th and 75th percentiles): 5.0 (2.25–7), 4.0 (2–6); anxiety (median, 25th and 75th percentiles): 5.5 (3–9), 5.0 (3–8.75)
Indirectness of population	No indirectness

Study	Siemonsma 2013[478]
Interventions	(n=104) Intervention 1: Psychological therapies - Cognitive therapy. Cognitive treatment of illness perception (CTIP) 10-14 one-hour individual treatment sessions provided weekly by a single physical therapist or occupational therapist. . Duration 18 weeks. Concurrent medication/care: Asked not to participate in any other diagnostic or therapeutic chronic low back pain procedure during the study period. Patients asked to report the number of back-pain related visits to their GP, medical specialist, physical therapist or alternative medicine practitioner and any pain medication taken for their back problem. (n=52) Intervention 2: Usual care - Waiting-list. No treatment assigned. . Duration 18 weeks. Concurrent medication/care: Asked not to participate in any other diagnostic or therapeutic chronic low back pain procedure during the study period. Patients asked to report the number of back-pain related visits to their GP, medical specialist, physical therapist or alternative medicine practitioner and any pain medication taken for their back problem.
Funding	Academic or government funding (The Netherlands Organisation for Health Research)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COGNITIVE THERAPY versus WAITING-LIST Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Quebec back pain disability scale at 18 weeks; Group 1: mean 36.9 (SD 16.13); n=104, Group 2: mean 38.7 (SD 19.13); n=52; QBDPS 0-100 Top=--; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=227)
Countries and setting	Conducted in Netherlands
Line of therapy	Unclear
Duration of study	Intervention + follow up: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 18 and 65 years, non-specific low back pain (with or without radiation to the leg) for more than 3 months resulting in functional limitations (Roland Morris Disability Questionnaire score >3), ability to walk >100m without interruption.
Exclusion criteria	Vertebral fracture, spinal infections or malignancy, current nerve root pathology spondylosis or spondylolisthesis, lumbar spondylodesis, medical comorbidity making intensive exercising impossible (e.g. cardiovascular or metabolic disease), ongoing investigations for treatments for chronic low back pain at the time of referral or a clear treatment preference.
Recruitment/selection of patients	Patients recruited between April 2002 and December 2004
Age, gender and ethnicity	Age - Mean (SD): Exercise 42.52 (9.67) Control 40.55 (11.17). . Gender (M:F): 56/48. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months pain).
Extra comments	Baseline scores (mean SD) for cognitive behavioural approaches, exercise and UC groups, respectively - Pain Raiting Index: 17.86 ± 9.94, 18.34 ± 11.32, 17.37 ± 8.52; current pain: 48.84 ± 23.51, 51.23 ± 26.55, 51.02 ± 25.40; RMDQ: 13.74 ± 3.65, 14.15 ± 3.70, 13.96 ± 3.88; depression: 10.45 ± 7.06, 10.38 ± 7.62, 9.78 ± 7.67
Indirectness of population	No indirectness
Interventions	(n=58) Intervention 1: Psychological therapies - cognitive behavioural approaches. Operant behavioral graded activity training and problem solving training. Duration 10 weeks. Concurrent medication/care: No other interventions than those that were randomised took place. (n=51) Intervention 2: Usual care - Waiting-list. Patients remained on waiting list and were then allocated to either treatment with exercise, cognitive behavioural approaches or a combination. Duration 10 weeks. Concurrent medication/care: No other interventions than those that were randomised took place. (n=53) Intervention 3: Mixed exercise - Biomechanical + aerobic. Aerobic exercise on a bicycle for 30 minutes, performing at 65-80% maximal heart rate (increased after two and four weeks) followed by muscle strengthening exercises (dynamic-static). Total session lasting 105 minutes, given 3 times a week for 10 weeks. Duration 10 weeks. Concurrent medication/care: No other interventions than those that were randomised took place.
Funding	Academic or government funding (ZonMw Grant (Netherlands))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: cognitive behavioural approaches versus WAITING-LIST

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS 0-100 at 10 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS 0-100 at 1 year; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: RMDQ 0-24 at 10 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: BDI at 10 weeks; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Storheim 2003[508]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=93)
Countries and setting	Conducted in Norway
Line of therapy	Unclear
Duration of study	Intervention + follow up: 18 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self efficacy for pain, self-efficacy for function, SF-36
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Sick-listed for 8–12 weeks due to non-specific LBP (receiving at least 50 sickness benefit, and with no sick-leave due to LBP during a period of 12 weeks before the current sick-listing period), sick-listed from a permanent job, aged 20–60 years, understanding Norwegian, accessibility to follow all 3 treatment alternatives, and conducting regular physical exercise less than 3 times per week for the last 6 months
Exclusion criteria	Sciatic pain, spinal stenosis with neurological affection, spondylolysis or spondylolisthesis > grade 2, spinal fracture,

Study	Storheim 2003[508]
	tumour or infection, abuse of drugs or alcohol, rheumatic diseases, back surgery, pregnancy or diseases that might interfere with participation, and conducting regular physical exercise more than 3 times per week for the last 6 months.
Age, gender and ethnicity	Age - Mean (SD): CT 41.3 (9.4). Exercise 42.3 (9.2). Control 38.9 (11.9). . Gender (M:F): Define. Ethnicity: not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Sick-listed for 8–12 weeks due to non-specific LBP).
Extra comments	. Baseline scores (mean SD) for exercise, cognitive and UC groups, respectively - VAS: 53.2±23.2, 55.7±19.6, 58.3±21.6; RMDQ: 8.2±3.5, 8.9±3.4, 9.3±3.6: Physical function: 64.7±19.3, 62.7±15.9, 60.9±17.2; Role physical: 4.2±11.5, 11.0±14.0, 7.8±17.8; Bodily pain: 30.8±12.9, 29.1±13.1, 25.8±10.8; General health: 68.4±20.5, 65.8±17.1, 63.8±17.7, vitality: 51.5±16.5, 37.8±18.2, 40.3±16.2; Social function: 72.1±17.9, 61.8±23.6, 63.8±22.2; Role emotional: 53.3±46.0, 46.1±44.2, 62.1±38.5; Mental health: 73.1±12.7, 64.5±16.8, 67.7±17.8; health transition: 29.1±24.4, 30.7±28.5, 24.9±27.3
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Psychological therapies - Cognitive therapy. Explanation of pain mechanisms. The questionnaire completed at inclusion was discussed once more in-depth. Functional examination with individual feedback and advice. Instruction in activation of deep stabilizing muscles (i.e. the transverse abdominal muscle) and advice on how to use it actively in functional and demanding tasks of daily life. Instruction in the squat technique when lifting is required. How to cope with new attacks. Reassure and emphasize that it is safe to move and to use the back without restriction.. Duration 18 weeks. Concurrent medication/care: Not stated (n=30) Intervention 2: Mixed exercise - Biomechanical + aerobic. 1 hour, preferably 3 times a week of group exercise consisting of the Norwegian aerobics fitness model, strengthening, flexibility, relaxation. Duration 18 weeks. Concurrent medication/care: Not stated (n=29) Intervention 3: Usual care. Treated by their GP with any intervention prescribed. Duration 18 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COGNITIVE THERAPY versus BIOMECHANICAL + AEROBIC

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 18 weeks; Group 1: mean 12.7 (SD 22.1576); n=34, Group 2: mean 6.5 (SD 12.5976); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role physical at 18 weeks; Group 1: mean 27.2 (SD 49.5631); n=34, Group 2: mean 30.8 (SD

Study	Storheim 2003[508]
42.7224); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 18 weeks; Group 1: mean 21.5 (SD 27.9886); n=34, Group 2: mean 14.7 (SD 16.9794); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health at 18 weeks; Group 1: mean 2.1 (SD 13.9943); n=34, Group 2: mean 0.9 (SD 13.1453); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 18 weeks; Group 1: mean 16.5 (SD 19.2421); n=34, Group 2: mean 4 (SD 15.3362); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 18 weeks; Group 1: mean 11.4 (SD 26.8224); n=34, Group 2: mean 8.3 (SD 20.2657); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role emotional at 18 weeks; Group 1: mean 25.5 (SD 51.3124); n=34, Group 2: mean 18.9 (SD 43.2701); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 18 weeks; Group 1: mean 12.4 (SD 16.9098); n=34, Group 2: mean 4.7 (SD 9.859); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Health transition at 18 weeks; Group 1: mean 29.2 (SD 42.5659); n=34, Group 2: mean 26.6 (SD 38.8883); n=30; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Low back pain at 18 weeks; Group 1: mean -20.9 (SD 25.0731); n=34, Group 2: mean -14.9 (SD 22.4566); n=30; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Disability (RMDQ) at 18 weeks; Group 1: mean -3.5 (SD 4.0817); n=34, Group 2: mean -2.1 (SD 3.8341); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COGNITIVE THERAPY versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Physical function at 18 weeks; Group 1: mean 12.7 (SD 22.1576); n=34, Group 2: mean 6 (SD 12.3859); n=29; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role function at 18 weeks; Group 1: mean 27.2 (SD 49.5631); n=34, Group 2: mean 18.1 (SD 176.095); n=29; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Bodily pain at 18 weeks; Group 1: mean 21.5 (SD 27.9886); n=34, Group 2: mean 12.6 (SD 18.3096); n=29; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 General health at 18 weeks; Group 1: mean 2.1 (SD 19.9943); n=34, Group 2: mean -2.9 (SD 10.7703); n=29; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Storheim 2003[508]
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Vitality at 18 weeks; Group 1: mean 16.5 (SD 19.2421); n=34, Group 2: mean 3.9 (SD 21.5407); n=29; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Social function at 18 weeks; Group 1: mean 11.4 (SD 26.8224); n=34, Group 2: mean 9.5 (SD 18.8481); n=29; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Role emotional at 18 weeks; Group 1: mean 25.5 (SD 51.3124); n=34, Group 2: mean 11.5 (SD 35.0036); n=29; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Mental health at 18 weeks; Group 1: mean 12.4 (SD 16.9098); n=34, Group 2: mean 5.6 (SD 13.4629); n=29; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 Health transition at 18 weeks; Group 1: mean 29.2 (SD 42.5659); n=34, Group 2: mean 23.6 (SD 34.4651); n=29; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Low back pain at 18 weeks; Group 1: mean -20.9 (SD 25.0731); n=34, Group 2: mean -10 (SD 19.9251); n=29; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Disability (RMDQ) at 18 weeks; Group 1: mean -3.5 (SD 4.0817); n=34, Group 2: mean -1.6 (SD 3.7696); n=29; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Stuckey 1986[509]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=24)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Not clear: 8 sessions
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall

Study	Stuckey 1986[509]
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain of at least 6 months duration.
Exclusion criteria	If needed other treatment such as back surgery or unable to ambulate, unable to read and speak English, unwilling to attend 8 sessions, or unwilling to practice daily.
Recruitment/selection of patients	Volunteers from the Adult Back Clinic of Orthopaedic Hospital in Los Angeles
Age, gender and ethnicity	Age - --: . Gender (M:F): 46% Male/ 54% Female. Ethnicity: not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months duration).
Extra comments	Medical diagnosis were varied, e.g., fact joint disease, post-surgical scarring, radiculopathy, etc.
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Psychological therapies - Behavioural therapy. EMG biofeedback training. Patients learned to relax muscle tension using operant conditioning procedures and reinforcement information feedback from the visual display meter and from the auditory clicking signal, from the upper trapezius and para-spinal muscles. Careful manipulation of the threshold by the experimenter was required to shape the correct response so the task was not too difficult and successful experiences were part of the treatment. Subjects were also coached in the “feeling of tension” that correlated to the change in EMG levels by first asking them to “make the meter go up” and “now let the meter go down” and “feel the difference”. Duration 8 sessions. Concurrent medication/care: Not stated (n=8) Intervention 2: Psychological therapies - Behavioural therapy. Relaxation training. Tension levels from the upper trapezius and para-spinal muscles were recorded, but subjects in this condition received no feedback from the machine. The experimenter utilized the information from the recordings to guide each subject in finding the best technique for relaxation. Subjects were taken though modified relaxation regimens including: Jacobson’s Progressive Relaxation (Jacobson 1938), breathing techniques, gentle cervical range of motion exercises, Autogenic raining and visual imagery. Duration 8 sessions. Concurrent medication/care: Not stated (n=8) Intervention 3: Placebo/Sham. Placebo control. Subjects in this condition were placed in the same physical set-up as those in previous conditions. They were scheduled for 8 treatment sessions during the study. These subjects received o feedback from the EMG electrodes and no instructions in specific relaxation techniques for the first 8 sessions. They received a detailed description of the value of relaxation for pain relief and how the egg-crate mattress and the bed position would facilitate relaxation. They were encouraged to relax more deeply at home in their daily relaxation-practice sessions, but they were not given instructions on how to relax. Duration 8 sessions. Concurrent medication/care: Not stated
Funding	Other (Doctors Education and research Fund at Orthopaedic Hospital)

Study	Stuckey 1986[509]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BEHAVIOURAL THERAPY versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain with function at Not clear (8 sessions); Group 1: mean 31.6 (SD 13.5); n=8, Group 2: mean 44.4 (SD 17.1); n=8; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain with function at Not clear (8 sessions); Group 1: mean 28 (SD 20.2); n=8, Group 2: mean 44.4 (SD 17.1); n=8; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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Study	Turner 1988[529]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=55)
Countries and setting	Conducted in USA; Setting: community
Line of therapy	Unclear
Duration of study	--:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Persistent lower back pain for at least 6 months, an age of 20-65 years, and current marriage or cohabitation.
Exclusion criteria	Medical conditions that require medical or surgical treatment (not specified) or that would prevent completion of an aerobic exercise programme
Recruitment/selection of patients	Referred by community physicians or self-referred following media publicity.

Study	Turner 1988[529]
Age, gender and ethnicity	Age - Mean (SD): not provided . Gender (M:F): not provided . Ethnicity: not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months pain).
Extra comments	Baseline scores (mean SD) for behavioural and control groups respectively - pain McGill: 23.07±12.37, 22.57±13.67.
Indirectness of population	Serious indirectness
Interventions	(n=30) Intervention 1: Psychological therapies - Behavioural therapy. Psychological therapies - Behavioural therapy. Operant behavioural therapy- patients and spouses educated, and advised to set goals for physical exercise and monitor results and obstacles. Spouses asked to reinforce good behavioural patterns. 8 x 2-hour weekly sessions. Duration 8 weeks. Concurrent medication/care: not listed (n=25) Intervention 2: Usual care - Waiting-list. Waiting list control. Duration 8 weeks. Concurrent medication/care: Not listed.
Funding	--
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BEHAVIOURAL THERAPY versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: McGill Pain Questionnaire at 8 weeks ; Group 1: mean 18.5 (SD 12.43); n=29, Group 2: mean 22.14 (SD 12.35); n=21; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Turner 1990[530]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=96)
Countries and setting	Conducted in USA
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 months

Study	Turner 1990[530]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with chronic LBP, aged 20-65 years, current marriage or cohabitation
Exclusion criteria	Current infection, cardiovascular disease, spine fracture or dislocation, spondylolisthesis, spine instability, ankylosis spondylitis, rheumatoid arthritis, connective tissue disease, history of cancer, surgery in the past year, and leg pain with sciatic tension signs
Recruitment/selection of patients	Referred by community and pain clinic or self-referred following media publicity
Age, gender and ethnicity	Age - Mean (range): 44 (25-64). Gender (M:F): 1:1.1 Male:Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (No further details).
Extra comments	Baseline scores (mean SD) - pain intensity McGill: behavioural 20.96±9.95, control 21.17±8.84
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Psychological therapies - Behavioural therapy. Operant conditioning (Fordyce), participation of spouses, group discussion, role playing, feedback; 2 hour / week. Duration 8 weeks. Concurrent medication/care: not described (n=23) Intervention 2: Usual care - Waiting-list. Waiting list control. Duration 8 weeks. Concurrent medication/care: Not described.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BEHAVIOURAL THERAPY versus WAITING-LIST Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity at 8 weeks ; Group 1: mean 17.71 (SD 8.84); n=18, Group 2: mean 20.95 (SD 10.62); n=19; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Turner 1993[531]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=102)
Countries and setting	Conducted in USA; Setting: Outpatient
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 13 months
Method of assessment of guideline condition	Partially adequate method of assessment/diagnosis: self-referral, no scale used to assess.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	low back pain persisting for longer then 6 months and aged 20-65.
Exclusion criteria	Evidence of a current infectious disease or cancer, rheumatoid arthritis, connective tissue disease or indications for surgical treatment.
Recruitment/selection of patients	referred by community and pain clinic physicians or self-referred following media publicity.
Age, gender and ethnicity	Age - Mean (range): 42 (22-62). Gender (M:F): 1:1.17 F:M. Ethnicity: not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months pain).
Extra comments	Baseline scores (mean, SD) for cognitive and control groups respectively - pain: 56.91 (18.47), 50.07 (21.14); depression: 12.83 (8.59), 9.83 (6.81)
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Usual care - Waiting-list. Waiting list control group. Duration 6 weeks. Concurrent medication/care: - Comments: No comment on other treatments during this period, for example other medical interventions. (n=23) Intervention 2: Psychological therapies - Cognitive therapy. Cognitive therapy as according to Beck 1979: patients first learned to identify negative emotions related to pain and stressful events and to identify associated maladaptive thoughts. Next, they were taught how to generate more adaptive thoughts to 'counter' automatic negative cognitions. Duration 6 weeks. Concurrent medication/care: Not described.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COGNITIVE THERAPY versus WAITING-LIST	

Study	Turner 1993[531]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity at post treatment (6 weeks) ; Group 1: mean 36.88 - (SD 20.45); n=21, Group 2: mean 48.06 - (SD 20.97); n=18; VAS 1-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Sickness Impact profile at post treatment (6 weeks) ; Group 1: mean 7.95 (SD 9.25); n=16, Group 2: mean 9.64 (SD 7.32); n=18; SIP 0-68 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Depression at post treatment (6 weeks) ; Group 1: mean 8.75 (SD 7.14); n=21, Group 2: mean 7.22 (SD 4.87); n=18; BDI 0-63 Top=--; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.11 Combinations of interventions – psychological therapy adjunct

Study (subsidiary papers)	Friedrich 2005[144] (Friedrich 1998[143], Friedrich 2009[142])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=93)
Countries and setting	Conducted in Austria
Line of therapy	Unclear
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall

Study (subsidiary papers)	Friedrich 2005[144] (Friedrich 1998[143], Friedrich 2009[142])
Subgroup analysis within study	Not applicable
Inclusion criteria	Age between 20 and 60 years; low back pain with or without radiation into the lower limbs; back pain of at least 4 months' duration or at least 3 episodes of low back pain in the last 6 months before the initial visit, with the current episode lasting at least 2 months; musculoskeletal pathologies for which exercise therapy as indicated.
Exclusion criteria	Disease of the cardiopulmonary system with reduced exercise tolerance or other severe disease that might interfere with participation in the study; acute lumbar radicular lesions; low back surgery in the previous 6 months; and lumbar spine pathologies, such as tumours, fractures, infections, acute inflammatory disease, spinal stenosis or high degree of instability; patients currently treated for a psychiatric disorder; pregnancy; patients involved in disability pension proceeding or private insurance litigation.
Recruitment/selection of patients	Patients referred to the outpatient department of orthopaedic physical therapy, Orthopaedic Hospital Speising (Vienna, Austria)
Age, gender and ethnicity	Age - Mean (SD): 44.12 (10.66). Gender (M:F): 49% Male/ 51% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (At least 3 months in the last 6 months).
Extra comments	Baseline data. Pain intensity (0-100): Multidisciplinary group: 50.2 (22.78), exercise group: 54.53 (21.73). Disability: (low back outcome score, 0-75): Multidisciplinary group: 45.2 (14.61), exercise group: 42.8 (13.87)..
Indirectness of population	No indirectness
Interventions	(n=44) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise programme as the other group, plus five interventions. (1) Extensive counselling and information strategies. The therapies also enquired about any problems the patient encountered and tried to solve them in mutual cooperation with the patient, by tailoring the regimen to the patient's daily routine in terms of treatment time and duration. (2) Reinforcement techniques; the therapist developed, in cooperation with the patient, reward and punishment strategies. (3) The oral agreements were reinforced in writing in a "treatment contract". By signing the contract, the patients agreed to exercise regularly and to gradually increase the intensity if the exercises. (4) Patients were asked to post the treatment contract in a prominent place at home to remind them of their exercises. (5) Patients were involved more in their care by reporting all exercises they had done in an exercise diary.. Duration 12 months. Concurrent medication/care: Not stated (n=49) Intervention 2: Mixed exercise - Biomechanical + aerobic. 25 minutes per session, 2-3 sessions per week. Individual, submaximal, gradually increased exercise programme. The exercises performed per session varied according to the physical ability of each patients identified in the first treatment session and adapted according to the results of serial assessments during the training phase. The treatment was directed towards improving spinal mobility as well as trunk and lower limb muscle length, force, endurance, and coordination. The patients were encouraged to

Study (subsidiary papers)	Friedrich 2005[144] (Friedrich 1998[143], Friedrich 2009[142])
	be physically active and to continue exercising at home. Patients were given proper instructions on correct posture. . Duration 10 sessions. Concurrent medication/care: Not stated
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINATION: EXERCISE + cognitive behavioural approaches versus BIOMECHANICAL + AEROBIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity at 4 months; Group 1: mean 32.7 (SD 24.3); n=44, Group 2: mean 39.8 (SD 26.6); n=49; Numerical rating scale 0 (no pain) to 100 (worst pain) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain intensity at 12 months; Group 1: mean 26.4 (SD 22.2); n=44, Group 2: mean 41.9 (SD 29.6); n=49; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Disability (low back outcome scale questionnaire) at 4 months; Group 1: mean 57.2 (SD 15.7); n=44, Group 2: mean 51 (SD 15.7); n=49; Low back outcome scale questionnaire 0 (great deal of disability) to 75 (no disability) Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Disability (low back outcome scale questionnaire) at 12 months; Group 1: mean 58.9 (SD 12.6); n=44, Group 2: mean 50.9 (SD 18.7); n=49; Low back outcome scale questionnaire 0 (great deal of disability) to 75 (no disability) Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Turner 1990[530]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=96)
Countries and setting	Conducted in USA
Line of therapy	Unclear

Study	Turner 1990[530]
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain (persisting for >6 months), age 20-65 and currently married or cohabiting
Exclusion criteria	Evidence of current infectious medical disorder, cardiovascular disease, spine fracture or dislocation, spondylolisthesis, spine instability, ankylosing spondylitis, rheumatoid arthritis, or connective tissue disease, history of cancer, surgery within the past year, non-spine limitation of lower limb function, leg pain with sciatic tension signs
Recruitment/selection of patients	Patients referred by community physicians or self-referred following media campaign
Age, gender and ethnicity	Age - Mean (range): 44 (25-64) years. Gender (M:F): 50:46. Ethnicity: white
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (>6 months).
Extra comments	Baseline scores (mean SD) for behavioural, exercise, behavioural + exercise and, waitlist groups, respectively - McGill pain: 20.96±9.95, 19.42±10.62, 25.54±12.41, 21.17±8.84; depression: 10.40±7.51, 11.95±7.68, 12.38±7.31, 10.48±4.19.
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Group Aerobic exercise - Group walking. Walking/jogging programme based on a quota system, progressing from 10 minute to 20 minute and from 60% to 70% maximal heart rate for 2 hour session weekly for eight weeks. Sessions led by trained physiotherapists. Duration 8 weeks. Concurrent medication/care: Not reported (n=25) Intervention 2: Psychological therapies - Behavioural therapy. Patients and spouses were presented with information about pain behaviours and well behaviours and about the role of social reinforcers in maintaining pain behaviours. Spouses were instructed not to reinforce pain behaviours and to reinforce well behaviours positively. Both patient and spouses kept daily records of pain behaviours and associated spouse responses. Couples also received communication training, 'The Communication Book' was given as a hand-out. Duration 8 weeks. Concurrent medication/care: Not reported (n=23) Intervention 3: Waiting list - Waiting list control. Patients put on waiting list for either exercise, behavioural therapy or a combination. Duration 8 weeks. Concurrent medication/care: Not stated (n=24) Intervention 4: Combinations of non-invasive interventions - Combined non-invasive interventions. Behaviour: Patients and spouses were presented with information about pain behaviours and well behaviours and about the role

Study	Turner 1990[530]
	of social reinforcers in maintaining pain behaviours. Spouses were instructed not to reinforce pain behaviours and to reinforce well behaviours positively. Both patient and spouses kept daily records of pain behaviours and associated spouse responses. Couples also received communication training; 'The Communication Book' was given as a hand-out. Group exercise: Walking/jogging programme based on a quota system, progressing from 10 minute to 20 minute and from 60% to 70% maximal heart rate for 2 hour sessions weekly for eight weeks. Sessions led by trained physiotherapists. Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Grant from National Institute of Neurological and Communicative Disorders and Stroke)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (AEROBIC) + BEHAVIOURAL THERAPY versus GROUP WALKING (AEROBIC)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Pain Questionnaire) at 8 weeks; Group 1: mean 14.78 Not stated (SD 11.44); n=18, Group 2: mean 17.52 Not stated (SD 10.2); n=21; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Depression CES-D at 8 weeks; Group 1: mean 7.36 Not stated (SD 5.89); n=18, Group 2: mean 7.38 Not stated (SD 4.57); n=21; CES-D Not stated Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (AEROBIC) + BEHAVIOURAL THERAPY versus BEHAVIOURAL THERAPY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Pain Questionnaire) at 8 weeks; Group 1: mean 14.78 Not stated (SD 11.44); n=18, Group 2: mean 17.71 Not stated (SD 12.08); n=18; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Depression CES-D at 8 weeks; Group 1: mean 7.36 Not stated (SD 5.89); n=18, Group 2: mean 8.08 Not stated (SD 4.95); n=18; CES-D Not stated Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: EXERCISE (AEROBIC) + BEHAVIOURAL THERAPY

Study	Turner 1990[530]
versus WAITING LIST CONTROL Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (McGill Pain Questionnaire) at 8 weeks; Group 1: mean 14.78 Not stated (SD 11.44); n=18, Group 2: mean 20.95 Not stated (SD 10.62); n=19; McGill Pain Questionnaire Not stated Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Depression CES-D at 8 weeks; Group 1: mean 7.36 Not stated (SD 5.89); n=18, Group 2: mean 7.03 Not stated (SD 5.02); n=19; CES-D Not stated Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	ISRCTN54717854 trial: Lamb 2012[300,301] (Lamb 2010[299,300], Lamb 2010[298,300], Underwood 2011[533,534])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=701)
Countries and setting	Conducted in United Kingdom; Setting: Primary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 3 months + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18 or older, at least moderately troublesome subacute or chronic LBP for at least 6 weeks; consulted in primary

Study (subsidiary papers)	ISRCTN54717854 trial: Lamb 2012[300,301] (Lamb 2010[299,300], Lamb 2010[298,300], Underwood 2011[533,534])
	care for LBP in last 6 months
Exclusion criteria	GP concerned they might have a serious cause for LBP (i.e. infection, fracture, malignancy); severe psychiatric or psychological disorders; previously participated in cognitive behavioural approaches intervention for LBP
Recruitment/selection of patients	Identified from consultations with family doctors or practice nurses and from searches of patient records
Age, gender and ethnicity	Age - Mean (range): 54 (18-85) years. Gender (M:F): 281:420. Ethnicity: White 618, Mixed 7, Asian 29, Black 11, Chinese 2, Other 34
Further population details	1. Chronicity of pain: Mixed (>6 weeks duration, consulted in preceding 6 months).
Indirectness of population	No indirectness
Extra comments	Baseline scores (mean SD) - RMDQ: cognitive behavioural approaches 9 (5.0), UC 9 (4.7); Von Korff disability: cognitive behavioural approaches 49 (23.9) UC 46 (23.8); Von Korff pain: cognitive behavioural approaches 59 (19.2), UC 59 (19.5); SF-12 physical: cognitive behavioural approaches 37 (9.3), UC 38 (10.1); SF-12 mental: cognitive behavioural approaches 45 (11.5), UC 46 (11.0). Note that the description of the intention to treat analysis is vague and it is not clear how the data was imputed. There was not a normal distribution of data for most of the outcomes and as such change scores were used, the text explains this was expected with no justification. The linear regression analysis results do not seem to be presented correctly. Subgrouping mentioned in their original protocol, only one of which was undertaken pre-randomisation. The trial is large powered, and otherwise seems like a good practice method.
Interventions	(n=233) Intervention 1: Self-management - Self-management programmes (including education, advice and reassurance). 15 minutes session of active management advice including benefit of and how to remain active, avoidance of bed rest, appropriate use of pain medication, symptom management. The Back Book.. Duration One-off. Concurrent medication/care: Not stated (n=468) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. 15 minutes session of active management advice including benefit of and how to remain active, avoidance of bed rest, appropriate use of pain medication, symptom management. The Back Book. Plus an individual assessment (up to 1.5 hours) and 6 sessions of group cognitive behavioural approaches (1.5 hours each), targeting behaviours and beliefs about physical activity and avoidance of activity. Duration 8 sessions total. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Institute for Health Research Health Technology Assessment Programme)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: SELF-MANAGEMENT + cognitive behavioural approaches versus SELF-MANAGEMENT PROGRAMMES (INCLUDING EDUCATION, ADVICE AND REASSURANCE)

Study (subsidiary papers)	ISRCTN54717854 trial: Lamb 2012[300,301] (Lamb 2010[299,300], Lamb 2010[298,300], Underwood 2011[533,534])
	Protocol outcome 1: Quality of life at ≤ 4 months - Actual outcome: EQ-5D at 3 months; Group 1: mean 0.628 (SD 0.264); n=349, Group 2: mean 0.567 (SD 0.29); n=179; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Physical component score at 3 months; MD 2.2 (95%CI 0.72 to 3.68); Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Mental component score at 3 months; MD 1.3 (95%CI -0.37 to 2.96); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - 1 year - Actual outcome: EQ-5D at 12 months; Group 1: mean 0.64 (SD 0.29); n=327, Group 2: mean 0.592 (SD 0.29); n=163; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Physical component score at 12 months; MD 4.1 (95%CI 2.56 to 5.57); Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-12 Mental component score at 12 months; MD 0.1 (95%CI -1.62 to 1.8); Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at ≤ 4 months - Actual outcome: Modified Von Korff pain at 3 months; Group 1: mean -12.2 % (SD 22.73); n=355, Group 2: mean -5.4 % (SD 20.78); n=190; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - 1 year - Actual outcome: Modified Von Korff pain at 12 months; Group 1: mean -13.4 % (SD 26.45); n=399, Group 2: mean -6.4 % (SD 23.46); n=199; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at ≤ 4 months - Actual outcome: Roland Morris Questionnaire at 3 months; Group 1: mean -2 Points (SD 4.09); n=355, Group 2: mean -1.1 Points (SD 4.18); n=190; Roland Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Modified Von Korff disability at 3 months; Group 1: mean -13.2 % (SD 24.75); n=355, Group 2: mean -8.9 % (SD 23.59); n=190; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - 1 year - Actual outcome: Roland Morris Questionnaire at 12 months; Group 1: mean -2.4 Points (SD 4.84); n=399, Group 2: mean -1.1 Points (SD 4.79); n=199; Roland Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Modified Von Korff disability at 12 months; Group 1: mean -13.8 % (SD 24.92); n=399, Group 2: mean -5.4 % (SD 24.87); n=199; Modified Von Korff scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological

Study (subsidiary papers)	ISRCTN54717854 trial: Lamb 2012[300,301] (Lamb 2010[299,300], Lamb 2010[298,300], Underwood 2011[533,534])
	distress (HADS/GHQ/BDI/STAI) at >4 months - 1 year; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - 1 year; Adverse event (mortality) at ≤ 4 months; Adverse event (mortality) at >4 months - 1 year; Responder criteria at ≤ 4 months; Responder criteria at >4 months - 1 year; Return to work at ≤ 4 months; Return to work at >4 months - 1 year

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Study	Albert 2013[5]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=162)
Countries and setting	Conducted in Denmark; Setting: Secondary spine centre
Line of therapy	Unclear
Duration of study	Intervention + follow up: 100 day intervention, 1 year follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-65 years; MRI-confirmed disc herniation L3/L4 or L4/L5 or L5/S1 within the preceding 6-24 months; LBP>6 months duration; both conservative and surgically treated patients were included, regardless of sciatica, neuropathic pain or not.
Exclusion criteria	Allergy to antibiotics; pregnancy or lactation; kidney disease; pending litigation
Age, gender and ethnicity	Age - Mean (SD): Intervention: 44.7 (10.3). Placebo: 45.5 (9.2). Gender (M:F): 42% Male/58% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months).
Extra comments	Baseline scores - RMDQ (median, IQ range): drug 15(11-18), placebo 15(12-18); back pain (median, IQ range): drug 6.7 (5.3-7.7), placebo 6.3 (4.7-8); bothersomeness: drug 7 (6-8), placebo 8 (5-9); EQ5D: drug 59 (40-70), plaebo 60 (40-75).. All patients were allowed to take their usual anti-inflammatory and pain relieving medication.

Indirectness of population	--
Interventions	(n=90) Intervention 1: Antibiotics. Amoxicillin-clavulanate (500mg/125 mg) (Bioclavid) tablets three times a day. n=45 patients took one tablet. n=45 took two tablets.. Duration 100 days. Concurrent medication/care: Not stated (n=72) Intervention 2: Placebo/Sham. Calcium carbonate.. Duration 100 days. Concurrent medication/care: Not stated
Funding	Other

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ANTIBIOTICS versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: Disability (RMDQ) at 1 year; Group 1: mean 7 (SD 17.62); n=77, Group 2: mean 14 (SD 16.4); n=67; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: ED-5D (1-100) 100 is best Thermometer at 100 days; Group 1: mean 65 (SD 61.27); n=76, Group 2: mean 60 (SD 61.5); n=67; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: ED-5D (1-100) 100 is best Thermometer at 1 year; Group 1: mean 75 (SD 66.09); n=77, Group 2: mean 60 (SD 57.4); n=67; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Back pain at 100 days; Group 1: mean 5 (SD 7.44); n=76, Group 2: mean 6.3 (SD 5.74); n=67; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Back pain at 1 year; Group 1: mean 3.7 (SD 9.25); n=77, Group 2: mean 6.3 (SD 5.74); n=67; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up
- Actual outcome: Disability (RMDQ) at 100 days; Group 1: mean 11.5 (SD 10.94); n=76, Group 2: mean 14 (SD 16.4); n=67; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome: Doctor consultation for back pain at 1 year; Group 1: 18/77, Group 2: 28/67; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Adverse events (morbidity) at Define
- Actual outcome: Adverse events (mainly low grade gastroenterological complaints) at 100 days; Group 1: 59/90, Group 2: 17/72; Risk of bias: High; Indirectness of

outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse event (mortality) at follow-up

Study	Alcoff 1982[6]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	LBP for atleast 6 weeks if it was a first episode, or 2 or more prior episodes lasting at least 2 weeks with a current episode of a minimum of 2 weeks duration.
Exclusion criteria	Back pain is not chronic, diastolic bloody pressure more than 90 mmHg, electrocardiogram chnages consistent with old myocardial infarction.
Recruitment/selection of patients	Study conducted at the Department of Family Practice, Naval Regional Medical Centre, Charleston, and the Department of Family Medicine, Medical University of South Carolina.
Age, gender and ethnicity	Age - Other: Average age (years): Imipramine 29.2, placebo 33.8. Gender (M:F): 26:24. Ethnicity: Majority caucasian, minority black and hispanic
Further population details	1. Chronicity of pain: Mixed (At least 6 weeks if it was a first episode).
Extra comments	Baseline data not reported
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Anti-depressants - Tricyclic antidepressants. Imipramine (Tofranil) 75 mg once a day for first 3 days and then twice at night for remainder of the trail. Duration 8 weeks. Concurrent medication/care: Not stated (n=22) Intervention 2: Placebo/Sham. Placebo. Duration 8 weeks. Concurrent medication/care: Not stated
Funding	Other (Bureau of medicine and surgery, department of the navy, clinical investigation programme)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRICYCLIC ANTIDEPRESSANTS versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months

- Actual outcome for Overall (acute, chronic) without sciatica: Severity of back pain at 8 weeks; Other: P=0.680; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Depression at 8 weeks; Mean P=0.680 (change in Back depression score); Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Amlie 1987[9]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=278)
Countries and setting	Conducted in Norway
Line of therapy	1st line
Duration of study	Intervention time: 7 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	People aged between 18-60 suffering from acute attacks of low back pain within the previous 48 hours, free from low back pain for the previous 3 months.
Exclusion criteria	Radicular symptoms, ankylosing spondylitis, rheumatoid arthiritis, history of peptic ulcer or severe dyspepsia, hypersensitivity to aspirin or other NSAIDS, pregnant or lactating women, any other know hematologic, hepatic, renal, pulmonary, cardiac or systemic disease.
Age, gender and ethnicity	Age - Other: Mean, men:women= piroxican 36.4:38.2, placebo 36.4:40.5. Gender (M:F): Piroxicam 82:58, placebo 84:58. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<48 hours).
Extra comments	Baseline data not reported
Indirectness of population	No indirectness
Interventions	(n=140) Intervention 1: Non-steroidal anti-inflammatory drugs - Piroxicam. 40 mg of pirioxicam for the first 2 days, followed by 20 mg for te remaining 5 days. Duration 7 days. Concurrent medication/care: Allowed to take upto 1000 mg of paracetamol 3/4 times a day as rescue medication, in rare cases a combination of paracetamol and codeine was permitted for severe pain (n=142) Intervention 2: Placebo/Sham. Placebo. Duration 7 days. Concurrent medication/care: Allowed to take upto 1000 mg of paracetamol 3/4 times a day as rescue medication, in rare cases a combination of paracetamol and codeine was permitted for severe pain
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PIROXICAM versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: pain intensity at 7 days; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Tiredness, headache, nausea, diarrhoea, dyspepsia, abdominal pain, oedema, other at 7 days; Group 1: 18/138, Group 2: 24/140; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Atkinson 1998[16]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=78)
Countries and setting	Conducted in USA; Setting: Primary care and orthopaedic clinics
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 21-65 years; LBP (at T-6 or below) present on a daily basis for the preceding 6 months or longer; able to understand the study measures.
Exclusion criteria	Major coexisting illness; coexisting orthopaedic or pain disorder other than those related to lumbar lesion; current mood disorder; history of a psychoactice substance use disorder within the preceding 12 months.
Recruitment/selection of patients	Patient recruited by screening attendees at the UCSD and San Diego VA medica centre primary care and orthopaedic clinics, and in the local community by paid and public service advertisement in newsprint, and word of mouth.
Age, gender and ethnicity	Age - Mean (SD): Intervention: 45.79 (10.59); placebo: 47.13 (10.65). Gender (M:F): 100% Male. Ethnicity: 79% white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores - pain intensity: drug 11.66±4.83, placebo 9.95±3.94; depression: drug 8.34±6.51, placebo 8.5±7.67; anxiety: drug 35.32±9.90, placebo 35.63±12.25. Individuals were required to discontinue opioid analgesics for the duration of the study, although on-going use of non-opioids was permitted.
Indirectness of population	No indirectness
Interventions	(n=38) Intervention 1: Anti-depressants - Tricyclic antidepressants. Nortriptyline. Dose escalation: 25 mg for 3 days; 50 mg for 4 days; 75 mg for 3 days; 100 mg for 4 days. Duration 8 weeks. Concurrent medication/care: 7 people took salicylates or over-the-counter NSAID; 6 people used a behavioural therapy (biofeedback, self-hypnosis, relaxation exercises) or physical therapy (back exercise, chiropractic manipulation); 2 people used both an analgesic and a behavioural therapy. . (n=40) Intervention 2: Placebo/Sham. Matching placebo. Duration 8 weeks. Concurrent medication/care: 11 people took salicylates or over-the-counter NSAID; 8 people used a behavioural therapy (biofeedback, self-hypnosis, relaxation exercises) or physical therapy (back exercise, chiropractic manipulation); 4 people used both an analgesic and a behavioural therapy.

Funding	Other (Unites States Department of Veterans Affairs and the National Institutes of Health)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRICYCLIC ANTIDEPRESSANTS versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity (Descriptor Differential Scale, DDS-I) at 8 weeks; Group 1: mean 2.59 (SD 4); n=38, Group 2: mean 0.91 (SD 3.43); n=40; DDS-I 0 (no pain) to 21 (worst pain) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Back depression, BDI at 8 weeks; Group 1: mean 3.79 (SD 4.53); n=38, Group 2: mean 2.08 (SD 3.04); n=40; BDI 0 (minimal depression) to 63 (severe depression) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Spielberg Anxiety, STAI at 8 weeks; Group 1: mean 1.97 (SD 8.24); n=38, Group 2: mean -0.62 (SD 9.17); n=40; STAI 20 (minimal anxiety) to 80 (greater anxiety) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome: Dry mouth, insomnia, sedation, orthostatic symptoms, constipation, increased sweating, palpitations at 8 weeks; Group 1: 28/38, Group 2: 29/40; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Atkinson 1999[15]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=103)
Countries and setting	Conducted in USA
Line of therapy	Mixed line
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 21-65 years; LBP (at T-6 or below) present on a daily basis for the preceding 6 months or longer; uble to understand the study measures.
Exclusion criteria	Major coexisting medical illness; coexisting orthopedic or pain disorder other than those related to the lumbar lesion; current mood disorder; history of a psychoactive substance use disorderwithin the preceding 12 months.
Recruitment/selection of patients	Subjects were recruited by screening patients at the UCSD and San Diego VA primary care and orthopaedic clinics, and in the local community, and word of mouth.
Age, gender and ethnicity	Age - Mean (SD): 49.2 (9.4). Gender (M:F): 63% Male/37% Female. Ethnicity: White
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline DDS pain intensity score - paroxetine 10.54±3.71, placebo 10.53±3.74. Patients were required to discontinue opioid analgesics for the duration of the study. Use of non-opioids was permitted.
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Anti-depressants - SSRIs. Paroxetine 30 mg. Starting dose was 10 mg for 3 days; the dose was then increased by 10 mg incfrements every 3 days thereafter to a maximum of 30 mg/day. If this target daily dose were not achieved, treatment was continued at the maximum tolerable dose. . Duration 8 weeks. Concurrent medication/care: 35% of patients were taking salicylates or NSAIDs; 91% employed a form of behavioural or physical therapy technique at baseline. 41% of patients took salicylates or over-the-counter NSAIDs on study; 23% used behavioural or physical therapy during the study. (n=36) Intervention 2: Placebo/Sham. Diphenhydramine 37.5 mg. It was increased every 3 days, as tolerated, starting at 12.5 mg/day, then to 25 mg/day, and then 37.5 mg/day. . Duration 8 weeks. Concurrent medication/care: 36% of patients were taking salicylates or NSAIDs; 92% employed a form of behavioural or physical therapy technique at baseline. 41% of patients took salicylates or over-the-counter NSAIDs on study; 41% used behavioural or physical

	therapy during the study.
Funding	Other (US Department of Veterans Affairs; National Institutes of Health)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SSRIS versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity score (DSS) at 8 weeks; Group 1: mean 2.34 (SD 3.52); n=34, Group 2: mean 2.83 (SD 3.31); n=36; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome: Dry mouth, insomnia, sedation, orthostatic symptoms, constipation, increased sweating, palpitations at 8 weeks; Group 1: 20/22, Group 2: 31/32; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Atkinson 2007[17]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=121)
Countries and setting	Conducted in USA
Line of therapy	Mixed line
Duration of study	Intervention time: US Department of Veterans Affairs; National Institutes of Health
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 21-65 years; LBP (at T-6 or below) present on a daily basis for the preceding 6 months or longer; English speaking, literate, and able to understand and communicate with the study team; not a present candidate for back surgery; CYP-450 2D6 extensive metabolizer phenotype.
Exclusion criteria	Major coexisting medical illness , which might confound assessment of function or life quality or other conditions for which classical anti-depressants would be inappropriate; another coexisting chronic pain problem; significant coexisting musculoskeletal disorder, sciatica as the primary problem, or back pain due to systemic disorder; history within the previous 12 months of alcohol or other substance use disorder, major depression or dysthymia; lifetime history of bipolar disorder or psychosis; dementia; known allergy to the study drug; use of psychoactive agents that would need to be continued during the study, or other agents that might interact with the study drugs before treatment with study agents.
Recruitment/selection of patients	Subjects were recruited by screening at the UCSD and VA primary care clinics, paid advertisement in the local community newspaper, and word of mouth.
Age, gender and ethnicity	Age - Mean (SD): 46.4 (10.2). Gender (M:F): 61% Male/39% Female. Ethnicity: 69% white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months).
Extra comments	Overall baseline pain intensity score - 9.4±4.0. No other baseline score reported. Participants were required to discontinue opioid analgesic fro 3 weeks and during the study. Cuncurrent use of non-opioids (eg NSAIDs) was permitted.
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Anti-depressants - SSRIs. Fluoxetine 100 ng/mL (low, n=14), 200 ng/mL (medium, n=14), 400ng/mL (high, n=15).. Duration 12 weeks. Concurrent medication/care: Cuncurrent use of non-opioids (eg NSAIDs) was permitted.

	(n=26) Intervention 2: Placebo/Sham. Active placebo, benztropine mesylate, 0.5 mg/day.. Duration 12 weeks. Concurrent medication/care: Cuncurrent use of non-opioids (eg NSAIDs) was permitted.
Funding	Other (US Department of Veterans Affairs; National Institutes of Health)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SSRIS versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity (Descriptor Differential Scale, DSS) at 12 weeks; Group 1: mean 7.1 (SD 2.78); n=31, Group 2: mean 6.2 (SD 2.81); n=22; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Side effects that interfered at least mildly with everyday finction at 12 weeks; Group 1: 16/43, Group 2: 3/26; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Basmajian 1978[25]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=76)
Countries and setting	Conducted in Canada
Line of therapy	Unclear
Duration of study	Intervention time: Up to 18 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Adults with clinically palpable muscle spasm of significant and measurable degree at the lumbar region which continued for at least 30 days, limitation of motion, limitation of activities of daily living, local pain and tenderness on palpation.
Exclusion criteria	Patients with complicating neurologic and general medical conditions
Age, gender and ethnicity	Age - Other: Not stated. Gender (M:F): Not stated. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (At least 30 days).
Extra comments	Baseline scores - muscle spasms: drug 2.9, placebo 3.2
Indirectness of population	No indirectness
Interventions	(n=16) Intervention 1: Muscle relaxants - Diazepam. 1-6 tablets (as needed) of 5 mg diazepam per day. Duration Up to 18 days. Concurrent medication/care: Patients were put through a time-motion-study program: they were seated at a table and performed a series of 12 simple standardised manual tasks which require twisting of the torso. The tasks were carried out first with the right hand and then the left hand, each time with 2.5 kg weight attached to the wrist of the hand being used. (n=19) Intervention 2: Placebo/Sham. Inert placebo up to 6 tablets a day. Duration up to 18 days. Concurrent medication/care: Patients were put through a time-motion-study program: they were seated at a table and performed a series of 12 simple standardised manual tasks which require twisting of the torso. The tasks were carried out first with the right hand and then the left hand, each time with 2.5 kg weight attached to the wrist of the hand being used.
Funding	Equipment / drugs provided by industry (Merck Sharp and Dohme)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DIAZEPAM versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Muscle spasms at 13 - 18 days; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Berry 1988[37]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=105)
Countries and setting	Conducted in United Kingdom
Line of therapy	1st line
Duration of study	Intervention time: 7 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18-65 years of age, acute low back pain of at least moderate severity, of recent onset, with painful limitation of movement of the lumbar spine.
Exclusion criteria	Pregnant or lactating women, malignancy, osteoporosis, previous history of significant systemic disease, allergy or sensitivity to any of the study drugs and those with rheumatic diseases other than osteoarthiritis or previous history of lumbar spine surgery. Patients taking other analgesics, anti-inflammatory drugs, anti-spasmodics, muscle relaxants, anxiolytics, anti-hypertensives or anticoagulants during the study.
Age, gender and ethnicity	Age - Other: Mean: Tizanidine 43, placebo 42. Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough detail in inclusion criteria).
Extra comments	Baseline scores not reported
Indirectness of population	No indirectness
Interventions	(n=51) Intervention 1: Muscle relaxants - Tizanidine. 4 mg three times a day. Duration 7 days. Concurrent medication/care: Ibuprofen 400 mg three times a day (n=54) Intervention 2: Placebo/Sham. Placebo three times a day. Duration 7 days. Concurrent medication/care: Ibuprofen 400 mg three times a day
Funding	Equipment / drugs provided by industry (Sandoz Ltd, Basel, Switzerland)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TIZANIDINE versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain at night at 7 days; Group 1: mean 32 (SD 39.5); n=46, Group 2: mean 36 (SD 34.1); n=51; VAS 0-100 Top=High is poor outcome; Risk of bias:

High; Indirectness of outcome: No indirectness - Actual outcome: Pain at rest at 7 days; Group 1: mean 29 (SD 43.3); n=46, Group 2: mean 33 (SD 32.9); n=51; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain walking at 7 days; Group 1: mean 36 (SD 34.1); n=46, Group 2: mean 30 (SD 32.8); n=51; VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome: Central nervous system, gastro-intestinal, other at 7 days; Group 1: 23/51, Group 2: 17/54; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Berry 1988[36]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=112)
Countries and setting	Conducted in United Kingdom
Line of therapy	1st line
Duration of study	Intervention time: 7 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Ages 18-70 years with acute low-back pain of at least moderate severity, recent onset, with or without sciatica, painful limitaion of movement of the lumbar spine
Exclusion criteria	Pregnant or lactating women, malignancy, osteoporosis, previous history of lumbar spine surgery or requiring surgical management, history of symptoms of significant systemic disease, hypersensitivity to aspirin and those with rheumatic disease other than osteoarthrosis.
Age, gender and ethnicity	Age - Mean (SD): Tizanidine 44 (13), placebo 38 (13). Gender (M:F): 57:55. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline characteristics- mean (SD): pain at night: tizanidine 51 (31.5), placebo 52 (33.1), pain at rest: tizanidine 51 (29.4), placebo 51 (26.9), pain on movement tizanidine 55 (30) placebo 49 (27.8)
Indirectness of population	--
Interventions	(n=53) Intervention 1: Placebo/Sham. Placebo. Duration 7 days. Concurrent medication/care: Patients could take up to 8 tablets of 500 mg aspirin a day (n=59) Intervention 2: Muscle relaxants - Tizanidine. Tizanidine 4 mg three times a day . Duration 7 days. Concurrent medication/care: Patients could take up to 8 tablets of 500 mg aspirin a day
Funding	Equipment / drugs provided by industry (Sandoz Ltd, Basel, Switzerland)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TIZANIDINE versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain at night at 7 days; Group 1: mean 15 (SD 20.6); n=51, Group 2: mean 18 (SD 20.8); n=45; VAS 0-100 Top=High is poor outcome; Risk of bias:

Very high; Indirectness of outcome: No indirectness - Actual outcome: Pain at rest at 7 days; Group 1: mean 19 (SD 23.2); n=51, Group 2: mean 19 (SD 22.9); n=45; VAS Patients could take up to 8 tablets of 500 mg aspirin a day Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Pain on movement at 7 days; Group 1: mean 18 (SD 22.9); n=51, Group 2: mean 18 (SD 23.1); n=45; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome: Drowsiness, dyspepsia, other at 7 days; Group 1: 24/59, Group 2: 11/53; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Birbara 2003[42]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=319)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	AGed 18-75 years, low back pain for at least 3 months, used an NSAID or acetaminophen for treatment of their low back pain regularly (at least past 30 days), with otherwise good health, assessed as class 1 (without pain to an extremity and neurological signs) or class 2 (pain with radiation to an extremity, but not below the knee and without neurological signs) on the Quebec Task Force System on Spinal Disorders.
Exclusion criteria	Patients with low back pain due to secondary causes e.g. malignancy, inflammatory disease, osteoporosis, fibromyalgia, ochronosis, vertebral fracture, infection, juvenile scoliosis or congenital malformation. Peple who had surgery for low back pain within 6 months of screening, had symptomatic depression that would interfere with completion of the study questionnaires, abused drugs or alcohol in the past 5 years, usd opioids more than 4 days in the month before screening, or had corticosteroid injections within 3 months before screening.
Age, gender and ethnicity	Age - Mean (SD): 51.8 (13.1). Gender (M:F): Define. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline charactristics of placebo, 60 mg and 90 mg etoricoxib respectively, Mean (SD): Pain intensity 76.9 (12.7), 77.8 (13.6), 77.2 (13); function 15.4 (5), 14.7 (5), 14.7 (5); SF12 physical 30.1 (7.4), 32.1 (8.4), 31.6 (8.2); SF12 mental 47.8 (10.5), 48.3 (10.7), 48.4 (10.8)
Indirectness of population	No indirectness
Interventions	(n=103) Intervention 1: Non-steroidal anti-inflammatory drugs - Etoricoxib. 60 mg once a day. Duration 12 weeks. Concurrent medication/care: 1950 mg acetaminophen could be taken per day as rescue medication (n=107) Intervention 2: Non-steroidal anti-inflammatory drugs - Etoricoxib. 90 mg once daily. Duration 12 weeks. Concurrent medication/care: 1950 mg acetaminophen could be taken per day as rescue medication (n=109) Intervention 3: Placebo/Sham. Placebo once a day. Duration 12 weeks. Concurrent medication/care: 1950 mg

	acetaminophen could be taken per day as rescue medication
Funding	Equipment / drugs provided by industry (Merck and Co, PA)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ETORICOXIB 60 versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF12 physical at 12 weeks; Other: Difference: 1.65 (95%CI -0.86 to 4.16) SF12 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF12 mental at 12 weeks; Other: 1.68 (95%CI -0.51 to 3.87) SF12 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain intensity at 12 weeks; Other: Difference: -10.45 (95%CI -16.77 to -4.14) VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Roland Morris disability questonnaire at 12 weeks; Other: -2.42 (95%CI -3.87 to -0.98) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome: Headache, nausea, diarrhoea, respiratory tract infections at 12 weeks; Group 1: 60/103, Group 2: 51/109; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ETORICOXIB 90 versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF12 physical at 12 weeks; Other: Difference: 2.58 (95%CI 0.13 to 5.02) SF12 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF12 mental at 12 weeks; Other: -0.92 (95%CI -3.08 to 1.23) SF12 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain intensity at 12 weeks; Other: Difference: -7.5 (95%CI -13.71 to -1.28) VAS 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Roland Morris disability questonnaire at 12 weeks; Other: Difference: -2.06 (95%CI -3.46 to -0.65) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome: Headache, nausea, diarrhoea, respiratory tract infections at 12 weeks; Group 1: 56/107, Group 2: 51/109; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Buynak 2010[62] (Katz 2015[265])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=981)
Countries and setting	Conducted in Australia, Canada, USA
Line of therapy	1st line
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	At least 18 years of age, history of non-malignant LBP for at least 3 months prior to the study, taking analgesics for LBP for at least 3 months prior to screening at a dose equivalent to at least 160mg oral morphine, dissatisfied with their current treatment and have a pain intensity score of at least 5 on a 11-point numeric rating scale (0 being no pain and 10 being worst pain) after a 3 to 7 day washout period of all analgesics.
Exclusion criteria	Taking part in any other clinical studies, or had previously taken part in a study involving Tapentadol, People with psychiatric or neurological conditions taking neuroleptics, TCA, anticonvulsants, anti-parkinsonian drugs, serotonin norepinephrine reuptake inhibitors during 14 days prior to screening. Corticosteroids within the following timelines prior to screening; oral within 4 weeks, intramuscular or soft tissue administered within 8 weeks, intra-articular within 3 months, depot-injected within 6 months. Use of concomitant analgesics, with the exceptin of allowed doses of acetaminophen, TENS, acupuncture, physical therapy, packs, massages, and other adjunctive therapy if patients started the tratment less than 14 days prior to enrolment. Presence of clinically significant medical or psychiatric disease, surgery requirements during study, surgery within 3 months of screening, history of substance abuse, epilepsy/seizure disorder, stroke/transient ischemic attack, HIV, chronic hepatitis B or C, malignancy in past 2 years, uncontrolled hypertension, severe renal impairement, moderate or severe hepatic impairement, abnormal baseline laboratory values that might affect patient safety, and hypersensitivity to the study medications or their excipients.
Age, gender and ethnicity	Age - Mean (SD): Placebo 50.4 (14.05), tapentadol ER 49.4 (13.21), Oxycodone CR 50 (14.21). Gender (M:F): 406:559. Ethnicity: Mixture of white, black, hispanic and other races, with white being the majority
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline characteristics-mean (SD): Pain: Placebo group 7.6 (1.33), Tapentadol ER 7.5 (1.33), Oxycodone CR 7.5 (1.21)
Indirectness of population	No indirectness
Interventions	(n=321) Intervention 1: Opioid analgesics - Tapentadol. Tapenadol ER Ranged between 100-250 mg (determined during a titration period). Duration 12 weeks. Concurrent medication/care: Patients may be receiving TENS,

	acupuncture, physical therapy, packs, massages, and other adjunctive therapy if patients started the tratment less than 14 days prior to enrolment. Acetaminophen (max of 1000mg/day) for pain other than low back pain (n=334) Intervention 2: Opioid analgesics - Codeine . Oxycodone ER dose per day ranging from 20 to 50mg (determined throug a titration period prior to 12 weeks iontervention time). Duration 12 weeks. Concurrent medication/care: Patients may be receiving TENS, acupuncture, physical therapy, packs, massages, and other adjunctive therapy if patients started the tratment less than 14 days prior to enrolment. Acetaminophen (max of 1000mg/day) for pain other than low back pain (n=319) Intervention 3: Placebo/Sham. Placebo. Duration 12 weeks. Concurrent medication/care: Patients may be receiving TENS, acupuncture, physical therapy, packs, massages, and other adjunctive therapy if patients started the tratment less than 14 days prior to enrolment. Acetaminophen (max of 1000mg/day) for pain other than low back pain
Funding	Principal author funded by industry (Johnson and Johnson Pharmaceutical Research and Development Services)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TAPENTADOL ER versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: EQ-5D at 12 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 12 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Brief Pain Inventory at 12 weeks; Group 1: mean 4.6 (SD 2.65); n=312, Group 2: mean 5.5 (SD 2.57); n=158; Brief pain inventory 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: 30% pain relief at 12 weeks; Group 1: 125/315, Group 2: 86/317; Risk of bias: ; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OXYCODONE ER versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: EQ-5D at 12 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 at 12 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Brief Pain Inventory at 12 weeks; Group 1: mean 4.6 (SD 2.55); n=323, Group 2: mean 5.5 (SD 2.57); n=158; Brief pain inventory 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Chu 2012[92]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=139)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 1 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-70 years; diagnosis of chronic, non-malignant, nonradicular LBP of at least 6 months duration with a minumum average VAS pain of 40 (0=no pain; 100=worst pain); elegible for chronic opioid therapy.
Exclusion criteria	History of substance abuse or severe psychiatric disease, use of medication for neuropathic pain; pain outside the lower back; neurological conditions interfering with eperimental pain testing; use of anticonvulsant or antidepressant drug; history of coronary artery disease of heart attack; clinically significant health concerns of other sorts, e.g. cancer or liver, renal or pulmonary conditions, cognitive impairment, major depression, antisocial or borderline personality disorder, sleep apnoea, allergy to study medication, or pregnancy.
Recruitment/selection of patients	Recruitment by fliers, email, radio advertisement.
Age, gender and ethnicity	Age - Mean (SD): Morphine group: 44 (14.2); Placebo group: 46 (13.5). Gender (M:F): 56% Male/44% Female. Ethnicity: Caucasian 65%; African-American 10%; Asian 12%; Hispanic 13%
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores - average pain: drug 49.5±14.7, placebo 50.2±14.8; RMDQ: drug 7.07±4.7, placebo 7.57±4.6; depression: drug 6.19±5.9, placebo 7.12±5.1. Participants were not currently taking opioid pain medication in excess of 30 mg oral morphine equivalents per day. Patients currently on low dose opioid therapy were allowed to continue with their normal drug routine; however, they were instructed to refrain from takingtheir daily pain medication at least 10 hours before any pain testing sessions.
Indirectness of population	No indirectness
Interventions	(n=69) Intervention 1: Opioid analgesics - Morphine. Sustained acting morphine 15 mg. Duration 1 month. Concurrent medication/care: 12 patients were already taking low-dose opioids at daily dosage of 10.2±7.9 morphine equivalent mg/day. (n=70) Intervention 2: Placebo/Sham. Matching placebo. Duration 1 month. Concurrent medication/care: 12 patients

	were already taking low-dose opioids at daily dosage of 9.5±6.1 morphine equivalent mg/day.
Funding	Academic or government funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MORPHINE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain intensity (VAS 0-10) at 1 month; Group 1: mean 2.84 0-10 (SD 1.47); n=48, Group 2: mean 3.77 0-10 (SD 1.48); n=55; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Disability (Roland-Morris Disability Index) at 1 month; Group 1: mean 5.05 (SD 4.7); n=48, Group 2: mean 7.06 (SD 4.6); n=55; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome: Pruritus, nausea, constipation, sedation, dry mouth, anxiety, erectile dysfunction at 1 month; Group 1: 20/48, Group 2: 3/55; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Dapas 1985[106]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 14 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute back syndrome with evidence of paravertebral muscle spasm and functional disabilityof less than 2 weeks duration, moderate severity pain,
Exclusion criteria	Other medical conditions that may have been responsible for the low back pain i.e. malignant tumours, fractures, herniated nucleus pulposus or acute infection. Pregnant or lactating women, patients receiving contraindicated medications or patients with other serious medical conditions.
Age, gender and ethnicity	Age - Mean (range): Baclofen 42.7 (17-74), placebo 41.8 (18-74). Gender (M:F): 96:104. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Less than 2 weeks).
Extra comments	Baseline scores presented as graph
Indirectness of population	No indirectness
Interventions	(n=100) Intervention 1: Muscle relaxants - Baclofen. 80 mg baclofen per day for first 3 days and could be reduced to a minimum of 30 mg a day if necessary for remainer of the time. Duration 14 days. Concurrent medication/care: Bed rest and heat therapy (n=100) Intervention 2: Placebo/Sham. Placebo. Duration 14 days. Concurrent medication/care: Bed rest and heat therapy
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BACLOFEN versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Lumbar pain at 14 days; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Central nervous system, gastro-intestinal, skin and mucosa, other at 14 days; Group 1: 67/98, Group 2: 29/97; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Dickens 2000[114]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=98)
Countries and setting	Conducted in United Kingdom; Setting: Rheumatology outpatient clinic.
Line of therapy	Mixed line
Duration of study	Intervention time: 56 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP >6 months; significant depressive symptoms; significant disability in daily living tasks.
Exclusion criteria	Other significant physical/mental disorder; a sstemic inflammatory disorder or malignancy; contraindications to taking paroxetine; taking opiates, corticosteroids, or psychotropic medication other than temazepam up to 20 mg nocte; recent surgery.
Age, gender and ethnicity	Age - Mean (SD): 45.2 (10.2). Gender (M:F): 46% Male/54% Female. Ethnicity: White
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months).
Extra comments	Baseline scores - pain VAS: drug 55.1±22.8, placebo 56.1±21.4; depression MADRS: drug 28.4±5.3, placebo 26.2±5.8; disability ODI: drug 54.2±13.7, placebo 54.7±10.3. Combined analgesics, simple analgesic, and NSAIDs were allowed.
Indirectness of population	--
Interventions	(n=44) Intervention 1: Anti-depressants - SSRIs. Paroxetine 20 mg. Duration 56 days. Concurrent medication/care: Combined analgesics, simple analgesic, and NSAIDs were allowed. (n=48) Intervention 2: Placebo/Sham. Matching placebo. Duration 56 days. Concurrent medication/care: Combined analgesics, simple analgesic, and NSAIDs were allowed.
Funding	Study funded by industry (SmithKline Beecham)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SSRIS versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain intensity (VAS) at 56 days; Group 1: mean 57 mm (SD 23.8); n=44, Group 2: mean 57 mm (SD 24.3); n=48; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index (ODI) at 56 days; Group 1: mean 50.2 (SD 15.2); n=44, Group 2: mean 52.4 (SD 13.6); n=48; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Depressive symptoms (MADRS) at 56 days; Group 1: mean 23.2 (SD 8.3); n=44, Group 2: mean 23.3 (SD 9); n=48; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Dreiser 2003[120]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=372)
Countries and setting	Conducted in France
Line of therapy	1st line
Duration of study	Intervention time: 7 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 18 to 60 years with untreated acute low back pain and onset within 2 days, pain at least 50 on the VAS (0-100) and on a 4-point pain intensity scale, intermittent or constant pain not aggravated by mechanical factors.
Exclusion criteria	Pain due to an associated radiculalgia, radiation below gluteal fold, known hypersensitivity to diclofenacibuprofen, paracetamol or aspirin, current disease status that could interfere with safety or efficacy of study medication, drug or alcohol abuse, required anticoagulant therapy, pregnant or nursing, required hospitalisation or other treatments for back pain, presence of neurological symptom, previous back pain episode within past 3 months, presence of inflammation, infection, neoplastic, metabolic or structural cause for back pain, chronic low back pain, symptomatic lumbalgia of viceral origin, history of chemonucleolysis or spinal surgery. No concomitant treatments apart from resting and daily activities.
Age, gender and ethnicity	Age - Mean (SD): Diclofenac 40.9 (10.9), Ibuprofen 40.6 (11.6), placebo 41 (11.3). Gender (M:F): 182/187. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline scores - pain intensity: diclofenac-K 72.1±10.9, ibuprofen 71.7±11.3, placebo 71.4±10.1; Eifel: diclofenac-K 13.6±4.2, ibuprofen 13.3±4.3, placebo 13.0±4.3
Indirectness of population	No indirectness
Interventions	(n=124) Intervention 1: Non-steroidal anti-inflammatory drugs - Diclofenac. Maximum of 6 tablets of 12.5 mg per day (1/2 tablets every 4-6 hours). Duration 7 days. Concurrent medication/care: 1 or 2 tablets of paracetamol 500 mg as rescue medication (n=122) Intervention 2: Non-steroidal anti-inflammatory drugs - Ibuprofen. Maximum of 6 tablets of 200 mg per day (1/2 tablets every 4-6 hours). Duration 7 days. Concurrent medication/care: 1 or 2 tablets of paracetamol 500 mg as rescue medication

	(n=126) Intervention 3: Placebo/Sham. Placebo matched to investigation drug doses. Duration 7 days. Concurrent medication/care: 1 or 2 tablets of paracetamol 500 mg as rescue medication
Funding	Equipment / drugs provided by industry (Novartis Consumer Health SA, Switzerland)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DICLOFENAC versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain relief at 7 days; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity at 8 days; Group 1: mean 48.4 (SD 26.1); n=107, Group 2: mean 37.5 (SD 26.9); n=92; VAS 1-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Diarrhoea, nausea, haemorrhage rectum, abdominal pain, vomiting, nervous system reactions at 7 days; Group 1: 11/124, Group 2: 17/126; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IBUPROFEN versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain relief at 7 days; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity at 8 days; Group 1: mean 48.8 (SD 24); n=103, Group 2: mean 37.5 (SD 26.9); n=92; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Diarrhoea, nausea, haemorrhage rectum, abdominal pain, vomiting, nervous system reactions at 7 days; Group 1: 13/122, Group 2: 17/126; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Goldie 1968[174]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Sweden
Line of therapy	1st line
Duration of study	Intervention time: 14 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Patients with low back pain and sciatica, symptoms did not exceed 3 weeks.
Exclusion criteria	Not stated
Age, gender and ethnicity	Age - Other: Plotted on graph, approximately 16 to 65 years. Gender (M:F): 26/24. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<3 weeks).
Extra comments	Baseline scores not reported
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Non-steroidal anti-inflammatory drugs - Indomethacin. Three time 25 mg a day, total of 75 mg/day. Duration 14 days. Concurrent medication/care: No other drugs as sedatives, hypnotics, or supplementary analgesics were admi, and were administered, no physiotherapy was given, patients remained in bed for a few days and were allowed to move around freely. (n=25) Intervention 2: Placebo/Sham. Placebo matching indomethacin group. Duration 14 day. Concurrent medication/care: No other drugs as sedatives, hypnotics, or supplementary analgesics were admi, and were administered, no physiotherapy was given, patients remained in bed for a few days and were allowed to move around freely.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: INDOMETHACIN versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain relief at 14 days; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Headache, nausea, giddiness at 14 days; Group 1: 8/25, Group 2: 5/25; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Goodkin 1990[175]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=42)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age ≥18 years; documented organic changes in the lumbosacral area; minimum of 1 year continuous LBP or 2 prior episodes of LBP of at least 2 weeks in duration with a current episode of at least 2 eeks.
Exclusion criteria	Patients with ≥4 additional pain sites; illiterate; suffered a MI <6 months earlier; had class IV or worse congestive heart failure; had cardiac arrhythmia; chronic or unstable angina; hepatic failure; renal failure; cancer related to the aetiology of LBP; spinal cord or canal abnormalities; dementia or other neurological disease; major psychiatric disorder; alcohol or substance abuse/dependence prior to the onset of pain; women who planned to become pregnant or refused to use contraceptive method; previous therapeutic trial of trazodone; history of allergy or sensitivity to trazodone.
Recruitment/selection of patients	Subjects recruited from 3 sources: the Stanford University Pain Clinic, the Livermore Veterans Administration Medical Center, and advertisement in a local newspaper.
Age, gender and ethnicity	Age - Mean (SD): 53.6 (12.9). Gender (M:F): 62% Male/38% Female. Ethnicity: 86% Caucasian, 7% Black, 7% Hispanic
Further population details	1. Chronicity of pain: Mixed (>1 year or 2 prior episodes of at least 2 weeks and a current episode of at least 2 weeks).
Extra comments	Baseline score - BDI: drug 16.27±10.39, placebo 15.20±7.01; pain VAS: drug 6.45±1.70, placebo 6.51±1.49. Subjects taking no more than 200 mg/day of an anti-depressant medication (incl. trazodone) were allowed to enter after a 2-week washout period. Subjects taking narcotic or a NSAID either discontinued this medication or agreed to take a fixed dose daily. Other medications, physical treatments, and therapies were maintained at the baseline level, but new forms of treatment were proscribed.
Indirectness of population	--
Interventions	(n=22) Intervention 1: Anti-depressants - Tricyclic antidepressants. Trazodone 50 mg tablets: 1 tablet a day for 3 days, 1 tablet 2 times a day for 3 days, 1 tablet 3 times a day for 3 days, then continue increasing dose by 1 tablet every 3 days on a 3-times-a-day schedule, barring significant side effects, to a maximum of 4 tablets 3 times a day (600 mg/day). Average daily dose: 201 mg.. Duration 6 weeks. Concurrent medication/care: Other medications, physical

	treatments, and therapies were maintained at the baseline level, but new forms of treatment were proscribed. (n=20) Intervention 2: Placebo/Sham. Matching placebo. Duration 6 weeks. Concurrent medication/care: Other medications, physical treatments, and therapies were maintained at the baseline level, but new forms of treatment were proscribed.
Funding	Other (Grants from: NIH, NIMH Mental health Clinical Research Center, Procter and Gamble Company, Stanford University Health Sciences Research and Development Fund, the Western Research and Development Office of the Veterans Administration.)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRICYCLIC ANTIDEPRESSANTS versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain severity (VAS) at 6 weeks; Group 1: mean 5.34 cm (SD 2.99); n=19, Group 2: mean 5.88 cm (SD 2.62); n=19; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Depression (BDI) at 6 weeks; Group 1: mean 14.05 (SD 11.83); n=21, Group 2: mean 11.84 (SD 7.99); n=19; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hale 2005[195]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=329)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 18 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Atleast 18 years old of age, confirmed diagnosis of moderate to severe low back pain, otherwise good health, backpain atleast 15 days before per month for past 2 months, taking stable dose of opioids fr atleast 3 consecutive days before screening.
Exclusion criteria	Pregnant or lactating, fibbromyalgia, reflex sympathetic dystrophy or causalgia, acute spinal cord compression, severe lower extremity weakness or numbness, bowel or bladder dysfunction as a result of cauda equida compression, diabetic amyotrphy, regional pain syndrome, meningitis, diskitis, infection or tumour related back pain, suspected or confirmed neoplasm. Major organic psychiatric conditon, serious or unstable intercurrent illness, medical conditions affecting drug absorption, history of uncontrolled seizure disorders, history of drug or alcohol dependence, hypersensitivity to opioids. surgical procedure for back pain within 2 months of screening or nerve/plexus block within 4 weeks of beginning dose titration. Pending or active litigation involving back pain.
Age, gender and ethnicity	Age - Range: 45.5 to 47.5. Gender (M:F): 174: 155. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Mixed (At least 15 days before per month for past 2 months).
Extra comments	Baseline score not reported . All eligible participants entered a titration period where they received eithewr 10-110 mg of oxycodone extended release (ER) of 20-220 mg of oxycodone controlled release (CR) every 12 hours for 7-14 days until a stabilised dose was achieved. On reaching a stabilised dose they were randomised to either oxycodone ER, oxycodone CR or placebo group.
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Opioid analgesics - Codeine . Oxycodone CR. Duration 18 days. Concurrent medication/care: Participants allowed no more than 15 mg per day of morphine sulphate as rescue medication (n=75) Intervention 2: Placebo/Sham. Placebo. Duration 18 days. Concurrent medication/care: Participants allowed no more than 15 mg per day of morphine sulphate as rescue medication

Funding	Equipment / drugs provided by industry (funded by Endo Pharmaceuticals)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OXYCODONE CR versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 18 days; Group 1: mean 5.2 (SD 2.38); n=75, Group 2: mean 6.4 (SD 2.38); n=67; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Constipation, sedation at 18 days; Group 1: 54/111, Group 2: 14/108; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Hale 2010[194] (Hale 2010[193], Nalamachu 2014[401])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=268)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Ages 18-75 years, moderate to severe chronic LBP-at least 3 hours pain per day for 20 days per month for 6 months, non-neuropathic pain, Taking daily opioidswith at least 60mg oral morphine or equivalent 2 months prior to screening and on stable dose for 2 weeks prior to screening, women on contraception throughout trial.
Exclusion criteria	Pregnancy, any other chronic pain condition that interfered with the assessment of LBP, surgery for LBP within 6 months prior to the screening, fibromyalgia, complex regional pain syndrome, acute spinal cord compression, severe or progressive lower extremity weakness or numbness, bowel or bladder dysfunction, major psychiatric condition, clinically significant anxiety or depression, clinically significant abnormal lab results. Taking monoamine oxidase inhibitors within 14 days prior to screening or had no bowel movement within 3 days, or bowel obstruction within 60 days prior to screening.
Age, gender and ethnicity	Age - Mean (SD): Experimental group 47.8 (10.5), control group 49.4 (10.6). Gender (M:F): 132:134. Ethnicity: Majority caucasion population
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 hours pain per day for 20 days per month for 6 months).
Extra comments	Baseline details, mean (SD): NRS: EG 6.3 (1.94), CG 6.5 (1.88)
Indirectness of population	No indirectness
Interventions	(n=134) Intervention 1: Opioid analgesics - Morphine. Hydromorphone extended release. Duration 12 weeks. Concurrent medication/care: Hydroprphone immediate release (2, 4, 8 mg) was allowed as rescue medication as a limit of 2 tablets a day (n=134) Intervention 2: Placebo/Sham. Placebo. Duration 12 weeks. Concurrent medication/care: Hydroprphone immediate release (2, 4, 8 mg) was allowed as rescue medication as a limit of 2 tablets a day

Funding	Equipment / drugs provided by industry (Funded by Neuromed and Covidien pharmaceuticals)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: HYDROMORPHINE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: NRS at 12 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Check at 12 weeks; Group 1: mean 3.8 (SD 1.77); n=133, Group 2: mean 4.8 (SD 2.03); n=133; RMDQ 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 12 weeks; Group 1: mean 5.05 (SD 4.7); n=48, Group 2: mean 11.7 (SD 6.13); n=132; RMDQ 0-24 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Withdrawn due to adverse events at 12 weeks; Group 1: 9/134, Group 2: 4/134; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Non-neuropathic LBP - Treatment related adverse event at 12 weeks; Group 1: 24/91, Group 2: 28/82; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Hyup lee 2013[240]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=245)
Countries and setting	Conducted in South Korea
Line of therapy	Unclear
Duration of study	Intervention time:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 25-75, able to walk, with moderate to severe chronic low back pain (average pain intensity at least 4cm on a 10cm VAS) despite the use of NSAIDs or COX-2 selective inhibitors, and had pain severe enough to require continual use of analgesics for at least 3 months before screening. Patients were required to have taken a stable dose of NSAIDs or COX-2-selective inhibitors from 7 days before study drug administration (screening period) and to maintain that same dose during the study period.
Exclusion criteria	Failure or discontinuation of tramadol or tranadol/paracetamol treatment in the past due to an adverse event; or the ingestion of tramadol, tramadol/paracetamol or opioid analgesics within 30 days of study drug administration, paracetamol within 7 days, or antidepressants, anticonvulsants or cyclobenzaprine (for pain relief) within 3 weeks of study drug administration. Tumour or infection on the meninges or spinal cord; had more severe pain in an area other than the low back' had a neurological deficit on the legs due to a spine lesion; suffered from pain due to fibromyalgia, complex regional pain syndrome, acute spinal cord compression, cauda equina sundrome,proximal diabetic neuropathy, infection, or a tumour; underwent back surgery wihtin the past 3 months; or received a steroid injection within 4 weeks of screening.
Recruitment/selection of patients	At the 1st screening visit patients were approved for participation after an examination of their demographic data, drug administration history, surgical history, and overall safety-related data. At the end of the screening period, patients with an average pain intensity of at least 4 on VAS over the last 48 hours were randomised.
Age, gender and ethnicity	Age - Mean (SD): Placebo: 60.4 (9.9) Tramadol/paracetamol: 59.9 (10.7). Gender (M:F): 62/183. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information provided in inclusion criteria).
Extra comments	Baseline values for outcomes not provided.
Indirectness of population	No indirectness
Interventions	(n=125) Intervention 1: Mixed pharmacological therapies - Opioid + paracetamol. Extended release tramadol hyrochloride 75 mg / Paracetamol 650mg. Duration 29 days. Concurrent medication/care: All patients were receiving

	a stable dose of NSAID or COX-2-selective inhibitor that they had been using for pain relief throughout the trial. (n=120) Intervention 2: Placebo/Sham. Placebo. Duration 29 days. Concurrent medication/care: All patients received a stable dose of NSAID or COX-2-selective inhibitor that the had been using for pain relief throughout the study.
Funding	Study funded by industry (Janssen Korea Ltd.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OPIOID + NON-OPIOID versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: Korean Short Form-36 - Physican functioning at 29 days; Group 1: mean 9.82 (SD 18.35); n=83, Group 2: mean 6.67 (SD 15.99); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Role-physical at 29 days; Group 1: mean 16.04 (SD 23.89); n=83, Group 2: mean 8.69 (SD 22.62); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Bodily pain at 29 days; Group 1: mean 19.29 (SD 18.99); n=83, Group 2: mean 17.69 (SD 14.84); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - General health at 29 days; Group 1: mean 7.36 (SD 14.41); n=83, Group 2: mean 2.77 (SD 12.58); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Vitality at 29 days; Group 1: mean 11.14 (SD 20.55); n=83, Group 2: mean 5.82 (SD 18.94); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Social functioning at 29 days; Group 1: mean 11.75 (SD 25.7); n=83, Group 2: mean 6.61 (SD 20.6); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Role-emotional at 29 days; Group 1: mean 8.13 (SD 28.93); n=83, Group 2: mean 7.47 (SD 28.25); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Mental health at 29 days; Group 1: mean 20.48 (SD 23.2); n=83, Group 2: mean 18.39 (SD 24.61); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Korean Short Form-36 - Reported health transition at 29 days; Group 1: mean -18.07 (SD 25.99); n=83, Group 2: mean -6.9 (SD 30.19); n=87; SF-36 0-100 Top=High is good outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Average pain intensity and pain relief over the last 48 hours (VAS) 6 point scale at 29 days; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Korean Oswestry Disability Index (Change from baseline) at 29 days; Group 1: mean 11.216 (SD 11.856); n=83, Group 2: mean 7.178 (SD 13.879);

n=87; Korean-ODI 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome: Adverse events at 29 days; Group 1: 104/125, Group 2: 65/120; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome: Pain intensity change >30% at 29 days; Group 1: 49/85, Group 2: 37/90; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Innes 1998[241]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=122)
Countries and setting	Conducted in Canada; Setting: Emergency department.
Line of therapy	1st line
Duration of study	Not clear: Patients folowed up at 7-9 days, may have stopped taking medication.
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: Acute low back pain
Subgroup analysis within study	Not applicable: None
Inclusion criteria	Moderate or severe musculoskeletal low back pain of less than 72 hours duration. Self-rated pain of at least moderate severity based on a 5-point categorical scale; weight of at least 50 kg; age 18 to 60 years and willing to provide written informed consent; well enough to be discharged within 2 to 4hours and requiring oral rather than parenteral analgesics, based on physician judgment; willing to complete and return the study diary and unused medications' and willing to attend a follow-up visit at the treatment centre.
Exclusion criteria	Active peptic ulcer within 6 months; bleeding diathesis or anticoagulant use within 4 weeks; pregnancy or breast feeding; any chronic pain condition or recurring back pain; current, suspected or known alcohol or drug abuse; previously enrolled in this study or received any investigational drug within 4 weeks; co-existing injury or illness which, in the investigator's judgment, contraindicated the study medications or interfered with study evalutations (e.g. asthma or COPD); allergy, sensitivity or contraindication to acetaminophen, opioids, ASA or NSAIDs; fracture, dislocations, neurological impairment, or a cause of back pain requireing treatment beyond analgesics; and patients who reveived any of the following medications within 3 hours of baseline or were expected to require them duing the 1 week study period: analgesics, anaethetics, sedating antihistamines, antiemetics, anxiolytics, antidepressants, psychotropics, or any medication that might influence pain intensity evaluations.
Recruitment/selection of patients	Convenience sampling of people presenting to emergency departments with acute musculoskeletal low back pain.
Age, gender and ethnicity	Age - Mean (SD): 34.5 (10.02). Gender (M:F): 96/26. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Pain less than 72 hours duration.).
Extra comments	Baseline pain values: Katorolac 68 (16.02) Paracetamol/codeine 67.5 (14.73)
Indirectness of population	No indirectness
Interventions	(n=62) Intervention 1: Non-steroidal anti-inflammatory drugs - Ketorolac. Ketorolac tromethamine 10mg orally, then 10mg every 4 to 6 hours as needed, up to 4 doses in any 24-hour period. . Duration 7-9 days. Concurrent medication/care: Patients requiring a 5th or 6th dose in any 24-hour period were given paracetamol 650mg per dose

	in 2 optional doses. Otherwise patients were instucted to avoid all contraindicated medications. (n=60) Intervention 2: Mixed pharmacological therapies - Opioid + paracetamol. Paracetamol - codeine 600mg paracetamol/60mg codeine orally, with the same dose repeated every 4 to 6 hours as needed, up to 6 doses in 24 hours.. Duration 7-9 days. Concurrent medication/care: Patients were instructed to acoid all contraindicated medications.
Funding	Study funded by industry (Hoffmann-La-Roche)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: KETOROLAC versus OPIOID + NON-OPIOID Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS pain intensity at 6 hours & 1 week; Group 1: mean 61.6 (SD 23.05); n=55, Group 2: mean 62.1 (SD 23.25); n=58; VAS 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Functional capacity at 6 hours & 1 week; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome: Adverse events at 1 week; Group 1: 21/55, Group 2: 38/58; Risk of bias: --; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Jenkins 1976[253]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=59)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	People admitted for in-patient treatment of LBP to the Rehabilitation Unit.
Exclusion criteria	Pain due to tubercular, neoplastic or metabolic bone disease; rheumatoid arthritis; treated with monoamine oxidase inhibitors; contraindication to tofranil.
Age, gender and ethnicity	Age - Mean (range): 18-49. Gender (M:F): 93% Male/ 7% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough informaiton in inclusion criteria).
Extra comments	Baseline scores - Pain (no previous history): drug 43.9, placebo 41.9; pain (previous history): drug 48.3, placebo 53.8; depression (no previous history): drug 15, placebo 9; depression (previous history): drug 8.5, placebo 9. Analgesics were not prescribed, except on the rare occasions when they became essential. Results are stratified by previous history of LBP, or no previous history of LBP.
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Anti-depressants - Tricyclic antidepressants. Tofranil (imipramine) 25 mg. Duration 4 weeks. Concurrent medication/care: All patients had a therapeutic programme of exercise (group and individual) together with physiotherapy, occupational therapy and hydrotherapy. (n=29) Intervention 2: Placebo/Sham. Matchnig placebo. Duration 4 weeks. Concurrent medication/care: All patients had a therapeutic programme of exercise (group and individual) together with physiotherapy, occupational therapy and hydrotherapy.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRICYCLIC ANTIDEPRESSANTS versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain severity (no previous history of LBP) at 4 weeks; Group 1: mean 38 (SD 10); n=23, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Pain severity (previous history of LBP) at 4 weeks; Group 1: mean 34.2 (SD 10); n=23, Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: Beck Depression Inventory (no previous history of LBP) at 4 weeks; Other: Median BDI: 6.5 for intervention, 7 for control; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Beck Depression Inventory (previous history of LBP) at 4 weeks; Other: Median BDI: 5 for intervention, 10 for control; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kalita 2014[261]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=200)
Countries and setting	Conducted in India
Line of therapy	Unclear
Duration of study	Intervention time: 14 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall: Low back pain with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain that had lasted for more than 3 months, aged 15-65 years.
Exclusion criteria	Low back pain due to specific cause such as injury, infection, malignancy, collagen vascular disease, rheumatoid or seronegative arthritis, spinal tumours and vascular malformation. People on immunosupression therapy, anticancer drugs, post-organ transplantation and post-spinal surgery. Those pregnant, lactating or with severe neurological deficit due to radiculopathy or lumbar canal stenosis.
Recruitment/selection of patients	Consecutive patients with chronic low back pain attending the neurology service.
Age, gender and ethnicity	Age - Mean (range): 41.5 (21-65). Gender (M:F): 109/91. Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>3 months).
Extra comments	Baseline scores - VAS pain: amitriptyline 6.7±1.6, pregabalin 6.7±1.9; ODI: amitriptyline 42.2±12.5, pregabalin 42.2±15.3. Median duration of illness was 35 (4-360) months. Clinically localized low back pain was present in 93 people, back pain with radiculopathy in 95 and lumbar canal stenosis in 12 people.Median pain score at baseline 6.6 band ODI disability score 43%.
Indirectness of population	No indirectness
Interventions	(n=97) Intervention 1: Anticonvulsants - Pregabalin. 75mg twice daily for 2 weeks, followed by 150mg twice dailiy for 4 weeks then 300mg twice daily. Increase after 6 weeks was flexible.. Duration 14 weeks. Concurrent medication/care: Advised not to take any analgesic or other pain modifying drugs. If patient had intolerant pain the study drug was stopped and an alternative treatment offered. All patients advised to do back extension exercise for 10-15 min daily and not to lift heavy weights. Also taught lifting techniques. (n=103) Intervention 2: Anti-depressants - Tricyclic antidepressants. Amitriptyline 12.5mg for 2 weeks, followed by 25mg for 4 weeks and increased to 50mg. Increase after 6 weeks was flexible.. Duration 14 weeks. Concurrent medication/care: Advised not to take any analgesic or other pain modifying drugs. If patient had intolerant pain the

	study drug was stopped and an alternative treatment offered. All patients advised to do back extension exercise for 10-15 min daily and not to lift heavy weights. Also taught lifting techniques.
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PREGABALIN versus TRICYCLIC ANTIDEPRESSANTS Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS pain severity at 14 weeks; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: Oswestry disability index at 14 weeks; Other: P=0.09; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome: Side effects (sedation, dry mouth and vertigo) at 14 weeks; Group 1: 21/70, Group 2: 18/77; Risk of bias: --; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	**Katz 2015[264]**
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=389)
Countries and setting	Conducted in USA; Setting: Secondary care.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 weeks + 2 weeks

Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Screening test by investigators.
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Male and nonpregant females, aged 18 to 75, with a clinical diagnosis of moderate-to-severe CLBP (ie. pain intensity score of ≥5 to ≤9 on an 11-point pain intensity-numerical rating scale [PI-NRS]) for a minimum of 6 months before the screening visit. Key inclusion criteria were classification of back pain by the investigator as non-malignant and non-neuropathic (classes 1 or 2), neuropathic (class 3), or symptomatic for more than 6 months after low back surgery (class 9) based on the Quebec TaskForce classification.
Exclusion criteria	Patients known to be refractory or intolerant to the analgesic effects of opioids or who had failed previous opioid therapy or had a known contraindication to any opioid or paracetamol, including allergy or hypersensitivity. Patients with any chronic pain condition other than CLBP who, in the investigator's opinion, would have interfered with the assessment of CLBP (eg. osteoarthritis, rheumatoid arthritis, postherpetic neuralgia, pain associated with diabetic neuropathy, fibromyalgia, and migraine headaches requiring opioid therapy).
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Mean (SD): Xtampza ER - 49.2(13.3); Placebo - 49.9(12.6).. Gender (M:F): Define. Ethnicity: Xtampza ER: Hispanic/Latino - 16/193, Not Hispanic/Latino - 177/193; Placebo: Hispanic/Latino - 21/196, Not Hispanic/Latino - 175/196.
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (miminimun of 6 months duration before screening visit).
Extra comments	Baseline Characteristics: Quality of life (SF-12v2) Physical component, mean(SD): Xtampza ER 33.7 (10.2), placebo 34.4 (10.3); Quality of life (SF-12v2) Mental component: Xtampza ER 55.0 (10.0), placebo 55.6 (9.7). RMDQ, mean (SD): Xtampza ER 8.4 (5.0), placebo 8.4 (5.4).
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=193) Intervention 1: Opioid analgesics - Oxycodone. Patients were maintained on doses of Xtampza ER ≥40 to ≤160

	mg oxycodone HCL equivalents daily, following prior open label titration. Patients were advised to take the drug twice daily (once in the morning and once in the evening approximately 12 hours apart) with food. . Duration 12 weeks . Concurrent medication/care: Any adjunct therapy for back pain such as physical therapy, biofeedback therapy, transcutaneous electrical nerve stimulation, acupuncture, nutraceuticals, herbal remedies, and water aerobics remained unchanged through the end-of-study or early discontinuation visit per protocol. Use of paracetamol up to 2000 mg/day was also permissable. (n=196) Intervention 2: Placebo/Sham. After the intial titration phase, patients randomized to receive placebo were tapered up in a blinded manner from the stable dose of Xtampza ER established during the open label titration phase for up to 20 days to prevent opioid withdrawal symptoms. Patients were advised to take the placebo twice daily (once in the morning and once in the evening approximately 12 hours apart) with food. Placebo drug matched the active drug and contained identical microspheres with the exception of oxycodone.. Duration 12 weeks . Concurrent medication/care: Any adjunct therapy for back pain such as physical therapy, biofeedback therapy, transcutaneous electrical nerve stimulation, acupuncture, nutraceuticals, herbal remedies, and water aerobics remained unchanged through the end-of-study or early discontinuation visit per protocol. Use of paracetamol up to 2000 mg/day was also permissable.
Funding	Equipment / drugs provided by industry (Collegium Pharmaceuticals, Inc.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: XTAMPZA ER versus PLACEBO

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Short form 12-question health survey, version 2 (SF-12v2) - Physical component at 12 weeks; Group 1: mean 7.52 (SD 10.13); n=193, Group 2: mean 3.62 (SD 9.43); n=196; SF-12 version 2 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Short form 12-question health survey, version 2 (SF-12v2) - Mental component at 12 weeks; Group 1: mean -2.55 (SD 10.42); n=193, Group 2: mean 0.67 (SD 11.17); n=196; SF-12 version 2 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: NRS at 12 weeks; Group 1: mean 3.2 (SD 1.7); n=193, Group 2: mean 3.7 (SD 2.4); n=196; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland-Morris Disability Questionnaire at 12 weeks; Group 1: mean 0.4 (SD 4.83); n=193, Group 2: mean 0.7 (SD 5.32); n=196; Roland Morris Disability Questionnaire 0 - 24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Patients with treatment emergent adverse events leading to death at 12 weeks; Group 1: 0/193, Group 2: 0/196; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Responder ≥30%in pain intensity on NRS scale at 12 weeks; Group 1: 95/193, Group 2: 65/196; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Responder ≥50% in pain intensity on NRS scale at 12 weeks; Group 1: 74/193, Group 2: 48/196; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Lasko 2012[305]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=277)
Countries and setting	Conducted in Canada, USA; Setting: Walk-in clinics, clinical research centres and hospital emergency rooms.
Line of therapy	Unclear
Duration of study	Intervention time: 2.5 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	In generally good health, aged 18-80, with moderate to severe acute low back pain. At baseline, included patients had a rating of at least 2 on a 4 point categorical pain intensity rating scale (0 = none, 1 = mild, 2 = moderate, 3 = severe) and a rating of at least 4 on the 11 point pain intensity numerical rating scale (PI-NRS) ranging from 0=no pain to 10=worst pain. The onset of current acute low back pain episode was within 48 hours prior to dosing.
Exclusion criteria	Patients with a known history or symptoms suspicious for spinal fracture, cancer (i.e. constitutional symptoms such as recent unexplained chills or weight loss), or spinal infection (e.g. IV drug abuse, immunosupression) were excluded from the study. Also excluded were patients with cauda equina syndrome, spina bifida, neurological deficit (e.g. foot drop), spinal surgery within 1 year of study entry, chronic low back pain, bakc pain radiating below the knee, or more severe pain in a region other than the lower back. Treatment with non-pharmacological therapy (e.g. chiropractic adjustment) within 3 weeks of entry to the study, use of any sedative hypnotics, topical preparations/medications and anaesthetics or muscle relaxants within 4 hours prior to sudy entry, use of short-actiing analgesics (e.g. paracetamol) within 4 hours prior to study entry or use or other analgesics within 5 half lives prior to study entry, use of an opioid within the 14 days preceding randomisation, treatment within the last 3 weeks with a drug that reduces seizure threshold, a chronic or acute painful condition other than the sudy indication which could have interfered with the assessment of the efficacy of the study medication or any other condition that, in the opinion of the investigator, could have adversely affected the patient's ability to complete the study or its measures, patients who had a history of seizure disorder (other than infantile febrile seizures), bowel disease or postsurgical condition causing malabsorption, significant renal or hepatic diseas, or patients who had ongoing or prior substance abuse or dependence (other than nicotine).
Recruitment/selection of patients	At a screening visit baseline evaluations were performed and randomisation.
Age, gender and ethnicity	Age - Mean (SD): 42.2 (13). Gender (M:F): 132/145. Ethnicity: Mixed Caucasian/black/hispanic/asian/other
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Acute pain within last 48hours, but not clear if it's new onset or recurrent.).

Extra comments	Baseline Pain intensity rating score - Mean (SD) Tramadol/paracetamol: 2.3 (0.5) Placebo 2.2 (0.4). Patients were advised to minimise their level of physical activity (e.g. walking for a short distance, sitting, standing). Any intensive physical activity (e.g. lifting or pushing weights exceeding 3kg, jumping, jogging, gardening, shoveling etc.) was prohibited for the duration of the double-blind phase.
Indirectness of population	No indirectness
Interventions	(n=141) Intervention 1: Mixed pharmacological therapies - Opioid + paracetamol. Tramadol (2x75mg)/Paracetamol (650mg) controlled release . Duration 2.5 days. Concurrent medication/care: No rescue medication allowed. (n=136) Intervention 2: Placebo/Sham. Placebo. Duration 2.5 days. Concurrent medication/care: No resuce medication allowed.
Funding	Study funded by industry (Labopharm Inc.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OPIOID + NON-OPIOID versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Time to onset of perceptible pain relief at 3 days; HR 1.22 (95%CI 0.92 to 1.61) Reported; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Time to onset of meaningful pain relief at 3 days; HR 1.57 (95%CI 1.05 to 2.33) Reported; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Time to remedication at 3 days; HR 0.93 (95%CI 0.47 to 1.84) Reported; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Adverse event at 2.5 days; Group 1: 59/141, Group 2: 17/136; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse event (mortality) at follow-up

Study	Mccleane 2001[364]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=80)
Countries and setting	Conducted in United Kingdom
Line of therapy	1st line
Duration of study	Intervention time: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Lumbar and associated leg pain, paravertebral (not-mid line) lumbar tenderness at one vertebral level and have pain worse on extension (not flexion) of the back.
Exclusion criteria	Features of neuropathic pain (shooting pain, paraesthesia, numbness, or allodynia) in either back or leg, pain adequately controlled with codeine-based analgesics or NSAIDS, treaed previously with gabapentin or known to be sensitive to it, taking concommitant medication that was expected to change during the study period, unable to complete study record forms, participated in any other clinical study in the last three months.
Age, gender and ethnicity	Age - Mean (SD): Placebo group 47.8 (11.7), gabapentin group 41.3 (13.1). Gender (M:F): Placebo group 13/21, gabapentin group 16/15. Ethnicity: not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline characteristics: back pain at rest: placebo 6.51 (1.9), gabapentin 6.82 (2.08); back pain on movemet: placebo group 7.33 (1.64), gabapentin 7.48 (1.6)
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Anticonvulsants - Gabapentinoids. Dosage increasing from 300 mg to 1200 mg per day over a period of 6 weeks. Duration 6 weeks. Concurrent medication/care: Concomitant analgesics (n=40) Intervention 2: Placebo/Sham. Placebo identicle to gabapentin capsules. Duration 6 weeks. Concurrent medication/care: Concomitant analgesics
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: GABAPENTINOIDS versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Back pain at rest at 6 weeks; Group 1: mean 6.31 (SD 2.07); n=31, Group 2: mean 6.52 (SD 2.06); n=34; Pain numeric rating scale 0-10 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Back pain on movement at 6 weeks; Group 1: mean 7.01 (SD 1.82); n=31, Group 2: mean 7.34 (SD 1.52); n=34; Pain numeric rating scale 0-10 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Nausea, drowsiness, blurred vision, restlessness, loss of energy, bleeidng per rectum, skin rash, dizziness, headache, disorientation, heartburn, constipation, unpleasant dreams, urinary frequency at 6 weeks; Group 1: 19/40, Group 2: 13/40; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Morera-dominguez 2010[385]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=683)
Countries and setting	Conducted in Spain
Line of therapy	Adjunctive to current care
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Aged at least 18 years, refractory to previous analgesics and suffered from chronic pain (>6 months) located on the low back region, pain secondary to lumbosacral radiculopathy, lumbar or sacral pain irradiating to the calves or feet, score of at least 4 on the pain VAS (0-10) indicating a neuropathic component in the pain, able to complete a health questionnaire in Spanish and give informed consent.
Exclusion criteria	Unable to understand the study objectives
Age, gender and ethnicity	Age - Mean (SD): 55 (12.7). Gender (M:F): 50.5/49.5%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 6 months).
Extra comments	Baseline characteristics: BPI mean (SD) UC 5.5 (1.6), pregablin 6.2 (1.5); responders (at least 50%) UC 37.3, pregablin 61.6; HADS anxiety UC 8.4 (4.2), pregablin 9.4 (3.9); HADS depression UC 9.3 (3.9), pregablin 10.1 (4.1); SF-12 physical UC 29.6 (7.2), pregablin 29.6 (6.5); SF-12 mental UC 45.6 (11.4), pregablin 42.7 (11.2). Secondary analysis
Indirectness of population	No indirectness
Interventions	(n=564) Intervention 1: Anticonvulsants - Pregabalin. Mean (SD) dose 189.9 (141.7) mg/d. Duration 12 weeks. Concurrent medication/care: Other treatments such as other antiepileptic, anxiolytic and antidepressant drugs (n=119) Intervention 2: Usual care. Participants added an analgesic other than pregabalin to their previous treatment. Duration 12 weeks. Concurrent medication/care: Drugs such as antiepileptics other than pregablin, anxiolytic and antidepressant drugs
Funding	Equipment / drugs provided by industry (Funded by Pfizer)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PREGABALIN versus USUAL CARE	

Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: SF-12 physical at 12 weeks; Group 1: mean 9.7 (SD 9.6); n=564, Group 2: mean 5.8 (SD 8.3); n=119; SF-12 physical 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-12 mental at 12 weeks; Group 1: mean 7.3 (SD 10.6); n=564, Group 2: mean 2 (SD 7.4); n=119; SF-12 mental 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: BPI at 12 weeks; Group 1: mean -3.4 (SD 2); n=564, Group 2: mean -2 (SD 2.1); n=119; Brief pain inventory 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: HADS anxiety at 12 weeks; Group 1: mean -3.7 (SD 3.6); n=564, Group 2: mean -1.9 (SD 3); n=119; HADS anxiety 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: HADS depression at 12 weeks; Group 1: mean -4 (SD 4.1); n=564, Group 2: mean -2.1 (SD 3.3); n=119; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Responded (pain reduction of at least 50%) at 12 weeks; Group 1: 347/564, Group 2: 44/119; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Muehlbacher 2006[395]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=96)
Countries and setting	Conducted in Germany
Line of therapy	Mixed line
Duration of study	Intervention time:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age ≥18 years; symptoms of chronic LBP with or without leg pain for at least 6 months
Exclusion criteria	Neurological deficit; current acute psychotic or manic episodes and current use of opioidsand/or topiramate; somatic illness such as cancer, systemic, or cardiopulmonary disease, if these restricted the patient's independence and ability in everyday life; acute suicidality; alcohol or drug abuse; pregnancy, including planning a pregnancy or not using contraception.
Recruitment/selection of patients	Patients recruited through advertisement.
Age, gender and ethnicity	Age - Mean (SD): Intervention: 48.8 (5.4); Placebo: 48.7 (5.0). Gender (M:F): 62% male/38% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores (mean SD)- SF36 physical: drug 56.4±6.4, placebo (PG) 57.5±5.6; SF36 role-physical: drug 53.8±5.4, PG 54.6±7.6; SF36 bodily pain: drug 53.5±5.9, PG 54.6±5.8; SF36 general health: drug 52.3±5.7, PG 53.3±6.1; SF36 vitality: drug 53.1±6.6, PG 53.0±6.5; SF36 social: drug 68.5±5.5, PG 68.8±5.8; SF36 emotional: drug 78.5±5.2, placebo 76.5±5.4; SF36 mental health: drug 68.1±6.3, placebo 67.0±5.6; pain rating index: drug 35.7±2.6, PG 35.9±2.4; disability OLBPQ: drug 39.6±5.3; PG 39.8±4.8. Patients were asked to refrain from using analgetic or anti-inflammatory medications for 1 week before participation in the study.
Indirectness of population	No indirectness
Interventions	(n=48) Intervention 1: Anticonvulsants - Topiramate. Topiramate. Initial concentration: 50 mg/day. Titrated at 50 mg/week to a dose of 300 mg/day in the sixth week and then remained constant. . Duration 10 weeks. Concurrent medication/care: Not stated (n=48) Intervention 2: Placebo/Sham. Matching placebo. . Duration 10 weeks. Concurrent medication/care: Not stated

Funding	No funding (10 weeks)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TOPIRAMATE versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36, physical function at 10 weeks; Group 1: mean 65.1 (SD 8.7); n=48, Group 2: mean 57.1 (SD 5.6); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, role-physical at 10 weeks; Group 1: mean 62.5 (SD 7.8); n=48, Group 2: mean 55 (SD 7.6); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, bodily pain at 10 weeks; Group 1: mean 57.6 (SD 7.3); n=48, Group 2: mean 55.5 (SD 5.5); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, general health perceptions at 10 weeks; Group 1: mean 57.7 (SD 6.8); n=48, Group 2: mean 54.2 (SD 6.3); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, vitality at 10 weeks; Group 1: mean 59.8 (SD 9.7); n=48, Group 2: mean 53.6 (SD 6.6); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, social functioning at 10 weeks; Group 1: mean 72.6 (SD 6.2); n=48, Group 2: mean 69.4 (SD 6.5); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, role-emotional at 10 weeks; Group 1: mean 79.7 (SD 4.7); n=48, Group 2: mean 77.1 (SD 5.6); n=48; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, mental health at 10 weeks; Group 1: mean 72.9 (SD 5.5); n=48, Group 2: mean 67.5 (SD 5.8); n=48; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain Rating Index of the McGill Pain Questionnaire at 10 weeks; Group 1: mean 22.9 (SD 1.4); n=48, Group 2: mean 32.4 (SD 2.3); n=48; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Disability (Oswestry LBP Disability Questionnaire) at 10 weeks; Group 1: mean 34 % (SD 5.2); n=48, Group 2: mean 38.9 % (SD 5.3); n=48; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome: Somnolence, vision problems, psychomotor slowing, memeory problems, dizziness, headache, paraesthesia at 10 weeks; Group 1: 18/48, Group 2: 10/48; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Nadler 2002[400]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=371)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention + follow up: 4 days (2 days treatment, 2 days follow up)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Aged 18 to 55 years inclusive, ambulatory status, no low back trauma within the proceeding 48 hoursw, pain of low back muscles, use of acceptable method of birth control for women of child bearing age.
Exclusion criteria	Pregnant, history of radiculopathy or other neurologic deficits, history of back surgery, fibromyalgia, diabetes mellitus, peripheral vascular disease, osteoporosis, gastrointestinal ulcers, gastrointestinal bleeding or perforation, renal disease, pulmonary edaema, cardiomyopathy, liver disease, instrinsic coagulation defects, bleeding diseases or antigoagulation therapy (e.g. warfarin), daily back pain for more than three consecutivemethods or hypersensitivity to acetaminophen, NSAIDS or heat.
Age, gender and ethnicity	Age - Other: Number of participants aged between 18-29: 116, 30-39: 96, 40-49: 120, 50-55: 36, >55: 3. Gender (M:F): 155:216. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline characteristics: pain intensity (%), more than moderate: acetaminophen 44.2, ibuprofen 43.4, placebo 45; disability: acetaminophen 46.24, ibuprofen 42.38, placebo 48.33. Participants asked not to use any other treatments during study period
Indirectness of population	No indirectness
Interventions	(n=113) Intervention 1: Paracetamol. 2 tablets 4 times a day, total dose of 4000 mg/day. Duration 4 days. Concurrent medication/care: Not stated (n=106) Intervention 2: Non-steroidal anti-inflammatory drugs - Ibuprofen. 2 tablets 4 times a day, total dose of 1200 mg/day. Duration 4 days. Concurrent medication/care: Not stated (n=20) Intervention 3: Placebo/Sham. 2 placebo tablets 4 times a day. Duration 4 days. Concurrent medication/care: Not stated

Funding	Other (Procter and Gamble Company)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PARACETAMOL versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain relief at 4 days; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Pain relief at 4 days; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IBUPROFEN versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain relief at 4 days; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Pain relief at 4 days; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Pallay 2004[422]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=325)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged between 18 to 75 years of age, with low back pain lasting >3 months, requiring regular treatment with an NSAID or paracetamol for 30 days or more prior to randomisation.
Exclusion criteria	Changes in concomitant therapies during the study, low back pain due to known secondary causes, had surgery for low back pain in the 6 months prior to screening, symptomatic depression that would interfere with completion of study questionnaires, potentially confounding comcomitant disease, drug or alcohol abuse within the past 5 years, or patients who used opioids for >4 days in the months before screening, or corticosteroid injections within 3 months of screening.
Age, gender and ethnicity	Age - Mean (SD): 52.8 (12.8). Gender (M:F): 122/203. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (> 3 months).
Extra comments	Baseline characteristics (total across groups)- Mean (SD): Pain 76.2 (14.6), function 14.7 (4.8), SF12 physical 31.7 (8.4), SF12 mental 48.9 (10.7)
Indirectness of population	No indirectness
Interventions	(n=109) Intervention 1: Non-steroidal anti-inflammatory drugs - Etoricoxib. 60 mg daily. Duration 12 weeks. Concurrent medication/care: Able to continue any concomitant therapies during the study as long as they didn't change, including muscle relaxants, physical therapies, chiropractic, or alternative therapy i.e. acupuncture. (n=106) Intervention 2: Non-steroidal anti-inflammatory drugs - Etoricoxib. 90 mg per day. Duration 12 weeks. Concurrent medication/care: Able to continue any concomitant therapies during the study as long as they didn't change, including muscle relaxants, physical therapies, chiropractic, or alternative therapy i.e. acupuncture. (n=110) Intervention 3: Placebo/Sham. Placebo. Duration 12 weeks. Concurrent medication/care: Able to continue any concomitant therapies during the study as long as they didn't change, including muscle relaxants, physical

	therapies, chiropractic, or alternative therapy i.e. acupuncture.
Funding	Equipment / drugs provided by industry (Funded by Merck and Co, Inc, USA)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ETORICOXIB 60 versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF12 mental at 12 weeks; Other: 60 mg versus placebo, difference: 0.72 (95%CI -2.93 to 1.48) SF12 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF12 physical at 12 weeks; Other: 60 mg versus placebo, difference: 2.88 (95%CI 0.56 to 5.21) SF12 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Low back pain intensity scale at 12 weeks; Other: 60 mg versus placebo, difference: -12.12 (95%CI -20.86 to -9.44) Low back pain intensity 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 12 weeks; Other: 60 mg versus placebo, difference: -2.82 (95%CI -4.13 to -1.52) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Abdominal pan, fatigue, back pain, cough, diarrhaea, dizziness, dysgeusia, epigastric discomfort, headache, lower extremity oedema, nausea, upper respiratory infection, urinary tract infection at 12 weeks; Group 1: 70/109, Group 2: 50/110; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ETORICOXIB 90 versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF12 mental at 12 weeks; Other: 90 mg versus placebo, difference: 0.82 (95%CI -1.4 to 3.05) SF12 mental 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF12 physical at 12 weeks; Other: 90 mg versus placebo, difference: 3 (95%CI 0.65 to 5.36) SF12 physical 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Low back pain intensity scale at 12 weeks; Other: 90 mg versus placebo, difference: -12.7 (95%CI -18.8 to

-6.72) Low back pain intensity 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionaire at 12 weeks; Mean 90 mg versus placebo, difference: -2.38 (95%CI -3.71 to -1.06) RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Abdominal pan, fatigue, back pain, cough, diarrhaea, dizziness, dysgeusia, epigastric discomfort, headache, lower extremity oedema, nausea, upper respiratory infection, urinary tract infection at 12 weeks; Group 1: 62/106, Group 2: 54/110; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Pareek 2009[423]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=197)
Countries and setting	Conducted in India
Line of therapy	Unclear
Duration of study	Intervention time: 7 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Male and female patients in the age range of 18–70 years with localized, uncomplicated acute lumbosacral pain, associated with degenerative spinal disorders (confirmed radiologically), of recent onset 1–30 day(s) and with pain intensity at rest of at least 6 on a 10-point visual analogue scale (VAS) were included in this study.
Exclusion criteria	Patients with suspicion of a serious underlying spinal condition such as sciatica and nonspecific back symptoms related to abdominal, pelvic or thoracic pathology; those with prior history of sensory and/or motor deficits in the lower extremities and lumbosacral facet syndrome; those with malignancy, osteoporosis or previous history of lumbar spine surgery; those with any possibly confounding severe pain relating to the back, fibromyalgia, symptomatic disc herniation, spondylolisthesis higher than grade 2, severe spinal stenosis, acute LBP due to prolapsed intervertebral disc (PID) and who had received aceclofenac or tizanidine therapy in the past 1 week before inclusion in the study. Patients with history of hypersensitivity to NSAIDS or tizanidine and those with prior history of asthma or hypersensitivity potentially requiring concomitant treatment, and had used steroids within 4 weeks of study entry, were excluded. Those patients requiring drugs that affect platelet functions and coagulation were excluded from the study. Patients with history of peptic ulcers, duodenal ulcers, gastrointestinal bleeding, or bleeding disorders were not recruited in this study. Patients with abnormal renal and liver function and with significant unstable medical disease were also excluded from the study. Pregnant and lactating women and females of childbearing potential, who did not use contraceptives, were not enrolled in this study.
Recruitment/selection of patients	All patients underwent a detailed neurological examination involving the spine and lower extremities. Neurological examination was performed by the principal investigators at each centre who were blinded to the study medication.
Age, gender and ethnicity	Age - Mean (SD): Treatment group 43.3 (12.16), usual care group 43.45 (10.94). Gender (M:F): Define. Ethnicity: Unstated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (Onset of 1-30 days).
Extra comments	Baseline scores not reported.

Indirectness of population	No indirectness
Interventions	(n=101) Intervention 1: Muscle relaxants - Tizanidine. Tizanidine 2 mg with aceclofenac 100 mg fixed dose. Duration 7 days . Concurrent medication/care: Not stated (n=96) Intervention 2: Usual care. Aceclofenac 100 mg. Duration 7 days. Concurrent medication/care: Not stated
Funding	Equipment / drugs provided by industry (Ipca Laboratories Limited funded the study)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TIZANIDINE versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain on movement at 7 days; Group 1: mean -6.09 (SD 2.34); n=94, Group 2: mean -3.98 (SD 1.86); n=91; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain at rest at 7 days; Group 1: mean -5.88 (SD 2.34); n=94, Group 2: mean -4.35 (SD 2.06); n=91; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain at night at 7 days; Group 1: mean -5.76 (SD 2.12); n=94, Group 2: mean -4.4 (SD 2.15); n=91; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Adverse events at 7 days; Group 1: 12/101, Group 2: 12/96; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Peloso 2004[427]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=336)
Countries and setting	Conducted in Canada; Setting: Outpatients departments
Line of therapy	Unclear
Duration of study	Intervention time: 91 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Over 18 years of age, with good general health. Female patients were required to either be postmenopausal for at 1 year, incapable of becoming pregnant, or using appropriate contraceptive methods with a negative pregnancy test within 1 week of study entry.
Exclusion criteria	Use of any sedative hypnotics, short acting analgesics, topical preparations/medications and anesthetics, or muscle relaxants for a period of less than 5 half-lives of the given medication prior to the double blind phase; use of medications that could reduce the seizure threshold within 3 weeks before the double blind phase; use of opioids or initiation of nutraceuticals within 6 weeks of the double blind phase; history of a seizure disorder, unstable medical disease, renal or hepatic dysfunction, substance abuse, inflammatory disease; and more severe pain in a location other than the lower back; or other disease states thay may interfere with the interpretation of pain. People who were known to have neurological deficits in the lower extremities, tumours or infections of the spinal cord or meninges, symptomatic disc herniation, severe spinal stenosis, spondylolisthesis greater than or equal to Grade 2, history of intability of lumbar vertebrae, as well as people with acute vertebral fractures or who had had back surgery (except if back pain was responsive to a single surgical procedure more than 5 years prior to study enrollment). People could not have received treatment with tramadol within 30 days before study entry, demonstrated inability to tolerate tramadol or had a contraindication to tramadol or paracetamol.
Recruitment/selection of patients	Ambulatory patients with chronic low back pain severe enough to require daily medication for at least 3 months prior to entry were randomised and entrered into a screening/washout phase when they discontinued all pain medications (up to 21 days or until the level of pain became intolerable). Patients was a pain VAS score of at least 40/100mm in the low back pain region within the preceding 48 hours at the end of the screening phase were eligible to enter the double blind phase.
Age, gender and ethnicity	Age - Mean (SD): 57.5 (12.55). Gender (M:F): 126/210. Ethnicity: Majority white
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).

Extra comments	Baseline scores (mean SD) - pain VAS: T/P 67.9±14.95, placebo(PG) 67.6 ±15.53; RDQ: T/P 15.2±4.2, PG 15.0±4.8; SF36 Physical: T/P 37.1±21.9, PG 38.7±22.4; SF36 Physical: T/P 18.4±28.8, PG 17.2±26.9; SF36 Bodily Pain: T/P 29.3±13.7, PG 32.6±14.8; SF36 General health: T/P 61.0±19.2, PG 57.9±22.0; SF36 Vitality: T/P 38.5±18.5, PG 41.2 ± 19.4; SF36 Social: T/P 55.8 ± 25.5, PG 59.7 ±25.7; SF36 emotional: T/P 52.4±42.9, PG 54.2±43.8; SF36 Mental health: T/P 65.5±17.9, PG 67.1±20.6;. Physiotherapy that was started prior to the double blind phase was to be maintained throughout the study or was otherwise not allowed.
Indirectness of population	No indirectness
Interventions	(n=167) Intervention 1: Mixed pharmacological therapies - Opioid + paracetamol. tramadol/paracetamol (37.5mg/325mg) Max of 2 tablets QID and minimum of 3 tablets/day.. Duration 91 days. Concurrent medication/care: No pain medication or treatment other than the study medication was allowed during the course of the study except for rescue mediation (paracetamol 500mg up to 4 tablets daily) during the first 6 days of the double blind phase, provided the patient was taking no more than 6 tablets of study medication daily. After the first 6 days, if experiencing pain not associated with the back, paracetamol at a max of 100mg/day for 2 consecutive days was allowed no more than twice for each patient. Patients were allowed to continue taking prophylactic doses of aspirin for cardiovascular protection. (n=171) Intervention 2: Placebo/Sham. Placebo. Duration 91 days. Concurrent medication/care: As for the intervention arm.
Funding	Study funded by industry (Ortho-McNeil Pharmaceutical)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OPIOID + NON-OPIOID versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical functioning at 91 days; Group 1: mean 44.8 (SD 25.7); n=164, Group 2: mean 41 (SD 26.2); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 role-physical at 91 days; Group 1: mean 27.3 (SD 38.6); n=164, Group 2: mean 23.5 (SD 33.5); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 bodily pain at 91 days; Group 1: mean 40.5 (SD 21.4); n=164, Group 2: mean 34.1 (SD 18.2); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 general health at 91 days; Group 1: mean 61.4 (SD 19.8); n=164, Group 2: mean 57.9 (SD 21.1); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 vitality at 91 days; Group 1: mean 44.5 (SD 20.9); n=164, Group 2: mean 43.2 (SD 20.2); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 social functioning at 91 days; Group 1: mean 60.4 (SD 24.8); n=164, Group 2: mean 61.1 (SD 25.9);

n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 role-emotional at 91 days; Group 1: mean 56.5 (SD 42.8); n=164, Group 2: mean 55.2 (SD 43.2); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health at 91 days; Group 1: mean 67.8 (SD 19.6); n=164, Group 2: mean 65.2 (SD 21); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: SF-36 reported health transition at 91 days; Group 1: mean 51.8 (SD 24.9); n=164, Group 2: mean 54 (SD 23.2); n=163; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS pain intensity at 91 days; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: McGill pain score at 91 days; Group 1: mean 15.5 (SD 10.8); n=164, Group 2: mean 17.7 (SD 11.6); n=161; McGill pain questionnaire 0-78 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 91 days; Group 1: mean 12.8 (SD 5.9); n=164, Group 2: mean 13.7 (SD 5.7); n=163; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Discontinuation due to adverse events at 91 days; Group 1: 47/167, Group 2: 13/169; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Perrot 2006[429]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=119)
Countries and setting	Conducted in France
Line of therapy	Unclear
Duration of study	Intervention time: 10 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: VAS
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	People with subacute low back pain of at least moderate intensity (at least 40 on 100mm VAS) without any signs of radiculopathy, for at least 10 to 42 days before enrolment. Aged at least 18 years and in good general health.
Exclusion criteria	If they had taken any analgesic comedication (adtidepressants, hypnotics, muslce relaxants, antiepileptics, or corticosteroids) or any long-acting analgesics 3 weeks before enrolment, or they had taken any short-acting analgesic medication (NSAIDs, other peripheral analgesics, opioids, anaesthetics, or topical medications) 24 hours before entering the study. People who had previous failure of tramadol treatment or treatment with tramadol in the precending 15 days were also excluded. People with a diagnosis of: tumours or infections of the meninges or spinal cord (or elsewhere) any possibly confounding severe pain relating to the back, fibromyalgia, symptomatic disc herniation, spondylolistesis higher than grade 2, severe spinal stenosis, actue verterbral fractures, or inflammatory diseases. Use of transcutaneous electric nerve stimulation unit, chiropractic treatment or any form of physiotheraphy, massage or physical therapy within 3 weeks before the study, or any known contraindication to opioids or paracetamol, significant major psychiatric disorder, receiving antipsychotic medication, had a history of attempted suicide or suicidal tendencies, or had substance abuse or chronic heavy alcohol abuse.
Age, gender and ethnicity	Age - Mean (SD): Paracetamol/tramadol: 56.5 (15.3), Tramadol: 54.1 (14.6). Gender (M:F): 50/69. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (10-42 days).
Extra comments	Baseline scores - Pain VAS: P+T 67.5±13.0, T 65.3±14.6
Indirectness of population	No indirectness
Interventions	(n=59) Intervention 1: Mixed pharmacological therapies - Opioid + paracetamol. Paracetamol 325mg plus tramadol 37.5mg.. Duration 10 days. Concurrent medication/care: Any physical and adjunctive therapies as well as any analgesic concomitant medications were prohibited. (n=60) Intervention 2: Opioid analgesics - Tramadol. Tramadol hydrochloride 50mg. Duration 10 days. Concurrent

	medication/care: Any physical and adjunctive therapies as well as any analgesic concomitant medications were prohibited.
Funding	Study funded by industry (Grunenthal GmhH)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OPIOID + NON-OPIOID versus TRAMADOL Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS pain intensity at 10 days; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Adverse events at 10 days; Group 1: 30/59, Group 2: 44/60; Risk of bias: --; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Rauck 2015[443]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=281)
Countries and setting	Conducted in USA; Setting: NR
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Unclear method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific CLBP with low back pain occurring between the 12th thoracic vertebra and the lower gluteal folds, with a classification of 1 or 2 according to the Quebec Task Force on spinal disorders. CLBP of at least 3 months.
Exclusion criteria	Pain from structural or progressive lesions, comorbid pain conditions within the past 2 years that would interfere with the assessment or self evaluation of CLBP, ie, a history of lumbosacral radiculopathy, symptomatic spinal stenosis, CLBP due in general but not limited to veterbral compression fracture, major trauma of the spine, osteoarthritis of major joints, rheumatoid arthritis, or neuropathic pain syndromes. positive urine drug test for illicit substances, active major depression in the past year, a body mass index >40kg/m2, known hypersensitivity to oxycodone, naltrexone or acetaminophen, pregnant or breastfeeding women.
Recruitment/selection of patients	NR
Age, gender and ethnicity	Age - Mean (SD): Placebo 49.3 (12.24), drug 50.6 (12.98). Gender (M:F): placebo - 59,75 drug - 65,81. Ethnicity: placebo - 76.9% white, 21.6% black, 0.7% asian, 1.4% other, drug - 69.9% white, 28.1% black, 0.7% asian, 1.4% other
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline - pain scores 3.1±1.0 (placebo), 3.0±1.3 (drug)
Indirectness of population	No indirectness
Interventions	(n=147) Intervention 1: Mixed pharmacological therapies - Opioid + paracetamol. 20, 40, 60, 80, 100, 120, 140 or 160 mg/d (median dose was 60mg), swallowed intact, with or without food. . Duration 12 weeks. Concurrent medication/care: Acetaminopjen (up to 3000mg) was allowed as a rescue medication (n=134) Intervention 2: Placebo/Sham. matching placebo. Duration 12 weeks. Concurrent medication/care: NR
Funding	Study funded by industry (sponsered by Pfizer)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OXYCODONE WITH NALOXONE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at 12 weeks; Group 1: mean 3.6 (SD 2.04); n=146, Group 2: mean 4.3 (SD 2.24); n=134; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Ruoff 2003[453]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=322)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 91 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	25 to 75 years of age, have had low back pain that needed daily medication for at least 3 months, general good health, ability to read and compreghend written instructions, able to complete pain assessment forms. Pain VAS score of >40 out of 100 mm
Exclusion criteria	Pregnant or lactating women, previous discontinuation of tramadol therapy due to adverse events, undergone therapy with tramadol within 30 days before study entry, taken antidepressant, cyclobenzaprine, or antiepileptic drugs for pain, or received TENS, chiropractic adjustments or acupuncture within 3 weeks og double-blind phase. Taken sedative-hypnotics, short-acting analgesics, topical anaesthetics or muscle relaxants for a period of <5 half-lives of the specific medication before the double-blind phase. Received corticosteroid injections in the lower back region or used systemic steroids within the 3 months before screening/washout phase. Severe pain in locations other than low back, had neurological deficits in the lower extremities. Known contrindications to opioids or APAP, major psychiatric disorder of a history of attempted suicide or substance abuse. Received an investigational drug/device within 30 days prior to entry to study.
Age, gender and ethnicity	Age - Mean (SD): 53.9. Gender (M:F): 117:201. Ethnicity: Majory caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline characteristics, mean (SD): McGill Pain score: Experimental group (EG) 19.9 (10.1), control group (CG) 18.1 (9.6), Roland Morris disability questionnaire score: EG 14.8 (4.4), 14.2 (4.6), SF-36 survery score, physical summary score: EG 30.9 (8), CG 32.5 (8), mental summary score: EG 47.5 (10.6), CG 48 (11.5). 10 day double-blind phase-titration period for drugs from 1-4 tablets/day.
Indirectness of population	No indirectness
Interventions	(n=162) Intervention 1: Opioid analgesics - Tramadol. Combination of Tramadol 37.5mg/APAP 325mg, maximum of 8 tablets a day. Duration 3 months. Concurrent medication/care: Rescue medication of 2000mg APAP was allowed only during days 1-6 of double blind-titration phase if the patient was not taking >6 tablets of study medication.

	(n=160) Intervention 2: Placebo/Sham. Placebo, no more than 8 tablets a day. Duration 3 months. Concurrent medication/care: Rescue medication of 2000mg APAP was allowed only during days 1-6 of double blind-titration phase if the patient was not taking >6 tablets of study medication.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRAMADOL versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 physical functioning at 3 months; Group 1: mean 52.6 (SD 27.8); n=150, Group 2: mean 53.3 (SD 26.8); n=146; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 role-physical at 3 months; Group 1: mean 49.8 (SD 41); n=149, Group 2: mean 39.7 (SD 42.2); n=146; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 bodily pain at 3 months; Group 1: mean 47.8 (SD 21.1); n=151, Group 2: mean 43.4 (SD 21.9); n=146; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 general health at 3 months; Group 1: mean 67.8 (SD 21.5); n=146, Group 2: mean 68.2 (SD 20.9); n=144; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 vitality at 3 months; Group 1: mean 47.2 (SD 21.6); n=151, Group 2: mean 46.9 (SD 21.8); n=145; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 social functioning at 3 months; Group 1: mean 72.3 (SD 27.1); n=151, Group 2: mean 70.3 (SD 26.8); n=146; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 role-emotional at 3 months; Group 1: mean 71.5 (SD 39.5); n=151, Group 2: mean 58.4 (SD 41.4); n=146; Sf-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: SF-36 mental health at 3 months; Group 1: mean 75.2 (SD 17.4); n=151, Group 2: mean 71.9 (SD 18); n=145; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: McGill pain score at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: VAS pain in previous 48 hours at 3 months; Group 1: mean 4.44 cm (SD 1.45); n=161, Group 2: mean 5.23 cm (SD 1.49); n=157; Visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability questionnaire at 3 months; Group 1: mean 10.7 (SD 6.3); n=151, Risk of bias: High; Indirectness of outcome: No indirectness

	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
Protocol outcomes not reported by the study	

Study	Sakai 2015[456]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=)
Countries and setting	Conducted in Japan; Setting: Unclear - outpatient department in hospital in Japan
Line of therapy	Unclear
Duration of study	--:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Had orthopedic surgery
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with low back pain, aged 65 years or older, who had been treated and followed up continuously for 3 months or longer in the outpatient department of orthopedic surgery
Exclusion criteria	Not stated
Recruitment/selection of patients	Not stated - most likely based on inclusion criteria only
Age, gender and ethnicity	Age - Mean (SD): 72.03-72.60. Gender (M:F): 40/20 (21:9 + 19/11). Ethnicity:
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline characteristics (mean±SD): VAS low back pain - 34.77±29.91 (Pregabalin group) 34.70±32.54 (TRAM/APAP group); VAS leg pain - 4.13±3.00 (Pregabalin group) 3.14±3.13 (TRAM/APAP); RDQ - 9.73±4.44 (Pregabalin group) 11.47±4.99 (TRAM/APAP group); EQ-5D - 0.63±0.10 (Pregabalin group) 0.58±0.12 (TRAM/APAP group); Neuropathic Pain Screening Questionnaire - 4.56±3.19 (Pregabalin group) 4.53±4.46 (TRAM/APAP group)
Indirectness of population	No indirectness
Interventions	(n=32) Intervention 1: Anticonvulsants - Pregabalin. Between October 2011 and September 2012, 75 mg pregabalin before bedtime.. Duration 4 weeks. Concurrent medication/care: Non-steroidal anti-inflammatory drugs were administered for 1 month to eliminate acute LBP as run-in period. Patients underwent a 7-14 day washout of prior analgesic therapy. (n=33) Intervention 2: Opioid analgesics - Tramadol. Twice daily dosing, (2 tablets per day; tramadol 75 mg and acetaminophen 650 mg per day), administered randomly for 4 weeks.. Duration 4 weeks. Concurrent medication/care: Non-steroidal anti-inflammatory drugs were administered for 1 month to eliminate acute LBP as run-in period. Patients underwent a 7-14 day washout of prior analgesic therapy.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PREGABALIN versus TRAMADOL + ACETAMINOPHEN Protocol outcome 1: Adverse events (morbidity) at Define - Actual outcome: Number of people discontinued due to averse events/side effects at 4 weeks; Group 1: 2/30, Group 2: 3/30; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Schiphorst preuper 2014[465]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Netherlands; Setting: Outpatient rehabilitation centres
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Non-specific chronic low back pain lasting at least 3 months, a VAS for worst pain in the past week at least 4 cm, aged over 18, on the waiting list for rehabilitation treatment and willing to take the trial medication for 2 weeks.
Exclusion criteria	Mental (e.g. major psychiatric disorders) or physical causes (e.g. cardiac or pulmonary disorders) leading to reduction in functioning, hypertension, unable/unsafe to participate in FCE, contraindication or known adverse effect for precribed medication, use of opioids, no willingness to stop pain medication or other treatments for low back pain.
Recruitment/selection of patients	Patients with chronic low back pain who were awaiting for an outpatient pain rehabilitation program where invited to participate by the treating physician. After inclusion, a wash-out period up to 7 days was required for patients who took analgesics prior to the study. During this period, the use of all analgesics was eliminated to ensure that effects of study medication were not confounded or interacted by other medication. Baseline measurements were completed after washout.
Age, gender and ethnicity	Age - Mean (range): Placebo: 44 (32.5 - 48), Treatment 42 (35.5 - 50.5). Gender (M:F): 16/34. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Basline VAS current pain - Placebo - 4.7 (2.7 - 7.2), Treatment 6.1 (3.2 - 7.1)
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Mixed pharmacological therapies - Opioid + paracetamol. Tramadol/paracetamol (37.5mg/325mg) per capsule (titrated from 1 casule 2x per day to max of 2 capsules 3x per day). Duration 2 weeks. Concurrent medication/care: None (n=25) Intervention 2: Placebo/Sham. Placebo. Duration 2 weeks. Concurrent medication/care: None
Funding	Study funded by industry (Grunenthal BV and Stichting Beatrixwood)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OPIOID + NON-OPIOID versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS current pain at 2 weeks; Other: (Median (IQR)); Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ at 2 weeks; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome: Adverse events (dizziness, nausea, tiredness, diarrhoea and short periods of skin rash) at 2 weeks; Group 1: 12/25, Group 2: 6/25; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Schnitzer 2000[467]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=154)
Countries and setting	Conducted in United Kingdom; Setting: Outpatient trial conducted at 26 investigational centres
Line of therapy	1st line
Duration of study	Intervention time: 4 week
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Beteen age 25-75 years, chronic LBP that requires daily medication for at least 3 months, otherwise good health, single back surgery more than 5 years in the past the resulted in complete pain relief.
Exclusion criteria	Neurological deficits in lower extremities, tumours or infections of the menings or pinal cord, back pain caused b a lesion that was amenable to surgery, more severe pain in a location other than back. Fibromyalgia, disk herniation, spondylolisthesis, spinal stenosis, hitory of instability of lumbar vertebrae exceeding 4 to 5 mm on flexion/extension roentgenograms, vertebral fractures, tumours, infections, inflammatory disease, hepatic or renal disease, morbid obesity or borderline personality disorder. Systemic or injections of corticosteroids in the lower back region within 3 months of screening/washout phase, TENS, history of narcotic or alcohol abuse, or a score of at least 3 out of 5 on Waddell's test.
Age, gender and ethnicity	Age - Mean (SD): 47.1 (12.91). Gender (M:F): 127:127. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline values-mean (SD): Pain VAS (0-10) 7.2 (1.55) , RMDQ 13.5 (4.76)
Indirectness of population	No indirectness
Interventions	(n=127) Intervention 1: Opioid analgesics - Tramadol. Dose range of within 200-400 mg/day. Duration 4 weeks. Concurrent medication/care: Exercise and physiotherapy (hot/cold packs, back exercise, massage, therapy) which was initiated before randomisation and before the run-in phase of the study and continued throughout the randomised intervention period. (n=127) Intervention 2: Placebo/Sham. Placebo. Duration 4 weeks. Concurrent medication/care: Exercise and physiotherapy (hot/cold packs, back exercise, massage, therapy) which was initiated before randomisation and before the run-in phase of the study and continued throughout the randomised intervention period.

Funding	Equipment / drugs provided by industry (Funded by Ortho-McNeil pharmaceuticals)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRAMADOL versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at 4 weeks; Group 1: mean 3.5 (SD 2.79); n=91, Group 2: mean 5.1 (SD 2.98); n=55; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 4 weeks; Group 1: mean 8.8 (SD 6.2); n=91, Group 2: mean 10.2 (SD 6.2); n=55; RMDQ 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Nausea, headache at 4 weeks; Group 1: 17/127, Group 2: 7/127; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Skljarevski 2009[482]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=404)
Countries and setting	Conducted in USA; Setting: Multicentre.
Line of therapy	Mixed line
Duration of study	Intervention time: 13 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Clinical diagnosis of chronic LBP, with pain either restricted to lower back or associated with radiation to the proximal portion of the lower limb only; pain present on most days for ≥6 months; average weekly pain ratings ≥4 during the week prior to randomisation.
Exclusion criteria	Radicular compression; spinal stenosis; presence of spondylolisthesis grade 3-4; history of ≥1 low back surgery; any low back surgery within 12 months; invasive procedure to reduce low back pain within 1 month; BMI > 40; seeking disability compensation related to back pain.
Age, gender and ethnicity	Age - Mean (SD): 53.8 (13.9). Gender (M:F): 42% Male/58% Female. Ethnicity: 80% Caucasian; 20% other
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (>6 months).
Extra comments	Baseline scores - BPI average pain: placebo 6.1(1.7), D20mg 6.3(1.6), D60mg 5.9(1.7), D120mg 6.0(1.6). No other baseline outcomes reported.. Patients who entered the trial taking stable doses of NSAIDs or receiving physical therapy were allowed to continue those therapies as long as they did not change their doses or frequency during the study. Regular use of anti-depressants, anti-consultants, opioids, muscle relaxants and other analgesics was prohibited, as was use of acupuncture, chiropractic manoeuvres, or other procedures aimed to relieve pain. Episodic use (≤3 consecutive days, ≤20 total days) of short-acting analgesics was allowed to manage breakthrough LBP or unrelated acute conditions.
Indirectness of population	No indirectness
Interventions	(n=59) Intervention 1: Anti-depressants - SNRIs. Duloxetine 20 mg/day. Duration 13 weeks . Concurrent medication/care: Patients who entered the trial taking stable doses of NSAIDs or receiving physical therapy were allowed to continue those therapies as long as they did not change their doses or frequency during the study. (n=116) Intervention 2: Anti-depressants - SNRIs. Duloxetine 60 mg/day. Duration 13 weeks. Concurrent medication/care: Patients who entered the trial taking stable doses of NSAIDs or receiving physical therapy were

	allowed to continue those therapies as long as they did not change their doses or frequency during the study. (n=112) Intervention 3: Anti-depressants - SNRIs. Duloxetine 120 mg/day. Duration 13 weeks. Concurrent medication/care: Patients who entered the trial taking stable doses of NSAIDs or receiving physical therapy were allowed to continue those therapies as long as they did not change their doses or frequency during the study. (n=117) Intervention 4: Placebo/Sham. Placebo. Duration 13 weeks. Concurrent medication/care: Patients who entered the trial taking stable doses of NSAIDs or receiving physical therapy were allowed to continue those therapies as long as they did not change their doses or frequency during the study.
Funding	Study funded by industry (Eli Lilly and Company)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SNRIS versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36 Bodily pain (20 mg) at 13 weeks; Group 1: mean 1.51 (SD 1.98); n=54, Group 2: mean 1.36 (SD 1.97); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health (20 mg) at 13 weeks; Group 1: mean 0.7 (SD 3.01); n=54, Group 2: mean 0.66 (SD 3.01); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health (20 mg) at 13 weeks; Group 1: mean 0.21 (SD 3.6); n=54, Group 2: mean 0.38 (SD 3.64); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning (20 mg) at 13 weeks; Group 1: mean 1.8 (SD 3.82); n=54, Group 2: mean 2.23 (SD 3.85); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role-emotional (20 mg) at 13 weeks; Group 1: mean 0.1 (SD 0.88); n=54, Group 2: mean 0.08 (SD 0.94); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role-physical (20 mg) at 13 weeks; Group 1: mean 0.81 (SD 1.54); n=54, Group 2: mean 0.8 (SD 1.56); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning (20 mg) at 13 weeks; Group 1: mean 0.75 (SD 1.54); n=54, Group 2: mean 0.5 (SD 1.56); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality (20 mg) at 13 weeks; Group 1: mean 0.69 (SD 3.67); n=54, Group 2: mean 0.91 (SD 3.64); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D (20 mg) at 13 weeks; Group 1: mean 0.07 (SD 0.22); n=54, Group 2: mean 0.08 (SD 0.2); n=104; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months

- Actual outcome: Pain right now (BPI-S), 20 mg at 13 weeks; Group 1: mean -1.63 (SD 2.47); n=56, Group 2: mean -1.74 (SD 2.55); n=113; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Average interference (BPI-I), 20 mg at 13 weeks; Group 1: mean -1.84 (SD 1.95); n=56, Group 2: mean -1.61 (SD 2.02); n=113; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome: At least 1 adverse event at 13 weeks; Group 1: 38/59, Group 2: 69/117; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SNRIS versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36 Bodily pain (60 mg) at 13 weeks; Group 1: mean 1.95 (SD 2.02); n=102, Group 2: mean 1.36 (SD 1.97); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health (60 mg) at 13 weeks; Group 1: mean 1.24 (SD 3.03); n=102, Group 2: mean 0.66 (SD 3.01); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health (60 mg) at 13 weeks; Group 1: mean 0.98 (SD 3.64); n=102, Group 2: mean 0.38 (SD 3.64); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning (60 mg) at 13 weeks; Group 1: mean 2.55 (SD 3.84); n=102, Group 2: mean 2.23 (SD 3.85); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role-emotional (60 mg) at 13 weeks; Group 1: mean 0.08 (SD 0.94); n=108, Group 2: mean 0.19 (SD 0.91); n=102; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role-physical (60 mg) at 13 weeks; Group 1: mean 0.8 (SD 1.51); n=102, Group 2: mean 0.8 (SD 1.56); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning (60 mg) at 13 weeks; Group 1: mean 0.46 (SD 1.62); n=102, Group 2: mean 0.5 (SD 1.56); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality (60 mg) at 13 weeks; Group 1: mean 1.43 (SD 3.64); n=102, Group 2: mean 0.91 (SD 3.64); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D (60 mg) at 13 weeks; Group 1: mean 0.11 (SD 0.2); n=102, Group 2: mean 0.08 (SD 0.2); n=104; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain right now (BPI-S), 60 mg at 13 weeks; Group 1: mean -2.67 (SD 2.49); n=108, Group 2: mean -1.74 (SD 2.55); n=113; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Average interference (BPI-I), 60 mg at 13 weeks; Group 1: mean -2.4 (SD 1.97); n=107, Group 2: mean -1.61 (SD 2.02); n=113; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define
- Actual outcome: At least 1 adverse event at 13 weeks; Group 1: 78/116, Group 2: 69/117; Risk of bias: High; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SNRIS versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36 Bodily pain (120 mg) at 13 weeks; Group 1: mean 2.11 (SD 2.01); n=101, Group 2: mean 1.36 (SD 1.97); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health (120 mg) at 13 weeks; Group 1: mean 0.81 (SD 3.02); n=101, Group 2: mean 0.66 (SD 3.01); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health (120 mg) at 13 weeks; Group 1: mean 0.46 (SD 3.62); n=101, Group 2: mean 0.38 (SD 0.35); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning (120 mg) at 13 weeks; Group 1: mean 3.11 (SD 3.84); n=101, Group 2: mean 2.23 (SD 3.85); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role-emotional (120 mg) at 13 weeks; Group 1: mean 0.14 (SD 0.9); n=101, Group 2: mean 0.08 (SD 0.94); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role-physical (120 mg) at 13 weeks; Group 1: mean 0.85 (SD 1.51); n=101, Group 2: mean 0.8 (SD 1.56); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning (120 mg) at 13 weeks; Group 1: mean 0.38 (SD 1.61); n=101, Group 2: mean 0.5 (SD 1.56); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality (120 mg) at 13 weeks; Group 1: mean 0.44 (SD 3.72); n=101, Group 2: mean 0.91 (SD 3.64); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: EQ-5D (120 mg) at 13 weeks; Group 1: mean 0.13 (SD 0.2); n=100, Group 2: mean 0.08 (SD 0.2); n=104; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain right now (BPI-S), 120 mg at 13 weeks; Group 1: mean -2.61 (SD 2.49); n=108, Group 2: mean -1.74 (SD 2.55); n=113; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Average interference (BPI-I), 120 mg at 13 weeks; Group 1: mean -1.92 (SD 1.97); n=108, Group 2: mean -1.61 (SD 2.02); n=113; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome: At least 1 adverse event at 13 weeks; Group 1: 81/112, Group 2: 69/117; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Skljarevski 2010[483]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=401)
Countries and setting	Conducted in Germany, Multiple countries, Netherlands, Poland, Russia, Spain, USA; Setting: Multicentre
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age ≥18 years; chronic LBP on most days for at least 6 months and rating of ≥4 on the Brief Pain Inventory (BPI)average pain; have had enough education to understand the study procedure and communicate well with the site personnel.
Exclusion criteria	History of >1 low back surgery; underwent invasive procedure aimed to reduce LBP within the past month; participated in previous studies investigating duloxetine hydrochloride; had major depressive disorder; were at suicidal risk; were treated with monoamine oxidase inhibitor within 14 days of randomization; had any previous diagnosis of psychosis, bipolar disorder, or schizoaffective disorder; were under evaluation for disability compensation or involved in a related litigation; pregnant or breast-feeding; had BMI > 40 kg/m2.
Age, gender and ethnicity	Age - Mean (SD): Intervention: 54.9 (13.7); placebo: 53.4 (14.2). Gender (M:F): 39% Male/61% Female. Ethnicity: 95% Caucasian
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores - BPI 24 hour average pain: placebo 5.8±1.4, drug 5.8±1.4; RMDQ: placebo 9.3±4.8, drug 9.6±4.6
Indirectness of population	No indirectness
Interventions	(n=198) Intervention 1: Anti-depressants - SNRIs. Duloxetine 60 mg. Duration 12 weeks. Concurrent medication/care: Patients were allowed episodic use of short acting analgesics including ibuprofen, acetaminophen, and naprowen as rescue therapy for the management of breakthrough LBP. Episodic use was defined as no more than 3 consecutive days and not exceeding 20 total days during the treatment period. (n=203) Intervention 2: Placebo/Sham. Matching placebo.. Duration 12 weeks. Concurrent medication/care: Patients were allowed episodic use of short acting analgesics including ibuprofen, acetaminophen, and naprowen as rescue therapy for the management of breakthrough LBP. Episodic use was defined as no more than 3 consecutive days and not exceeding 20 total days during the treatment period.

Funding	Study funded by industry (Eli Lilly and Company)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SNRIS versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: EQ-5D at 12 weeks; Group 1: mean 0.15 (SD 0.28); n=190, Group 2: mean 0.07 (SD 0.28); n=192; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 mental component at 12 weeks; Group 1: mean 2.89 (SD 9.09); n=147, Group 2: mean 0.64 (SD 9.28); n=153; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 physical component at 12 weeks; Group 1: mean 5.34 (SD 9.34); n=147, Group 2: mean 4.1 (SD 9.52); n=153; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 bodily pain transformed at 12 weeks; Group 1: mean 16.28 (SD 19.88); n=188, Group 2: mean 11.7 (SD 19.85); n=190; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 mental health transformed at 12 weeks; Group 1: mean 5.83 (SD 13.74); n=165, Group 2: mean 0.95 (SD 13.79); n=166; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 general health transformed at 12 weeks; Group 1: mean 6.96 (SD 16.45); n=188, Group 2: mean 4.38 (SD 16.54); n=190; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 physical functioning transformed at 12 weeks; Group 1: mean 11.67 (SD 19.03); n=186, Group 2: mean 8.18 (SD 1.41); n=189; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 role-emotional transformed at 12 weeks; Group 1: mean 6.81 (SD 23.21); n=172, Group 2: mean 4.39 (SD 23.55); n=179; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 role-physical transformed at 12 weeks; Group 1: mean 10.03 (SD 25.31); n=172, Group 2: mean 8.12 (SD 25.69); n=179; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 social functioning transformed at 12 weeks; Group 1: mean 11.5 (SD 19.2); n=188, Group 2: mean 7.51 (SD 19.3); n=190; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 vitality transformed at 12 weeks; Group 1: mean 8.73 (SD 17.36); n=163, Group 2: mean 4.63 (SD 17.34); n=165; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: BPI-Severity (average pain) at 12 weeks; Group 1: mean -2.25 (SD 2.11); n=195, Group 2: mean -1.65 (SD 2.14); n=199; BPI-S 0 (no pain) to 10 (worst possible pain) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Disability RMDQ-24 at 12 weeks; Group 1: mean -2.69 (SD 4.14); n=178, Group 2: mean -2.22 (SD 4.28); n=179; RMDQ-24 0 (no disability) to 24

(severe disability) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome: Discontinuation due to adverse events at 12 weeks; Group 1: 30/198, Group 2: 11/203; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome: Pain reduction of at least 30% at 12 weeks; Group 1: 111/195, Group 2: 97/199; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Skljarevski 2010[481]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=236)
Countries and setting	Conducted in Brazil, France, Germany, Mexico, Multiple countries, Netherlands
Line of therapy	Mixed line
Duration of study	Intervention time: 13 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age ≥18 years; pain present in the lower back (T-6 or belo for most days for the past 6 months or longer; pain either restricted to low back or associated with radiation to thigh proximally, with no radicular symptoms or signs.
Exclusion criteria	Spinal stenosis; high-grade spondylolisthesis; spinal fracture; radicular compression; history of >1 low back surgery and had a low back surgery within 12 months before study entry; had invasive procedures aimed to reduce LBP within the past month; participated in previous studies investigating duloxetine hydrochloride; were treated with monoamine oxidase inhibitor within 14 days of randomisation; previous diagnosis of psychosis, bipolar disorder, or schizoaffective disorder; current major depressive disorder; pregnanto or breast-feeding; BMI > 40 kg/m2.
Age, gender and ethnicity	Age - Mean (SD): Intervention: 51.8 (14.9); placebo: 51.2 (13.5). Gender (M:F): 39% Male/61% Female. Ethnicity: 75% Caucasian, 19% Hispanic, 6% other
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline scores - BPI average pain: drug 5.9±1.6, placebo 6.0±1.7; weekly mean 24 hr average pain: drug 5.9±1.4, placebo 6.1±1.3. Patient regularly using (for ≥14 days per month for 3 months before study entry) therapeutic doses of NSAIDs or acetaminophen at the time of the study entry were allowed to continue these therapies as long as doses or frequency were not changed during the study. Continuation of long-term, regular, non-pharmacological treatments such as physical therapy or relaxation therapy was allowed. Use of anti-depressants, anti-convulsants, muscle relaxants, or analgesics (other than NSAIDs), and procedures aimed to relieve pain (acupuncture, chiropractic treatmetn, and TENS) were not allowed. episodic use of short-acting analgesics (no more than 3 consecutive days or no more than 20 total days) was allowed for the management of breakthrough LBP or acute conditions unrelated to LBP.
Indirectness of population	No indirectness
Interventions	(n=115) Intervention 1: Anti-depressants - SNRIs. Duloxetine 60 mg. Patients started with duloxetine 30 mg for 1 week and continued on 60 mg for 6 more weeks; at that point patients who did not meet the response criteria (≥ 30%

	reduction in the weekly mean of the BPI24-hour average pain) had their dose increased to 120 mg for the reminder of the study.. Duration 13 weeks. Concurrent medication/care: 30% of patients used NSAIDs at baseline (n=121) Intervention 2: Placebo/Sham. Matching placebo. Duration 13 weeks. Concurrent medication/care: 32% of patients used NSAIDs at baseline
Funding	Study funded by industry (Eli Lilly and Cimpany)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SNRIS versus PLACEBO/SHAM Protocol outcome 1: Quality of life at follow-up - Actual outcome: EQ-5D and SF-36 at 13 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: BPI-S (Brief Pain Inventory - Severity) at 13 weeks; Group 1: mean -2.35 (SD 2.51); n=109, Group 2: mean -1.42 (SD 0.23); n=116; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: BPI-I (Brief Pain Inventory - Intensity) at 13 weeks; Group 1: mean -1.92 (SD 2.19); n=109, Group 2: mean -1.18 (SD 2.14); n=115; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: At least 1 treatment-emergent adverse event at 13 weeks; Group 1: 65/115, Group 2: 58/121; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome: Discontinuation due to adverse events at 13 weeks; Group 1: 16/115, Group 2: 7/121; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at follow-up - Actual outcome: At least 30% pain reduction from baseline at 13 weeks; Group 1: 61/115, Group 2: 48/121; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up

Study	Stein 1996[505]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=39)
Countries and setting	Conducted in Israel; Setting: Emergency service department
Line of therapy	Unclear
Duration of study	Intervention time: 5 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: Acute low back pain
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute low back pain defined as a first episode of pain in the luboscral region, with or without sciatic radiation, lasting up to 6 months.
Exclusion criteria	Those over the age of 60 and those with other physical disorders or any psychiatric disturbance.
Age, gender and ethnicity	Age - Mean (SD): 36.49 (7.34). Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (First episode of pain, lasting up to 6 months).
Extra comments	Baseline scores - BDI: AM 10.10±9.95, AC 11.74±8.57; pain intensity VAS: AM 7.48±3.73, AC7.94±3.42; STAI state: AM 45.15±15.03, AC 44.37±13.14; STAI trait: AM 32.95±8.73, AC 38.68±10.26. People were restricted from any medication for at least 1 week before entering the study.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Anti-depressants - Tricyclic antidepressants. Amitriptyline 150mg daily. Duration 5 weeks. Concurrent medication/care: No other medications were allowed during the study period. (n=19) Intervention 2: Paracetamol. Paracetamol 2000mg/d. Duration 5 weeks. Concurrent medication/care: No other medications were allowed during the study period.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRICYCLIC ANTIDEPRESSANTS versus PARACETAMOL

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: 0-15cm VAS usual pain intensity at 5 weeks; Group 1: mean 2.65 (SD 1.47); n=20, Group 2: mean 4.48 (SD 3.8); n=19; VAS 0-15 Top=High is poor outcome; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome: BDI at 5 weeks; Group 1: mean 7.25 (SD 8.26); n=20, Group 2: mean 9.42 (SD 8.23); n=19; Beck depression inventory 0-63 Top=High is poor outcome; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: STAI - state at 5 weeks; Group 1: mean 32.95 (SD 9.71); n=20, Group 2: mean 35.26 (SD 8.94); n=19; STAI - State 20-80 Top=High is poor outcome; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: STAI - trait at 5 weeks; Group 1: mean 36.5 (SD 15.9); n=20, Group 2: mean 37.8 (SD 14.71); n=19; STAI-trait 20-80 Top=High is poor outcome; Risk of bias: --; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Steiner 2011[506] (Miller 2014[372], Yarlas 2015[577])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=539)
Countries and setting	Conducted in United Kingdom; Setting: Conducted in 86 centers in the U.S. between June 2007 and July 2008
Line of therapy	Unclear
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	At least 18 years of age with moderate to severe low back pain persisting for a minimum of three months prior to study entry. Low back pain must have been the predominant pain condition and must have lasted several hours daily. Opiod naive (patients receiving less than 5 mg of oxycodone or the equivalent for three months prior to screening, not opioid dependent), had not benefited from or had not tolerated nonopioid therapy. Low back pain related to nonmalignant conditions (e.g. intervertebral disc disease, spinal stenosis, spondylolysis and osteoarthritis)
Exclusion criteria	Patients that presented with radicular symptoms, surgery to treat their back pain within 6 months of screening or had planned to have surgery during the study period.
Recruitment/selection of patients	Based on inclusion and exclusion criteria? - unclear
Age, gender and ethnicity	Age - Mean (SD): 49.4 (12.99). Gender (M:F): 45%/55%. Ethnicity: 70% White
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 3 months).
Extra comments	Baseline (mean±SD): Pain score (average pain over the last 14 days) - 7.2±1.26 (BTDS group), 7.2±1.22 (TDS group); severity score - 6.4±1.4 (patients overall)
Indirectness of population	No indirectness
Interventions	(n=256) Intervention 1: Opioid analgesics - Buprenorphine. Buprenorphine (BTDS) 10 or 20 mcg/hour. Duration 12 weeks. Concurrent medication/care: All patients were provided with immediate-release oxycodone for supplementary analgesia during the first six days following randomisation. Weeks 2-12 patients were permitted to use sponsor-provided acetaminophen 500 mg every six hours up to a maximum of 2g/day or ibuprofen 200 mg every six hours up to a maximum of 800 mg/day. Downgrade of dosage was permitted once if analgesia was deemed inadequate. (n=283) Intervention 2: Placebo/Sham. Matching placebo transdermal system (TDS). Duration 12 weeks . Concurrent medication/care: All patients were provided with immediate-release oxycodone for supplementary analgesia during

	the first six days following randomisation. Weeks 2-12 patients were permitted to use sponsor-provided acetaminophen 500 mg every six hours up to a maximum of 2g/day or ibuprofen 200 mg every six hours up to a maximum of 800 mg/day. Downgrade of dosage was permitted once if analgesia was deemed inadequate.
Funding	Study funded by industry (Purdue Pharma L.P., Stamford, CT)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BUPRENORPHINE versus PLACEBO/SHAM - TDS Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Average pain over the last 24 hours at 12 weeks; Group 1: mean 3.81 (SD 0.166); n=256, Group 2: mean 4.39 (SD 0.152); n=283; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain severity at 12 weeks; Group 1: mean 2.4 (SD 1.93); n=165, Group 2: mean 3.4 (SD 1.95); n=194; Brief Pain Inventory 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome: Adverse events at 12 weeks; Group 1: 40/256, Group 2: 20/283; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Szpalski 1994[510]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=73)
Countries and setting	Conducted in Belgium
Line of therapy	Unclear
Duration of study	Intervention time: 15 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Acute low back pain (pain present for less than 2 weeks at the time of clinical assessment), with this being their first episode of back pain in the previous 6 months.
Exclusion criteria	Patients whose symptoms were the result of work accident covered by workers compensation or whose pain was caused specific pathology e.g. herniated disc or spinal trauma. Pregnancy, lactation, history of hypersensitivity to NSAIDs, history of gastrointenstinal ulceration and current treatment with NSAIDs, anticoagulant drugs, oral antidiabetics or lithium.
Age, gender and ethnicity	Age - Mean (SD): Tenoxicam: 37.5 (9.2), placebo: 24/12. Gender (M:F): Tenoxicam: 22/14, placebo: 24/12. Ethnicity: Majority caucasian
Further population details	1. Chronicity of pain: Acute pain (<3 months duration) (<2 weeks).
Extra comments	Baseline pain values (scale of 0-10) mean (SD): Tenoxicam 7.36 (1.46), placebo 7.14 (1.98)
Indirectness of population	No indirectness
Interventions	(n=37) Intervention 1: Non-steroidal anti-inflammatory drugs - Tenoxicam. 20 mg intramuscular injection of tenoxicam on day 1, followed by 20 mg oral tenoxicam for the next 13 days. Duration 15 days. Concurrent medication/care: 7 days of bed rest followed by 7 days light activity at home (n=36) Intervention 2: Placebo/Sham. Saline intramuscular injection on day 1 followed by placebo administered orally for the following 13 days. Duration 15 days. Concurrent medication/care: 7 days of bed rest followed by 7 days of light activity
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TENOXICAM versus PLACEBO/SHAM	

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain severity VAS at 15 days; Group 1: mean 0.56 (SD 1.14); n=33, Group 2: mean 0.79 (SD 1.09); n=35; Visual analogue scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Tervo 1976[514]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in Finland
Line of therapy	Unclear
Duration of study	Intervention + follow up: Up to 21 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Acute lumbago
Exclusion criteria	Pain below the knee, impaired reflexes or disturbances of sensation
Age, gender and ethnicity	Age - Range: 21-60. Gender (M:F): Orphenodrine 8/17, placebo 9/16. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough details in inclusion criteria).
Extra comments	No baseline scores reported
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Muscle relaxants - Orphenadrine. Initial intramuscular injection of 60 mg orphenadrine citrate followed by combined tablet of 35 mg orphenadrine citrate and 450 mg paracetamol to take two 3 times a day.. Duration Upto 21 days. Concurrent medication/care: Not stated (n=25) Intervention 2: Placebo/Sham. Initially given a saline injection, followed by two 450 mg paracetamol tablets 3 times a day. Duration Up to 21 days. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ORPHENADRINE versus PLACEBO/SHAM Protocol outcome 1: Function (disability scores) at follow-up - Actual outcome: Duration of disability at Up to 21 days; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months;

Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define	

Study	Vondrackova 2008[553]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=463)
Countries and setting	Conducted in Germany
Line of therapy	1st line
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	people ove rthe age of 18 years, history of moderate to severe chronic non-malignant low back pain (e.g. osteoarthiritis/osteoarthrosis of spine deforming spondylosis, spondylolisthesis, disc herniation/sciatica, spinal stenosis) adequately managed by an opioid analgesic for at least 2 weeks before study enrolment, if they receive daily opioid analgesic treatment and are likely to benefit from chronic opioid therapy for the duration of the study.
Exclusion criteria	A history of hypersensitivity to oxycodone, naloxoe or related products, patients currently taking the equivalent of <10 mg or >40 mg/d oxycodone, cancer, active alcohol or drug abuse, abnormal liver function tests, history of more than 2 lower back sureries. Clinically significant cardiovascular, renal, hepatic, gastrointestinal or psychiatric disease that would put participant at risk upon exposure to the study medication or could confound the analysis of interpretation of the results.
Age, gender and ethnicity	Age - Mean (SD): Oxycodone group: 56.47 (10.14), Placebo group: 56.73 (11.92). Gender (M:F): 107:202. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (At least 2 weeks).
Extra comments	Baseline data not reported. Patients went through a titration period to reach a stabilised dose of oxycodone
Indirectness of population	No indirectness
Interventions	(n=151) Intervention 1: Opioid analgesics - Codeine . 10 or 20 mg oxycodone PR every 12 hours. Duration 12 weeks. Concurrent medication/care: Rescue medication: OxyIR every 4 to 6 hours as required (n=158) Intervention 2: Placebo/Sham. Placebo every 12 hours. Duration 12 weeks. Concurrent medication/care: Rescue medication: OxyIR every 4 to 6 hours as required
Funding	Equipment / drugs provided by industry (Funded by Mundioharma research GmbH and Co. KG)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OXYCODONE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Brief pain inventory-short form at 12 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Constipation, diarrhoea, nausea, vomiting, fatigue, dizziness, headache at 12 weeks; Group 1: 80/151, Group 2: 83/158; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Vorsanger 2008[554]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=386)
Countries and setting	Conducted in USA
Line of therapy	Unclear
Duration of study	Intervention time: 12 week
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Study participants were required to have chronic (at least 6 months) low back pain requiring daily treatment with an NSAID, paracetamol, opioid analgesic, COX-2 selective inhibitor, and/or muscle relaxant for at least 60 of 90 days preceding the screening visit. At the start of the open label run-in period, patients were required to have a score of at least 40mm on a 100-mm VAS after 2 to 7 day washout from analgesics.
Exclusion criteria	Patients were excluded if they had a complex regional pain syndrome, significant inflammatory pain, clinically significant fibromyalgia, a history of lumbar spine surgery or chemonucleolysis, or any medical condition that was not well controlled. Patients who were undergoing transcutaneous electrical nerve stimulation or spinal manupulation for low back pain were excluded. Other exclusion criteria were weight less than or equal to 45.4kg, dysphagia or difficulty swallowing tablets, intractable nausea and comiting, a previous history of clinically significant intolerance to tramadol or known hypersensitivity ot opioid analgesics such that treatment with tramadol or other opioids was contraindicated, aspartate aminotransferase or alanin aminotransferase levels >two times the upper limits of normal, creatinine levels >1.9mg/dl, a history of substance abuse wihtin six months prior to the screening visit, or a diagnosis of cancer in the prior three years. Patients were not permintted to have received a monoamine oxidase inhibitor or a tricyclic antidepressant in the prior 14 days; corticosteroids in the prior one month; or intra-articular viscosupplementation in the prior three months.
Recruitment/selection of patients	Eligible patients entered a 2-7 day washout period during which analgesics were not allowed (excpet for aspirin for cadriovascular prophylaxis, or paracetamol for reasons other than chronic pain). Patients with pain intensity VAS scores of at least 40mm after washout were admitted into the 3 week, open-label, run-in period. Patients received tramadol at increasing doses over this period up to 300mg per day. Patients with pain unresponsive to appropriate dose adjustments or with unacceptable side effects were discontinued from the study. `eligible patients were then randomised in to 1:1:1 ration to the double blind phase.
Age, gender and ethnicity	Age - Mean (SD): Tramadol ER 300mg 48.5 (13.7). tramadol ER 200mg 47.4 (13.8), placebo 47.6 (15.5). Gender (M:F): Define. Ethnicity: Majority caucasian

Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline characteristics- mean (SD): Pain intensity (0-100) T 300mg 50.5 (22.4), T 200mg 51.3 (23), placebo 48.3 (21.6); Rolnd Morris disability index (0-24): T 300mg 11.9 (5.2), T 200mg 11.7 (5.2), placebo 11.2 (4.9)
Indirectness of population	No indirectness
Interventions	(n=128) Intervention 1: Opioid analgesics - Tramadol. Tramadol 300 mg/day. Duration 3 months. Concurrent medication/care: Not stated (n=129) Intervention 2: Opioid analgesics - Tramadol. Tramadol 200 mg/day. Duration 3 months. Concurrent medication/care: Not stated (n=129) Intervention 3: Placebo/Sham. Placebo. Duration 3 months. Concurrent medication/care: Not stated
Funding	Equipment / drugs provided by industry (Supported by Biovail corporationm, canada and Ortho-McNeil Janssen Scientific affairs, New Jersey.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRAMADOL 300 versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS average from week 1-12 at 3 months; Group 1: mean 50.5 (SD 22.4); n=87, Group 2: mean 48.3 (SD 21.6); n=68; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability score average from week 1-12 at 3 months; Group 1: mean 11.9 (SD 5.2); n=88, Group 2: mean 11.2 (SD 4.9); n=68; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) without sciatica: Nausea, dizziness, constipation, headache, somnolence, vomiting, pruritus, flushing, fatigue at 3 months; Group 1: 97/128, Group 2: 72/129; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRAMADOL 200 versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: VAS average from week 1-12 at 3 months; Group 1: mean 34.1 (SD 27.1); n=87, Group 2: mean 40.3 (SD 25.2); n=68; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris disability score average from week 1-12 at 3 months; Group 1: mean 11.7 (SD 5.2); n=87, Group 2: mean 11.2 (SD 4.9); n=68; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Nausea, dizziness, constipation, headache, somnolence, vomiting, pruritus, flushing, fatigue at 3 months; Group 1: 79/129, Group 2: 72/129; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Webster 2006[558]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=719)
Countries and setting	Conducted in USA
Line of therapy	1st line
Duration of study	Intervention time: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Aged 18-70 years with persistent LBP for at least 6 months requiring daily analgesics, baseline pain intensity score of at least 5 (0 no pain to 10 worst pasin) during washout phase for all analgesics except acetaminophen, confirmatory PI score of at least 5 at baseline at the end of the washout period. TCAs, selective serotonin reuptake inhibitors, glucosamine/chrondroitin, or st Jons wort being taken at stable doses for 4 weeks before the study entry.
Exclusion criteria	LBP secondary to malignancy, autoimmune disease, fibromyalgia, recent fracture or infection. Positive urine drug screens for any illicit substance at baseline, a history of substance abuse within 5 years or involvement in litigation regarding their lower back condition. Pregnancy, known hypersinsitivity to the study mediciation, severe hepatic pulmonary or renal impairment, unstable cardiac disease, active malignancy or history of leukaemia, lymphoma or metastatic cancer, investigational drug use, corticosteroid therapy, intraspinal analgesic infusion or spinal cord stimulator in the proceding month, major surgery in the proceding 3 months, percutaneous or open procedure of the lumbosacral spine in the proceding 4 months, or high doses of central nervous system depressants or phenothiazines.
Age, gender and ethnicity	Age - Other: mean placebo 48.7, oxycodonr 47.9. Gender (M:F): 277:442. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic pain (at least 3 months duration) (At least 6 months).
Extra comments	Baseline pain intensity mean (SD): placebo 7.7 (1.44), oxycodone 7.6 (1.36)
Indirectness of population	No indirectness
Interventions	(n=206) Intervention 1: Opioid analgesics - Codeine . Oxycodone (titrated to a dose between 10-80 mg/day). Duration 12 weeks. Concurrent medication/care: Not stated (n=101) Intervention 2: Placebo/Sham. Placebo. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: OXYCODONE versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain intensity at 12 weeks; Group 1: mean 4 (SD 2.53); n=101, Group 2: mean 5.2 (SD 3.05); n=42; 11-point numeric diary pain intensity scale 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Discontinuation due to adverse events at 12 weeks; Group 1: 49/206, Group 2: 5/101; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Williams 2014[572]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=1103)
Countries and setting	Conducted in Australia
Line of therapy	1st line
Duration of study	Intervention time: 4 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	New episode of acute low back pain with or without leg pain, at least moderate-intensity pain.
Exclusion criteria	Suspected spinal pathology e.g. spinal cancer, infection, fracture, current use of full, regular recommended doses of an analgesic, spinal surgery in the proceeding 6 months, contraindication to paracetamol, use of psychotrpic drugs for a disorder judged to prevent reliable recording of study information, pregnancy or planning pregnancy.
Age, gender and ethnicity	Age - Mean (SD): Paracetamol group 44.1 (14.8), placebo group 45.4 (15.9). Gender (M:F): Paracetamol group 52/48%, placebo group 55/45%. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Not stated / Unclear (Not enough information in inclusion criteria).
Extra comments	Baseline characteristics-Mean (SD): function: paracetamol 12.5 (5.4), placebo 12.9 (5.3); pain intensity: paracetamol 6.3 (1.9), placebo 6.2 (1.8); SF12 physical: paracetamol 42.7 (9.8), placebo 42.1 (10.6); SF12 mental: paracetamol 44.3 (8), placebo 44.5 (7.9)
Indirectness of population	No indirectness
Interventions	(n=550) Intervention 1: Paracetamol. Two times 665 mg modified-release paracetamol tablets 3 times a day. Duration 4 weeks. Concurrent medication/care: One of two placebo tablets per day (n=553) Intervention 2: Placebo/Sham. Placebo tablets matching the dosing of the paracetamol group. Duration 4 weeks. Concurrent medication/care: Placebo tablets
Funding	Other (National health and medical research council, Australia and Galaxo Smith Kline, Australia)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: PARACETAMOL versus PLACEBO/SHAM Protocol outcome 1: Quality of life at follow-up	

- Actual outcome: SF12 physical score at 4 weeks; Group 1: mean 54.9 (SD 8.6); n=252, Group 2: mean 54.7 (SD 8.8); n=243; SF12 physical score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF12 mentall score at 4 weeks; Group 1: mean 45.6 (SD 5.3); n=252, Group 2: mean 44.7 (SD 5.5); n=243; SF12 mental score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain intensity at 4 weeks; Group 1: mean 1.2 (SD 2.2); n=506, Group 2: mean 1.3 (SD 2.3); n=505; Pain scale 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: Rolland Morris disability questionnaire at 4 weeks; Group 1: mean 2.4 (SD 4.7); n=504, Group 2: mean 2.4 (SD 4.5); n=503; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome: Any adverse event at 4 weeks; Group 1: 99/534, Group 2: 98/531; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse event (mortality) at follow-up; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.12.1 Combinations of interventions – pharmacological adjunct

Study	Majchrzycki 2014[339]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=59)
Countries and setting	Conducted in Poland; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	40–60 years old; pain lasting longer than 7 weeks (chronic); VAS1 (pain at rest) ≥ 25mm of 100mm; VAS2 (pain during motion) ≥ 25mm of 100mm
Exclusion criteria	Injection of local anesthetic; patients after surgical procedures around spine or in the abdominal area; neurological signs present; compression of spinal nerve root confirmed by specific imaging techniques: computer tomography, myelography, or magnetic resonance imaging. Other diagnostic techniques, for example, electromyography, venography. Diagnosis of (i) metastasis, (ii) vertebral fractures, (iii) spondylolisthesis, (iv) ankylosing spondylitis, (v) increased temperature (fever), (vi) pregnancy, (vii) inflammatory and acute ailments. Nonsteroid anti-inflammatory therapy during the last 3 months or strong analgesic therapy (opioid and stronger). Allergy to ingredients of nonsteroid anti-inflammatory drugs
Recruitment/selection of patients	Patients referred by physicians specialized in rehabilitation, orthopedics and traumatology, neurology, internal medicine, or rheumatology. The patients were referred to an ambulatory rehabilitation clinic with prescription to undergo a procedure of therapeutic massage
Age, gender and ethnicity	Age - Mean (SD): 51.8 (9.0) years. Gender (M:F): 28:26. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (>7 weeks).
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Daily 30-minute session of deep tissue massage for 2 weeks (total 10 sessions). Once daily NSAID (not specified). Duration 2 weeks. Concurrent medication/care: Not stated

Study	Majchrzycki 2014[339]
	(n=30) Intervention 2: Massage. Daily 30-minute session of deep tissue massage for 2 weeks (total 10 sessions).. Duration 2 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: MASSAGE + NSAID versus MASSAGE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at rest (VAS) at 2 weeks; Group 1: mean 30.6 Not stated (assume mm) (SD 21.9); n=26, Group 2: mean 42.2 Not stated (assume mm) (SD 21.1); n=28; VAS Not stated (assume 0-100) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain on movement (VAS) at 2 weeks; Group 1: mean 31.2 Not stated (assume mm) (SD 21.2); n=26, Group 2: mean 36.5 Not stated (assume mm) (SD 20.6); n=28; VAS Not stated (assume 0-100) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain on movement of the aching area of the spine (VAS) at 2 weeks; Group 1: mean 25.3 Not stated (assume mm) (SD 19.4); n=26, Group 2: mean 33.5 Not stated (assume mm) (SD 21.9); n=28; VAS Not stated (assume 0-100) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Questionnaire at 2 weeks; Group 1: mean 6.1 Not stated (SD 4.6); n=26, Group 2: mean 6.4 Not stated (SD 4.4); n=28; Roland Morris Questionnaire Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Oswestry Disability Index at 2 weeks; Group 1: mean 16.6 Not stated (SD 9.4); n=26, Group 2: mean 21 Not stated (SD 15.1); n=28; Oswestry Disability Index Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Shankar 2011[470]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in India; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic LBP (>6 months); 30-50 years; moderate-severe intensity non-radiating LBP; without apparent neurological deficit or prior history of acupunture therapy
Exclusion criteria	None apart from above
Recruitment/selection of patients	Selected from Orthopaedic outpatients
Age, gender and ethnicity	Age - Mean (SD): 35.50 (5.24) years. Gender (M:F): 20:40. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>6 months).
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Acupuncture. 30 gauge needles, 2 inches long, inserted into 10 acupuncture points: UB23, UB24, UB36, UB37, UB40, UB57, UB60, GB30, GB34, GV4; needles stimulated electrically from battery powered electrostimulator providing a rectangular wave pulse and current of 0.5mA; output of 6-9 volts delivered at 10-20Hz for 20 minutes; total of 10 sittings delivered on alternate days.. Duration 3 weeks. Concurrent medication/care: Not stated (n=30) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Valdecoxib 20mg BD for 10 days + supervised physiotherapy for 3 weeks, including strengthening exercises and lumbar extension training to improve low back strength, like stretching the lower back muscles, partial sit-ups and pelvic lift. Duration 3 weeks. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS: NSAID + EXERCISE (BIOMECH) versus	

Study	Shankar 2011[470]
ELECTROACUPUNCTURE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Group 1: mean 4.2 cm (SD 1.8); n=30, Group 2: mean 3.3 cm (SD 1.58); n=30; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

H.13 Combined interventions: multidisciplinary biopsychosocial rehabilitation (MBR) programmes

Study (subsidiary papers)	Bendix 1995[28] (Bendix 1998[27])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=75)
Countries and setting	Conducted in Denmark; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6 weeks + follow up to 4 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Medical examination including imaging
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Minimum of 6 months disabling low back trouble, threatened job situation due to back problems, age 18-59 years, ability to read and write Danish

Study (subsidiary papers)	Bendix 1995[28] (Bendix 1998[27])
Exclusion criteria	Current clinically relevant disc herniation, other surgically remediable lesions in the back, inflammatory disease int eh back, pregnancy, cancer, clinically relevant fractures, social pension
Recruitment/selection of patients	Referred to Copenhagen Back Center
Age, gender and ethnicity	Age - Range of means: 40-42 years. Gender (M:F): 18:57. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (Chronic > 6 months).
Extra comments	Baseline scores (median) - back pain: functional restoration (FR), 5.3, psycho-physical (PP) 5.9; disability: FR 15.5, PP 15.3; work readiness (%): FR 23, PP 23. Third group in teh study had back school (excluded from protocol)
Indirectness of population	No indirectness
Interventions	(n=46) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. Intensive multidisciplinary programme on functional restoration model delivered by a multidisciplinary team: 3 weeks, 39 hours per week: PHYSICAL - aerobics (cardiovascular fitness, muscular endurance, coordination and stretching), progressive weight training and endurance for all major muscle groups, simulated work situations and work intensification including lifting, pulling and pushing, sitting and standing, garden and kitchen work. Intensive physical training was led by physical and occupational therapists; COGNITIVE - psychological treatment (behavioural approach) with the aim of making patients understand the importance of assuming greater responsibility for coping with pain, setting realistic personal goals, changing negative sensation of pain into more positive way of living and inclreased self-acknowledgement; relaxation; individual counselling; stretching; theoretical classes including spinal anatomy and pathology, medication, surgery and diagnosis, sexual issues, nutrition etc; recreational activities showing patients that it is possible to participate in different sports activities and games even with back pain (e.g. ball games, power walking, running and swimming) This was guided by clinical psychologists. 7 patients at a time participated in the groups. One day a week for the next 3 weeks, patients participated in a 6-hour follow-up programme including psychological, physical and ergonomic training following the same principles. EDUCATION - 1 hour/day - a topic selected and delivered by physicians, therapists, psychologists, a social worker and a nutritionist. Duration 6 weeks. Concurrent medication/care: Not stated (n=43) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. Active combined psychophysical programme including psychoogical pain management and active physical training with warm up exercises and progressive weight training; 7-8 participants in 2-hour sessions twice a week for 6 weeks. Duration 6 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Danish Rheumatism Association, Nycomed-DAK and charitable foundations)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY INTENSIVE FUNCTIONAL RESTORATION PROGRAMME versus

Study (subsidiary papers)	Bendix 1995[28] (Bendix 1998[27])
MULTIDISCIPLINARY PSYCHO-PHYSICAL PROGRAMME Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain at 4 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain at 2 years; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Function at 4 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Function at 2 years; Risk of bias: Flawed; Indirectness of outcome: No indirectness Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Contacts with health care system at 4 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Contacts with health care system at 2 years; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Return to work at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: "Work readiness" defined as working, studying/training or seeking work at 4 months; Group 1: 30/40, Group 2: 14/35; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 8: Return to work at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: "Work readiness" defined as working, studying/training or seeking work at 2 years; Group 1: 32/40, Group 2: 15/34; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months

Study	Bertocco 2002[38]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=21)
Countries and setting	Conducted in Italy; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: 3 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Physical examination by orthopaedist or rheumatologist
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Obese female; chronic LBP
Exclusion criteria	LBP due to protrusion or herniated intervertebral disc, active neurologic objective signs involving appendicular inferior limbs, surgical procedures of lumbar spine, acute or subacute LBP (with pain <6 months), total hip or knee prosthesis
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): Active group: 50.5 (13.6), physical therapy group: 49.3 (8.4). Gender (M:F): All female. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (Chronic > 6 months).
Extra comments	Baseline scores (mean) - pain VAS: MBR 44.3, laser 37.5. No SD reported.
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. Education: keeping patient informed about changes in spine physiology, pain and posture related to obesity and other risk factors. Active exercises: relaxation, control of spine position and its proprioception and coordination during movement, increasing pelvis and spine mobility, increase trunk extensor muscle strength, mobility and muscle length. Lessons about ergonomy. Standardised protocol over 3 weeks. Uni/multidisciplinary delivery of the programme was unclear. Duration 3 weeks. Concurrent medication/care: Specific hypocaloric diet; no drugs; walked every day for about 1 hour, 5 times a week for 3 weeks (n=10) Intervention 2: Electrotherapy - Laser therapy. Electrotherapy (soft-laser and ultrasound) on the lumbar spine. Duration 3 weeks. Concurrent medication/care: Specific hypocaloric diet; no drugs; walked every day for about 1 hour, 5 times a week for 3 weeks

Study	Bertocco 2002[38]
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: EXERCISE + EDUCATION versus LASER THERAPY Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Critchley 2007[102]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=212)
Countries and setting	Conducted in United Kingdom; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention up to 12 session; follow up to 18 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Low back pain >12 weeks, with or without leg symptoms or neurologic signs, being 18 years and older, adequate command of the english language, can give informed consent and the ability to attend classes.
Exclusion criteria	Previous spinal surgery, physiotherapy for low back pain in the last 6 months, medical conditions such as rheumatological diseases, or other dsabilities rendering them unsuitable for group treatments of low back pain.

Study	Critchley 2007[102]
Recruitment/selection of patients	Recruited from referrals tby specialist or primary care practitioner to hospitals' physiotherapy departments
Age, gender and ethnicity	Age - Mean (SD): Physiotherapy group 45 (12), pain management programme group 44 (12); exercise group 44 (13) years. Gender (M:F): % women: Physiotherapy group 59%, MBR programme group 62%. Ethnicity: White 110, Black African 36, Black Afro-Caribbean 37, Other 29
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>12 weeks pain).
Extra comments	Mean (CIs) baseline chaacteristics of the physiotherapy group, MBR programme group and single intervention group respectively: RMDQ disability questionnaire (0-24): 11.1 (9.6, 12.6), 11.5 (9.8, 13.1),12.8 (11.4, 14,2) pain (0-100): 60 (54, 66), 59 (52,85), 67 (61-73); EQ5D (-0.5, 1.0): 0.57 (0.5, 0.64), 0.54 (0.45, 0.63), 0.48 (0.40, 0.55)
Indirectness of population	No indirectness
Interventions	(n=71) Intervention 1: Combinations of non-invasive interventions - Combined non-invasive interventions. Joint mobilisations, joint manipulations and massage. As well as home exercise: specific trunk muscle retraining stretches, and general spinal mobility. Patients also received back-care advice.. Duration Up to to 12 sessions of 30 minutes. Concurrent medication/care: Not stated (n=69) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR programme delivered by a unidisciplinary team. Pain management programme: structured back pain education, group exercise: strengthening, stretching and light aerobic exercises, cognitive behavioural approach: reduce fear avoidance and encouragement of self-management; graded return to usual activites with goal setting and positive coping strategies. All treatments were delivered in hospital physiotherapy departments alongside normal patients. All treating physiotherapists had at least 2 years of clinical experience. Duration Up to 8 sessions of 90 minutes. Concurrent medication/care: Not stated (n=72) Intervention 3: Group biomechanical exercise - Core stabilization. Spinal stabilisation physiotherapy: individual transversus abdominis and lumbar multifidus muscle training followed by group exercises that challenged spinal stability; tailored to assessment findings; progressed with participants' ability to maintain a stable and minimally painful spine; programme aimed to improve trunk muscle motor control to provide dynamic segental stability for the lumbar spine.. Duration Up to 8 sessions of 90 minutes. Concurrent medication/care: Not stated Comments: Inadequate detail of exercise programme
Funding	Other (Arthritis research campaign)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED INTERVENTIONS (MANUAL THERAPY AND BIOMECHANICAL EXERCISE) versus SINGLE INTERVENTION

Study	Critchley 2007[102]
	Protocol outcome 1: Quality of life at >4 months - Actual outcome: EQ5D at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome: RMDQ at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MBR (3 ELEMENTS) versus COMBINED INTERVENTIONS (MANUAL THERAPY AND BIOMECHANICAL EXERCISE) Protocol outcome 1: Quality of life at >4 months - Actual outcome: EQ5D at 12 months; Group 1: mean 0.72 Not stated (SD 0.311); n=46, Group 2: mean 0.72 Not stated (SD 0.208); n=55; EQ-5D -0.5 to 1.0 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Group 1: mean 38 Not stated (SD 29.41); n=46, Group 2: mean 42 Not stated (SD 24.22); n=55; NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome: RMDQ at 12 months; Group 1: mean 5.8 Not stated (SD 5.54); n=46, Group 2: mean 8.1 Not stated (SD 6.24); n=55; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MBR (3 ELEMENTS) versus SINGLE INTERVENTION Protocol outcome 1: Quality of life at >4 months - Actual outcome: EQ5D at 12 months; Group 1: mean 0.72 (SD 0.3); n=46, Group 2: mean 0.61 (SD 0.29); n=53; EQ-5D -0.5 to 1.0 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Group 1: mean 38 (SD 30.3); n=46, Group 2: mean 42 (SD 25.4); n=53; Numerical analogue scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Critchley 2007[102]
Protocol outcome 3: Function (disability scores) at >4 months - Actual outcome: RMDQ at 12 months; Group 1: mean 5.8 (SD 5.39); n=46, Group 2: mean 7.6 (SD 6.17); n=53; Roland disability questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Dufour 2010[121]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=286)
Countries and setting	Conducted in Denmark; Setting: Patients from primary or secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 12 weeeks + follow up to 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination, x-ray, CT scan or MRI
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP > 12 weeks +/- radiation to leg(s); age 18-60 years
Exclusion criteria	Symptoms of serious spinal pathology e.g. malignancy, osteoporosis, vertebral fracture, spinal stenosis, clinical symptoms of an acute herniated disc + nerve root entrapment, unstable spondylolisthesis, spondylitis, health conditions that prevented them from performing strenuous exercise and language problems
Recruitment/selection of patients	Referred by rheumatologists or GPs
Age, gender and ethnicity	Age - Mean (SD): Group A: 41.2 (10.0), group B: 40.6 (9.1) years. Gender (M:F): 119:153. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>12 weeks).

Study	Dufour 2010[121]
Extra comments	Baseline scores (mean SD) for MBR and exercise groups respectively - VAS: 56.8±19.8, 57.7±19.9; RMDQ: 12.7±4.7, 12.4±4.7; physical functioning: 53.3±21.0, 54.5±18.9; physical role: 22±33.1, 16.6±29.5; bodily pain: 29.7±15.4, 29.1±15.9; general health: 55±21, 53.5±18.5; vitality: 376.6±19.5, 36.6±19.8; social functioning: 64.8±26, 60.1±26.8; emotional role: 42.9±42.3, 42.1±44.3; mental health: 59.7±19.9, 57.5±21.1; physical summary: 33.7±7.2, 33.2±6.6; mental summary: 43.5±11.1, 42.1±12.1
Indirectness of population	No indirectness
Interventions	(n=142) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. MBR programme delivered by a multidisciplinary team (physiotherapist; occupational therapist). Treated in groups of 6 patients. exercise, education and pain management (based on Bendix "functional restoration" programme). Reassured that there was no serious cause for their back pain and that the exercise programme was safe and effective. 12 weeks in 3 periods of 4 weeks. 1st period: exercise 3 times a week in 2-hour sessions. Goals and intensity individualised to each patient. Started with warm up and ended with stretching. Bulk of session consisted of aerobic training and strengethening muscles in back, gluteus region and abdominal wall, plus 1.5 hours for ball games, 1.5 hours training in hot water and 2 hours ball stick training. Biweekly lessons on anatomy, postural techniques and pain management provided by physio and on back care and lifting techniques by occupational therapist in total 10 hours. 2nd period: 2-hour exercise sessions twice a week at study site and once a week at home or fitness centre. 3rd period, 2-hour exercise sessions 3 times a week at home or fitness centre. Duration 12 weeks. Concurrent medication/care: Not stated (n=144) Intervention 2: Individual Biomechanical exercise - Core stability. Programme of specific and intensive muscle training exercises to strengthen and shorten the muscles in the back and gluteal region, primarily body and leg lifting prone and exercises aimed at dynamic contraction of painful muscles (not stretching of abdominal muscles); body and leg lifting: 6 sets of 10 repetitions; musculus piriformis exercises: 3-6 sets of 15 repetitions; all other exercises 3-4 sets of 10 repetitions. 1 hour twice a week for 12 weeks. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Apotekerfonden af 1999, Sygekassernes Helsefond, and the Danish National Board of Health)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUNCTIONAL RESTORATION PROGRAMME versus CORE STABILITY

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 Physical functioning at 3 months; Group 1: mean 12.2 Not stated (SD 21.2); n=129, Group 2: mean 6 Not stated (SD 17.7); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Role limitation physical at 3 months; Group 1: mean 16.7 Not stated (SD 39.6); n=129, Group 2: mean 13.5 Not stated (SD 35.3); n=143; SF-36

Study	Dufour 2010[121]
Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Bodily pain at 3 months; Group 1: mean 15.2 Not stated (SD 21); n=129, Group 2: mean 9.5 Not stated (SD 21.8); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 3 months; Group 1: mean 0.11 Not stated (SD 17.4); n=129, Group 2: mean 1.4 Not stated (SD 19.6); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Energy and vitality at 3 months; Group 1: mean 11 Not stated (SD 21.8); n=129, Group 2: mean 8 Not stated (SD 20.5); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social functioning at 3 months; Group 1: mean 7.7 Not stated (SD 25.4); n=129, Group 2: mean 7.3 Not stated (SD 20.1); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role limitation emotional at 3 months; Group 1: mean 7.4 Not stated (SD 42.2); n=129, Group 2: mean 4.3 Not stated (SD 42.7); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health dimension at 3 months; Group 1: mean 6.1 Not stated (SD 19.6); n=129, Group 2: mean 6.2 Not stated (SD 19.5); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical component summary score at 3 months; Group 1: mean 5 Not stated (SD 7.7); n=129, Group 2: mean 2.8 Not stated (SD 7.3); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental component summary score at 3 months; Group 1: mean 2.1 Not stated (SD 10.7); n=129, Group 2: mean 2.5 Not stated (SD 10.2); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome: SF-36 Physical functioning at 12 months; Group 1: mean 12.1 Not stated (SD 24); n=129, Group 2: mean 2 Not stated (SD 19); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role limitation physical at 12 months; Group 1: mean 25.2 Not stated (SD 40.8); n=129, Group 2: mean 16.9 Not stated (SD 38.4); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Bodily pain at 12 months; Group 1: mean 14.6 Not stated (SD 22.2); n=129, Group 2: mean 9.8 Not stated (SD 21.6); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 12 months; Group 1: mean 0.06 Not stated (SD 17.1); n=129, Group 2: mean 2.4 Not stated (SD 17.6); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Energy and vitality at 12 months; Group 1: mean 11.6 Not stated (SD 24.5); n=129, Group 2: mean 5.1 Not stated (SD 22.8); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social functioning at 12 months; Group 1: mean 8.6 Not stated (SD 28.3); n=129, Group 2: mean 4.2 Not stated (SD 25); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Role limitation emotional at 12 months; Group 1: mean 16.9 Not stated (SD 46.8); n=129, Group 2: mean 8.6 Not stated (SD 46.6); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health dimension at 12 months; Group 1: mean 7.6 Not stated (SD 21.4); n=129, Group 2: mean 4.7 Not stated (SD 20.3); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	

Study	Dufour 2010[121]
- Actual outcome: SF-36 Physical component summary score at 12 months; Group 1: mean 5.1 Not stated (SD 8.3); n=129, Group 2: mean 1.9 Not stated (SD 7.4); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental component summary score at 12 months; Group 1: mean 3.8 Not stated (SD 11.2); n=129, Group 2: mean 2.2 Not stated (SD 11.5); n=143; SF-36 Not stated Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain VAS at 3 months; Group 1: mean 16.5 mm (SD 25); n=129, Group 2: mean 11.2 mm (SD 23.8); n=143; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain VAS at 12 months; Group 1: mean 15.2 mm (SD 25.3); n=129, Group 2: mean 8.6 mm (SD 22.8); n=143; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: Roland Morris Disability Questionnaire at 3 months; Group 1: mean 3 Not stated (SD 5.3); n=129, Group 2: mean 1.5 Not stated (SD 4.4); n=143; RMDQ Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: RMDQ at 12 months; Group 1: mean 3.3 Not stated (SD 5.7); n=129, Group 2: mean 1.2 Not stated (SD 5.1); n=143; RMDQ Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Return to work at Up to 4 months - Actual outcome: Ability to work (working, studying or seeking work) at 3 months; Group 1: 52/129, Group 2: 54/143; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Return to work at >4 months - Actual outcome: Ability to work (working, studying or seeking work) at 24 months; Group 1: 62/129, Group 2: 77/143; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months

Study	Gatchel 2003[161]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=70)
Countries and setting	
Line of therapy	Unclear
Duration of study	Intervention + follow up: 3 weeks intervention and 12 months follow up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Aged 18 to 65 years, with acute low back pain (less than 10 weeks since injury), less than 2 months acute low back pain onset, constant daily pain when performing normal job activities, decreased ability to perform normal job requirements because of pain, no history of chronic episodic back pain, no need for surgery.
Exclusion criteria	Pain exacerbating medical condition i.e. cancer or fibromyaligia, six or more DSM-IV Axis diagnoses, or current psychosis or suicidal ideation.
Age, gender and ethnicity	Age - Range: 18-65 years old. Gender (M:F): Not reported. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (Less than 10 weeks since injury).
Extra comments	No baseline data provided.
Indirectness of population	No indirectness
Interventions	(n=22) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. MBR programme delivered by a multidisciplinary team (nurse; physician). Functional restoration: psychosocial and physical reconditioning programme consisting of the following exercises; stretching, cycling, walking, relaxation, strengthening, weight bearing and recreational activities such as volley ball. As well as psycho-social and return to work issues were addressed by psychology, occupational therapy and case management components of the intervention using psychosocial approaches. Interdisciplinary team approach which was guided by a supervising nurse–physician team. Duration 3 weeks. Concurrent medication/care: Not stated (n=48) Intervention 2: Usual care. Described as 'nonintervention group'. Duration 12 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (National institute of mental health)

Study	Gatchel 2003[161]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain intensity at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Return to work at >4 months - Actual outcome: Return to work at follow up at 12 months; Group 1: 20/22, Group 2: 33/48; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

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Study	Johnstone 2002[257]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=12)
Countries and setting	Conducted in United Kingdom; Setting:
Line of therapy	Unclear
Duration of study	Not clear:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with acute LBP of less then 6 weeks duration. First episode or recurrent episode with at least 3 months between episodes. 18-65 years old. DRAM score of at risk or higher, highlighting psychological distress, i.e. DRAM score:Modified Zung score >17, Modified somatic perception questionaire of >8
Exclusion criteria	Acute episode on chronic LBP, Acute epsiode longer than 6 weeks. Fractures, neoplasm, active inflammatory disease.

Study	Johnstone 2002[257]
	Spondylolysthesis. Previous spinal surgery. Ongoing medicolegal issues.
Recruitment/selection of patients	Recruited from GP referrals.
Age, gender and ethnicity	Age - Mean (SD): 44.7 (13.2). Gender (M:F): 10/2. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (<6 weeks duration).
Extra comments	Baseline scores (median, range) for the 3 element and 2 element groups respectively - RMDQ: 12.5 (18), 14 (13); pain VAS: 5.5 (6), 8.5 (4)
Indirectness of population	Serious indirectness: Only included those with higher chance of psychosocial issues, and somatising traits. The mean disability score of the subjects at baseline was moderate to high.
Interventions	(n=6) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR programme delivered by a unidisciplinary team (physiotherapists). 6 sessions of CBT lasting 15-25 minutes each and 6 sessions of Maitland manipulation therapy technique as well as McKenzie exercises. Education on the basic anatomy and biomechanics of the spine, postural advice and bending and lifting techniques. Duration Unclear. Concurrent medication/care: Not stated (n=6) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. 6 sessions of Maitland manipulation therapy technique as well as McKenzie exercises. Education on the basic anatomy and biomechanics of the spine, postural advice and bending and lifting techniques. . Duration Not stated. Concurrent medication/care: Not stated
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus 2 CORE ELEMENTS: PHYSICAL + EDUCATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VAS at unclear; Risk of bias: Very high; Indirectness of outcome: -- Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at unclear; Risk of bias: Very high; Indirectness of outcome: --	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing,

Study	Johnstone 2002[257]
	investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Jousset 2004[258] (Roche-leboucher 2011{ROCHELEBOUCHER2011}, Roche 2007[449])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=86)
Countries and setting	Conducted in France; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 5 weeks + follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History and examination (multidisciplinary assessment)
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18 to 50 years; living within 3 counties in the west of France; presently engaged in a non-limited work contract; threatened in their job situation by chronic LBP; not relieved by conventional medical or surgical therapy
Exclusion criteria	LBP of specific origin, recent (<4 months) spinal surgery; cardiac or respiratory abnormalities after exercise stress tests on bicycle ergometer; psychiatric disorder precluding group participation; receiving disability pension; not motivated or declined to participate
Recruitment/selection of patients	Referred to multidisciplinary LBP clinic by industrial physicians, family doctors, specialists and social insurance medical advisors
Age, gender and ethnicity	Age - Mean (SD): Functional restoration 40.8 (7.4), individual therapy 38.7 (6.1) years. Gender (M:F): 86:46. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (Chronic LBP).
Extra comments	Full data set (n=132) reported in Roche 2007 and Roche 2011; subset of patients (first 86 randomised) reported in Jousset 2004
Indirectness of population	No indirectness
Interventions	(n=68) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. MBR programme delivered by a multidisciplinary team (physiotherapist; physiatrist; psychologist). Functional restoration programme: 6 hours a day, 5 days a week for 5 weeks, adjusted to each

Study (subsidiary papers)	Jousset 2004[258] (Roche-leboucher 2011{ROCHELEBOUCHER2011}, Roche 2007[449])
	participant's capacity; conducted as a group, sports-like activity. Warm-up, stretching, proprioception: walking and running, floor exercises, stretching of trunk muscles and games. Strengthening exercises: isotonic training of all major muscle groups, resistance increased weekly; global strengthening exercises (not including isokinetic techniques, supervised by a physiotherapist). Aerobic activities: including jogging and ball games. Occupational therapy: training in flexibility, endurance and coordination, weight lifting, work simulation. Endurance training: jogging, stepping and cycling adapted to heart rate. Balneotherapy. Individual interventions: physiatrist, psychologist, dietetic advice. Duration 5 weeks. Concurrent medication/care: Not stated (n=64) Intervention 2: Individual Biomechanical exercise - Core stability. 1-hour treatment sessions, 3 times a week for 5 weeks. Programme of exercises that the patient also performed at home on the other 2 weekdays. 1st 2 weeks: focused on flexibility, range of motion and pain coping strategies. Strengthening exercises and functional training were then introduced. Patients were instructed to develop cardiorespiratory endurance by regular performance of sports activities.. Duration 5 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (Union Regionale des Caisses d'Assurance Maladie des Pays de Loire)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUNCTIONAL RESTORATION PROGRAMME versus CORE STABILITY

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain VAS (Roche 2007 full dataset) at 5 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain (Jousset preliminary results) at 6 months; Group 1: mean 3.1 cm (SD 2.5); n=42, Group 2: mean 4 cm (SD 2.8); n=41; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Pain VAS (Roche 2011 full dataset) at 1 year; Group 1: mean -1.7 cm (SD 2.6); n=64, Group 2: mean -1 cm (SD 2.3); n=48; VAS 0-10 Top=High is poor outcome; Risk of bias: Flawed; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome: Quebec Back Pain Disability Scale (Jousset preliminary results) at 6 months; Group 1: mean 22 Not stated (SD 16); n=42, Group 2: mean 22.9 Not stated (SD 17.7); n=41; Quebec Scale 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: HAD scale (Jousset preliminary results) at 6 months; Group 1: mean 12.7 Not stated (SD 7.2); n=42, Group 2: mean 13.4 Not stated (SD 6.4); n=41; HAD 0-21 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Jousset 2004[258] (Roche-leboucher 2011{ROCHELEBOUCHER2011}, Roche 2007[449])
Protocol outcome 5: Return to work at Up to 4 months - Actual outcome: Return to work (Jousset preliminary results) at 1 week; Group 1: 27/39, Group 2: 24/36; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Return to work (Roche 2007 full dataset) at 5 weeks; Group 1: 58/67, Group 2: 54/63; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Return to work at >4 months - Actual outcome: Return to work (Roche 2011 full dataset) at 1 year; Group 1: 60/64, Group 2: 41/48; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months

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Study	Keller 1997[270]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=65)
Countries and setting	Conducted in Germany; Setting: Outpatient
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 5 weeks intervention + 6 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic low back pain (Quebec Task Force definition). Not participated previously in a pain management programme. Fluent in German, Able to attend therapy sessions on regular basis in outpatient setting.
Exclusion criteria	None reported
Recruitment/selection of patients	Consecutive
Age, gender and ethnicity	Age - Mean (SD): 48 (12.5). Gender (M:F): 18/45. Ethnicity:
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (No furrther details).

Study	Keller 1997[270]
Extra comments	Pain intensity, scale 0-10 (SD): intervention = 4.52 (2.4), n=29; CTRL = 5.83 (1.6), n=23. Functional capacity, scale 0-100 (SD): intervention = 74.5 (20.0), n=30; CTRL = 70.5 (17.5), n=23. Disability, scale 0-10 (SD): intervention = 3.37 (2.4), n=29; CTRL = 3.75 (1.6), n=21
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR 3 CORE ELEMENTS delivered by a multidisciplinary team (physicians; physiotherapists). Pts received both individual and group treatment alternately, in order to tailor the programme to the specific needs of each participant. 18 x 2hr group meetings (3/week) + 18 x 30mins individualised training sessions in an outpatient setting. MDT therapists (physicians, physiotherapists, supervised by clinical psychologists; all experienced or trained in pain management) PHYSICAL: Training of posture and physical exercise. Taught to adapt progressively to an upright position and maintain this position while performing activities. Exercises aimed at strengthening and stretching (ie. biomechanical), while paying attention to each pt's specific needs. Also had evaluation of home and work environment, and problem areas were highlighted and improvements suggested. EDUCATION: information about pain, pain medication, avoidance, demoralisation and dysphoric mood, how the Tx methods would help gain self-control over pain and pain-related behaviour. Active participation through group discussions, physical activity and homework. PSYCHOLOGICAL: Relaxation sessions (learning how to control physical response to pain with the aid of muscle relaxation). Also used imagery techniques and visualisation to aid distraction. Pleasant activity scheduling and distraction (direct attention from their restricted activities, to those they could enjoy). training offered variety of perceptional experiences to elicit feelings of pleasure. Activity goals scheduled and pleasurable activities reinforced. Emphasis on distraction techniques (focus attention on mental or physical activities to direct attention away from pain).. Duration 5 weeks intervention + 6 month follow-up. Concurrent medication/care: None reported (n=29) Intervention 2: Waiting list - Waiting list control. No details reported. Duration 5 weeks intervention + 6 month follow-up. Concurrent medication/care: Not reported
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus WAITING LIST CONTROL

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Typical pain intensity (0-10) at 6 months follow-up; Group 1: mean 3.1 (SD 2.1); n=29, Group 2: mean 5.6 (SD 2.1); n=23; Typical pain intensity 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Keller 1997[270]
Protocol outcome 2: Function (disability scores) at >4 months - Actual outcome: Functional capacity (0-100) at 6 months follow-up; Group 1: mean 83.1 (SD 17.3); n=30, Group 2: mean 66.7 (SD 17.1); n=23; Functional capacity 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Disability (0-10) at 6 months follow-up; Group 1: mean 2.2 (SD 1.7); n=29, Group 2: mean 3.6 (SD 1.7); n=21; Pain Disability Index 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Khan 2014[277]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=54)
Countries and setting	Conducted in Pakistan; Setting: Alain Poly Clinic Karachi and Institute of Physical medicine & Rehabilitation Dow University of Health Sciences Karachi
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients who were diagnosed with chronic non-specific low back pain, age 25-45 who had MRI of the lumbar spine to exclude underlying pathology, back pain for > 3 months up to 2 years, no associated medical conditions
Exclusion criteria	Back pain < 3 months, history of back surgery, inflammatory arthritis, tumours, spinal or hip fractures, pregnancy, lumbar radiculopathy and severe cardiopulmonary disease affecting exercise tolerance

Study	Khan 2014[277]
Recruitment/selection of patients	January 2012 - April 2012
Age, gender and ethnicity	Age - Mean (SD): 39.61 (5.3) years. Gender (M:F): 25/29. Ethnicity:
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (> 3 months up to 2 years duration).
Extra comments	Baseline values (mean (SD)) for intervention and control group, respectively: VAS 6.51 (1.34), 7.03 (1.25); ODI 13.77 (2.53), 12.92 (2.09)
Indirectness of population	No indirectness
Interventions	(n=27) Intervention 1: Mixed exercise - Biomechanical + aerobic. Mixed modality (aerobic and biomechanical) exercise (rolling, bridging, knee to chest, hamstring stretching (each exercise 20 repetitions); cycling plus treadmill (each exercise for 10 minutes, with resistance and speed adjusted to individual needs)). Duration 12 weeks. Concurrent medication/care: Self-management (educational pack containing advise on pain and activity, pacing, goal setting, posture, when to see their GP). (n=27) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. MBR physical + psychological delivered by a unidisciplinary team (physical therapist). 1) Psychological = CBT (operant behavioural graded activity and problem solving training, instruction to modify dysfunctional belief) + 2) Physical = mixed modality (aerobic and biomechanical) exercise (rolling, bridging, knee to chest, hamstring stretching (each exercise 20 repetitions); cycling plus treadmill (each exercise for 10 minutes, with resistance and speed adjusted to individual needs)). All the exercises in both groups were carried out under the supervision of physical therapist and the patients were told to carry out the same exercises at home.. Duration 12 weeks. Concurrent medication/care: Self-management (educational pack containing advise on pain and activity, pacing, goal setting, posture, when to see their GP)
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2-ELEMENT MBR (PHYSICAL + PSYCHOLOGICAL) versus EXERCISE (MIXED MODALITY)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS at 12 weeks; Group 1: mean 2.66 (SD 1.39); n=27, Group 2: mean 5.25 (SD 1.19); n=27; VAS pain score 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome: RMDQ at 12 weeks; Group 1: mean 5.33 (SD 2.67); n=27, Group 2: mean 9.88 (SD 1.84); n=27; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Khan 2014[277]
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Lau 2008[306]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=110)
Countries and setting	Conducted in Hong Kong (China); Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention around 4 weeks + follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Acute LBP (onset of pain in lower back with or without leg pain in previous 24 hours); age 18 years or above
Exclusion criteria	Red flag e.g. fracture, tumour, infection, cauda equina syndrome; previous episode of acute LBP within 6 months, osteoporosis, inflammatory arthritis, pregnancy, previous hip or back surgery, systemic steroid therapy for longer than 12 weeks
Recruitment/selection of patients	Screened by physiotherapist
Age, gender and ethnicity	Age - Mean (SD): Intervention: 52 (18), control 49 (15) years. Gender (M:F): 43:67. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (<24 hours).
Extra comments	Baseline scores (mean SD) - pain NRS: MBR group 7.8±1.5, control 7.6±1.5; disability RMDQ: MBR group 15.8±5.0, control 15.2±5.3; BPS: MBR group 12.9±2, control 12.5±2.4; SF12 physcial: MBR group 36±9, control 37±9; SF12 mental: MBR group 51±13, control 46±9.
Indirectness of population	No indirectness

Study	Lau 2008[306]
Interventions	(n=55) Intervention 1: Individual Aerobic exercises - Walking programme. At A&E, conventional intervention i.e. walking training and prescription of walking aids as needed. . Duration 4 weeks. Concurrent medication/care: On discharge from A&E, standard physiotherapy in outpatient department twice a week including education, reassurance, pain management and interferential therapy according to findings of examination. Discharged when 70% reduction in pain. (n=55) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR programme delivered by a unidisciplinary team (Physiotherapists). In A&E, encouragement to stay as active as possible and to return to normal activities including work; education session with Back Care booklet (information on conservative management of acute LBP, correct spinal posture during ADL, harmful effect of prolonged bed rest, advice to stay active); reassurance; practical advice on coping with pain at home (self-management skills); mobility training in tasks such as rolling, sitting up form lying and sitting to standing; walking practiced with walking aids; 1 or 2 x 15-minute sessions of interferential therapy (current swept from 70 to 130 Hz with a pulse duration of 130 micros and swing pattern of 6s, intensity of the stimulation adjusted to just below pain threshold). Outpatient management as for usual care group. Duration 4 weeks. Concurrent medication/care: On discharge from A&E, standard physiotherapy in outpatient department twice a week including education, reassurance, pain management and interferential therapy according to findings of examination. Discharged when 70% reduction in pain.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus WALKING PROGRAMME

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-12 Physical Component Summary at 3 months; Group 1: mean 46 Not stated (SD 10); n=48, Group 2: mean 47 Not stated (SD 9); n=51; SF-12 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Mental Component Summary at 3 months; Group 1: mean 51 Not stated (SD 9); n=48, Group 2: mean 50 Not stated (SD 9); n=51; SF-12 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome: SF-12 Physical Component Summary at 6 months; Group 1: mean 45 Not stated (SD 11); n=48, Group 2: mean 46 Not stated (SD 8); n=51; SF-12 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-12 Mental Component Summary at 6 months; Group 1: mean 54 Not stated (SD 8); n=48, Group 2: mean 53 Not stated (SD 7); n=51; SF-12 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Lau 2008[306]
Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Numeric Pain Rating Scale at 3 months; Group 1: mean 2.3 Not stated (SD 2.3); n=48, Group 2: mean 2.3 Not stated (SD 2.1); n=51; Numeric Pain Rating Scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Numeric Pain Rating Scale at 6 months; Group 1: mean 1.6 Not stated (SD 2.1); n=48, Group 2: mean 1.6 Not stated (SD 1.5); n=51; Numeric Pain Rating Scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: RMDQ at 3 months; Group 1: mean 3.3 Not stated (SD 3.5); n=48, Group 2: mean 3.8 Not stated (SD 4.2); n=51; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Back Performance Scale at 1 month; Group 1: mean 5.1 Ordinal scale (SD 3); n=49, Group 2: mean 5.1 Ordinal scale (SD 2.6); n=51; Back Performance Scale 0-15 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: RMDQ at 6 months; Group 1: mean 2.7 Not stated (SD 3.8); n=48, Group 2: mean 2.8 Not stated (SD 3.2); n=51; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Moffett 1999[376]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=187)
Countries and setting	Conducted in United Kingdom
Line of therapy	Unclear
Duration of study	Intervention + follow up: 4 week intervention, 1 year follow-up

Study	Moffett 1999[376]
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Mechanical low back pain of at least 4 weeks' duration but less than 6 months aged between 18 and 60, declared medically fit by their general pracitioner to undertake the exercise and who had consulted one of the general practitioners participating in the study.
Exclusion criteria	Those with potentially serious pathology, those unable to attend or participate.
Age, gender and ethnicity	Age - Mean (SD): Control group: 42.6 (8.62), intervention group 41.1 (9.21). Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain: Mixed (More than 4 weeks but less than 6 months).
Extra comments	Baseline characteristics, mean (sd) values of control and intervention group respectively: healthcare utilisation (visits to the GP in past 6 months) 2.45 (2.36), 2.22 (3.32); RMDQ (0-24) 5.56 (3.94), 6.65 (4.02); Aberdeen back pain scale (0-100) 25.52 (10.85), 27.93 (11.07); EQ5D (0-1) 0.73 (0.15), 0.71 (0.16)
Indirectness of population	No indirectness
Interventions	(n=85) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR physical + psychological + educational delivered by a unidisciplinary team (physiotherapist). Exercise programme led by a physiotherapist: Eight sessions, each lasting an hour, spread out spread outover four weeks, with up to 10 participants in eachclass including stretching exercises, aerobic exercises, and strengthening exercises. Participants were discouraged from viewing themselves as invalids and from following the precept of “Let pain be your guide.” They were encouraged to improve their individua lrecord and were selectively rewarded with attentionand praise. The programme used cognitive-behavioural principles. One simple educational message encouraging self reliance was delivered at each class. Participants were told that they should regard the classes as a stepping stone to increasing their own levels of activity. Duration 4 weeks. Concurrent medication/care: Not stated (n=98) Intervention 2: Usual care. Usual care. Duration 4 weeks. Concurrent medication/care: May have been referred to physiotherapy, one consultant used manipulation as usual care.
Funding	Other (Arthiritis Research Campaign, the Northern and Yorkshire Regional Health Authority, and the National Back pain Association)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus USUAL CARE

Study	Moffett 1999[376]
Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: EQ5D at 6 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: EQ5D at 12 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Aberdeen pain scale at 6 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Aberdeen pain scale at 12 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 6 weeks; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 12 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Number of visits to the GP in the past 6 months at 6 weeks; Mean Mean no. of visits to GP (range): Intervention group 0.2 (0-3), control group 0.41 (0-6); Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Monticone 2013[383]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=90)

Study	Monticone 2013[383]
Countries and setting	Conducted in Italy; Setting: Specialised rehabilitation centre for chronic LBP
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention: 12 months. Follow up: 12 and 24 months
Method of assessment of guideline condition	--
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age ≥18 years; non-specific LBP >3months; good understanding of Italian.
Exclusion criteria	Cognitive impairment, all causes of specific LBP (eg spinal surgery), any patient receiving compensation for work related disabilities, or who had previously had CBA for LBP.
Recruitment/selection of patients	From those referred to the rehab centre from primary care.
Age, gender and ethnicity	Age - Mean (SD): Experimental group: 48.96 (7.97), control group 48.96 (7.97). . Gender (M:F): 42% Male/ 58% Female. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months duration).
Extra comments	Baseline scores (mean SD) for MBR group and combined non-invasive group respectively - RMDQ: 15.27±2.94, 15±2.85; NRS: 7.02±1.07, 7.02±1.3; phsycial functioning: 47.22±27.25, 48.33±24.65; physical role: 29.44±35.47, 31.11±32.48; physical pain: 38.24±15.36, 41.36±17.93; general health: 34±17.72, 36.67±14.1; vitality: 52±16.93, 52.56±15.36; social functioning: 50.83±18.34, 51.56±17.66; emotional role: 39.26±35.02, 39.26±37.79; mental health: 50.13±11.55, 52.09±12.69
Indirectness of population	No indirectness
Interventions	(n=45) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. BR physical + psychological delivered by a multidisciplinary team: 2 physiatrists, a psychologist, and 4 physiotherapists. CBA. Initial phase: individual CBA sessions once a week for 5 weeks, and then one individual session per month for 11 months. Purpose: to modify fear of movement beliefs, catastrophizing, thinking, and negative feelings, and ensuring gradual reactions to illness behaviours. Exercise. Biomechanical. 10 sessions with physiotherapist over 5 weeks, and then encouraged (via telephone) to continue doing these twice a week for a year. The stretching was segmentary and involved the groups of lower limb and back muscles. Basic exercises were gradually introduced to improve spinal deep muscle awareness, and the patient learned a specific strengthening technique for the same muscles. Postural control was developed by means of exercises aimed at developing motor control of the spine and pelvis. Manual. Passive mobilisation involved manual therapy for accessory and physiological movements to improve the range of motion. . Duration 12 months. Concurrent medication/care: Patients not offered any other treatment once enrolled including analgesia other than NSAIDS and mild analgesia. Primary care physicians

Study	Monticone 2013[383]
	asked not to refer to other service for the CLBP during the study. Relatives and GP asked to follow patient and ensure adherence to the exercise regime. (n=45) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Exercise. Biomchanical. 10 sessions with physiotherapist over 5 weeks, and then encouraged (via telephone) to continue doing these twice a week for a year. The stretching was segmentary and involved the groups of lower limb and back muscles. Basic exercises were gradually introduced to improve spinal deep muscle awareness, and the patient learned a specific strengthening technique for the same muscles. Postural control was developed by means of exercises aimed at developing motor control of the spine and pelvis. Manual. Passive mobilisation involved manual therapy for accessory and physiological movements to improve the range of motion.. Duration 12 months. Concurrent medication/care: Patients not offered any other treatment once enrolled including analgesia other than NSAIDS and mild analgesia. Primary care physicians asked not to refer to other service for the CLBP during the study. Relatives and GP asked to follow patient and ensure adherence to the exercise regime.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus COMBINED NON-INVASIVE INTERVENTIONS

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36, physical functioning at 5 weeks; Group 1: mean 78.44 (SD 19.93); n=45, Group 2: mean 57.44 (SD 19.87); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, physical role at 5 weeks; Group 1: mean 72.22 (SD 28.31); n=45, Group 2: mean 50.56 (SD 28.94); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, physical pain at 5 weeks; Group 1: mean 68.36 (SD 13.97); n=45, Group 2: mean 44 (SD 16.71); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, general health at 5 weeks; Group 1: mean 73.22 (SD 18.19); n=45, Group 2: mean 44.22 (SD 16.51); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, vitality at 5 weeks; Group 1: mean 77.22 (SD 14.71); n=45, Group 2: mean 51.89 (SD 15.85); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, social functioning at 5 weeks; Group 1: mean 85.83 (SD 15.21); n=45, Group 2: mean 63.06 (SD 17.66); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, emotional role at 5 weeks; Group 1: mean 76.89 (SD 28.9); n=45, Group 2: mean 55.56 (SD 28.42); n=45; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36, mental health at 5 weeks; Group 1: mean 81.78 (SD 13.79); n=45, Group 2: mean 55.47 (SD 12.66); n=45; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Monticone 2013[383]
	Protocol outcome 2: Quality of life at >4 months - Actual outcome: SF-36, physical functioning at 1 year; Group 1: mean 85.67 (SD 19.64); n=45, Group 2: mean 62.11 (SD 19.43); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, physical role at 1 year; Group 1: mean 86.11 (SD 19.24); n=45, Group 2: mean 60.33 (SD 19.14); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, physical pain at 1 year; Group 1: mean 78.98 (SD 14.65); n=45, Group 2: mean 52.02 (SD 16.25); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, general health at 1 year ; Group 1: mean 85 (SD 13.81); n=45, Group 2: mean 56.44 (SD 15.9); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, vitality at 1 year; Group 1: mean 90 (SD 11.67); n=45, Group 2: mean 55.33 (SD 11.04); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, social functioning at 1 year; Group 1: mean 91 (SD 10.47); n=45, Group 2: mean 54.44 (SD 11.35); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, emotional role at 1 year; Group 1: mean 91.11 (SD 14.9); n=45, Group 2: mean 58.52 (SD 14.48); n=45; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF-36, mental health at 1 year; Group 1: mean 89.78 (SD 13); n=45, Group 2: mean 54.13 (SD 11.89); n=45; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (NRS) at 5 weeks; Group 1: mean 2.69 (SD 0.97); n=45, Group 2: mean 4.96 (SD 1.27); n=45; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain (NRS) at 1 year; Group 1: mean 1.38 (SD 1.07); n=45, Group 2: mean 5.33 (SD 1.22); n=45; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: Disability (RMDQ) at 5 weeks; Group 1: mean 5.04 (SD 2.04); n=45, Group 2: mean 11.04 (SD 2.27); n=45; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: Disability (RMDQ) at 1 year; Group 1: mean 1.31 (SD 1.59); n=45, Group 2: mean 11 (SD 2); n=45; Risk of bias: High; Indirectness of outcome: No indirectness

Study	Monticone 2013[383]
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Monticone 2014[382]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=20)
Countries and setting	Conducted in Italy; Setting: Physical medicine and rehabilitation unit, scientific institute of Lissone (Milan), Institute of Care and Research (IRCCS), Milan, Italy
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: documented history of pain lasting > 3 months
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Outpatients aged > 18 years with non-specific chronic low back pain (ie a documented history of pain lasting > 3 months) and a good understanding of Italian, referred to the hospital January-June 2013
Exclusion criteria	Patients with central or peripheral neurological signs, cognitive impairment (ie deficits in higher reasoning, forgetfulness, learning disabilities, concentration difficulties, decreased intelligence and other reductions in mental functions), severe cardiovascular and respiratory comorbidity, prior spine surgery, ambulation deficits due to neurological or orthopaedic impariments, pregnant or who had previously participated in cognitive-behavioural interventions.
Recruitment/selection of patients	People referred to the hospital January-June 2013 meeting the inclusion criteria
Age, gender and ethnicity	Age - Mean (SD): Experimental group: 58.9 (16.4); control group: 56.6 (14.4). Gender (M:F): Experimental group: 3/7; control group: 6/4. Ethnicity:
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Extra comments	. Baseline values (mean (SD)) for experimental (n=10) and control group (n=10), respectively: ODI 26(5), 24(2); NRS

Study	Monticone 2014[382]
	5(3), 4(1); SF-36 physical activity 41(7), 43(5); SF-36 physical role 38(18), 35(13); SF-36 bodily pain 45(14), 48(13); SF-36 general health 34(15), 39(12); SF-36 vitality 54(12), 54(13); SF-36 social functioning 60(10), 59(10), SF-36 emotional role 47(17), 43(16), SF-36 mental health 59(10), 57(12). Baseline values (n) for experimental (n=10) and control group (n=10), respectively: occupation - student 1,0; employed 2,4; self-employed 1,0; pensioner 5,5; housewife 1,1; type of drug used - antidepressant/anxiolytic 1,0; analgesic 3,3; muscle relaxant 0,0; NSAISs/corticosteroid 0,0; unable to perform usual activities, such as domestic duties or job (yes/no) 3/7, 4/6.
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. The intervention was delivered by a miltidisciplinay team and involved 2 physiatrists, a pshychologist, an occupational therapist, ad 2 physiotherapists. The multi-disciplinary programme consisted of motor training integrated with cognitive-behavioural therapy: a) physical component: motor training involving personalised spinal stabilising exercises in addition to usual-care physical rehabilitation (passive mobilisation, stretching and postural control). Exercises were personalised, based on physiotherapist examination and mainly focusing on the observation of lumbar movement dysfunction within the neutral zone and associated excessive intervertebral motion. Gradual introduction of basic exercises to improve spinal deep muscle awareness; learning of specific stabilizing techniques, with a progressive increase in the speed and complexity of movement patterns, aiming to reach autonomy in daily living demands. Individual 60-minutes motor training sessions twice a weeks; b) cognitive-behavioural component: training aiming at modifying their fear of movement beliefs, catastrophizing and negative feelings, and ensuring gradual reactions to illness behaviours, under the supervision of a clinical psychologist. Identification of fear-avoidance beliefs, explanation of the fear-avoidance model, cognitive reconditioning. Graded exposure to the situations previously perceived as dangerous to increase the level of activity. Individual 60-minutes sessions once a week for 8 weeks. Duration 3 months follow up. Concurrent medication/care: No other treatments (eg physical modalities or nerve blocks) offered once the patients had been accepted for the programme; no major pharmacological agents allowed (mild analgesics and NSAIDs permitted) Comments: All of the participants completed the treatment interventions and all of the assessment tests (n=10) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Referred to as 'usual care rehabilitation' by the authors. It included a combination of 1) Manual therapy (passive spinal mobilisation) + 2) Exercise (stretching, muscle strengthening) + 3) Postural therapy (postural control). Individual 60-minutes sessions twice a week for 6 weeks. Duration 3 months follow up. Concurrent medication/care: No other treatments (eg physical modalities or nerve blocks) offered once the patients had been accepted for the programme; no major pharmacological agents allowed (mild analgesics and NSAIDs permitted) Comments: All of the participants completed the treatment interventions and all of the assessment tests.
Funding	Academic or government funding (EuroSpine Task Force on Research 2012)

Study	Monticone 2014[382]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus COMBINED NON-INVASIVE INTERVENTIONS Protocol outcome 1: Quality of life at Up to 4 months - Actual outcome: SF-36 Physical activity at 3 months; Group 1: mean 84 (SD 6); n=10, Group 2: mean 67 (SD 10); n=10; SF-36 Physical activity (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical role at 3 months; Group 1: mean 80 (SD 16); n=10, Group 2: mean 59 (SD 11); n=10; SF-36 Physical role (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Bodily pain at 3 months; Group 1: mean 65 (SD 12); n=10, Group 2: mean 55 (SD 7); n=10; SF-36 Bodily pain (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 3 months; Group 1: mean 71 (SD 5); n=10, Group 2: mean 55 (SD 8); n=10; SF-36 General health (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Vitality at 3 months; Group 1: mean 82 (SD 8); n=10, Group 2: mean 62 (SD 11); n=10; SF-36 Vitality (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social function at 3 months; Group 1: mean 81 (SD 7); n=10, Group 2: mean 61 (SD 7); n=10; SF-36 Social function (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Emotional role at 3 months; Group 1: mean 77 (SD 16); n=10, Group 2: mean 57 (SD 16); n=10; SF-36 Emotional role (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 3 months; Group 1: mean 88 (SD 10); n=10, Group 2: mean 67 (SD 12); n=10; SF-36 Mental health (Italian version) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: NRS at 3 months; Group 1: mean 2 (SD 1); n=10, Group 2: mean 3 (SD 2); n=10; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: ODI at 3 months; Group 1: mean 8 (SD 6); n=10, Group 2: mean 15 (SD 3); n=10; ODI (Italian version) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome: Medication use at 3 months; Group 1: 0/10, Group 2: 7/10; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or

Study	Monticone 2014[382]
	health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Monticone 2015[381]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=150)
Countries and setting	Conducted in Italy; Setting: Operative unit of Physical Medicine and Rehabilitation of Salvatore Maugeri Foundation's Scientific Institute in Lissone, Italy
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: Irradiation present in 18/57 experimental group, 15/60 control group
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of non-specific chronic low back pain (ie a documented history of low back pain lasting > 3 months), a good understanding of italian and age > 18 years
Exclusion criteria	Cognitive impairment, all causes of specific LBP (previous spinal surgery, deformity, infection, fracture, malignancy, systemic or neuromuscular diseases), any subjects having previously received CBA
Recruitment/selection of patients	Outpatients consecutively included between January and December 2011
Age, gender and ethnicity	Age - Mean (SD): intervention group 53.2 (11.1); control group 53.8(10.4). Gender (M:F): Define. Ethnicity:
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (Pain lasting > 3 months).
Extra comments	Baseline values, mean (SD), for intervention and control group respectively: ODI 34.4(4.6), 32.4(5.4); pain NRS 6.4(1.7), 6.1(1.6); SF-36 physical activity 51.5(10), 49.1(12.1); SF-36 physical role 42.3(15.9), 42.7(16.3); SF-36 bodily pain 44.3(16.9), 46.3(15.4); SF-36 general health 39.8(14.5), 38.5(12.9); SF-36 vitality 54.2(15.6), 55.9(14.2); SF-36 social functioning 54.3(11.5), 56.2(12.6); SF-36 emotional role 44.9(18.6), 42.7(15.1); SF-36 mental health 51.3(11.6), 52.5(12.7)
Indirectness of population	No indirectness

Study	Monticone 2015[381]
Interventions	(n=75) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. Intervention programme was delivered by a multidisciplinary team involving 2 physiatrists, a psychologist and 4 physiotherapists featuring 1) Group exercises to improve spinal mobility and deep muscle awareness (techniques for the local muscles mainly involved, eg lumbar multifidus, transversus abdominis and obliquus abdominis internus, progressively increasing in speed and complexity of movement patterns) + task oriented exercises (moving from the couch to sitting position, from sitting to standing, ascendng-descending stairs, climbing osbstacles while maintaining a deep muscle activation, aimed at gradually improving mobility and strength of lumbar spine, recovering segmentary stretching of back muscles, and improving proprioception and neuromotor control of spine and limbs) + additional exercises to recover coordination, balance and walking stability (turning, standing on unstable surfaces, and walking). The exercise programme was planned individually, based on physical examination at baselien of spinal postural, muscular and articular performances. The programme was then carried out in small groups, each consisting of 5 patients, but each patient performed different exercises during the intervention. Patients were also asked to fill out a diary after each training session, to be checked by phisio every week. Sessions were carried out twice weekly for 1 hour; 2) Group based CBA: under the supervision of a clinical psychologist, the programme aimed at modifying fear of movement beliefs and ensuring gradual reactions to illness behaviours. After explaining the fear-avoidance model, patients were educated to view pain as a situation that can be self-managed rather than a serious disease needing vigilant protection. The main situations avoided were identified from group discussions, questionnaires and the presentation of images showing back-stressing activities. Specific questions were also formulated to investigate patients'beliefs concerning causes/characteristics of pain, movements supposed to produce harm etc. Whenever fear-avoidance behaviours of a single subject were revealed, these were shared and debated within the whole group, to identify the most suitable solutions, as correct re-learning and cognitive restructuring were based on developing an awareness of the problem and seeking a means of reacting to frightening thoughts. Relaxation as well as attentional techniques such as distraction and desensitizing were shared with the subjects to facilitate graded exposure and control over pain (also during flare-ups). Advice to develop helpful ways of thinking were provided to master fearful situations and to minimize the level of distress; ways to challenge and change unhelpful ways of thinking were also encouraged to keep under control mood disorders. Based on a close collaboration between the psychologist and the physiotherapists, fear-avoidance beliefs were used to choose the task-oriented exercises to perform, to perform an exposition treatment to feared movements. Sessions took place once a week for 1 hour; 3) Education: subjects were educated on the nature of chronic pain; information on chronic conditions (eg 'your hurts will not hurt you because a hypersensitized nervous system uses pain to protect you at all costs, but not to inform you about real damage') had to be retained, understood, and applied to current problems to reduce the threat of pain itself as well as to change how they see themselves and behave; subjects were encouraged to combine pain physiology with active and paced movements and approaches to gradually increase physical capacity, reduce pain and improve quality of life. Ergonomic advice was provided by means of a booklet given to the patients during the first session of the treatment, to facilitate modification of their daily living activities. . Duration 5 weeks.

Study	Monticone 2015[381]
	Concurrent medication/care: No other treatments (eg physical modalities, nerve blocks) were offered once patients were accepted for the programme. Patients were not allowed to taje major pharmacological agents (opioids, steroids, anticonvulsants and antidepressant analgesics) but mild analgesics and NSAIDs were permitted. Family doctors were asked to avoid givind referrals for other treatments while patients were undergoing intervention. Spouses, significant others were asked to support patients' compliance during the studt and inform staff promptly of any difficulties. (n=75) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Combination of 1) Exercise: biomechanical (strenghtening, involving abdominal and back muscles) + 2) Manual therapy: passive mobilization to improve lumbar range of motion + 3) Postural therapy: postural control exercises aimed at developing motor control of spine and pelvis + 4) Self-management: education (ergonomic advice was provided by means of a booklet given to the patients during the first session of treatment to facilitate the modification of their daily living activities).. Duration 5 weeks. Concurrent medication/care: No other treatments (eg physical modalities, nerve blocks) were offered once patients were accepted for the programme. Patients were not allowed to taje major pharmacological agents (opioids, steroids, anticonvulsants and antidepressant analgesics) but mild analgesics and NSAIDs were permitted. Family doctors were asked to avoid givind referrals for other treatments while patients were undergoing intervention. Spouses, significant others were asked to support patients' compliance during the studt and inform staff promptly of any difficulties.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus COMBI (EXERCISE + MANUAL TP + POSTURAL TP + EDUCATION)

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: SF-36 Physical activity at 5 weeks; Group 1: mean 84.4 (SD 9.4); n=75, Group 2: mean 63.6 (SD 11.2); n=75; SF-36 Physical activity 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical role at 5 weeks; Group 1: mean 84.1 (SD 19.2); n=75, Group 2: mean 61.6 (SD 15.6); n=75; SF-36 Physical role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Bodily pain at 5 weeks; Group 1: mean 73 (SD 16.4); n=75, Group 2: mean 55.2 (SD 13); n=75; SF-36 Bodily pain 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health at 5 weeks; Group 1: mean 74.3 (SD 11.9); n=75, Group 2: mean 57.6 (SD 12.8); n=75; SF-36 General health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality at 5 weeks; Group 1: mean 79 (SD 11.7); n=75, Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social function at 5 weeks; Group 1: mean 81.8 (SD 11.6); n=75, Group 2: mean 63.4 (SD 10.9); n=75; SF-36 Social function 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Monticone 2015[381]
- Actual outcome: SF-36 Emotional role at 5 weeks; Group 1: mean 75.7 (SD 20.1); n=75, Group 2: mean 53.9 (SD 20.5); n=75; SF-36 Emotional role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 5 weeks; Group 1: mean 86.3 (SD 7.9); n=75, Group 2: mean 62.5 (SD 13.1); n=75; SF-36 Mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Quality of life at >4 months - Actual outcome: SF-36 Physical activity at 1 year; Group 1: mean 87.7 (SD 9.4); n=75, Group 2: mean 60.1 (SD 9.1); n=75; SF-36 Physical activity 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical role at 1 year; Group 1: mean 86.1 (SD 15.7); n=75, Group 2: mean 60.3 (SD 14.5); n=75; SF-36 Physical role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Bodily pain at 1 year; Group 1: mean 76.3 (SD 14); n=75, Group 2: mean 49.3 (SD 13); n=75; SF-36 Bodily pain 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 General health at 1 year; Group 1: mean 81.6 (SD 13.4); n=75, Group 2: mean 55.7 (SD 11.3); n=75; SF-36 General health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Vitality at 1 year; Group 1: mean 84.4 (SD 10.1); n=75, Group 2: mean 61.4 (SD 12.5); n=75; SF-36 Vitality 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Social function at 1 year; Group 1: mean 84.1 (SD 12.8); n=75, Group 2: mean 61.4 (SD 9.6); n=75; SF-36 Social function 0-100 Top=--; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Emotional role at 1 year; Group 1: mean 80 (SD 18.3); n=75, Group 2: mean 45.6 (SD 16.2); n=75; SF-36 Emotional role 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Mental health at 1 year; Group 1: mean 89.9 (SD 7.4); n=75, Group 2: mean 64.4 (SD 12.9); n=75; SF-36 Mental health 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain NRS at 5 weeks; Group 1: mean 1.4 (SD 1.2); n=75, Group 2: mean 4.5 (SD 1.8); n=75; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain NRS at 1 year; Group 1: mean 2.4 (SD 1.5); n=75, Group 2: mean 4.2 (SD 1.6); n=75; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at Up to 4 months - Actual outcome: ODI at 5 weeks; Group 1: mean 15.5 (SD 4.8); n=75, Group 2: mean 25.3 (SD 5.5); n=75; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Monticone 2015[381]
Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome: ODI at 1 year; Group 1: mean 11.9 (SD 3.8); n=75, Group 2: mean 27.7 (SD 6.4); n=75; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Nicholas 1991[409]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=62)
Countries and setting	Conducted in Australia
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention: 5 weeks, Follow-up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Subjects were selected from a sample of 82 referred from the pain clinic of a major city hospital and by specialist and general medical practitioners.
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Subjects were accepted into the program if they met the following criteria: 1) history of chronic (i.e. more than 6 months), non-malignant low back pain as their main complaint; 2) not considered suitable for further invasive treatments; 3) aged between 20 and 60yr; 4) no (insurance) compensation claim due for settlement within 12 months; 5) able to read and speak English; 6) willing to participate in a research-orientated treatment program.
Exclusion criteria	Not specified
Recruitment/selection of patients	Subjects were selected from a sample of 82 referred from the pain clinic of a major city hospital and by specialist and general medical practitioners.
Age, gender and ethnicity	Age - Mean (range): 41.2 (21-63). Gender (M:F): 28 men, 30 women. Ethnicity: Not specified
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>6 months duration).

Study	Nicholas 1991[409]
Extra comments	Baseline scores (mean SD) for MBR physical, cog and education, MBR physical and education, and MBR phsycial, behav and education - pain intensity: 3.8±0.79, 2.84±0.8, 2.78±0.41; anxiety: 53.5±14.98, 52.89±10.74, 52.75±14.01; depression: 25.13±10.37, 15.67±4.37, 24.63±7.25; sickness impact profile: 33.41±8.27, 27.12±7.05, 37.13±10.75; medication: 1.38±0.99, 1.78±1.4, 2.38±1.32.
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR programme delivered by a multidisciplinary team. All subjects received the same physiotherapy which consisted of information, exercises and written handouts. The sessions were primarily educational in nature and were intended to teach some basic back anatomy, back-care procedures, medical terms associated with back conditions and the different types of medication commonly prescribed. Training in exercises aimed at strengthening back-support muscles was also given. Four sessions of exercise practice in a heated, indoor hydrotherapy pool were included to provide practice of the physiotherapy mobilisation exercises under supervision. The cognitive treatement was based largely on the work of Turk, Meichenbaum and Genest (1983), Turner (1982) and Rybstein-Blinchik (1979). Subjects were encouraged to see the links between their cognitive and affective responses to pain through the use of self-monitoring assignments. Ways of dealing with unrealistic, non-coping cognitions were discussed as well as the importance of identifying non-coping cognitions, challenging them and replacing them with more appropriate, coping self-statements. Distraction techniques (e.g. Rybstein-Blinchik, 1979; Turk et al., 1983) were also taught.The treatment program consisted of one 2-hr and one 1.5hr session per week for 5 weeks. ONe hour of the first session each week was conducted by the two physiotherapists and the other hour was conducted by the psychologist who had had 5 years of experience with chroinc pain patients since completing his clinical qualifications. At the second session each week subjects were seen by two registered physiotherapists under the supervision of a senior physiotherapist. . Duration 5 weeks. Concurrent medication/care: Subjects were asked to record medication intake (name and dose) on their Pain Rating Chart over a week at each of the four assessment occasions. Medication types recorded included: narcotic analgesics, non-narcotic analgesics, non-steroidal anti-inflammatory drugs, antidepressants and sedatives/hypnotics. (n=10) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. MBR programme delivered by a multidisciplinary team. All subjects received the same physiotherapy which consisted of information, exercises and written handouts. The sessions were primarily educational in nature and were intended to teach some basic back anatomy, back-care procedures, medical terms associated with back conditions and the different types of medication commonly prescribed. Training in exercises aimed at strengthening back-support muscles was also given. Four sessions of exercise practice in a heated, indoor hydrotherapy pool were included to provide practice of the physiotherapy mobilisation exercises under supervision. In addition to physiotherapy, subjects attended five sessions with the psychologist. The approach employed was

Study	Nicholas 1991[409]
	derived from the attention control condition reported by Rybstein-Blinchik (1979). These sessions were aimed at providing the opportunity to discuss the problems of living with chronic back pain with others who had a similar problem. At each session the psychologist tried to present a friendly, empathetic manner but was reflective rather than directive in approach. No coping methods were taught and no information on the nature of chronic pain or treatments avaiable was provided.The treatment program consisted of one 2-hr and one 1.5hr session per week for 5 weeks. One hour of the first session each week was conducted by the two physiotherapists and the other hour was conducted by the psychologist who had had 5 years of experience with chroinc pain patients since completing his clinical qualifications. At the second session each week subjects were seen by two registered physiotherapists under the supervision of a senior physiotherapist. . Duration 5 weeks. Concurrent medication/care: Subjects were asked to record medication intake (name and dose) on their Pain Rating Chart over a week at each of the four assessment occasions. Medication types recorded included: narcotic analgesics, non-narcotic analgesics, non-steroidal anti-inflammatory drugs, antidepressants and sedatives/hypnotics. (n=10) Intervention 3: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR programme delivered by a multidisciplinary team. All subjects received the same physiotherapy which consisted of information, exercises and written handouts. The sessions were primarily educational in nature and were intended to teach some basic back anatomy, back-care procedures, medical terms associated with back conditions and the different types of medication commonly prescribed. Training in exercises aimed at strengthening back-support muscles was also given. Four sessions of exercise practice in a heated, indoor hydrotherapy pool were included to provide practice of the physiotherapy mobilisation exercises under supervision. The behavioural treatment was based largely on the work of Fordyce (1976), Sanders (1983), Turk et al. (1983) and Turner (1982). The chronic pain model used emphasises the consequences of reduced activity level that often accompanied chronic pain, particularly 1) deterioration in muscle strength and fitness 2) depression. Subjects were encouraged to gradually reduce their medication and to take medication on a time-basis rather than on a pain-basis. It was recommended that they plan a medication-reduction regimen in consultation with their medical practitioners. Subjects were encouraged to identify long-term behavioural goals that they wished to achieve in a number of areas (e.g. medication use, recreational and social activities, home duties and work) and to work towards these goals in a step-like way. The pacing of activities was encouraged. The psychologist verbally praised each subject for signs of progress towards their goals. In contrast to the cognitive condition, subjects in the behavioural condition were also verbally praised by the psychologist for practicing the physiotherapy exercises each week. The treatment program consisted of one 2-hr and one 1.5hr session per week for 5 weeks. One hour of the first session each week was conducted by the two physiotherapists and the other hour was conducted by the psychologist who had had 5 years of experience with chroinc pain patients since completing his clinical qualifications. At the second session each week subjects were seen by two registered physiotherapists under the supervision of a senior physiotherapist. . Duration 5 weeks. Concurrent medication/care: Subjects were asked to record medication intake (name and dose) on their Pain

Study	Nicholas 1991[409]
	Rating Chart over a week at each of the four assessment occasions. Medication types recorded included: narcotic analgesics, non-narcotic analgesics, non-steroidal anti-inflammatory drugs, antidepressants and sedatives/hypnotics.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus 2 CORE ELEMENTS: PHYSICAL + EDUCATION

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain Rating Chart at 5 weeks; Group 1: mean 3.04 (SD 0.77); n=8, Group 2: mean 3.03 (SD 0.75); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain Rating Chart at 12 months; Group 1: mean 3.3 (SD 0.83); n=4, Group 2: mean 2.7 (SD 0.84); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at Up to 4 months
- Actual outcome: Sickness Impact Profile-Self at 5 weeks; Group 1: mean 24.28 percentage (SD 9.75); n=8, Group 2: mean 25.34 percentage (SD 10.09); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at >4 months
- Actual outcome: Sickness Impact Profile-Self at 12 months; Group 1: mean 20.77 percentage (SD 8.29); n=6, Group 2: mean 18.94 percentage (SD 12.79); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome: State-Trait Anxiety Inventory at 5 weeks; Group 1: mean 51.13 (SD 14.23); n=8, Group 2: mean 48.89 (SD 8.83); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Beck Depression Inventory at 5 weeks; Group 1: mean 18.38 (SD 6.38); n=8, Group 2: mean 12.11 (SD 3.73); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: State-Trait Anxiety Inventory at 12 months; Group 1: mean 47.17 (SD 17.01); n=6, Group 2: mean 46.56 (SD 11.51); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Beck Depression Inventory at 12 months; Group 1: mean 12.83 (SD 6.69); n=6, Group 2: mean 10.56 (SD 5.21); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Nicholas 1991[409]
	Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome: Medication intake at 5 weeks; Group 1: mean 1.25 (SD 0.83); n=8, Group 2: mean 1.23 (SD 1.22); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: Medication intake at 12 months; Group 1: mean 1.67 (SD 1.37); n=6, Group 2: mean 1.44 (SD 0.96); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + BEHAVIOURAL + EDUCATION versus 2 CORE ELEMENTS: PHYSICAL + EDUCATION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain Rating Chart at 5 weeks; Group 1: mean 2.23 (SD 0.66); n=8, Group 2: mean 3.03 (SD 0.75); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain Rating Chart at 12 months; Group 1: mean 2.56 (SD 0.97); n=5, Group 2: mean 2.7 (SD 0.84); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: Sickness Impact Profile-Self at 5 weeks; Group 1: mean 18.14 percentage (SD 11.46); n=8, Group 2: mean 25.34 percentage (SD 10.09); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome: Sickness Impact Profile-Self at 12 months; Group 1: mean 23.85 percentage (SD 12.5); n=6, Group 2: mean 18.94 percentage (SD 12.79); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome: State-Trait Anxiety Inventory at 5 weeks; Group 1: mean 50.38 (SD 13.63); n=8, Group 2: mean 48.89 (SD 8.83); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Beck Depression Inventory at 5 weeks; Group 1: mean 17.13 (SD 10.29); n=8, Group 2: mean 12.11 (SD 3.73); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months

Study	Nicholas 1991[409]
- Actual outcome: State-Trait Anxiety Inventory at 12 months; Group 1: mean 42.83 (SD 9.42); n=6, Group 2: mean 46.56 (SD 11.51); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Beck Depression Inventory at 12 months; Group 1: mean 18.67 (SD 10.04); n=6, Group 2: mean 10.56 (SD 5.21); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months - Actual outcome: Medication intake at 5 weeks; Group 1: mean 1.25 (SD 1.09); n=8, Group 2: mean 1.23 (SD 1.22); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 8: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: Medication intake at 12 months; Group 1: mean 1.17 (SD 1.37); n=6, Group 2: mean 1.44 (SD 0.96); n=9; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

Study	Nicholas 1992[410]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=20)
Countries and setting	Conducted in Australia; Setting: Not specified
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention: 5 weeks, follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Subjects were selected from patients referred from the pain clinic of a major city hospital, and by specialists and general medical practitioners.
Stratum	Overall

Study	Nicholas 1992[410]
Subgroup analysis within study	Not applicable
Inclusion criteria	Subjects were accepted into the program provided they met the following criteria: 1) history of chronic (i.e. than 6 months) non-malignant low back pain, 2) not considered suitable for further invasive treatments, 3) aged between 20 and 60 years, 4) no (insurance) compensation claim due for settlement within 12 months, 5) able to read and speak English, 6) willing to participate in a research-orientated treatment program
Exclusion criteria	Not explicitely stated.
Recruitment/selection of patients	Subjects were selected from patients referred from the pain clinic of a major city hospital, and by specialists and general medical practitioners.
Age, gender and ethnicity	Age - Mean (range): 43.7 (26-61). Gender (M:F): 11 men, 9 women. Ethnicity: Not specified
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>6 months).
Extra comments	Baseline scores (mean SD) for MBR phys, cog and education, and MBR phys and education group respectively - pain intensity: 3.13±0.88, 2.84±0.85; depression: 17.33±7.41, 20.44±10.62; sickness impact profile: 30.87±12.17, 32.10±13.45; medication users (no. of participants): 10, 9.
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. MBR programme delivered by a multidisciplinary team. All subjects received the same physiotherapy input which consisted of information, exercises and a set of written materials. The sessions were primarily educational in nature and were intended to teach some basic back anatomy, back-care procedures, medical terms associated with back conditions and different types of medication commonly prescribed for people with back pain. Training in exercises that are thought to strengthen back support muscles was also given. Four sessions of exercise practice in a heated, indoor hydrotherapy pool were included to provide practice of the physiotherapy mobilisation exercises under supervision. The cognitive-behavioural treatment was based largely on work of Frodyce (1976), Turk et al. (1983), Turner (1982) and Rybstein-Blinchik (1979). Subjects were encouraged to identify long-term behavioural goals that they wished to achieve in a number of areas (medication use, recreation and social activities, home duties and work) and to work towards these goals in a step-like way each week. The psychologist verbally praised each subject for signs of progress. Subjects were also encouraged to see the relationship between their cognitive and affective responses to pain. Ways of dealing with unrealistic, non-coping cognitions were discussed in a manner similar to that described by Turk et al. (1983), which stressed the importance of identifying non-coping cognitions, challenging them and replacing them with more appropriate coping self-statements. Distraction techniques (Rybstein-Blinchik 1979, Turk et al. 1983) were also taught.The treatment program consisted of one 2h and one 1.5h session per week for 5 weeks. One hour of the first session each week was conducted by the two physiotherapists and the other hour was conducted by the psychologist (MKN) who had had 5 years of experience

Study	Nicholas 1992[410]
	since completing his clinical qualification. At the second session each week subjects were seen by two registered physiotherapists under the supervision of a senior physiotherapist (JG). . Duration 5 weeks . Concurrent medication/care: Subjects were requested to record medication intake on their Pain Rating Chart over a week at each of the four assessment occasions. Medication types included narcotic analgesics, non-narcotic analgesics, non-steroidal anti-inflammatory drugs antidepressants and sedatives/hypnotics. Subjects were also taught the progressive muscle relaxation training technique described by Bernstein and Borkovec (1973). Three 30 minute audiotapes were used; the first focused on muscle groups above the waist, the second on the whole body and the third on the whole body but with individual muscle groups combined into four inclusive groups (both arms, legs, torso and head/neck). Subjects were given the first tape at the first session with the psychologist, the second tape at session three and the third tape at session four. Subjects were instructed to practice relaxation at least twice daily. (n=10) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. MBR programme delivered by a multidisciplinary team. All subjects received the same physiotherapy input which consisted of information, exercises and a set of written materials. The sessions were primarily educational in nature and were intended to teach some basic back anatomy, back-care procedures, medical terms associated with back conditions and different types of medication commonly prescribed for people with back pain. Training in exercises that are thought to strengthen back support muscles was also given. Four sessions of exercise practice in a heated, indoor hydrotherapy pool were included to provide practice of the physiotherapy mobilisation exercises under supervision. In addition to the same physiotherapy program given to subjects in the treatment condition, subjects in the control condition attended five sessions with the psychologist. Subjects were informed that these sessions were aimed at providing the opportunity to discuss problems of living with chronic back pain with others who had a similar problem. Throughout each session the psychologist attempted to present a friendly, empathetic manner but was reflective rather than directive in approach. Direct questions to the psychologist were deflected onto other subjects to answer on the basis of their experience. No coping methods were taught and no information on the nature of chronic pain or treatments available was provided. No encouragement or reinforcement for practicing the exercise was given by the psychologist. The treatment program consisted of one 2h and one 1.5h session per week for 5 weeks. One hour of the first session each week was conducted by the two physiotherapists and the other hour was conducted by the psychologist (MKN) who had had 5 years of experience since completing his clinical qualification. At the second session each week subjects were seen by two registered physiotherapists under the supervision of a senior physiotherapist (JG). . Duration 5 weeks . Concurrent medication/care: Subjects were requested to record medication intake on their Pain Rating Chart over a week at each of the four assessment occasions. Medication types included narcotic analgesics, non-narcotic analgesics, non-steroidal anti-inflammatory drugs antidepressants and sedatives/hypnotics. Subjects were also taught the progressive muscle relaxation training technique described by Bernstein and Borkovec (1973). Three 30 minute audiotapes were used; the first focused on muscle groups above the waist, the second on the whole body and the third on the whole

Study	Nicholas 1992[410]
	body but with individual muscle groups combined into four inclusive groups (both arms, legs, torso and head/neck). Subjects were given the first tape at the first session with the psychologist, the second tape at session three and the third tape at session four. Subjects were instructed to practice relaxation at least twice daily.
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus 2 CORE ELEMENTS: PHYSICAL + EDUCATION

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Pain Rating Chart at 5 weeks; Group 1: mean 3.07 (SD 0.79); n=9, Group 2: mean 2.72 (SD 0.77); n=9; Pain rating chart 0 to 5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain Rating Chart at 6 months; Group 1: mean 2.89 (SD 0.64); n=9, Group 2: mean 2.75 (SD 1.11); n=8; Pain Rating Chart 0 to 5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at Up to 4 months
- Actual outcome: Sickness Impact Profile - Self at 5 weeks; Group 1: mean 18.81 percentage (SD 10.97); n=9, Group 2: mean 26.08 percentage (SD 16.4); n=9; Sickness Impact Profile - self 0 to 100 Top=--; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at >4 months
- Actual outcome: Sickness Impact Profile - Self at 6 months; Group 1: mean 18.3 percentage (SD 11.18); n=9, Group 2: mean 25.31 percentage (SD 14.34); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome: Beck Depression Inventory at 5 weeks; Group 1: mean 14.69 (SD 6.2); n=9, Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: Beck Depression Inventory at 6 months; Group 1: mean 14.44 (SD 5.98); n=9, Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months
- Actual outcome: Medication intake at 5 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 8: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months

Study	Nicholas 1992[410]
- Actual outcome: Medication intake at 6 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Additional treatment at 6 months; Group 1: mean 0.22 Number of additional treatments received for back pain in the 6 months following the treatment program. (SD 0.44); n=9, Group 2: mean 0.38 Number of additional treatments received for back pain in the 6 months following the treatment program. (SD 0.74); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Pengel 2007[428]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=259)
Countries and setting	Conducted in Australia, New Zealand; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 6 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-80 years; nonspecific LBP at least 6 weeks and no longer than 12 weeks. Did NOT exclude participants receiving LBP treatment apart from spinal surgery, osteoarthritis, spondylitis, spondylolysis, spondylolisthesis, disc protrusion, herniation or prolapse or spinal stenosis
Exclusion criteria	Spinal surgery in last 12 months, pregnancy, nerve root compromise, confirmed or suspected serious spinal abnormality (e.g. infection, fracture, cauda equina), contraindications to exercise, poor comprehension of English language
Recruitment/selection of patients	Direct referral to trial by healthcare professional (n=1), invitations to patients on hospital waiting lists for physiotherapy treatments of LBP (m=73) and advertisements in newspapers (n=185)
Age, gender and ethnicity	Age - Mean (SD): 49.9 (15.8) years. Gender (M:F): 135:124. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (6-12 weeks duration).

Study	Pengel 2007[428]
Extra comments	Baseline details (mean, SD) for exercise+CBA+advice, exercise+CBA+sham advice, respectively - pain: 5.4 (2.2), 5.4 (1.9); RMDQ: 9.1 (4.8), 8.3 (5.0); depression; 7.3 (8.8), 7.1 (7.8)
Indirectness of population	No indirectness
Interventions	(n=63) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. Programme delivered by a unidisciplinary team (physiotherapists). PHYSICAL: Individualised, progressive submaximal programme designed to improve the abilities of participants to comlete functional activities specified as being difficult to perform due to back pain. Aerobic exercise (e.g. walking/cycling programme); stretches; functional activities; activities to build speed, endurance and coordination; trunk- and limb-strengthening exercises. COGNITIVE: CBAincluding goal-setting (increasing difficulty), encouraging self-monitoring of progress and promoting self-reinforcement. Individualised home exercise programme. 3 sessions per week in weeks 1 and 2, 2 sessions per week in weeks 3 and 4 and 1 session per week in weeks 5 and 6. EDUCATION: Advice sessions aimed to encourage a graded return to normal activities. The physiotherapist explained the benign nature of low back pain, addressed any unhelpful beliefs about back pain, and emphasized that being overly careful and avoiding light activity would delay recovery.. Duration 6 weeks. Concurrent medication/care: Not reported (n=65) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. Programme delivered by a unidisciplinary team (physiotherapists). PHYSICAL: Individualised, progressive submaximal programme designed to improve the abilities of participants to complete functional activities specified as being difficult to perform due to back pain. Aerobic exercise (e.g. walking/cycling programme); stretches; functional activities; activities to build speed, endurance and coordination; trunk- and limb-strengthening exercises. COGNITIVE: CBA including goal-setting (increasing difficulty), encouraging self-monitoring of progress and promoting self-reinforcement. Individualised home exercise programme. 3 sessions per week in weeks 1 and 2, 2 sessions per week in weeks 3 and 4 and 1 session per week in weeks 5 and 6. SHAM ADVICE: Participants were given the opportunity to talk about their low back pain and any other problems. The physiotherapist responded in a warm and empathetic manner, displaying genuine interest in the participant, but did not give advice about the low back pain. 3 sessions per week in weeks 1 and 2, 2 sessions per week in weeks 3 and 4 and 1 session per week in weeks 5 and 6.. Duration 6 weeks. Concurrent medication/care: Not reported
Funding	Academic or government funding (National Health and Medical Research Council of Australia and the Australian Low Back Pain Trial Committee)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus 2 CORE ELEMENTS: PHYSICAL + COGNITIVE

Study	Pengel 2007[428]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain at 3 months; Other: (Linear mixed model); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain at 12 months; Other: (Linear mixed model); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris Disability Questionnaire at 3 months; Other: (Linear mixed model); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome: Roland-Morris Disability Questionnaire at 12 months; Other: (Linear mixed model); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome: Depression Anxiety Stress Scale (DASS) for depression at 3 months; Other: (Linear mixed model); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome: DASS for depression at 12 months; Other: (Linear mixed model); Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Preyde 2000[437]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=104)
Countries and setting	Conducted in Canada; Setting: Health and Performance Centre, University of Guelph, Ontario which offers multidisciplinary services such as sports medicine, physiotherapy and chiropractic manipulation.

Study	Preyde 2000[437]
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 1 month + follow up 1 month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Self report verified from subject's physician
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-81 years; subacute (1 week to 8 months) LBP; stable health
Exclusion criteria	Significant pathology e.g. fracture, nerve damage or severe psychiatric condition; pregnancy
Recruitment/selection of patients	University email, flyers sent to family physicians and advertisements in local newspapers
Age, gender and ethnicity	Age - Range of means: Mean 46 years; 41.9 to 48.4 between groups. Gender (M:F): 47:51. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (Subacute (1 week-8 months)).
Extra comments	Baseline valued for 2-MBR physical (manipulation + exercise) + education, Manual therapy (manipulation) and 2-MBR physical (exercise) + education, respectively: RDQ 8.3 (4.2), 8.6(4.4), 7.2(5.2); McGill Pain PPI 2.4(0.8), 2.2(0.8), 2.2(0.7); 12.3(5), 10.6(5.8), 10.2(6.4); McGill pain PRI 12.3(5), 10.6(5.8), 10.2(6.4); STAI 31.8(9.8), 37.2(10.3), 32.6(7.5)
Indirectness of population	No indirectness
Interventions	(n=26) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. Programme delivered by a unidisciplinary team (physiotherapists). Comprehensive massage therapy including soft-tissue manipulation 30-35 minutes. Stretching exercises for trunk, hips and thighs including flexion and modified extension; within pain-free range, held for 30 seconds in a relaxed manner, performed twice on one occasion per day for related areas and more frequently for affected areas. Encouraged to engage in general strengthening or mobility exercises e.g. walking, swimming, aerobics to build overall fitness. Education of posture and body mechanics, particularly as they related to work and daily activities was provided. Exercise + education 15-20 minutes. 6 treatments within 1 month. Duration 1 month. Concurrent medication/care: patients asked not to seek additional therapy for low back pain for duration of study, those taking anti-inflammatory medications asked to refrain on test days (n=27) Intervention 2: Manual therapy - Manipulation. Same soft tissue manipulation as in combination group but no other treatment. Duration 1 month. Concurrent medication/care: patients asked not to seek aditional therapy for low back pain for duration of study, those taking anti-inflammatory medications asked to refrain on test days (n=24) Intervention 3: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Education. Programme delivered by a unidisciplinary team (physiotherapists). Same exercise and education

Study	Preyde 2000[437]
	component as combination group but not massage. Duration 1 month. Concurrent medication/care: patients asked not to seek aditional therapy for low back pain for duration of study, those taking anti-inflammatory medications asked to refrain on test days (n=27) Intervention 4: Placebo/Sham - Sham. Sham low level laser (not functioning) but held over area of complaint for about 20 minutes (attention control). Duration 1 month. Concurrent medication/care: patients asked not to seek aditional therapy for low back pain for duration of study, those taking anti-inflammatory medications asked to refrain on test days
Funding	Academic or government funding (College of Massage Therapists of Ontario)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2-ELEMENT MBR: PHYSICAL (MANIPULATION + EXERCISE) + EDUCATION versus MANUAL THERAPY (MANIPULATION)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: McGill Present Pain Intensity at 1 month follow up after end of treatment; Group 1: mean 0.42 None (SD 0.6); n=24, Group 2: mean 1.18 None (SD 1.5); n=22; McGill Present Pain Intensity 0-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Rating Index at 1 month follow up after end of treatment; Group 1: mean 2.29 None (SD 4.2); n=24, Group 2: mean 4.55 None (SD 5.7); n=22; McGill Pain Rating Index 0-79 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome: Roland Morris Disability Score at 1 month follow up after end of treatment; Group 1: mean 1.54 Not stated (SD 2); n=24, Group 2: mean 2.86 Not stated (SD 3.1); n=22; Roland Morris Disability Score 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome: State Anxiety Index Score at 1 month follow up after end of treatment; Group 1: mean 23.79 None (SD 3.8); n=24, Group 2: mean 30.73 None (SD 9.8); n=22; State Anxiety Index Score 20-80 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2-ELEMENT MBR: PHYSICAL (EXERCISE) + EDUCATION versus MANUAL THERAPY (MANIPULATION)

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: McGill Present Pain Intensity at 1 month follow up after end of treatment; Group 1: mean 1.33 (SD 0.8); n=21, Group 2: mean 1.18 (SD 1.5); n=22; McGill Pain PPI score 0-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: McGill Pain Rating Index at 1 month follow up after end of treatment; Group 1: mean 5.19 (SD 4.3); n=21, Group 2: mean 4.55 (SD 5.7); n=22; McGill

Study	Preyde 2000[437]
Pain PRI score 0-79 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: Roland Morris Disability Score at 1 month follow up after end of treatment; Group 1: mean 5.71 (SD 4.8); n=21, Group 2: mean 2.86 (SD 3.1); n=22; RMDQ 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome: State Anxiety Index Score at 1 month follow up after end of treatment; Group 1: mean 28.81 (SD 7.1); n=21, Group 2: mean 30.73 (SD 9.8); n=22; STAI 20-80 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Rasmussen-barr 2003[442]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=47)
Countries and setting	Conducted in Sweden; Setting:
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks intervention + 3months and 12 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP (sub-acute, chronic or recurrent) seeking care at a physiotherapy clinic. Age 18-60 years with LBP (pain >6 weeks) with or without radiation to the knee and pain provoked by provocation tests of lower lumbar segments.
Exclusion criteria	Prior segmental stabilising training, manual treatment in the previous 3 months, prior spinal surgery, radiation to the

Study	Rasmussen-barr 2003[442]
	leg or legs with overt neurological signs, pregnancy, known lumbar disc hernia, diagnosed inflammatory joint disease, known severe osteoporosis, or known malignant disease.
Recruitment/selection of patients	Not reported
Age, gender and ethnicity	Age - Range: 18 - 60 years. Gender (M:F): 12/35. Ethnicity:
Further population details	1. Chronicity of pain : Mixed (>6 weeks duration).
Extra comments	Pain, VA, median (25/75th percentile): MBR = 33 (27/49); MANUAL = 32 (21/49). Oswestry index, median (25/75th percentile): MBR = 18 (8/25); MANUAL = 14 (10/21). DRI, disability rating index, median (25/75th percentile): MBR = 32 (15/47); MANUAL = 33 (20/46).
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. MBR 2 core elements delivered by a unidisciplinary team (physiotherapist). Treatment programme, pts met individually with a physiotherapist (PT) once/week for 45 mins and told how to activate and control thier deep abdominal and MF muscles. PHYSICAL: Biomechanical (stabilising training) exercises. Gradually developed by applying low load to the muscles through the limbs in different positions. Instructed how to use contraction of the muscles during daily activities and in situations tha set off pain. Also encoraged to do self-management (training programme 10-15 mins at hoem each day).COGNITIVE: taught how the muscles act as stabilisers for the spine, and re-learning motor control of the muscles. Taught how to activate the deep abdominal muscles as well as relaxed breathing in different positions. Activation of MF with the deep muscles was also trained. PT monitored pts by palpitating lower abdominal and MF muscles, and a biopressure unit was used in the learning process.Pts also taught basic ergonomics.. Duration 6 weeks intervention + 3 months and 12 months follow-up. Concurrent medication/care: None reported (n=23) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. 45 mins once/week session with PT. MANUAL THERAPIES: based on physical examination. They could include a combination of muscle stretchimng, segmental traction, and soft tissue mobilisation (and if needed mobilisation of stiff thoracic and lumbar segments) + SELF-MANAGEMENT: pts encouraged to go on with their usual home activities and exercises (which did not include specific stabilising exercises. Patients also were taugh basic ergonomics.. Duration 6 weeks intervention + 3 months and 12 months follow-up. Concurrent medication/care: None reported
Funding	Academic or government funding (Anne-Marie and Ragnar Hemborg Foundation)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus COMBINED NON-INVASIVE INTERVENTIONS	

Study	Rasmussen-barr 2003[442]
Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain, VAS (0-10) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain, VAS (0-10) at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: Oswestry LBP questionnaire, % at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: DRI, Disability Rating Index (0-10) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome: Owestry LBP questionnaire, % at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: DRI, Disability Rating Index (0-10) at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Skouen 2002[485]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=195)
Countries and setting	Conducted in Norway
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks, follow up upto 24 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	Long-term sick-listed employees with low back pain, with or without sciatica.

Study	Skouen 2002[485]
Exclusion criteria	Active rheumatologic disease, progressive neurologic disease, serious cardiac or other internal medical conditions, decreased lung capacity, traumas, infections, acute vascular catastrophes, were pregnant, had insufficient knowledge of the Norwegian language, loss of vision or hearing, or were registered substrate abusers.
Age, gender and ethnicity	Age - Mean (SD): Usual care: 44 (11.7), MBR programme: 42.9 (10.5). Gender (M:F): Define. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Not stated / Unclear
Extra comments	Baseline data not reported
Indirectness of population	No indirectness
Interventions	(n=57) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 3 CORE ELEMENTS: Physical + Cognitive + Education. Programme delivered by a multidisciplinary team (physiotherapist; nurse; psychologist). Six hour sessions, 5 days a week. The programme included cognitive behavioural modification in group sessions: two 1 hour group sessions per week; education: anatomy, pain mechanism, exercise, and mental coping strategies applied at work and daily life; graded exercise under supervision by physiotherapist given daily to patients for 1.5-3.5 hours- exercises involved increasing flexibility of the spine and strengthening of the stabilising muscle groups. At the end of the 4 week programme, a home rehabilitation plan was made. The team was composed of a physiotherapist, a nurse, a psychologist.Duration 4 weeks. Concurrent medication/care: Not stated (n=95) Intervention 2: Usual care. Usual care: GP administered medication and referral to either physiotherapists or chiropractors. . Duration 4 week. Concurrent medication/care: Not stated
Funding	Academic or government funding (Royal Norwegian Ministry of Health and Social Affairs)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 3 CORE ELEMENTS: PHYSICAL + COGNITIVE + EDUCATION versus USUAL CARE Protocol outcome 1: Return to work at >4 months - Actual outcome: Number of months at work at Please enter a time period.; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=172)
Countries and setting	Conducted in Netherlands; Setting: Three Dutch outpatient rehabilitation centres
Line of therapy	Not applicable
Duration of study	Intervention time: 10 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Rehabilitation treatment necessary to resolve or reduce the functional limitations due to LBP; age between 18 and 65 years, non-specific LBP >3 months resulting in disability (Roland Disability Questionnaire >3) and ability to walk at least 100m
Exclusion criteria	Vertebral fracture, spinal inflammatory disease or infection, malignancy, current nerve root pathology, spondylolysis, spondylolisthesis, lumbar spondylodesis, medical comorbidity making exercise impossible (e.g. cardiovascular disease), clear treatment preference, not proficient in Dutch, pregnancy, substance abuse interfering with treatment; psychopathology that might hamper individual or group processes
Recruitment/selection of patients	Referred by GP or medical specialist
Age, gender and ethnicity	Age - Mean (SD): 41.91 (9.65) years. Gender (M:F): 93:79. Ethnicity:
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months duration).
Extra comments	Baseline scores (mean SD) for mixed exercise, psychological therapies, MBR and wait list control respectively - RDQ: 14.15±3.70, 13.74±3.65, 13.51±3.92, 13.96±3.88; pain: 51.23±26.55, 48.84±23.51, 45.98±23.95, 51.02±25.4; BDI: 10.38±7.62, 10.45±7.06, 9.75±6.68, 9.78±7.67.. 1. Acute pain : (>3 months). 2. Pain severity: (Baseline pain 48.56 (24.58) on 0-100mm VAS). 3. Risk assessment for chronicity: (Already chronic). 4. Structural pathology: No clear structural pathology (Exclusion criterion).
Indirectness of population	No indirectness
Interventions	(n=61) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. rogramme delivered by a multidisciplinary team (physiotherapists; clinical psychologist or social worker). Active physical training (APT) and problem solving training (PST) in same frequency and duration as in APT and GAP groups, respectively. Graded activity (GA) started in 3rd week, increase in activities by end of 4th week. Total of 19 GA sessions. APT 3 times a week, PST once a week, GA initially 3 times a week decreasing to once a week. Called

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
	Combination Treatment (CT) in paper. Physiotherapists for active physical treatment and CBT; clinical psychologist or social worker for problem solving training. Duration 10 weeks. Concurrent medication/care: Allowed to continue medication prescribed at baseline but other co-interventions discouraged (and none took place). In case of acute and severe psychosocial stress or pathology (severe depression, high risk for suicide or personal problems the patient did not wish to discuss during group treatment), a consultation with clinical psychologist or social worker was possible and these could refer to professional help outside rehabilitation centre. (n=53) Intervention 2: Mixed exercise - Biomechanical + aerobic. Group (maximum 4 patients): 30 minutes aerobic training on a bicylce (65-80% heart rate maximum) and 75 min of strength and endurance training of lower back and upper leg muscles (3 series of 15-18 repetitions in a dynamic-static manner with training intensity 70% of 1-repetition maximum, which was re-assessed after every 5th session); 3 times a week for 10 weeks. Called Active Physical Treatment (APT) in paper. Duration 10 weeks. Concurrent medication/care: Allowed to continue medication prescribed at baseline but other co-interventions discouraged (and none took place). In case of acute and severe psychosocial stress or pathology (severe depression, high risk for suicide or personal problems the patient did not wish to discuss during group treatment), a consultation with clinical psychologist or social worker was possible and these could refer to professional help outside rehabilitation centre. (n=58) Intervention 3: Psychological therapies - CBA. Graded activity (GA) plus problem solving training (PST). Graded activity: physiotherapist or occupational therapist focused on time-contingent increase or pacing of three activities important and relevant for the individual. Daily performance registered in diary. Therapists positively reinforced progress towards pre-set goals. No physical training (muscle strengtheining or aerobic exercise) or relaxation training. Partner invited to 1 session to explain rationale and they were to reinforce healthy behaviour (gradual increase in activity). Graded activity started with three group sessions then maximum 17 individual sessions of 30 min. Frequency gradually decreased from 3/week to 1/week. Problem-solving: 3 sessions in which rationale and skill of positive problem orientation discussed. Sessions 4-10 focused on problem formulation and definition, generation of alternatives, decision-making, implementation and evaluation. Patients received a course book with summary of session and homework assignments. Clinical psychologist or social worker provided 10 sessions of 1.5 hours to maximum 4 patients at a time. This group called Graded activity with problem solving training: GAP.. Duration 10 weeks. Concurrent medication/care: Allowed to continue medication prescribed at baseline but other co-interventions discouraged (and none took place). In case of acute and severe psychosocial stress or pathology (severe depression, high risk for suicide or personal problems the patient did not wish to discuss during group treatment), a consultation with clinical psychologist or social worker was possible and these could refer to professional help outside rehabilitation centre. (n=51) Intervention 4: Waiting list - Waiting list control. Patients requested to wait 10 weeks after which they were

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
	offered regular individual rehab treatment.. Duration 10 weeks. Concurrent medication/care: Not allowed to participate in Dx or therapeutic procedures for their LBP during the waiting period.
Funding	Academic or government funding (Zorgonderzoek Nederland/Medische Wetenschappen (ZonMw))

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus BIOMECHANICAL + AEROBIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS 0-100 at 10 weeks; Group 1: mean 4.9 (SD 24.3); n=55, Group 2: mean 4.72 (SD 24.3); n=52; Risk of bias: --; Indirectness of outcome:

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: VAS 0-100 at 12 months; Group 1: mean -5.73 (SD 24.2); n=55, Group 2: mean 2.31 (SD 24.2); n=51; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at Up to 4 months
- Actual outcome: RMDQ at 10 weeks; Group 1: mean 2.47 (SD 4.9); n=55, Group 2: mean 2.42 (SD 4.7); n=52; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at >4 months
- Actual outcome: RMDQ at 12 months; Group 1: mean 2.12 (SD 4.6); n=53, Group 2: mean 3.28 (SD 4.7); n=51; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months
- Actual outcome: BDI at 10 weeks; Group 1: mean 0.69 (SD 5.3); n=55, Group 2: mean 2.86 (SD 5.3); n=52; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months
- Actual outcome: BDI at 12 months; Group 1: mean 2.17 (SD 5.3); n=53, Group 2: mean 3.23 (SD 5.3); n=51; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome: General practice (no. of visits) at 12 months; Group 1: mean 2.12 (SD 2.45); n=56, Group 2: mean 2.99 (SD 5.58); n=52; Risk of bias: --; Indirectness of outcome: No indirectness
- Actual outcome: Specialist care (no. of visits) at 12 months; Group 1: mean 1.55 (SD 2.63); n=56, Group 2: mean 1.7 (SD 2.81); n=52; Risk of bias: --; Indirectness of outcome: No indirectness
- Actual outcome: Radiology (no. of visits) at 12 months; Group 1: mean 0.26 (SD 1.48); n=56, Group 2: mean 0.06 (SD 0.24); n=52; Risk of bias: --; Indirectness of outcome: No indirectness
- Actual outcome: Occupational physician (no. of visits) at 12 months; Group 1: mean 0.12 (SD 0.5); n=56, Group 2: mean 0.1 (SD 0.41); n=52; Risk of bias: --;

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
Indirectness of outcome: No indirectness - Actual outcome: Therapist (no. of sessions) at 12 months; Group 1: mean 7.36 (SD 25.36); n=56, Group 2: mean 4.41 (SD 9.47); n=52; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: Psychologist (no. of visits) at 12 months; Group 1: mean 0.34 (SD 1.24); n=56, Group 2: mean 0.57 (SD 3.14); n=52; Risk of bias: --; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus CBA Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS 0-100 at 10 weeks; Group 1: mean 4.9 (SD 24.3); n=55, Group 2: mean 10.25 (SD 24.4); n=55; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: VAS 0-100 at 12 months; Group 1: mean -5.73 (SD 24.2); n=55, Group 2: mean 3.15 (SD 24.1); n=52; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: RMDQ at 10 weeks; Group 1: mean 2.47 (SD 4.9); n=55, Group 2: mean 3.04 (SD 4.7); n=55; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome: RMDQ at 12 months; Group 1: mean 2.12 (SD 4.6); n=53, Group 2: mean 3.74 (SD 4.7); n=52; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 5: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome: BDI at 10 weeks; Group 1: mean 0.69 (SD 5.3); n=53, Group 2: mean 2.31 (SD 5.3); n=55; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 6: Psychological distress (HADS/GHQ/BDI/STAI) at >4 months - Actual outcome: BDI at 12 months; Group 1: mean 2.17 (SD 5.3); n=53, Group 2: mean 2.08 (SD 5.3); n=53; Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 7: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: General practice (no. of visits) at 12 months; Group 1: mean 2.12 (SD 2.45); n=56, Group 2: mean 3.29 (SD 4.62); n=52; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: Specialist care (no. of visits) at 12 months; Group 1: mean 1.55 (SD 2.63); n=56, Group 2: mean 1.12 (SD 1.97); n=52; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: Radiology (no. of visits) at 12 months; Group 1: mean 0.26 (SD 1.48); n=56, Group 2: mean 0.16 (SD 0.46); n=52; Risk of bias: --; Indirectness of	

Study (subsidiary papers)	Smeets 2006[489] (Smeets 2008[488], Smeets 2009[486], Smeets 2006[490], Smeets 2008[487])
outcome: No indirectness - Actual outcome: Occupational physician (no. of visits) at 12 months; Group 1: mean 0.12 (SD 0.5); n=56, Group 2: mean 0.24 (SD 0.96); n=52; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: Therapist (no. of sessions) at 12 months; Group 1: mean 7.36 (SD 25.36); n=56, Group 2: mean 9.03 (SD 18.34); n=52; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome: Psychologist (no. of visits) at 12 months; Group 1: mean 0.34 (SD 1.24); n=56, Group 2: mean 0.29 (SD 1.26); n=52; Risk of bias: --; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus WAITING LIST CONTROL Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: VAS 0-100 at 10 weeks; MD -8.23 (95%CI -16.37 to -0.1); Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome: RMDQ at 10 weeks; MD -2.56 (95%CI -4.27 to -0.85); Risk of bias: --; Indirectness of outcome: No indirectness Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome: BDI at 10 weeks; MD 0.04 (95%CI -1.71 to 1.79); Risk of bias: --; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Sousa 2009[109]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Brazil; Setting: Outpatient clinic
Line of therapy	Unclear
Duration of study	Intervention time: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica

Study	Sousa 2009[109]
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP >3 months
Exclusion criteria	Disc herniation, tumours, infections, osteoarticular inflammatory diseases, fibromyalgia syndrome, chronic obstructive pulmonary disease, vertebral fractures
Recruitment/selection of patients	Selected successively
Age, gender and ethnicity	Age - Range of means: Intervention 45.31, control 47.47 years. Gender (M:F): 17:43. Ethnicity: White control 23, treatment 17; Asian 0 and 1, Non-White 7 and 12 patients
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>3 months).
Extra comments	Baseline scores (median, mean, SD) - VAS: MBR 4, 4.97±2.73, control 5.5, 5.88±2.99; RMDQ: MBR 9, 9.97±6, control 13.5, 12.57±7.3; STAI state: MBR 39, 39.31±8.71, control 43, 43±9.05; STAI trait: MBR 46, 47.72±14.13, control 48.5, 50.57±9.49; BDI: MBR 12, 14.86±11.51, control 17, 18.13±8.62
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Waiting list - Waiting list control. Paracetamol 500mg every 6 hours if neessary. Duration 2 months. Concurrent medication/care: No other intervention (n=30) Intervention 2: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. 16-session programme, twice weekly for 8 weeks that included global muscle relaxation, exercises to stregnthen the abdominal muscles (with and without biofeedback) and cognitive restructuring techniques. Paracetamol 500mg every 6 hours if neessary. Uni/multidisciplinary delivery of the programme was unclear. Duration 2 months. Concurrent medication/care: Not stated
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PAIN MANAGEMENT PROGRAMMES versus WAITING LIST CONTROL

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 2 months; Group 1: mean 3.35 Not stated (assume cm) (SD 2.48); n=27, Group 2: mean 4.76 Not stated (assume cm) (SD 2.8); n=25; VAS Not stated (assume 0-10) Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: RMDQ at 2 months; Group 1: mean 5.31 Not stated (SD 4.79); n=27, Group 2: mean 8.16 Not stated (SD 6.2); n=25; RMDQ Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Sousa 2009[109]
Protocol outcome 3: Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: State-Trait Anxiety Inventory: State at 2 months; Group 1: mean 35.54 Not stated (SD 6.38); n=27, Group 2: mean 40.84 Not stated (SD 8.23); n=25; State-Trait Anxiety Inventory: State Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: State-Trait Anxiety Inventory: Trait at 2 months; Group 1: mean 41.58 Not stated (SD 12.85); n=27, Group 2: mean 45.4 Not stated (SD 9.26); n=25; State-Trait Anxiety Inventory: Trait Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Beck Depression Inventory at 2 months; Group 1: mean 12.08 Not stated (SD 13.95); n=27, Group 2: mean 12.6 Not stated (SD 11.19); n=25; Beck Depression Inventory Not stated Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study	Vibe fersum k. 2013[546]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=169)
Countries and setting	Conducted in Norway; Setting: Outpatient physiotherapy
Line of therapy	Unclear
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	--
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Between the ages of 18 and 65. Diagnosed with non specific lower back pain for more than 3 months that were primarily localized from T12 to gluteal folds, and they reported that their pain was provoked and relieved with posture movement and activities. Pain intensity on PINRS >2/10, and Oswerty disability score of >14%.

Study	Vibe fersum k. 2013[546]
Exclusion criteria	Continuous sick leave duration >4/12. acute exacerbation of LBP at time of testing in order to avoid regression to the mean, specific LBP diagnosis (eg disc herniation)
Recruitment/selection of patients	from private physiotherapy outpatient practices, GPs and outpatient spine clinic at a local hosptial.
Age, gender and ethnicity	Age - Mean (SD): 42.9 (12.5) control, 41.0 (10.3) intervention. Gender (M:F): 1:1 male:female . Ethnicity:
Further population details	1. Chronicity of pain: Chronic (>3 months duration) (>3months).
Extra comments	Owestry DI (SD): CNTRL = 24.0 (8) and MBR = 21.3 (7.5); Pain intensity last week (SD): CNTRL = 5.3 (1.9) and MBR = 4.9 (2.0)
Indirectness of population	No indirectness
Interventions	(n=62) Intervention 1: Multidisciplinary biopsychosocial rehabilitation (MBR) programmes - 2 CORE ELEMENTS: Physical + Cognitive. Programme delivered by a unidisciplinary team (three experienced physioterapists who conducted the management had undergone 106 hours of CB-CFT training). 2 CORE MBR = behavioural management approach targeting changing individual cognitive, movement and lifestyle behaviours considered to be maladaptive.. Pts seen weekly for first 2/3 weeks, then one session every 2-3 weeks for the rest of the 12 week intervention. Sessions 30-45 mins. PHYSICAL = Specific movement exercises and physical activity programme tailored to the movment classification. Also targeted functional integration of activities in their daily life PSYCHOLOGICAL = cognitive component. viscious cycle of pain was outlined. Duration 12 weeks intervention, and 12 months follow-up. Concurrent medication/care: not described (n=59) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Manual therapy + self-management. Manual therapy (combination of techniques - joint mobilisation or manipulation techniques applied to the spine or pelvis). Biomechnical exercise /self-management: most patients were given exercises or a home exercise programme to follow. This included general exercises or motor control exercsie. Duration 12 weeks, 30 minute sessions. Duration 12 weeks intervention, and 12 months follow-up. Concurrent medication/care: none reported. Comments: Treatment was discontinued if the therapist deemed the participant had no further need.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: 2 CORE ELEMENTS: PHYSICAL + COGNITIVE versus COMBINED NON-INVASIVE INTERVENTIONS

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: PINRS - Pain intensity in previous week at 12 weeks; Group 1: mean 1.7 (SD 1.7); n=51, Risk of bias: High; Indirectness of outcome: No indirectness

Study	Vibe fersum k. 2013[546]
Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: PINRS - Pain intensity in previous week at 12 months; Group 1: mean 2.3 (SD 2); n=51, Group 2: mean 3.8 (SD 2.1); n=43; PINRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: Owestry at 12 weeks; Group 1: mean 7.6 (SD 6.7); n=51, Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome: Owestry at 12 months; Group 1: mean 9.9 (SD 9.8); n=51, Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome: Care-seeking - number of treatments since intervention at 12 months; Group 1: mean 2.1 number of treatments since intervention (SD 5.4); n=51, Group 2: mean 10.6 number of treatments since intervention (SD 13.3); n=43; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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H314 Return to work programmes

Study (subsidiary papers)	Anema 2007[10] (Steenstra 2006[503], Steenstra 2006[504])
Study type	RCT (Clusters randomised; Parallel)
Number of studies (number of participants)	1 (n=196)
Countries and setting	Conducted in Netherlands; Setting: 13 occupational health services
Line of therapy	Unclear
Duration of study	Intervention + follow up: Return to work programme up to 8 weeks; then graded activity up to 13 weeks; follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Assessed by occupational physician
Stratum	Overall

Study (subsidiary papers)	Anema 2007[10] (Steenstra 2006[503], Steenstra 2006[504])
Subgroup analysis within study	Not applicable
Inclusion criteria	On sick leave from regular work for 2 to 6 weeks due to low back pain. Workers have to be in the working age range, that is 18 to 65 years old and are able to understand Dutch in a way that they can give real informed consent and to complete written questionnaires (in Dutch). The workers have low back pain defined as: pain localised in the lower back without a specific underlying cause, between the lower angle of the scapulae and above the buttocks (ICD-10 codes: M54.5, M54.4, M54.3, M54.1, M54.8 and M54.9).
Exclusion criteria	Specific causes of low back pain: herniated discs with pareses; paralysis; spinal tumour; spinal fracture; ankylosing spondilitis; spinal stenosis; spondylolisthesis; specific rheumatological diseases; pregnancy, serious psychiatric disorders; (ICD-10 code: M51, M51.2, M51.4, M51.3, M51.8, M40–M54, M45, M46.0, M46.1, M46.8, M49, and M46.9) or a legal conflict at work, sick-listed due to low back pain less than one month prior to the current episode of sick leave.
Recruitment/selection of patients	The workers' occupational physician (OP) informs the researchers whether inclusion in the study is justified on medical grounds.
Age, gender and ethnicity	Age - Mean (SD): Workplace intervention: 44.0 (8.6), usual care: 41.2 (10.7) years. Gender (M:F): 84:112. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (Only new incident cases).
Extra comments	Baseline scores (mean SD) for multidisciplinary programmes, usual care, single interventions, usual care 2nd randomisation groups, respectively - RDQ: 14.9 (4.2), 13.8 (4.6), 14.4 (4.5), 15.8 (3.2); pain severity: 6.5 (1.7), 6.3 (1.7), 6.6 (1.4), 6.7 (1.5). First OPs were randomised and their patients received workplace intervention or usual care (first comparison). Then those not returned to work at 6 weeks re-randomised at patient level for graded activity programme or usual care (stratified within original randomisation groups; second comparison, so comparator = usual care +/- workplace, and a similar number in the treatment group also had/did not have workplace intervention). The authors also presented analyses for Workplace + graded activity (n=27) vs. the rest (n=85: workplace only or graded activity only or usual care in both randomisations) but this comparison not data extracted as not all patients had the same intervention and not comparable between intervention and comparator (heterogeneous) groups.
Indirectness of population	No indirectness
Interventions	(n=96) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Multidisciplinary programmes with a specific return to work focus. The workplace intervention involved the occupational physician (OP)and GP working together to reach consensus on counselling the worker in return to work according to a protocol, communication between the GP, OP and employer regarding the OPs management policy, optional work place visit by occupational therapist, implementation of the participative work adjustment protocol by the OHS's ergonomist or Occupational Health nurse for workplace assessments and modifications to aid return to

Study (subsidiary papers)	Anema 2007[10] (Steenstra 2006[503], Steenstra 2006[504])
	work. . Duration Up to 8 weeks. Concurrent medication/care: Usual care as for usual care group (n=100) Intervention 2: Usual care. Following Dutch OP guidelines for LBP, advice by OP to resume normal dailiy activities and work within 2 weeks, education on good prognosis and coping with low back pain as well fear of movement. . Duration Up to 8 weeks. Concurrent medication/care: Not stated (n=55) Intervention 3: Interventions/multidisciplinary programmes with a specific return to work focus - Single interventions with a specific return to work focus. Graded Activity: implemented by 47 physiotherapists from several in- and out-company training-centres, trained in the Graded Activity protocol. The purpose of the program is to restore occupational function and to facilitate return to work. Primary aim of the program is return to previous work and not pain reduction. All subjects eligible for Graded Activity are sick listed for 8 weeks. During the program the worker is responsible for the results of the therapy. The worker has an active role and the physiotherapist acts as a coach and supervisor, using a hands-off approach The Graded Activity program consists of the following components: (1) Patient history and physical examination, (2) measurement of functional capacity, (3) an individual, submaximal, gradually increasing exercise program, with an operant-conditioning behavioural approach, based on the results of functional capacity tests, the demands from the patients work and the patients expectations on time to return to work. Exercise sessions have a frequency of twice a week and last for an hour per session. The first session takes approximately 1.5 hours since a physical examination is part of the first session. The entire program consists maximally of 26 sessions (maximum duration is thus three months). The program should be stopped earlier if a lasting return to own or equal work has been established according to an earlier agreed upon schedule. In the first session the physiotherapist takes the workers case history. Asking questions on the nature of low back pain (duration, intensity) and on the knowledge of the subject provided by other health care professionals and significant others. Furthermore it is important to know which actions and situations, both private and at work, are troublesome because of low back pain. The physiotherapist asks the worker on his expected date of return to work and the conditions that have to be provided to return to work. This case history should not take more than 5 minutes. In the first session, the physiotherapist also performs a physical examination to assess range of motion of the spine. In case of radiating pain a short neurological examination should be performed (test of Lasègue or Bragard, knee tendon reflex and/ or Achilles' tendon reflex, sensibility test of the foot). Based on this physical examination, the physiotherapist confirms the diagnosis made by the occupational physician that no abnormalities could be found. Following the examination, the physiotherapist gives counselling on the origin of low back pain, the benign nature and good prognosis of back pain and the patients' own responsibility. This message might take extra effort and repetition in the following sessions. The remainder of the first session and the following two sessions are used to get a good estimate of the workers functional capacity. The main objective of functional capacity evaluation is reaching a good starting point for therapy. All exercises during the functional capacity evaluation are based on the working to tolerance principle This testing-phase is pain contingent, which means that the worker may stop if he feels pain or other discomfort. From the

Study (subsidiary papers)	Anema 2007[10] (Steenstra 2006[503], Steenstra 2006[504])
	start, the goal of the Graded Activity program is made clear by the physiotherapist: return to work by gradually increasing physical activities. The end of the program is reached as soon as return to regular work is established. The 3 months time limit is not communicated to the worker, because it will probably lead to a time lag. In dialogue, the worker and the therapist reach agreement on the date of return to work. The therapist gently adjusts unreal goals. The OP's expert opinion on return to work is being considered in this process. Every other six sessions the progress made and the date for return to work are evaluated. The Graded Activity program consists of: 1. aerobic exercises on the stationary bike, or rowing machine; 2. a step exercise; 3. a lattisimus exercise, the initial weight can either be chosen by the physiotherapist or the worker; 20 to 30 repetitions in a test situation are considered to be an ideal test-result; 4. a dynamic extension exercise: preferably performed on a lower back bench, despite the fact that it might be somewhat frightening to the worker; 5. Abdominal exercise, for instance crunches, or a crossed version of the crunch where the heterolateral knee has to be touched; 6. Getting up from a simple chair, without hand support, possibly making the exercise heavier by holding a (heavy) object; 7/8. Exercises seven and eight are to be designed by the physiotherapist and the worker and should be based on the actions and situations mentioned in the anamnesis. They should simulate the problematic motions of the worker, preferably by simulating working situations. Some of the exercises can be used as a home assignment. Besides the above mentioned equipment, dumbbells/ free weights and boxes have to be available for simulating working situations. During the exercise part of the program (i.e. from session 4 onwards) time contingent principles are used, meaning that pain is not a reason for stopping or altering the program, unless a clear relapse (new injury) or deterioration to back pain as mentioned as exclusion criterion in the study population section has taken place. The exercise goals are defined based on the functional capacity evaluation. The starting point of the program is based on 70% of the mean of all functional capacity test results. The load of each exercise at the end of the program (moment of return to work) is agreed upon at this starting point. The quotas should always be followed exactly, neither underperformed, nor over-performed. The latter might prove difficult for some, especially in the beginning stages of the program. The first quotas are slightly lower than baseline level, to ensure the experience of success ("sure to win"). Successful completion of the quotas should enhance the patients' motivation. Positive reinforcement is a key principle in operant conditioning theory and will be provided by reaching the quotas and by appropriate feedback from the physiotherapist. In case the physiotherapist finds out that significant others, like partners or co-workers, influence the change in pain behaviour in a negative way, they are invited to attend one or more sessions to gain insight in the rationale of the therapy. After return to work the worker meets with the physiotherapist for a last time to evaluate the experiences on the work floor.. Duration Up to 3 months. Concurrent medication/care: Usual care as for usual care group Comments: 27 previously assigned to workplace intervention + 28 originally in usual care group (n=57) Intervention 4: Usual care. As for original usual care group. Duration Up to 3 months. Concurrent medication/care: Not stated Comments: 25 previously assigned to workplace intervention + 33 in original usual care group

Study (subsidiary papers)	Anema 2007[10] (Steenstra 2006[503], Steenstra 2006[504])
Funding	Academic or government funding (The Netherlands Organisation for Health Research and Development (ZON/Mw), Dutch Ministries of Health, Welfare and Sports and of Social Affairs)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS versus USUAL CARE

Protocol outcome 1: Quality of life at Up to 4 months
- Actual outcome: Mean improvement in quality of life at 8 weeks; Group 1: mean 0.21 (SD 0.27); n=94, Group 2: mean 0.26 (SD 0.29); n=92; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Mean improvement in numeric pain rating scale at 8 weeks; Group 1: mean -2.45 Not stated (SD 2.65); n=94, Group 2: mean -2.66 Not stated (SD 2.69); n=94; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at Up to 4 months
- Actual outcome: Mean improvement in Roland-Morris Disability Questionnaire at 8 weeks; Group 1: mean -7.84 Not stated (SD 5.69); n=94, Group 2: mean -8.75 Not stated (SD 6.29); n=94; Roland-Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome: Minutes of consultation with occupational physician at 12 months; Group 1: mean 110.9 Minutes (SD 38.2); n=25, Group 2: mean 110.4 Minutes (SD 49.3); n=32; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: GP visits at 12 months; Group 1: mean 0.9 number of visits (SD 1.4); n=25, Group 2: mean 1.8 number of visits (SD 1.9); n=32; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Physio visits at 12 months; Group 1: mean 10 number of visits (SD 9.7); n=25, Group 2: mean 13.2 number of visits (SD 11); n=32; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Manual therapy visits at 12 months; Group 1: mean 1.9 number of visits (SD 3.8); n=25, Group 2: mean 4.1 number of visits (SD 7.8); n=32; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Return to work at Up to 4 months
- Actual outcome: Days to return to work at 8 weeks; Group 1: mean 100.14 Days (SD 96.38); n=96, Group 2: mean 130.12 Days (SD 69.58); n=100; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 6: Return to work at >4 months
- Actual outcome: Return to work at 12 months; HR 1.7 (95%CI 1.2 to 2.3) Reported; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Anema 2007[10] (Steenstra 2006[503], Steenstra 2006[504])
Protocol outcomes not reported by the study	Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months

Study	The Bergen Study: Back to Work trial: Haldorsen 1998[192]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=223)
Countries and setting	Conducted in Norway; Setting: Community
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients on sick leave (>50%) for 8 weeks for LBP; employed
Exclusion criteria	Pregnant, insufficient knowledge of Norwegian language, loss of vision or hearing, registered substance abusers; active rheumatological disease, progressive neurological disease, serious cardiac or other internal medical conditions, decreased lung capacity, malignant basic diseases, acute traumas, infections or acute vascular catastrophes
Recruitment/selection of patients	Approached by National Health Insurance
Age, gender and ethnicity	Age - Mean (SD): 43 (10.8) years. Gender (M:F): 105:118. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Not stated / Unclear (On sick leave for 8 weeks).
Extra comments	No baseline scores reported
Indirectness of population	No indirectness
Interventions	(n=142) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus -

Study	The Bergen Study: Back to Work trial: Haldorsen 1998[192]
	Multidisciplinary programmes with a specific return to work focus. RTW focused study: part of te Bergen Study: Back to work. 6-h sessions 5 days per week including physical treatment (group morning exercise, body awareness, relaxation training, stretching, cardiovascular training, exercises in heated pool, work training, individually based medical training therapy, exercise), CBT (improving coping skills and changing illness behaviour to health-related behaviour; encouraged to take responsibility for own health/lifestyle; behavioural goal setting, problem-solving, self-rewards, coping strategies, reducing stress), education (anatomy, pain, physical and mental coping strategies, work and lifestyle) and workplace-based intervention (physical and psychological strains at workplace examined; telephone conference with company health service and/or work supervisor, site visit, possible re-education); neurologist, GP, psychologist, 2 nurses, 4 physiotherapists. Followed up with individual advice at 2, 6 and 10 months at clinic and telephone contacts at 2 weeks and 4 and 8 months. Duration 4 weeks. Concurrent medication/care: Not stated (n=81) Intervention 2: Usual care. Followed up by GP without any feedback or advice on therapy; given usual care e.g. physiotherapy. Duration Up to 1 year. Concurrent medication/care: Not stated
Funding	Academic or government funding (Royal Norwegian Department of Health and Social Affairs)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS versus USUAL CARE Protocol outcome 1: Return to work at >4 months - Actual outcome: Return to work at 12 months; Group 1: 71/142, Group 2: 47/34; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

Study	Jensen 2012[254]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=300)

Study	Jensen 2012[254]
Countries and setting	Conducted in Denmark; Setting: Rheumatological outpatient clinics
Line of therapy	Unclear
Duration of study	Intervention time: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with LBP; age 17-63, paid work employment, willingness to accept workplace visit if needed, concerns about ability to maintain current job independently of sick leave status; Danish-speaking
Exclusion criteria	Referral for low back surgery, pregnancy, serious comorbidity
Recruitment/selection of patients	Referred by GP or other hospital wards for specialist evaluation at one of two rheumatological outpatient clinics
Age, gender and ethnicity	Age - Mean (SD): Intervention 46.2 (9.5), control 44.6 (10.3) years. Gender (M:F): 101:123. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Not stated / Unclear
Extra comments	Baseline scores (mean sd) - pain NRS: intervention 6.5 (2.6), control 6.3 (2.5); SF36 bodily pain: intervention 45.1 (20.2), control 42.9 (20.0); Roland Morris Questionnaire: intervention 11.7 (5.9), control 11.1 (5.3); SF36 physical functioning: intervention 68.0 (22.6), control 69.3 (19.1); Sick leave >90 days because of low back pain (%): intervention 12.7, control 9.8
Indirectness of population	No indirectness
Interventions	(n=150) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Single interventions with a specific return to work focus. Initial counselling session by occupational physician (OP), workplace visit if required, 6-week status interview with focus on compliance and adherence to the plan made together with the OP; 3-month follow up concluding counselling session with OP.. Duration 3 months. Concurrent medication/care: Not stated (n=150) Intervention 2: Usual care. Brief instruction in exercises, or readmission to GP for further contact with physiotherapist or chiropractic treatment. Duration 3 months. Concurrent medication/care: Not stated
Funding	Academic or government funding (Danish Research Fund for the Working Environment)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SINGLE INTERVENTIONS WITH A SPECIFIC RETURN TO WORK FOCUS versus USUAL CARE

Protocol outcome 1: Quality of life at Up to 4 months

Study	Jensen 2012[254]
- Actual outcome: SF-36 Bodily Pain at 3 months; Group 1: mean 13.5 None (SD 19.4); n=110, Group 2: mean 7.3 None (SD 21.9); n=114; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-36 Physical Functioning at 3 months; Group 1: mean 10.4 None (SD 16.8); n=110, Group 2: mean 4.8 None (SD 14.5); n=114; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain NRS at 3 months; Group 1: mean -2.6 Not stated (SD 2.8); n=110, Group 2: mean -1.9 Not stated (SD 3); n=114; NRS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome: Roland-Morris Questionnaire at 3 months; Group 1: mean -3.2 Not stated (SD 4.8); n=110, Group 2: mean -2.2 Not stated (SD 5.1); n=114; Roland Morris Questionnaire 0-23 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Return to work at Up to 4 months - Actual outcome: Sick leave >8 weeks at 3 months; Group 1: 17/150, Group 2: 29/150; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at >4 months

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Study (subsidiary papers)	Lambeek 2010[304] (Lambeek 2007[302], Lambeek 2010[303])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=134)
Countries and setting	Conducted in Netherlands; Setting: Primary care (10 physiotherapy practices, one occupational health service, one occupational therapy practice) and secondary care (five hospitals).
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 12 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall

Study (subsidiary papers)	Lambeek 2010[304] (Lambeek 2007[302], Lambeek 2010[303])
Subgroup analysis within study	Not applicable
Inclusion criteria	Adults aged 18-65 with low back pain who had visited an outpatient clinic (mainly orthopaedics and neurology, but also rheumatology and neurosurgery) in one of the participating hospitals, had had low back pain for more than 12 weeks, were in paid work (paid employment or self employed) for at least eight hours a week, and were absent or partially absent from work
Exclusion criteria	Patients who had been absent from work for more than two years; had worked temporarily for an employment agency without detachment; had specific low back pain due to infection, tumour, osteoporosis, rheumatoid arthritis, fracture, or inflammatory process; had undergone lumbar spine surgery in the past six weeks or had to undergo surgery or invasive examinations within three months; had a serious psychiatric or cardiovascular illness; were pregnant; or were engaged in a lawsuit against their employer.
Recruitment/selection of patients	Patients with low back pain who had visited one of the participating hospitals received a letter from their medical specialist within one week of their visit informing them about the trial
Age, gender and ethnicity	Age - Mean (SD): Intervention 45.5 (8.9), usual care 46.8 (9.2) years. Gender (M:F): 66:68. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Chronic (>3 months duration) (>12 weeks).
Extra comments	Baseline scores (mean SD) - function: intervention 14.7 (5.0), UC 15.0 (3.6); pain: intervention 5.7 (2.2), usual care 6.3 (2.1)
Indirectness of population	No indirectness
Interventions	(n=66) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Multidisciplinary programmes with a specific return to work focus. Integrated care management by clinical occupational physician: Aim—To plan and coordinate care and communicate with other involved healthcare professionals. Period—From week 1 to full sustainable return to work, or week 12. Content—Formulate treatment plan (week 1), monitor treatment plan (week 6), and, when necessary, communicate with other healthcare professionals. Workplace intervention: Aim—To achieve consensus of all stakeholders about adjustments to the workplace to facilitate return to work. Period—From week 3 to week 12. Content—Observation of patient's workplace; obstacles on return to work ranked independently by supervisor and patient; patient, supervisor, and occupational therapist brainstorm and discuss possible solutions for obstacles until reaching consensus. Graded activity: Aim—To restore patient's occupational function and supervise return to work. Period—From week 2 to full sustainable return to work, or after receipt of 26 sessions of graded activity (within maximum of 12 weeks). Content—Baseline (consisting of three sessions) to test patient's functional capacity; individually graded exercise programme, teaching patients that, despite pain, moving is safe while increasing activity level. The overall aim of the integrated care was to restore occupational functioning and achieve lasting return to work for patients in their own job or similar work, and not to reduce pain. The integrated care was coordinated by a clinical occupational physician and consisted

Study (subsidiary papers)	Lambeek 2010[304] (Lambeek 2007[302], Lambeek 2010[303])
	of a workplace intervention based on participatory ergonomics and a graded activity programme, which is a time contingent programme based on cognitive behavioural principles.. Duration 12 weeks. Concurrent medication/care: Not stated (n=68) Intervention 2: Usual care. Patients allocated to the usual care group received the usual treatment from their medical specialist, occupational physician, general practitioner, and/or allied health professionals.. Duration 12 weeks. Concurrent medication/care: Not stated
Funding	Academic or government funding (VU University Medical Center, TNO Work & Employment, Dutch Health Insurance Executive Council, Stichting Instituut GAK, and the Netherlands Organisation for Health Research and Development)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Pain at 12 months; Group 1: mean 1.64 (SD 0.35); n=58, Group 2: mean 1.85 (SD 0.36); n=59; VAS 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at Up to 4 months
- Actual outcome: Function at 12 months; Group 1: mean 7.16 (SD 0.71); n=58, Group 2: mean 4.43 (SD 0.72); n=59; RDQ 0-23 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months
- Actual outcome: Primary care: no. of patients visiting occupational physician at 12 months; Group 1: 10/66, Group 2: 16/68; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Primary care: no. of patients visiting GP at 12 months; Group 1: 10/66, Group 2: 11/68; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Primary care: no. of patients visiting Physio at 12 months; Group 1: 23/66, Group 2: 42/68; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Primary care: no. of patients visiting Graded Activity therapist at 12 months; Group 1: 55/66, Group 2: 0/68; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Primary care: no. of patients visiting Manual therapist at 12 months; Group 1: 6/66, Group 2: 20/68; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Primary care: no. of patients visiting Cesar therapist at 12 months; Group 1: 3/66, Group 2: 5/68; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: Primary care: no. of patients visiting Other Physiotherapist at 12 months; Group 1: 2/66, Group 2: 5/68; Risk of bias: Low; Indirectness of outcome:

Study (subsidiary papers)	Lambeek 2010[304] (Lambeek 2007[302], Lambeek 2010[303])
No indirectness - Actual outcome: Primary care: no. of patients visiting Psychologist at 12 months; Group 1: 2/66, Group 2: 5/68; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Primary care: no. of patients visiting Alternative therapist at 12 months; Group 1: 12/66, Group 2: 16/68; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Secondary care: no. of patients visiting medical specialist at 12 months; Group 1: 13/66, Group 2: 29/68; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Secondary care: no. of patients having diagnostic tests at 12 months; Group 1: 21/66, Group 2: 44/68; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Secondary care: no. of patients having inpatient visit or surgery at 12 months; Group 1: 3/66, Group 2: 8/68; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: No. of patients having drugs for back pain at 12 months; Group 1: 27/66, Group 2: 40/68; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Return to work at >4 months - Actual outcome: Duration of continuous period of sick leave at 12 months; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

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Study	Lee 2013[314]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=47)
Countries and setting	Conducted in Hong Kong (China); Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention time: Up to 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable

Study	Lee 2013[314]
Inclusion criteria	Patients with a history of low back pain of less than 12 weeks duration; injured on-duty or on sick leave, aged 18–55 y, moderate psychosocial risk as triaged by the OMPQ score (106–145)
Exclusion criteria	Declined participation. Sick leave of more than 7 days because of low back pain in the past 12 months; Musculoskeletal problems led to seeking medical consultation in the past 12 months; Previous back surgery in the past 12 months; Radiculopathy with nerve root compromise (with 2 or more of the following signs: weakness with power of less than grade 3; reflex changes; associated sensation loss); Presence of specific diagnoses such as MRI-verified disc herniation; spondylolisthesis; spinal stenosis (Pavlov's ratio less than 0.8); and inflammatory diseases; Spinal instability exceeding 4 mm on flexion/extension radiographs; Confirmed or suspected serious spinal abnormality (e.g. tumour, infection, vertebral fracture, or cauda equina syndrome); Pregnancy; Medical diagnosis or comorbid health conditions with contraindications to exercise; Defined or pre-existing psychiatric diagnosis; Drug abuse; Illiteracy; Body mass index of 30 kg/m2 or greater
Recruitment/selection of patients	Recruited from the physiotherapy department of Alice Ho Mui Ling Nethersole Hospital (AHNH)
Age, gender and ethnicity	Age - Mean (SD): Intervention: 38.3 (11.2), control: 36.2 (10.5) years. Gender (M:F): 24:23. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Acute (<3 months duration) (<12 weeks).
Extra comments	Baseline scores (mean SD) for intervention and control groups respectively - pain NRS: 5.57 (1.95), 6.38 (1.43); RMDQ: 13.13 (4.00), 13.48 (4.86); CODI: 44.01 (13.01), 42.28 (12.19)
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Single interventions with a specific return to work focus. Physiotherapists: individual treatment. A cognitive behavioural approach was adopted for the patients receiving treatment in the integrated work rehabilitation programme. The main focus of the programme was functional improvement. Individualised graded activity programme, pacing techniques, work conditioning, return-to-work goal setting, self-management strategies, job analysis, and ergonomic advice were taught to the patients with the aim of improving their physical and functional capabilities with proper attention to return to work.. Duration Up to 3 months. Concurrent medication/care: Not stated (n=23) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Physiotherapists: individual treatment. The treatment in the conventional treatment group was broadly based on the patients' symptoms at presentation and on their response to treatment. It was normally a combination of treatment, including electrophysical agents for pain relief such as interferential therapy, transcutaneous electrical nerve stimulation, lumbar traction, manual therapy, and exercise therapy.. Duration Up to 3 months. Concurrent medication/care: Not stated
Funding	Funding not stated

Study	Lee 2013[314]
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SINGLE INTERVENTIONS WITH A SPECIFIC RETURN TO WORK FOCUS versus COMBINED NON-INVASIVE INTERVENTIONS Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain at At discharge (up to 3 months); Group 1: mean 2.42 Not stated (SD 1.95); n=24, Group 2: mean 3.14 Not stated (SD 2.37); n=23; Numeric Pain Rating Scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Morris Disability Questionnaire at At discharge (up to 3 months); Group 1: mean 5.83 Not stated (SD 4.65); n=24, Group 2: mean 6.59 Not stated (SD 5.42); n=23; Roland Morris Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Chinese Oswestry Disability Index (CODI) at At discharge (up to 3 months); Group 1: mean 18.9 Not stated (SD 14.02); n=24, Group 2: mean 22.55 Not stated (SD 14.33); n=23; Chinese Oswestry Disability Index (CODI) 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at >4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months; Return to work at >4 months

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Study (subsidiary papers)	Staal 2004[501] (Hlobil 2005[221], Hlobil 2007[222])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=134)
Countries and setting	Conducted in Netherlands; Setting: Occupational health services center at Schipol airport
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention mean 7 weeks; max 3 months and follow up to 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Assessed by occupational physician
Stratum	Overall (acute, chronic) without sciatica

Study (subsidiary papers)	Staal 2004[501] (Hlobil 2005[221], Hlobil 2007[222])
Subgroup analysis within study	Not applicable
Inclusion criteria	Absent from work (full or partial) because of non-specific LBP and symptoms for 4 weeks in succession.
Exclusion criteria	Radiation below the knee with signs of nerve root compression; cardiovascular contraindications for physical activity; conflict between worker and employer with legal involvement; pregnancy
Recruitment/selection of patients	Occupational physicians
Age, gender and ethnicity	Age - Mean (SD): Graded activity 39 (9), usual care 37 (8) years. Gender (M:F): 126:8. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (>4 weeks).
Extra comments	Baseline scores (mean SD) - function RDQ: intervention 13.3±4.6, UC 13±4.9; pain severity: intervention 6.7±1.8, UC 6.4±1.7
Indirectness of population	No indirectness
Interventions	(n=67) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Multidisciplinary programmes with a specific return to work focus. Graded activity, a physical exercise programme based on operant-conditioning behavioural principles. Physiotherapist. Two 1-hour sessions per week. Education. Exercises (aerobic, abdominal, back and leg) and individually tailored exercises to simulate and practice problematic tasks at work or ADL; gradually increased. Return to work plan . Duration Up to 3 months . Concurrent medication/care: Usual care from GP (n=67) Intervention 2: Usual care. Usual care and guidance from occupational physician.. Duration Up to 3 months. Concurrent medication/care: Not allowed to attend physiotherapy practice where intervention group were treated; GPs could treat according to Dutch College of General Practitioners guidelines
Funding	Academic or government funding (Dutch Health Insurance Executive Council)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS (GRADED ACTIVITY) versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 3 months; Group 1: mean -2.8 Not stated (SD 2.4); n=61, Group 2: mean -2.5 Not stated (SD 2.8); n=63; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain VAS at 12 months; Group 1: mean -2.9 Not stated (SD 3.1); n=60, Group 2: mean -2.7 Not stated (SD

Study (subsidiary papers)	Staal 2004[501] (Hlobil 2005[221], Hlobil 2007[222])
3); n=59; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 3 months; Group 1: mean -6.3 Not stated (SD 6.7); n=62, Group 2: mean -4.9 Not stated (SD 6.2); n=64; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Roland Disability Questionnaire at 12 months; Group 1: mean -7.3 Not stated (SD 6); n=60, Group 2: mean -6.7 Not stated (SD 6.7); n=60; Roland Disability Questionnaire 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Consultations with GP at 12 months; Group 1: mean 2.2 (SD 4.1); n=67, Group 2: mean 4.5 (SD 6.9); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Consultations with occupational physician at 12 months; Group 1: mean 3.9 (SD 3.5); n=67, Group 2: mean 4.8 (SD 4.1); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: CT scans/MRI scans at 12 months; Group 1: mean 0.2 (SD 0.9); n=67, Group 2: mean 0.03 (SD 0.2); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: x-ray lumbar back at 12 months; Group 1: mean 0.5 (SD 1.8); n=67, Group 2: mean 0.4 (SD 1.3); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Physio and paramedical therapy sessions at 12 months; Group 1: mean 35.1 (SD 21.9); n=67, Group 2: mean 27.6 (SD 48.7); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Consultations to specialist at 12 months; Group 1: mean 0.3 (SD 1.2); n=67, Group 2: mean 0.3 (SD 0.9); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Consultations to alternative therapist at 12 months; Group 1: mean 0.7 (SD 4.2); n=67, Group 2: mean 1.4 (SD 5.6); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain medication at 12 months; Group 1: mean 1.2 (SD 2.1); n=67, Group 2: mean 1.6 (SD 2.6); n=67; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 6: Return to work at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Median days absence from work at 12 months; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Work disabled due to LBP at 12 months; Group 1: 5/67, Group 2: 8/67; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Adverse events (morbidity) at Define; Psychological

Study (subsidiary papers)	Staal 2004[501] (Hlobil 2005[221], Hlobil 2007[222])
	distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

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Study	Van den hout 2003[539]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=84)
Countries and setting	Conducted in Netherlands; Setting: Regabilitation Centre
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 8 weeks + follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Employees who were recently absent due to LBP; age 18-65 years; LBP >6 weeks; on sick leave for LBP no longer than 20 weeks and no more than 120 days sick leave in last year
Exclusion criteria	Specific back disorders (vertebral fracture, infectious disease, rheumatoid arthritis, ankylosing spondylitis, herniated disc), predominant psychopathology; pregnant; not proficient in Dutch; seeing a medical specialist other than a rehabilitation physician for LBP at time of referral; medical comorbidity (if disorder interfered with treatment programmeor rendered patient unable to participate in every part of the programme; involved in litigation regarding work conflicts
Recruitment/selection of patients	Referred by GPs, occupational physicians or rehabilitation physicians
Age, gender and ethnicity	Age - Mean (range): 40 (23-54) years. Gender (M:F): 64:20. Ethnicity: Not stated
Further population details	1. Chronicity of pain : Mixed (Pain >6 weeks and sick leave <20 weeks).
Extra comments	Baseline scores (mean SD) - function RDQ: GAPS 13.8±5.4, GAGE 12.5±5.2; pain MPQ: GAPS 17.8±10.6, GAGE 17.6±9
Indirectness of population	No indirectness
Interventions	(n=45) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Multidisciplinary programmes with a specific return to work focus. GAPS: 19 half-day sessions over 8 weeks in small groups of at most 5 patients, plus individual meetings with patients. 15 x 1-hour sessions of Graded Activity (operant

Study	Van den hout 2003[539]
	behavioural treatment, increasing activity by quota systems with positive reinforcement) plus workplace visit + 3 sessions of back education/lifting instructions. Occupational therapist treated patients individually for 30 minutes/week, applying graded activity to personally relevant activities e.g. wok, housekeeping and leisure-time activities; multi-disciplinary return to work plan. Problem-Solving therapy (CBT): behaviour therapists.. Duration 8 weeks. Concurrent medication/care: Subjects had to agree to stop any other ongoing treatments for back disorders. (n=39) Intervention 2: Interventions/multidisciplinary programmes with a specific return to work focus - Multidisciplinary programmes with a specific return to work focus. GAGE: 19 half-day sessions over 8 weeks in small groups of at most 5 patients, plus individual meetings with patients. 15 x 1-hour sessions of Graded Activity (operant behavioural treatment, increasing activity by quota systems with positive reinforcement) plus workplace visit + 3 sessions of back education/lifting instructions. Occupational therapist treated patients individually for 30 minutes/week, applying graded activity to personally relevant activities e.g. wok, housekeeping and leisure-time activities; multi-disciplinary return to work plan. Group Education: 10 x 90-minute sessions in which issues relating to back and back pain were discussed: physio, occupational therapist and psychologist used protocolised manual. . Duration 8 weeks. Concurrent medication/care: Subjects had to agree to stop any other ongoing treatments for back disorders.
Funding	Academic or government funding (Council for Medical and Health Research of the Netherlands)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS (GAPS) versus MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS (GAGE) Protocol outcome 1: Return to work at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Return to work at 12 months; Group 1: 35/41, Group 2: 22/35; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

Study	Whitfill 2010[568]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=142)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Unclear
Duration of study	Intervention + follow up: Intervention 4-10 weeks and follow up to 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: History, examination
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	English speakers; age 18-65 years; acute LBP within last 3 months; no current illnesses or diseases that directly caused or exacerbated the pain (e.g. lupus or arthritis); not urgently in need of surgery; uninterrupted pain on a daily basis while performing usual ADL; high risk of developing chronic LBP disability
Exclusion criteria	None apart from above
Recruitment/selection of patients	Referred to the Acute Low Back Pain Program
Age, gender and ethnicity	Age - Mean (SD): 41.8 (11.2) years. Gender (M:F): 56:67. Ethnicity: Caucasian: 48, Latino: 20, African American: 30, Asian: 4, Other: 0 of completers
Further population details	1. Chronicity of pain : Acute (<3 months duration) (<3 months).
Extra comments	Baseline scores (mean SD) for intervention group and control group respectively - VAS: 6.00 (2.07), 5.95 (1.95); depression: 11.63 (9.30), 9.43 (9.58); SF36: 33.00 (8.09), 35.99 (10.13).
Indirectness of population	No indirectness
Interventions	(n=89) Intervention 1: Interventions/multidisciplinary programmes with a specific return to work focus - Multidisciplinary programmes with a specific return to work focus. Early intervention: medical examination; 6-9 physical therapy sessions (stretching and exercises to maintain/improve strength, endurance and range of motion); 6-9 behavioural medicine sessions (tailored) of 45 minutes each following a protocol focusing on stress management/biofeedback and CBT skills (coping, distraction etc); half of patients also received work transition component of up to 6 sessions of 45 minutes each + case management by occupational therapist; printed workbook and didactic sessions tailored to specific situations . Duration 4-10 weeks. Concurrent medication/care: Not stated Comments: Originally randomised into EI (n=46) or EI + WT (n=43) but groups combined for comparison vs. standard care

Study	Whitfill 2010[568]
	(n=52) Intervention 2: Usual care. Standard care (no further details). Duration Ongoing. Concurrent medication/care: Not stated
Funding	Academic or government funding (National Institutes of Health)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MULTIDISCIPLINARY PROGRAMMES WITH A SPECIFIC RETURN TO WORK FOCUS versus USUAL CARE Protocol outcome 1: Quality of life at >4 months - Actual outcome: Depression at 12 months; Group 1: mean 8.81 (SD 9.49); n=89, Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: SF36 at 12 months; Group 1: mean 40.47 (SD 11.47); n=89, Group 2: mean 39.45 (SD 10.59); n=52; SF36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain at 12 months; Group 1: mean 3.91 (SD 2.86); n=89, Group 2: mean 5.07 (SD 2.78); n=52; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Return to work at >4 months - Actual outcome: Return to work at 12 months; Group 1: 25/27, Group 2: 10/15; Risk of bias: Flawed; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at Up to 4 months; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at Up to 4 months; Adverse events (morbidity) at Define; Function (disability scores) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Up to 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at >4 months; Adverse event (mortality) at Up to 4 months; Adverse event (mortality) at >4 months; Responder criteria at Up to 4 months; Responder criteria at >4 months; Return to work at Up to 4 months

H.15 Spinal injections

Study	Bourne 1984[45]
Study type	RCT (Patient randomised; Parallel)

Number of studies (number of participants)	1 (n=57)
Countries and setting	Conducted in United Kingdom; Setting: Back pain clinic at Old church hospital during 1978-1980
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other non-image guided injections: Non-image guided injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Not stated
Exclusion criteria	Not stated
Recruitment/selection of patients	No information given
Age, gender and ethnicity	Age - --: Not stated. Gender (M:F): Not stated. Ethnicity:
Further population details	
Extra comments	Referred by consultants or GP's after failure to respond to treatment for chronic backache. No baseline values reported
Indirectness of population	No indirectness
Interventions	(n=8) Intervention 1: Non-image guided combination treatment - Methylprednisolone acetate + Lignocaine. Methylprednisolone aqueous suspension 40mg/ml 0.25 ml water for injection 0.75 ml plus 2% lignocaine hydrochloride solution 1.0 ml . Duration unclear. Concurrent medication/care: na Further details: 1. Choice of agent: Methylprednisolone (Plus lignocaine). (n=22) Intervention 2: Non-image guided local anesthetics - Anesthetic. 1% Lignocaine hydrochloride injection 2 ml. Duration unclear. Concurrent medication/care: NA Further details: 1. Choice of agent: Lignocaine (n=27) Intervention 3: Non-image guided combination treatment - Steroid + Anesthetic. Triamcinolone acetate aqueous suspension 10 mg/ml (Adcortyl) 1 ml plus 2% lignocaine hydrochloride injection. Duration unclear. Concurrent medication/care: NA Further details: 1. Choice of agent: Triamcinolone (Plus lignocaine).
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: METHYLPREDNISOLONE (STEROID) GROUP versus ANAESTHETIC GROUP Protocol outcome 1: Responder criteria at 4 months or less - Actual outcome for Other non-image guided injections: responder criteria described as excellent, good and failure with no description of assesment. Cannot be extracted at 2 weeks; Risk of bias: ; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: TRIAMCINOLONE ACEATATE (STEROID) GROUP versus ANAESTHETIC GROUP Protocol outcome 1: Responder criteria at 4 months or less - Actual outcome for Other non-image guided injections: responder criteria described as excellent, good and failure with no description of assesment. Cannot be extracted at unclear; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Cao 2011-1[67]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=80 (120 in study but 40 of these not included in review as had non-protocol treatment))
Countries and setting	Conducted in China; Setting: Unclear if outpatient or inpatient. Treatment fot patient, but general setting was a hospital in Shanghai, China.
Line of therapy	2nd line
Duration of study	Follow up (post intervention): 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other image-guided injections
Subgroup analysis within study	Stratified then randomised: Strata were patients with modic changes type I (n=40). There were 20 more in as well, but these had a non-protocol treatment (steroid + herbal remedy) and so have not been included in this review.
Inclusion criteria	presence of disc degeneration on MRI in at least one level; end plate modic changes either type I or type II AT ONE LEVEL ONLY; positive discography at focused level; failed conservative treatment
Exclusion criteria	<20 years; >60 years; > one-level end plate modic changes on MRI; negative discography for focused level; positive discography at > 1 level; systemic steroid therapy
Recruitment/selection of patients	Unclear
Age, gender and ethnicity	Age - Range of means: 41-42.5 years. Gender (M:F): 25:15. Ethnicity: Chinese
Further population details	
Extra comments	All patients had failed conservative treatment for at-least 6 weeks. Baseline values for VAS was 6.5 +-1.18 in the Steroid Group and 7.1 +- 1.61 in saline group. The baseline values for ODI(%) was 35.7+-11.1 in Steroid Group and 37.9+-14.65 in the Saline group.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Image guided steroids - Steroid. Intradiscal injection of betamethasone. A nurse prepared 3 ml injection solution and 1 ml was injected slowly and gently into the center of the nucleus pulpous under CT guidance.. Duration NA. Concurrent medication/care: NA Further details: 1. Choice of agent: Betamethasone (Betamethasone). (n=20) Intervention 2: Saline. Intra-discal injection of saline. A nurse prepared 3 ml injection solution and 1 ml was injected slowly and gently into the center of the nucleus pulposus under CT guidance.. Duration NA. Concurrent medication/care: NA Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP versus SALINE GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Other image-guided injections: VAS pain at 3 months; Group 1: mean 1.8 VAS (SD 1.03); n=20, Group 2: mean 7 VAS (SD 1.33); n=20; VAS pain 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Other image-guided injections: VAS pain at 6 months; Group 1: mean 2.3 VAS (SD 0.95); n=20, Group 2: mean 7.5 VAS (SD 1.08); n=20; VAS pain 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Other image-guided injections: ODI at 3 months; Group 1: mean 13.1 ODI score (SD 2.22); n=20, Group 2: mean 42 ODI score (SD 13.92); n=20; Oswestry Disability scale 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - Actual outcome for Other image-guided injections: ODI at 6 months; Group 1: mean 14.7 ODI score (SD 3.18); n=20, Group 2: mean 44.4 ODI score (SD 13.98); n=20; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Cao 2011-2[67]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in China; Setting: Unclear if inpatient or outpatient, but general setting was a hospital in Shanghai, China
Line of therapy	2nd line
Duration of study	Follow up (post intervention): 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other image-guided injections
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	presence of disc degeneration on MRI in at least one level; end plate modic changes either type I or type II at one level only; positive discography at focused level; failed conservative treatment
Exclusion criteria	<20 years; >60 years; >one level end plate modic changes on MRI; negative discography for focused level; positive discography at > 1 level; systemic steroid therapy
Recruitment/selection of patients	Unclear
Age, gender and ethnicity	Age - Range of means: 42.5-43. Gender (M:F): 24;16. Ethnicity: Chinese
Further population details	
Extra comments	All patients had failed conservative treatment for 6 weeks .Baseline values for VAS was 6.8 +-1.30 in the Steroid Group and 6.5 +- 1.20 in Saline group. The baseline values for ODI(%) was 31.5+-5.9 in Steroid Group and 32.4+-9.65 in the Saline group.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Image guided steroids - Steroid. Intra-discal injection of betamethasone. A nurse prepared 3ml injection solution and 1 ml was injected slowly and gently into the center of the nucleus pulpous under CT guidance. Duration NA. Concurrent medication/care: NA Further details: 1. Choice of agent: Betamethasone (n=20) Intervention 2: Saline. Intra-discal injection of saline. A nurse prepared 3ml injection solution and 1 ml was injected slowly and gently into the center of the nucleus pulpous under CT guidance. Duration NA. Concurrent medication/care: NA Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP versus SALINE GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Other image-guided injections: Pain VAS at 3 months; Group 1: mean 1.6 VAS (SD 0.84); n=20, Group 2: mean 6.8 VAS (SD 1.03); n=20; VAS pain 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Other image-guided injections: Pain VAS at 6 months; Group 1: mean 2.1 VAS (SD 0.99); n=20, Group 2: mean 6.4 VAS (SD 1.07); n=20; VAS pain 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Other image-guided injections: Pain VAS at 6 months; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Other image-guided injections: ODI at 3 months; Group 1: mean 12.7 ODI score (SD 2.12); n=20, Group 2: mean 33.3 ODI score (SD 10.63); n=20; Oswestry Disability index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - Actual outcome for Other image-guided injections: ODI at 6 months; Group 1: mean 13.8 ODI score (SD 2.32); n=20, Group 2: mean 33.8 ODI score (SD 11.95); n=20; Oswestry Disabilty Index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Carette 1991[69]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=97)
Countries and setting	Conducted in Canada; Setting: Rheumatology outpatient clinic referrals in Quebec, canada.
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Image-guided facet joint injections
Subgroup analysis within study	Not applicable
Inclusion criteria	18-65 years; first or recurrent episode of back pain, buttock pain or both that had lasted for at least 6 months; pain could be intermittent or constant, unilateral or bilateral, with/without radiation, but it had to present on the day of entry into the study; normal neurology;
Exclusion criteria	non mechanical back-pain (eg. tumour, infection, spondylitis); previous injections into the facet joints or back surgery; pregnancy; known allergies to study treatments; blood coagulation disorders.
Recruitment/selection of patients	All eligible patients
Age, gender and ethnicity	Age - Mean (range): 42.5 years in steroid group and 43 years in saline group. Gender (M:F): 53/46. Ethnicity: Not reported
Further population details	
Extra comments	Patients with pain that had lasted for at least six months. Baseline values MSIP for steroid group was 11.4 and 13.4 for Placebo. Baseline VAS scores were 6.3 in steroid group and 6.2 in the Placbo group .
Indirectness of population	No indirectness
Interventions	(n=49) Intervention 1: Image guided steroids - Steroid. Under fluoroscopic guidance, injection of 20 mg (1 ml) of methylprednisolone acetate mixed with 1 ml of isotonic saline. . Duration NA. Concurrent medication/care: Initial testing of facet joint etiology, using prior image guided injections of local anesthetic; if this reduced pain then a facet joint etiology was confirmed. These participants were then eligible for study if the pain returned within 2 weeks at a severity of at least 50% of their original pain. Further details: 1. Choice of agent: Methylprednisolone (methylprednisolone acetate plus 1ml saline). (n=48) Intervention 2: Saline. Under fluoroscopic guidance, injection of 2 ml of isotonic saline. . Duration NA. Concurrent medication/care: Initial testing of facet joint etiology, using prior image guided injections of local anesthetic; if this reduced pain then a facet joint etiology was confirmed. These participants were then eligible for

	study if the pain returned within 2 weeks at a severity of at least 50% of their original pain. Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).
Funding	Academic or government funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP versus SALINE GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Image-guided facet joint injections: VAS pain at 1 month; Group 1: mean 4.5 cm (SD 2.34); n=48, Group 2: mean 4.7 cm (SD 2.34); n=48; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Image-guided facet joint injections: VAS pain at 6 months; Group 1: mean 4 cm (SD 2.33); n=48, Group 2: mean 5 cm (SD 2.33); n=47; VAS pain 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Image-guided facet joint injections: MSIP score at 1 month; Group 1: mean 9.3 points (SD 5.55); n=48, Group 2: mean 9.8 points (SD 5.55); n=48; Mean Sickness Impact profile score 0-100 Top=Unclear; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - Actual outcome for Image-guided facet joint injections: MSIP score at 6 months; Group 1: mean 7.8 points (SD 7.85); n=48, Group 2: mean 10.8 points (SD 7.85); n=47; Mean sickness impact profile score 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Carrasco 2003 trial: Carrasco 2003[71]
Study type	Retrospective cohort study
Number of studies (number of participants)	1 (n=51)
Countries and setting	Conducted in USA; Setting: private practise setting/ pain clinic in Texas, USA.
Line of therapy	Unclear
Duration of study	--:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other non-image guided injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients were noted to have documented myofascial pain with active, reproducible trigger points that were not responsive to NSAID'S, muscle relaxantsm narcotocs or physical therapy. Patients had been treated with Botox for atleast 3 montsh prior to the date of data collection and had received Botox injections in the lumbar paraspinal, gluteal and quadtratus lumborum muscle. Pre and post treatemnt measures pf LBP severity must have been recorded in medical records such as VAS.
Exclusion criteria	patients were excluded from the study if they had previously received Botox treatment in regions/muscles other than the lumbar area
Recruitment/selection of patients	Patients were randomly selected from a list known to have received Botox for the treatment of lumbar myofascial back pain
Age, gender and ethnicity	Age - Other: Mea n (SEM)= 47.8 (1.93). Gender (M:F): 20:31. Ethnicity:
Further population details	
Indirectness of population	No indirectness
Interventions	(n=51) Intervention 1: Image guided botox - Botox. 12.5 unitts of Botox in 1 ml volume at aech of 8 siutes for a total of 100 units per patients. Duration mean time between treatments following Botox injections was 189.11 (12.24) days. Concurrent medication/care: none reported Further details: 1. Choice of agent: Botox (n=51) Intervention 2: Non-image guided combination treatment - Steroid + Anaesthetic. mixture of bupivacaine 0.5% and Kenalog 2 mg/ml-1.5 ml to each of the 4-6 sites . Duration mean time between treatments following Botox injections was 70.43 (8.23) days. Concurrent medication/care: None reported Further details: 1. Choice of agent: Bupivicaine (plus kenalog).

Funding	Study funded by industry (unrestricted grant from Allergen Inc, Irvine, CA)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BOTOX GROUP versus STEROID + ANAESTHETIC GROUP Protocol outcome 1: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Other image-guided injections: Pain (VAS) at Not reprted; Risk of bias: Very high; Indirectness of outcome: Serious indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Colhado 2013[98]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Brazil; Setting: Pain Management in Maringa, Prana State, Brazil
Line of therapy	Unclear
Duration of study	Other:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other non-image guided injections: Non image guided steroid injections
Subgroup analysis within study	Not applicable
Inclusion criteria	patients suffering from chronic LBP associated either with a disc herniation. The inclusion criteria were age over 18 years, a complaint of LBP, and evidence on clinical examination and magnetic resonance imaging of lumbar nerve root compression caused by a disc herniation
Exclusion criteria	Exclusion criteria were presence of tumor, infection, severe heart disease, diabetes mellitus, smoking, alcohol abuse, structural abnormality preventing safe administration of epidural block, and difficulty in understanding the study protocol
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Range: 18-65. Gender (M:F): not stated. Ethnicity:
Further population details	
Extra comments	Baseline values for VAS for: Steroid group(first block)=5.68(2.69) and Steroid+Anaesthetic group (first block)=6.22(2.51) Steroid groupsecond block)=4.85(7.07) and Steroid+Anaesthetic group (second block)=3.79(2.17) Baseline Values for NRS: Steroid group(first block)=53.67(27.19) and Steroid+Anaesthetic group (first block)=60.20(29.08) Steroid groupsecond block)=39.37(25.80) and Steroid+Anaesthetic group (second block)=39.37(22.73)
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Non-image guided steroids - Methylprednisolone. Methylprednisolone acetate 80 mg in 8 mL of 0.9% Saline. Duration 24 hours. Concurrent medication/care: Not stated Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone acetate). Comments: All patients underwent two epidral blocks seperated by an interval of 15 days but were randomised according to agent given (n=30) Intervention 2: Non-image guided combination treatment - Steroid + Anaesthetic. Methylprednisolone acetate

	80 mg mixed with 5 ml of levobupivacaine + 3 mL of 0.9% Saline. Duration 24 Hours. Concurrent medication/care: NA Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone acetate plus Levobupivacaine). Comments: All patients underwent two epidral blocks seperated by an interval of 15 days but were randomised according to agent given (n=30) Intervention 3: Non-image guided steroids - Steroid. Methylprednisolone acetate 80 mg in 8 mL of 0.9% + Saline. Duration 24 hours. Concurrent medication/care: NA Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone acetate). Comments: All patients underwent two epidral blocks seperated by an interval of 15 days but were randomised according to agent given (n=30) Intervention 4: Non-image guided combination treatment - Steroid + Anaesthetic. Methylprednisolone acetate 80 mg mixed with 5 ml of levobupivacaine + 3 mL of 0.9% Saline. Duration 24 hours. Concurrent medication/care: NA Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone acetate + levobupivacaine). Comments: All patients underwent two epidral blocks seperated by an interval of 15 days but were randomised according to agent given
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP (1ST EPIDURAL BLOCK) versus STEROID+ ANAESTHETIC (1ST EPIDURAL BLOCK)

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less
- Actual outcome for Other non-image guided injections: Visual Analogue Scale, VAS (1st block vs 1st block) at 24 Hours; Group 1: mean 3.36 (SD 2.53); n=30, Group 2: mean 2.79 (SD 2.11); n=30; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Other non-image guided injections: 101, Numerical scale of 101 points, NRS (1st block vs 1st block) at 24 Hours; Group 1: mean 30.37 (SD 22.82); n=30, Group 2: mean 26 (SD 23.06); n=30; Numerical Scale of 101 points, NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP (2ND EPIDURAL BLOCK) versus STEROID+ ANAESTHETIC (2ND EPIDURAL BLOCK)

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less
- Actual outcome for Other non-image guided injections: Visual Analogue Scale, VAS (2nd block vs 2nd block) at 24 Hours; Group 1: mean 2.38 (SD 2.63); n=30, Group 2: mean 2.13 (SD 2.03); n=30; Numerical Scale of 101 points, NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Other non-image guided injections: 101, Numerical scale of 101 points, NRS (2nd block vs 2nd block) at 24 Hours; Group 1: mean 25 (SD 27.64); n=30, Group 2: mean 20.57 (SD 19.77); n=30; Numerical scale of 101 points 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No

indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Dechow 1999[110]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=74)
Countries and setting	Conducted in United Kingdom; Setting: Poole Hospital NHS Trust, Secondary Care
Line of therapy	Unclear
Duration of study	Not clear:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Prolotherapy/Sclerosants
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with low back pain for six month aged 18-71 years
Exclusion criteria	patients were excluded if they were pregnant or contemplating pregnancy , had evidence of nerve root entrapment , unresolved litigation, severe co-existing disease or body weight greater than 20 kg over thier ideal.
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): . Gender (M:F): 18:20 in Intervention group and 20:16 in Placebo Group. Ethnicity: Not stated
Further population details	
Extra comments	No Baseline values for VAS and ODI reported
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Non-image guided combination treatment - Anaesthetic+Sclerosant. Three, once weekly injections of a solution of 5 ml of dextrose 25%, glycerine 25% and phenol 2.4% made upto 100 ml with sterile water combined with 5 ml of 1% Lignocaine. Duration 6 months. Concurrent medication/care: NA Further details: 1. Choice of agent: Prolotherapy (dextrose, glycerine, phenol and Lignocaine). Comments: non-image guided (n=38) Intervention 2: Non-image guided local anaesthetics - Anaesthetic. Control goup recieved three, once weekly injections of 5 ml of the normal saline solution combined with 5 ml of 1% lignocaine. Duration 6 months. Concurrent medication/care: NA Further details: 1. Choice of agent: Lignocaine
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ANAESTHETIC+ SCLEROSANTS GROUP versus ANAESTHETIC GROUP Protocol outcome 1: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Prolotherapy/Sclerosants: McGill Pain Questionaire (0-78) at up to 6 months; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Prolotherapy/Sclerosants: Oswestry Disability Questionnaire at up to 6 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Foster 2001[138]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=31)
Countries and setting	Conducted in USA; Setting: Department of Physical Medicine and Rehabilititation and Walter Reed Army Medical Centre
Line of therapy	Unclear
Duration of study	Intervention + follow up: 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other non-image guided injections: Non-image guided Botox Injection
Subgroup analysis within study	Not applicable
Inclusion criteria	Inclusion criteria consisted if 1) LBP 2) pain duration of 6 months or longer 3) pain laterality(either unilateral or if bilateral, showing a left or right predominance)
Exclusion criteria	Exclusion criteria included LBP of less than 6 months duration, age under 18 years, presence of a systemic inflammatory disorder, acute pathology on MRI, known allergy or sensitivity to Botox, current or planned pregnancy, disorders of a neuro-muscular transmission, and anaesthetic or corticosteroid injections to the lumbosacral spine within 12 weeks of enrolment. Patients involved in litigation, seeking significant disability from LBP, or with evident secondary gain were also excluded from the study. All exclusions were performed before trial entry
Recruitment/selection of patients	31 consecutive patients who met the inclusion criteria
Age, gender and ethnicity	Age - Mean (range): Botox Group: 46.4 (21-65) and Saline Group: 47.0 (20-73). Gender (M:F): 15:16. Ethnicity:
Further population details	
Extra comments	Majority of the patients disclosed no clear causative or precipitating factor. 6 had history of disc disease and 3 had a disectomy 5-18 years prior to study.4 patients had a history of remote LBP trauma. MRI revealed chronic changes related to previous surgery in 3 and disclosed evidence of degenerative spine disease in 4 older patients. In no patients did MRI show acute pathology.. Baseline values for VAS varied from 6-10 *mean (7.5) in the Botox group and 5-10 (mean 7) in the Saline group
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Non-image guided botox - Botox. Botulinum toxin A (Allerhen, Inc) was prepared by reconstituting freeze-dried toxin with preservative-free 0.9% saline too 100 units/mL concentration. material was drawn into a 1 mL-tuberculin syringe. Injection were given at 5 lumbar (L1 to L5) or if pain involved the upper sacral region, lumbroscral (L2 to S1) sites; each site recieved 40 units(total 200 units). All patIents were injected only once unilaterally on the side of the pain or pain predominance.. Duration 8 weeks. Concurrent medication/care: Patients on

	the study were onn a variety of analgesic and antispasmodic medications, including baclofen, nonsteroidal anti-inflammatory drugs, antidepressants,and muscle relaxants. They were advised to continue thier medications and not to change the dose during the study. Further details: 1. Choice of agent: Botox (Botulinum toxin A). (n=16) Intervention 2: Saline. 200 units of normal saline. Injection was given at 5 lumbar (L1 to L5) or if pain involved the upper sacral region, lumbroscral (L2 to S1) sites; each site recieved 40 units(total 200 units). All patients were injected only once unilaterally on the side of the pain or pain predominance.. Duration 8 weeks. Concurrent medication/care: Patients on the study were onn a variety of analgesic and antispasmodic medications, including baclofen, nonsteroidal anti-inflammatory drugs, antidepressants,and muscle relaxants. They were advised to continue thier medications and not to change the dose during the study. Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: BOTOX GROUP versus SALINE GROUP Protocol outcome 1: Responder criteria at 4 months or less - Actual outcome for Other non-image guided injections: VAS scores of patients reporting pain relief exceeding 50% at 8 weeks; Group 1: 9/15, Group 2: 2/16; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Fuchs 2005[156]
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in Germany; Setting: Unclear, but study based in Germany
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: X ray confirmation of facet joint OA
Stratum	Image-guided facet joint injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Persistent pain in lumbar spine for at least 3 months before study; radiological confirmation of facet joint OA of Kellgren grade 2/3; good general and nutritive condition
Exclusion criteria	History of hypersensitivity or contraindication to the test products, intra-articular treatment; anticoagulant use; radicular pain or other conditions that would interfere with the findings on non-radicular low back pain.
Recruitment/selection of patients	Nort reported
Age, gender and ethnicity	Age - Range of means: 64.97 to 65.87. Gender (M:F): 18/42. Ethnicity: Not reported
Further population details	
Extra comments	Kellgren scores varied between 2.28 and 3.36 at levels between L3 to L5. Basement VAS values in the Hyaluronans group was 69.2 +-14.2 and Steroid group was 68.7+-11.5 Basement RMQ values in the Hyaluronans group was 12.5 +-4.9 and Steroid group was12.5+-4.4 Basement ODQvalues in the Hyaluronans group was 20.7 +- 8.5and Steroid group was 18.4+-6.2 Basement LBOS values in the Hyaluronans group was 31.9 +-11.4 and Steroid group was 43.3+-15.5
Indirectness of population	No indirectness
Interventions	(n=30) Intervention 1: Image guided steroids - Steroid. Injection of 10 mg Glucocorticoid (triaminolone acetonide) in a 1mL crystalline suspension to the facet joint capsules at L5-S1, L5-L4 or L4-L3 under CT image guidance. Duration Given at weekly intervals for 3 weeks. Concurrent medication/care: NA Further details: 1. Choice of agent: Triamcinolone acetonide (n=29) Intervention 2: Image guided hyaluronans - Hyaluronans. injection of 10 mg sodium hyaluronate in a 1mL buffer solution to the facet joint capsules at L5-S1, L5-L4 or L4-L3 under CT image guidance. Duration Given at weekly intervals for 3 weeks. Concurrent medication/care: NA Further details: 1. Choice of agent: Sodium hyaluronate

Funding	Funding not stated (No author reported conflict of interest)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP versus HYALURONAN GROUP

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less
- Actual outcome for Image-guided facet joint injections: VAS (mm) PAIN at 4 weeks; Group 1: mean 30.1 mm (SD 23.3); n=30, Group 2: mean 40.8 mm (SD 25.6); n=29; VAS pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months
- Actual outcome for Image-guided facet joint injections: VAS (mm) PAIN at 6 months; Group 1: mean 33.4 mm (SD 20.7); n=30, Group 2: mean 38 mm (SD 26.5); n=29; VAS pain 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at 4 months or less
- Actual outcome for Image-guided facet joint injections: RMQ at 4 weeks; Group 1: mean 7.2 (SD 5.1); n=30, Group 2: mean 8.4 (SD 5.4); n=29; Roland Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Image-guided facet joint injections: ODQ at 4 weeks; Group 1: mean 12.3 ODQ (SD 7.5); n=30, Group 2: mean 14.2 ODQ (SD 10.7); n=29; Oswestry Disability Score 0-50 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Image-guided facet joint injections: LBOS at 4 weeks; Group 1: mean 43.7 LBOS (SD 13.3); n=30, Group 2: mean 43.3 LBOS (SD 15.5); n=29; Low Back Pain Outcome Score 0-75 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months
- Actual outcome for Image-guided facet joint injections: RMQ at 6 months; Group 1: mean 8.32 RMQ (SD 4.8); n=30, Group 2: mean 7.1 RMQ (SD 5.4); n=29; Roland Morris Questionnaire 0-24 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Image-guided facet joint injections: ODQ at 6 months; Group 1: mean 13 ODQ (SD 7.1); n=30, Group 2: mean 12.6 ODQ (SD 9.7); n=29; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Image-guided facet joint injections: LBOS at 6 months; Group 1: mean 44.1 LBOS (SD 14); n=30, Group 2: mean 46 LBOS (SD 16.5); n=29; Low Back Pain Outcome Score 0-75 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Jackson 1992[247]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=25)
Countries and setting	Conducted in USA; Setting: North Kansas City hospital
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Inadequate method of assessment/diagnosis: Mean Motion Pain Assesment Score
Stratum	Other non-image guided injections
Subgroup analysis within study	Not applicable
Inclusion criteria	localised unilateral LBP, no radiating pain below the knee, no prior back surgery, localised tenderness, normal results on neurologoc examination, no root tension signs, and no roentgenographoc or computed tomographic evidence of transitional vertebrae,pars defect, disc herniations, spinal stenosis or nerve root entrapments
Exclusion criteria	not stated
Recruitment/selection of patients	not stated
Age, gender and ethnicity	Age - Other: Mean age 35.5 years. Gender (M:F): 14:11. Ethnicity:
Further population details	
Extra comments	Patients had clinical features and findings indicative lumbar facet syndrome.
Indirectness of population	--
Interventions	(n=12) Intervention 1: Non-image guided local anaesthetics - Anaesthetic. 1% Lidocaine (1 ml). Duration 1 YEAR. Concurrent medication/care: None reported Further details: 1. Choice of agent: Lidocaine Comments: Unilateral intra-articular injection of the L4-L5 and L5-SI facet joints corresponding to the side and site of pain (n=13) Intervention 2: Saline. 1 ml of saline. Duration 1 year. Concurrent medication/care: NA Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline). Comments: Unilateral intra-articular injection of the L4-L5 and L5-SI facet joints corresponding to the side and site of pain
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ANAESTHETIC GROUP versus SALINE GROUP Protocol outcome 1: Function (disability scores) at > 4 months - Actual outcome for Other non-image guided injections: Mean MPA scores reported. However, definition of outcome not in protocol. Pain values reported during a set of 10 specific movements and a mean value reported for each of these at 1 year; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Kader 2012[260]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=63)
Countries and setting	Conducted in United Kingdom; Setting: Unclear
Line of therapy	Unclear
Duration of study	Follow up (post intervention):
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Image-guided facet joint injections
Subgroup analysis within study	Not applicable
Inclusion criteria	18-65 years; diffuse laterised unilateral or bilateral LBP more than leg pain for > 3 months; leg pain could radiate below or above the knee; paraspinal tenderness; multifidus atrophy; mild disc degeneration of dehydration allowed;
Exclusion criteria	Clear signs of root pain ; other pathology of lumbar spine other than myofascial, facet or ligament injuries; pregnancy, scoliosis, neuromuscular disease of trunk; malignancy; fracture; previous surgery; symptomatic spinal stenosis; disc hernation; spondylolisthesis;
Recruitment/selection of patients	Unclear
Age, gender and ethnicity	Age - Range: 23-67. Gender (M:F): unclear (29:27 completed questionnaires). Ethnicity: Unclear
Further population details	
Extra comments	Baseline ODI for steroid group:28.7 (16.1) and Physio group: 28.2(12.8) Baseline EQ5D for steroid group:0.43 (0.33) and Physio group: 0.60(0.27) Baseline MPQ for steroid group:22.7 (14.8) and Physio group: 23.4(16.4)
Indirectness of population	No indirectness
Interventions	(n=21) Intervention 1: Image-guided combination treatment - Steroid +Anaesthetic. Under image intensifier control the perifacet regions at L4/5 and L5/S1 levels were injected with methylprednisolone 80mg and bupivicaine 1-2 mls of 0.5% bilaterally by a designated radiologist. Duration NA. Concurrent medication/care: The importance of mobility exercises such as walking and cycling was emphasised after the injecion and advised at least 3 times weekly. Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone + Bupivacaine). (n=20) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other invasive and non-invasive treatments . Back education and standard physiotherapy - pain talk, ergomics advise, anatomy teaching and goal setting. Warm up 5-10 mins on bike, followed by pain relief via heat/ice, US, IFC or PSWD, follwed by McKenzie, maitland or Mulligan exercise/manual therapy. Also some retraining of transversus/multifidus without a gym ball and

	a daily home exercise programme of 20mins swimming or walking. Duration 10 weeks. Concurrent medication/care: NA Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Other treatment).
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID+ ANESTHETIC GROUP versus OTHER TREATMENT Protocol outcome 1: Quality of life at 4 months or less - Actual outcome for Image-guided facet joint injections: EQ-5D utility at 10 weeks; Group 1: mean 0.68 utility score (SD 0.19); n=19, Group 2: mean 0.7 utility score (SD 0.18); n=17; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Image-guided facet joint injections: McGill Pain Questionnaire at 10 weeks; Group 1: mean 15.4 Pain score (SD 10.6); n=19, Group 2: mean 23 Pain score (SD 15.1); n=17; McGill pain questionnaire 0-78 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Image-guided facet joint injections: ODI at 10 weeks; Group 1: mean 23.9 ODI score (SD 14.6); n=19, Group 2: mean 27.4 ODI score (SD 12.1); n=17; Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Kawu 2011[266]
Study type	Prospective cohort study
Number of studies (number of participants)	1 (n=18)
Countries and setting	Conducted in Nigeria; Setting: University of Abuja Teaching Hospital, Gwagwalada, Abuja Nigeria
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Image-guided facet joint injections: Image guided facet joint injections
Subgroup analysis within study	Not applicable
Inclusion criteria	1) chronic pain of more than 3 months duration, not responding to conventional drugs 2) Non-radicular LBP 3) Focal tenderness over the facet joint elicited by the digital pressure 4) MRI fewatures of facet joint arthropathy (FJA)
Exclusion criteria	1)radiuclar pain radiating below the pain 2) MRI findings of nerve root compression 3) clinical or imaging of infection and neoplastic disease
Recruitment/selection of patients	LBP patients interviewed and examined by reviewer with clinical diagnosis and MRI finding of FJA randomly placed in treatment group of FJI and physiotherapy.
Age, gender and ethnicity	Age - Mean (SD): 42.3 years +-12.2 years(range 33-64 years). Gender (M:F): 0.6:1. Ethnicity:
Further population details	
Extra comments	Baseline values for ODI were given as FJI (male)=58.6+-6.8, FJI (female)=52.3 +-9.2, Physio (Male)= 59.0 (8.6) and Physio (female)=56.3 +-8.9 Baseline values forVASI were given as FJI (male)=7.8+-1.9, FJI (female)=7.2+-1.6, Physio (Male)= 7.4 +-2.1 and Physio (female)=7.0 +-2.3
Indirectness of population	No indirectness
Interventions	(n=10) Intervention 1: Image-guided combination treatment - Steroid +Anaesthetic. 0.5ml of of 0.25% Bupivacaine and 0.5ml (20 mg) of Methylprednisolone acetate were injected into FJ under X ray guidance. Duration 6 months. Concurrent medication/care: None reported Further details: 1. Choice of agent: Methylprednisolone (Methyprednisolone+ Bupivacaine). (n=8) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other invasive and non-invasive treatments . Physiotherapy according to the McKenzie regimen. Duration 6 months. Concurrent medication/care: None reported Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Other treatment).

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FJI GROUP versus PHYSIO GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Image-guided facet joint injections: VAS at 3 months; Group 1: mean 4.3 (SD 1.4); n=10, Group 2: mean 5.5 (SD 1.5); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Image-guided facet joint injections: VAS at 6 months; Group 1: mean 4 (SD 1.45); n=10, Group 2: mean 5 (SD 1.6); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Image-guided facet joint injections: ODI at 3 months; Group 1: mean 40.6 (SD 6.15); n=10, Group 2: mean 46.2 (SD 6.75); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - Actual outcome for Image-guided facet joint injections: ODI at 6 months; Group 1: mean 38.35 (SD 5.05); n=10, Group 2: mean 44.45 (SD 11.2); n=8; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Khot 2004[278]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=120)
Countries and setting	Conducted in United Kingdom; Setting: Department of Trauma and Orthopaedics, Ipswich Hospital
Line of therapy	2nd line
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other image-guided injections: Image guided Methyprednisolone
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients included were those that presented with symptoms and signs of discogenic LBP without radicular leg pain, together with MRI findings demonstrating degenerative disc disease. They also had failure of atleast 6 weeks of conservative treatment and without any medical conditions requiring systemic steroid therapy
Exclusion criteria	Not stated
Age, gender and ethnicity	Age - Mean (SD): Steroid Group 45.0 (8.8) and Control Group 42.5 (9.3). Gender (M:F): 55:65. Ethnicity:
Further population details	
Extra comments	Baseline value for ODI (SD)=50.8 (15.4) in Steroid group and 49.8 (16.6) in Saline Group
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Image guided steroids - Methylprednisolone. Fluoroscopic guided Methylprednisolone acetate 40 mg in 1 mL . Duration 1 year. Concurrent medication/care: Not stated Further details: 1. Choice of agent: Methylprednisolone (n=60) Intervention 2: Saline. Fluoroscopic guided 1 mL of normal saline. Duration 1 year. Concurrent medication/care: Not stated Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP versus SALINE GROUP

Protocol outcome 1: Function (disability scores) at > 4 months
- Actual outcome for Other non-image guided injections: Oswestry Disability Index (ODI) at 1 year; Group 1: mean 2.3 (SD 16.87); n=46, Group 2: mean 3.4 (SD 12.93);

n=52; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Klein 1993[285]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=79)
Countries and setting	Conducted in USA; Setting: Primary Care, Sansum Mediical Clinic
Line of therapy	2nd line
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Prolotherapy/Sclerosants: Prolotherapy injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Men and non-pregnant women 21-60 years of age with LBP for atleast 6 months duration that had failed to respond to prior conservative treatments.
Exclusion criteria	criterai for exclusion prior to interview and examination were unresolved litigation or worker compensation claims, prior lumbar laminectomy, body weight >40 lbs over the ideal and known serious medical conditions such as cancer. Patients also excluded if contemplating pregnancy. At examination, patients were exckuded ig they had clinical evidence of CNS or peripheral nervous system disease inclusing radiculopathy. Patients with significant exacerbation of thier chronic pain as well as those with hip joint arthritis were excluded. Most common cause for exclusion was discogenic/radicular pain.
Recruitment/selection of patients	Potential subjects were sought by newspaper and radio advertising. Ptients interviwed and examined to provide a total of 80 suitable patients. 141 candiadates interviewed and examined of a total of 334 who applied for the study. 80 selcted who fulfilled criteria.
Age, gender and ethnicity	Age - Mean (SD): . Gender (M:F): 47:32. Ethnicity:
Further population details	
Extra comments	Baseline RMQ values for Sclerosant+Anaesthetic group=9.36+-3.56 and 8.25+-3.26 in the Anaestehtic group RMQ+-SD Baseline VAS values for Sclerosant+Anaesthetic group=4.56+-1.12 and 4.88+-1.30 in the Anaestehtic group VAS+-SD
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Image-guided combination treatment - Sclerosant +Anaesthetic. dextrose,25%; glycerine, 25% and phenol 2.4% made upto 100% with pyrogen-free water. 15 ml of this solution was combined with 15 ml of 0.5% lidocaine to make up a maximum total volume of 30 ml of solution available for each of the six weekly injection sessions. Duration 6 months. Concurrent medication/care: Total (both experimental and control groups) of 6 patients were taking narcotics (codeine or Percodan) at entry into the study and 57% were using pain medications or muscle

	relaxants Further details: 1. Choice of agent: Prolotherapy (Glycerol. dextrose and phenol with lidocaine). Comments: • Fluoroscopy guided (n=40) Intervention 2: Image guided local anaesthetics - Anaesthetic. Maximum of 30 ml of solution at each treatment session; made up of mixing 15 ml of 0.5% lidocaine with 15 ml of sterile normal saline solution. Duration 6 months. Concurrent medication/care: Total (both experimental and control groups) of 6 patients were taking narcotics (codeine or Percodan) at entry into the study and 57% were using pain medications or muscle relaxants Further details: 1. Choice of agent: Lidocaine Comments: • Fluoroscopy guided
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SCLEROSANT+ ANAESTHETIC GROUP versus ANAESTHETIC GROUP Protocol outcome 1: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Prolotherapy/Sclerosants: Visual Analogue Pain score at 6 months; Group 1: mean 2.29 (SD 1.67); n=39, Group 2: mean 2.85 (SD 1.88); n=40; VAS 0 (no pain) to 8 cm (severe pain) Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at > 4 months - Actual outcome for Prolotherapy/Sclerosants: Diability Roland-Morris Questionairre at 6 months; Group 1: mean 4.04 cm (SD 3.71); n=39, Group 2: mean 4.38 cm (SD 4.05); n=40; Roaland-Morris 0-24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at 4 months or less; Function (disability scores) at 4 months or less; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Kotilainen 1997[293]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=15)
Countries and setting	Conducted in Finland; Setting: Department of Neurosurgery, Turku University Central Hospital, Finland
Line of therapy	Unclear
Duration of study	Intervention + follow up: one month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Prolotherapy/Sclerosants: Prolotherapy Injections
Subgroup analysis within study	Not applicable
Inclusion criteria	All patients suffered from LBP and in addition 10 patients had occasional sciatica. Only patients whose LBP was considered to be due to discogenic pain from one disc interspace were included
Exclusion criteria	Patients with two or more symptomatic levels or disc herniation were excluded
Recruitment/selection of patients	During the years 1992-1994, a total of 15 patients suffereing from LBP were recruited to the study and underwent same procedure and followup.
Age, gender and ethnicity	Age - Mean (SD): 47 (11) (range 35 to 63 years). Gender (M:F): 1:14. Ethnicity:
Further population details	
Extra comments	5 patients in the glycerol group and 4 patients in the bupivacaine group had undergone lumbar surgery. 8 pateints had been operated on because of lumbar disc hernation and 1 patient because of lumbar stenosis.. On average, LBP had lasted 8 years (range 1-20 years) and sciatica 1.3 years (range 0.5 to 3 years) before the admission into the study. All patients entering the study were examined with MRI of the lumbar spine and discography including pain provocation test. Baseline mean VAS score of the patients was 58+-22 (range 40 to 90)
Indirectness of population	No indirectness
Interventions	(n=9) Intervention 1: Image guided Sclerosants - Sclerosants. 1 ml of 50% gylcerol intradiscally. Duration 1 month. Concurrent medication/care: none Further details: 1. Choice of agent: Glycerol Comments: Fluoroscopy guided (n=6) Intervention 2: Image guided local anaesthetics - Anaesthetic. 2 ml of 0.5% Bupivacaine interdiscacally into one disc interspace. Duration one month. Concurrent medication/care: None Further details: 1. Choice of agent: Bupivicaine

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SCLEROSANTS GROUP versus ANAESTHETIC GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Prolotherapy/Sclerosants: VAS score at 2 weeks; Group 1: mean 49 (SD 27); n=9, Group 2: mean 50 (SD 56); n=2; Visual Analogue Score, VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Lumabar Facet Joint Syndrome trial: Lilius 1989[326]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=109)
Countries and setting	Conducted in Finland; Setting: does not say
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Image-guided facet joint injections
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP for over three months localised to one side with tenderness qand local muscle spasm over the facet joints. All had negative straight -leg raising test but 62 had slight pain radiating into the posterior thigh.Symptoms were right sided in 53. 27 had previous disc surgery but thier pain was similar to that of patients with no operations.Treated with analgesics and physiotherapy without success
Exclusion criteria	None
Recruitment/selection of patients	No information given
Age, gender and ethnicity	Age - Mean (range): mean age 44 years (range 19 to 64 years). Gender (M:F): 48:61. Ethnicity:
Further population details	
Extra comments	Minor, non-significant neurological deficiencies were found in a number of cases. 27 had sedentary and 9 had standing occupations whilst 63 did heavy manual work. 6 patients housewives and 48 were on sick leave at the start of the study
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Image-guided combination treatment - Steroid +Anaesthetic. 6 ml (30 mg) bupivacaine hydrochloride (Marcain) mixed with 2 ml (80 mg) methylprednisolone acetate injected INTO each of the two facet joints. Duration 3 months. Concurrent medication/care: None Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone+ Bupivacaine). (n=39) Intervention 2: Image-guided combination treatment - Steroid +Anaesthetic. 6 ml (30 mg) bupivacaine hydrochloride (Marcain) mixed with 2 ml (80 mg) methylprednisolone acetate injected peri-capsularly AROUND each of the two facet joints. Duration 3 months. Concurrent medication/care: None Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone+ Bupivacaine).

	(n=42) Intervention 3: Saline. 8 ml of physiological saline was injected INTO two facet joints. Duration 3 months. Concurrent medication/care: None Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline). (n=67) Intervention 4: Image-guided combination treatment - Steroid +Anaesthetic. 6 ml (30 mg) bupivacaine hydrochloride (Marcain) mixed with 2 ml (80 mg) methylprednisolone acetate. Duration 3 months. Concurrent medication/care: None Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone+ Bupivacaine).
Funding	Academic or government funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED STEROID+ANAESTHETIC GROUPS versus SALINE Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Image-guided facet joint injections: Pain Scale at Not clear-maybe 3 months; Other: ; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at 4 months or less - Actual outcome for Image-guided facet joint injections: Disability Score at Not clear-maybe 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study (subsidiary papers)	Manchikanti 2007[352] (Manchikanti 2008[354], Manchikanti 2010[355])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in USA; Setting: Interventional pain management practice, a specialty referral center in a private practice setting.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnosis of lumber facet joint pain by means of comparative local anaesthetic blocks
Stratum	Image-guided facet joint injections: Image guided facet joint injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of lumber facet joint pain by means of comparative local anaesthetic blocks, patients aged over 18 years,. history of chronic function limiting low back pain for at least 6 months duration, patients who were competent to understand the study protocol and could provide voluntary written informed consent, patients willing to comply with participation in outcome measurements without recent surgical history of past 3 months.
Exclusion criteria	Negative or false positive responses to controlled comparative local anaesthetic blocks. Uncontrolled psychiatric disorders, heavy opioid use or medical illness, chronic severe conditions that could interfere withthe interpretation of the outcome assessments, women who were pregnant or lactating, patients unable to be positioned in the prone position, and patients with history of adverse reactions to local anaesthetic, sarapin or steroids.
Age, gender and ethnicity	Age - Mean (SD): Anaesthetic grp: 56 (15.6); anaesthetic + steroid grp: 44 (16.3). Gender (M:F): Anaesthetic grp: 8/7; anaesthetic + steroid grp: 7/8. Ethnicity: Not stated
Further population details	
Extra comments	Baseline characteristics for the anaesthetic and anaesthetic + steroid group respectively, mean (SD): Pain NRS: 8.1 (1.4) and 8.1 (0.8), function ODI: 23 (7.4) and 24.2 (6.8)
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Image guided local anaesthetics - Anaesthetic. Lumbar facet joint nerve blocks with injections of local anaesthetic bupivacaine 0.25%. Duration 12 months follow up. Concurrent medication/care: Facet or zygapophysial joint pain of the lumbar spine was investigated in all patients starting with diagnostic blocks using 1% lidocaine. Patients with lidocaine-positive results were further studied using 0.25% bupivacaine on a separate occasion, usually 3 to 4 weeks after the first injection. Patients received opioid and non-opioid analgesics, adjuvant analgesics as prescribed prior to initiation of the therapeutic facet joint nerve blocks. If they were improving

	significantly and there was no medical necessity for these drugs to be continued, medications were stopped or dosages were decreased. If required, dosages were also increased. Patients also continued previously directed exercise programs. Further details: 1. Choice of agent: Bupivicaine Comments: NOTE: If a patient required additional facet joint nerve blocks, the blocks were provided based the patient's response, either after unblinding or without unblinding. Patients without unblinding were offered only the assigned treatments. In contrast, unblinded patients were offered either the assigned treatment or another treatment based on response. If the patients were nonresponsive and different treatments other than lumbar facet joint nerve blocks were required, they were considered to be withdrawn from the study, and no subsequent data were collected on these patients. HOWEVER IT WAS REPORTED THAT NO PATIENTS DISCONTINUED INTERVENTIONS IN ANY OF THE FOUR GROUPS! (n=15) Intervention 2: Image-guided combination treatment - Steroid +Anaesthetic. Lumbar facet joint nerve blocks with a mixture of bupivacaine mixed with betamethasone at 0.15 mg per ml. . Duration 12 months follow up. Concurrent medication/care: Facet or zygapophysial joint pain of the lumbar spine was investigated in all patients starting with diagnostic blocks using 1% lidocaine. Patients with lidocaine-positive results were further studied using 0.25% bupivacaine on a separate occasion, usually 3 to 4 weeks after the first injection. Patients received opioid and non-opioid analgesics, adjuvant analgesics as prescribed prior to initiation of the therapeutic facet joint nerve blocks. If they were improving significantly and there was no medical necessity for these drugs to be continued, medications were stopped or dosages were decreased. If required, dosages were also increased. Patients also continued previously directed exercise programs. Further details: 1. Choice of agent: Betamethasone (Betamethasone +Bupivacaine). Comments: NOTE: If a patient required additional facet joint nerve blocks, the blocks were provided based the patient's response, either after unblinding or without unblinding. Patients without unblinding were offered only the assigned treatments. In contrast, unblinded patients were offered either the assigned treatment or another treatment based on response. If the patients were nonresponsive and different treatments other than lumbar facet joint nerve blocks were required, they were considered to be withdrawn from the study, and no subsequent data were collected on these patients.
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ANAESTHETIC GROUP versus STEROID+ANAESTHETIC GROUP

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less
- Actual outcome for Image-guided facet joint injections: NRS at 3 months; Group 1: mean 3.9 (SD 1.2); n=15, Group 2: mean 3.7 (SD 1.1); n=15; Numeric rating scale

0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Image-guided facet joint injections: NRS at 12 months; Group 1: mean 3.9 (SD 1.2); n=15, Group 2: mean 3.8 (SD 0.9); n=15; Numeric pain reporting scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Image-guided facet joint injections: ODI at 3 months; Group 1: mean 12.2 (SD 5.5); n=15, Group 2: mean 14.3 (SD 3.6); n=15; Oswestry diability index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - Actual outcome for Image-guided facet joint injections: ODI at 12 months; Group 1: mean 11.3 (SD 5.1); n=15, Group 2: mean 13.9 (SD 4.2); n=15; Oswestry disability index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at 4 months or less - Actual outcome for Image-guided facet joint injections: Pain relief >50% at 3 months; Group 1: 12/15, Group 2: 11/15; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at > 4 months - Actual outcome for Image-guided facet joint injections: Pain relief >50% at 12 months; Group 1: 11/15, Group 2: 14/15; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study (subsidiary papers)	Manchikanti 2008[349] (Manchikanti 2011[350], Manchikanti 2012[343])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=120)
Countries and setting	Conducted in USA; Setting: Private interventional pain practice and speciality referral centre
Line of therapy	2nd line
Duration of study	Follow up (post intervention): 24 months
Method of assessment of guideline condition	Method of assessment /diagnosis not stated: Chronic low back pain for at least 6 months period with failure to improve substantially with conservative management
Stratum	Image-guided facet joint injections: Other image guided injection
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	No evidence of disc herniation, negative diagnosis of lumbar facet joint pain by means of controlled local anaesthetic blocks, atleast 18 years of age, history of chronic low back pain of at least 6 months duration, ability to understand the study protocol and provide voluntary written informed consent as well as participate in outcome measurements, failure to improve substantially with conservative management.
Exclusion criteria	Previous lumbar surgery, uncontrolled/unstable opioid use, uncontroled psychiatric disorders, uncontrolled medical illness acute or chronic, any other condition that could interfere with the interpretation of outcome assessments including pregnancy, lactating women and individuals with history of adverse effects to local anaesthetics, steroids or both.
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Mean (SD): anaesthetic group: 48.5 (15.3); anaesthetic+steroid group: 43.9 (13.1). Gender (M:F): anaesthetic group: 13/47; anaesthetic+steroid group: 22/38. Ethnicity: Not stated
Further population details	
Extra comments	Baseline characteristics for anaesthetic and anaesthetic+steroid group respectively, mean (SD): pain NRS: 8 (0.9) and 7.9 (1); function ODI: 28.3 (4.92) and 28.4 (4.67)
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Image guided local anaesthetics - Anaesthetic. Caudal epidural injection of lidocaine 0.5% 10 ml. . Duration 24 months follow up. Concurrent medication/care: Prior to intervention injection, all participants received facet joint nerve blocks with lidocaine (0.5 ml 1%), blockade of facet joint nerve was conducted with 0.25% bupivacaine. Repeat caudal epidural injections were perfromed when increased levels of pain were reported with deteriating relief below 50%. Non-responsive participants trested with conservative management were followed without further epidural inections with medical management. Nearly all participants were undergoing conservative

	management before joining the study i.e. analgesic (opioid/non-opioid) or exercise, drug dosages were decreased/stopped if no longer needed and increased if needed. Exercie and job attendance was continued. Further details: 1. Choice of agent: Lidocaine Comments: Fluoroscopy guided (n=60) Intervention 2: Image-guided combination treatment - Steroid +Anaesthetic. Caudal epiduarals of local anaesthetic lidocaine (0.5%, 9 ml) mixed with either brand name betamethasone (6 mg), non-particulate betamethasone (6 mg) or methylprednisolone (40 mg). . Duration 24 month follow-up. Concurrent medication/care: Prior to intervention injection, all participants received facet joint nerve blocks with lidocaine (0.5 ml 1%), blockade of facet joint nerve was conducted with 0.25% bupivacaine. Repeat caudal epidural injections were perfromed when increased levels of pain were reported with deteriating relief below 50%. Non-responsive participants trested with conservative management were followed without further epidural inections with medical management. Nearly all participants were undergoing conservative management before joining the study i.e. analgesic (opioid/non-opioid) or exercise, drug dosages were decreased/stopped if no longer needed and increased if needed. Exercie and job attendance was continued. Further details: 1. Choice of agent: Systematic review: mixed (Mixed steroids and anaesthetic). Comments: Fluoroscopy guided
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: ANAESTHETIC GROUP versus STEROID+ANAESTHETIC GROUP

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less
- Actual outcome for Other image-guided injections: NRS at 3 months; Group 1: mean 4.2 (SD 1.8); n=60, Group 2: mean 3.6 (SD 1.4); n=60; Numeric pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months
- Actual outcome for Other image-guided injections: NRS at 24 months; Group 1: mean 4.4 (SD 1.9); n=48, Group 2: mean 4 (SD 1.7); n=50; Numeric pain rating scale 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at 4 months or less
- Actual outcome for Other image-guided injections: ODI at 3 months; Group 1: mean 16.3 (SD 7.2); n=60, Group 2: mean 14.5 (SD 5.5); n=60; Oswestry disability index 0-100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at > 4 months

- Actual outcome for Other image-guided injections: ODI at 24 months; Group 1: mean 16.5 (SD 77); n=48, Group 2: mean 14.9 (SD 6.4); n=50; Oswestry disability index 0-100 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Mayer 2004[363]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=70)
Countries and setting	Conducted in USA; Setting: 'tertiary functional restoration' is the only clue to the setting.
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 5-7 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Image-guided facet joint injections: Image guided injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic disabling work-related lumbar spinal disorder (CDWRLSD); lumbar rigidity over 1-3 levels
Exclusion criteria	patient declining injection therapy; no insurance preauthorisation; >3 levels of SR.
Recruitment/selection of patients	Unclear
Age, gender and ethnicity	Age - Mean (range): 43.4 in steroid group and 46.2 in exercise group. Gender (M:F): 50:20. Ethnicity: Not reported
Further population details	
Extra comments	Baseline VAS pain scores mean(SD) was 6.3(1.5) in steroid+anaesthetic group and 6.7(1.8) in the excercise only group Baseline VAS disabiliyu scores mean(SD) was 99.7(16.7) in steroid+anaesthetic group and 100.0(29.2) in the excercise only group
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Image-guided combination treatment - Steroid +Anaesthetic. Facet joint injection under flouroscopic guidance. Each rigid joint injected bilaterally with a mixture of 1 ml 2% lidocaine, 1ml 0.5% buivicaine and 1ml of a depot corticosteroid perparation. . Duration 5-7 weeks. Concurrent medication/care: Prior to treatment facet blocks were given to confirm a facet joint etiology. These patients also had a home exercise programme of stretches, taught at the pre-treatment assessment session and subsequently supervised by a physiotherapist at each successive visit. In between follow up meausres patients were also supervised twice a week and advised on exercises as part of the stretching programme. In the final week there were daily sessions. Further details: 1. Choice of agent: Systematic review: mixed (Corticosteroid(unknown) +Lidocaine+ Bupivacaine). (n=34) Intervention 2: Other invasive and non-invasive treatments included in this guideline - exercise therapy - stretching. Home exercise programme of stretches, taught at the pre-treatment assessment session and subsequently supervised by a physiotherapist at each successive visit. In between follow up meausres patients were also supervised twice a week and advised on exercises as part of the stretching programme. In the final week there were daily

	sessions.. Duration 5-7 weeks. Concurrent medication/care: Prior to treatment facet blocks were given to confirm a facet joint etiology. Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Other treatment).
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID +ANAESTHETIC GROUP versus OTHER INVASIVE AND NON-INVASIVE TREATMENT GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Image-guided facet joint injections: % improvement in VAS score at 5-7 weeks; Group 1: mean 53 % improvement in VAS (SD 54.92); n=36, Group 2: mean 50 % improvement in VAS (SD 54.92); n=34; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Image-guided facet joint injections: Pain Intensity(VAS) at 5-7 weeks; Group 1: mean 5.4 (SD 1.6); n=36, Group 2: mean 5.9 (SD 2.1); n=34; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at 4 months or less - Actual outcome for Image-guided facet joint injections: % improvement in Million VAS score at 5-7 weeks; Group 1: mean 72 % improvement in VAS (SD 40.37); n=36, Group 2: mean 68 % improvement in VAS (SD 40.37); n=34; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Image-guided facet joint injections: Million VAS at 5-7 weeks; Group 1: mean 85.6 (SD 21.5); n=36, Group 2: mean 92.2 (SD 25.1); n=34; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study (subsidiary papers)	NCT00681447 trial: Manchikanti 2010[346] (Manchikanti 2012[345], Manchikanti 2013[347])
Study type	RCT (randomised; Parallel)
Number of studies (number of participants)	1 (n=120)
Countries and setting	Conducted in USA; Setting: Interventional pain management practice, a specialty referral centre based in USA.
Line of therapy	2nd line
Duration of study	Follow up (post intervention): 24 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Patients with lumbar axial or discogenic pain
Stratum	Overall: Other image guided injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Only patients with lumbar axial or discogenic pain were included. Patients were required to be over the age of 18 years with a history of chronic function-limiting low back pain of at least 6 months duration and the ability to understand the study protocol and provide voluntary, written informed consent, and participate in outcome measurements. In addition, all the patients should have undergone controlled comparative local anesthetic blocks to rule out either facet joint pain or sacroiliac joint pain if suspected, and failed to improve significantly with conservative management, including various rehabilitation modalities such as physical therapy, chiropractic manipulation, structured exercise program, and other modalities including behavioural therapy, drug therapy, and bedrest.
Exclusion criteria	Exclusion criteria included the presence of facet joint pain or sacroiliac joint pain, previous lumbar surgery, opioid use which was uncontrolled or unstable, psychiatric disorders which were not controlled, uncontrolled medical illness (either acute or chronic), and any conditions that could interfere with the interpretation of the outcome assessments. Pregnant or lactating women and those with a history of potential for adverse reaction(s) to local anaesthetics or steroids were also excluded.
Recruitment/selection of patients	New patients presenting to the centre
Age, gender and ethnicity	Age - Mean (SD): 45.7. Gender (M:F): Anaesthetic grp: 14/24 and anaesthetic + steroid grp: 24/36. Ethnicity: Not reported
Further population details	
Extra comments	Baseline characteristics of the anaesthetic and anaesthetic + steroid group respectively, mean (SD): Pain NRS: 8 (1) and 7.7 (9); Function ODI: 30.7 (4.5) and 29.2 (5.2).
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Image-guided combination treatment - Betamethasone + Lidocaine. lumbar interlaminar epidural procedures performed injection of 5ml lidocaine mixed with 6mg non particulate betamethasone to L5/S1

	(or other level dictated by symptoms) interlaminar space. Duration 2 years. Concurrent medication/care: predceded by diagnostic facet nerve block tests to exclude facte joint etiology. Co-interventions were similar in both groups, which included the continuation of previously directed structured excercise programs, employment, and medical therapy Further details: 1. Choice of agent: Betamethasone (Betamethasone + lidocaine). Comments: Fluoroscopy guided (n=60) Intervention 2: Image guided local anaesthetics - Lidocaine. Same physician carried out injection of 6ml lidocaine hydrocholide 0.5%. Duration 2 years. Concurrent medication/care: prior test to exclue facet joint pathology.Co-interventions were similar in both groups, which included the continuation of previously directed structured excercise programs, employment, and medical therapy Further details: 1. Choice of agent: Lidocaine
Funding	No funding (No external funding)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE GUIDED STEROID + ANAESTHETIC versus IMAGE GUIDED ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less
- Actual outcome: NRS at 3 months; Group 1: mean 3.5 (SD 1.2); n=60, Group 2: mean 3.6 (SD 0.9); n=60; Numeric Pain Rating Scale 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome:
- Actual outcome: ODI at 3 months; Group 1: mean 14.6 (SD 5.1); n=60, Group 2: mean 14.9 (SD 4.3); n=60; Oswestry Disability Index 0-50 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months
- Actual outcome: NRS at 24 months; Group 1: mean 3.6 (SD 1.4); n=60, Group 2: mean 3.9 (SD 1.3); n=60; Numeric pain rating scale 0-10 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at > 4 months
- Actual outcome: ODI at 24 months; Group 1: mean 14.6 (SD 6.1); n=60, Group 2: mean 14.9 (SD 5.1); n=60; Oswestry Disability Idex 0-50 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Adverse events (mortality) at 4 months or less
- Actual outcome: >50% pain improvement at 3 months; Group 1: 52/60, Group 2: 54/60; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (mortality) at > 4 months

- Actual outcome: >50% pain improvement at 24 months; Group 1: 42/60, Group 2: 47/60; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Function (disability scores) at 4 months or less; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	New approach to the treatment og LBP trial: Ongley 1987[417]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=82)
Countries and setting	Conducted in USA; Setting: Secondary, Multispeciality Medical Clinic
Line of therapy	2nd line
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Prolotherapy/Sclerosants: Prolotherapy Injections
Subgroup analysis within study	Not applicable
Inclusion criteria	Back pain of more than one year duration that had not responded to previous conservative (non-surgical) treatment. All patients accepted for the study had full clinical evaluations and lumbar spine and pelvic X-rays lab tests to rule out infectious, neoplastic, metabolic, or inflammatory causes of back pain
Exclusion criteria	Causes for rejection were recent exacerbation of chronic pain, overt psychopathology, radiographic osteoporosis, alcohol abuse, cervical myelopathy, upper rather than LBP, uncontrolled diabetes, angina or hypertension, aseptic necrosis or osteoarthritis of the hip, "total body pain", unresolved litigation, other conservative treatment not tried and refusal to participate.
Recruitment/selection of patients	Computer generated list based on zip codes of 10, 000 randomly selected previously registered patients.
Age, gender and ethnicity	Age - Mean (range): Prolotherapy group= 45(23-70) , Palcebo Group =43.3 (23-70). Gender (M:F): 38:43. Ethnicity:
Further population details	
Extra comments	Baseline VAS pain scores for Scerlosant +Anaesthetic group were 3.78(0.19) and 3.99(0.19) in the Saline group Baseline RMQ disability scores for Scerlosant +Anaesthetic group were 11.45(0.83) and 11.82(0.92) in the Saline group
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Non-image guided combination treatment - Sclerosant + Anaesthetic. Dextrose 25%, Glycerine 25%, phenol 2.5% and pyrogen-free water to 100%. This solution was diluted with an equal volume of 0.5% plain Lignocaine to make comparable to the palcebo injection. Duration 6 months. Concurrent medication/care: At entry into study, 49 of TOTAL participants were taking non-steroidal anti-inflammatory drugs and 9 were taking analgesics.Patients were advised to stop all treatments apart from paracetamol and avoid any other treatments during course of study. Single forceful manipulation was delivered on first day of treatment. Further details: 1. Choice of agent: Prolotherapy (Dextrose, Glycerol and Phenol + Lignocaine). (n=42) Intervention 2: Saline. Patients in the Placebo group recieved 0.9% Saline. Duration 6 months. Concurrent

	medication/care: At entry into study, 49 of TOTAL participants were taking non-steroidal anti-inflammatory drugs and 9 were taking analgesics.Patients were advised to stop all treatments apart from paracetamol and avoid any other treatments during course of study. Less forceful manipulation (compared to intervention group) was delivered on first day of treatment. Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SCLEROSANT+ANAESTHETIC GROUP versus SALINE GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Prolotherapy/Sclerosants: Pain (Visual Analogue Score, VAS)-3 months at 3 months; Group 1: mean 1.77 (SD 1.39); n=40, Group 2: mean 2.93 (SD 1.6); n=41; Visual Analogue Pain Scale 0(no pain) to 7.5 (severe pain) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Prolotherapy/Sclerosants: Pain (Visual Analogue Score, VAS)-6 Months at 6 months; Group 1: mean 1.5 (SD 1.33); n=40, Group 2: mean 3.08 (SD 1.77); n=41; Visual Analogue Score, VAS 0(no pain) to 7.5 (severe pain) Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at 4 months or less - Actual outcome for Prolotherapy/Sclerosants: Disability Score-3 months at 3 months; Group 1: mean 4.7 (SD 4.62); n=40, Group 2: mean 8.49 (SD 6.66); n=41; Roland Morris Diability Questionairre +9 questions from Waddell's chronic disablity index 0-33 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at > 4 months - Actual outcome for Prolotherapy/Sclerosants: Disability Score-6 months at 6 months; Group 1: mean 3.43 (SD 4.55); n=40, Group 2: mean 8.29 (SD 7.04); n=41; Roland Morris Diability Questionairre +9 questions from Waddell's chronic disablity index 0-33 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Serrao 1992[469]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=28)
Countries and setting	Conducted in United Kingdom; Setting: York Pain Clinic, York District Hospital, York
Line of therapy	Unclear
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other non-image guided injections: Non-image guided comibination injections
Subgroup analysis within study	Not applicable
Inclusion criteria	28 patients attending the York Pain Clinic for further treatment of thier chronic mechanical LBP were entered into the study
Exclusion criteria	Patients with disc lesions and spinal claudication were excluded
Recruitment/selection of patients	Not stated
Age, gender and ethnicity	Age - Median (range): Midazolam Group:49 (38-70) and Steroid Group (42.5 (33-79). Gender (M:F): 9:19. Ethnicity:
Further population details	
Extra comments	Duration patient symptom in median (range) years : Midazolam Group= 4.66 (1-35) and Steroid Group: 8.00 (1.50-24). No baseline values for outcomes reported
Indirectness of population	No indirectness
Interventions	(n=14) Intervention 1: Non-image guided combination treatment - Steroid +Sclerosant. 80 mg of methylprednisolone suspended in 10 ml normal saline injected into the lumbar epidural space plus 3 ml 5% dextrose injected into the lumbar intrathecal space. Duration 2 month. Concurrent medication/care: Patients were instructed not to change thier self-medication attitudes during the period of the trial but to adjust to thier doses according to their normal custom Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone+Dextrose). (n=14) Intervention 2: Non-image guided combination treatment - Anaesthetic+Sclerosant. 10 ml of normal saline injected into the lumbar epidural space plus 2 mg midazolam dissolved in 3 ml 5% dextrose injected into the lumbar intrathecal space. Duration 2 months. Concurrent medication/care: 10 ml of normal saline injected into the lumbar epidural space plus 2 mgmidazolam dissolved in 3 ml 5% dextrose injected into the lumbar intrathecal space Further details: 1. Choice of agent: Midazolam (Midazolam+Dextrose).

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID+ SCLEROSANT GROUP versus ANAESTHETIC+SCLEROSANT Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Other non-image guided injections: VAS at 2 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Other non-image guided injections: Short form McGill Pain questionnaire at 2 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less - Actual outcome for Other non-image guided injections: HAD at 2 months; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Simmons 1992[480]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=25)
Countries and setting	Conducted in USA; Setting: Not stated
Line of therapy	2nd line
Duration of study	Intervention + follow up: 10-14 days after injection
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other image-guided injections: Steroid vs Anaesthetic
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged 18-50 years with either internal disc disruption or a nonsequestered nuclear prolapse identified my MRI and discography. Discography was also used to confirm a positive pain response and to verify one-level symptomatic involvement only. Included patients also had failure of atleast 6 weeks of conservative treatment and did not have medical conditions that requiredsystemic steroids.
Exclusion criteria	All patients with two or more symptomatic levels were excluded. In addition, all patients with prior lumbar surgery or evidence of stenosis-either central or lateral-were excluded.
Recruitment/selection of patients	Two groups of patients were selected as appropiate that met the inclusion criteria
Age, gender and ethnicity	Age - Range: 18-50 years. Gender (M:F): Define. Ethnicity:
Further population details	
Extra comments	No baseline values reported
Indirectness of population	No indirectness
Interventions	(n=14) Intervention 1: Image guided steroids - Steroid. 80 mg/ml Methylprednisolone (Depo-Medrol) interdiscally. Duration 10-14 days. Concurrent medication/care: No non-steroidal anti-inflammatory drugs were prescribed after disc injection Further details: 1. Choice of agent: Methylprednisolone (n=11) Intervention 2: Image guided local anaesthetics - Anaesthetic. 0.5%, 1.5 ml Bupivacaine interdisacally. Duration 10-14 days. Concurrent medication/care: No non-steroidal anti-inflammatory drugs were prescribed after disc injection Further details: 1. Choice of agent: Bupivicaine
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID versus ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Other image-guided injections: Pain Visual Analog Scale at 10-14 days; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at 4 months or less - Actual outcome for Other image-guided injections: Oswestry Pain Questionanaire at 10-14 days; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at > 4 months; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Sonne 1985[495]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in Denmark; Setting: Department of Rheumatology,Copenhagen, Denmark
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other non-image guided injections: Non-ims guided steroid + anesthetic combination injection
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with LBP of atleast one month duration, with the exception of patients with herniated disc lesions, osteoporosis,arachnoiditis or ankylosing spondylitis
Exclusion criteria	Patients with herniated disc lesions, osteoporosis,arachnoiditis or ankylosing spondylitis
Recruitment/selection of patients	not stated
Age, gender and ethnicity	Age - Mean (range): 57 years (26-79). Gender (M:F): 8:21. Ethnicity:
Further population details	
Extra comments	No Basline values reported
Indirectness of population	No indirectness
Interventions	(n=14) Intervention 1: Non-image guided combination treatment - Steroid + Anaesthetic. 5 ml of 1% Lignocaine mixed with 1 ml of Methylprednisolone acetate injected at the site of iliolumbar ligament. Duration 2 weeks. Concurrent medication/care: none stated Further details: 1. Choice of agent: Methylprednisolone (Methylprednisolone acetate + Lignocaine). (n=15) Intervention 2: Saline. 5 ml of isotinic saline at the site of the iliolumbar ligament. Duration 2 weeks. Concurrent medication/care: NA Further details: 1. Choice of agent: Not applicable / Not stated / Unclear (Saline).
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID + ANAESTHETIC GROUP versus SALINE GROUP	

Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Other non-image guided injections: Graphical VAS score with no scale mentioned-outcome could not beb extracted at 2 weeks; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 2: Responder criteria at 4 months or less - Actual outcome for Other non-image guided injections: Changes during treatment in the patients self-assesment. No classification of the responder criteria given-data could not be extracted at 2 weeks; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Pain severity (VAS/NRS) at > 4 months; Function (disability scores) at 4 months or less; Function (disability scores) at > 4 months; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

Study	Yu 2012 trial: Yu 2012[580]
Study type	Prospective cohort study
Number of studies (number of participants)	1 (n=45)
Countries and setting	Conducted in China; Setting: Changzhng Hospital
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Other image-guided injections
Subgroup analysis within study	Not applicable
Inclusion criteria	All patients had only one segmental disc pathologyon MRI for the purpose of minimising the interference.Patients had deep, dull axial LBP with or without pain in the region of the groin and the anterior or posterior region of the thigh.VAS scores of atleast 6 in patients and duratiopn of symtoms were longer than 6 months. Discographies were performed on all patients and only patients with negative results were included in the studyuration of LBP was 0.8-3.5 years ,
Exclusion criteria	Pastients with severe previous trauma, surgery, myofascitis, inflammation, connective tissue tumor of the back and osteotomy operatio. patients wuth palpatory pain in the back, Sacro-iliac joint pain , facet joint pain, spinal stenosis and spondylolisthesis was also excluded
Recruitment/selection of patients	Consecutive individuals who compalined of typical discogenic pain symptoms and had abnormal disc signals on MRI from January 2006 to June 2008.ll
Age, gender and ethnicity	Age - Other: range (37-52) and mean 44.9 years. Gender (M:F): 16:29. Ethnicity:
Further population details	
Extra comments	Duration of LBP was 0.8-3.5 years, mean 2.1 years and all patients were negative og straight-leg raising test and without abnormal muscle strength and tendon refelx in the lower extremeties. Baseline values for Pain (VAS) in the Steroid Group was 6.82 (0.59) and 6.80 (0.64) in the Saline Group.Baseline values for Disability(ODI) in the Steroid Group was 51.2 (5.80) and 50.5(6.02) in the Saline Group.
Indirectness of population	No indirectness
Interventions	(n=23) Intervention 1: Image guided steroids - Steroid. Interdiscal injection of dexamethasone (5 mg) after injection of contrast dye (omnipaque). Duration 2 years. Concurrent medication/care: None reported Further details: 1. Choice of agent: Dexamethasone (n=22) Intervention 2: Placebo. Discography +Interdiscal injection of Saline. Duration 2 years. Concurrent

	medication/care: None reported Further details: 1. Choice of agent: Not applicable / Not stated / Unclear
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: STEROID GROUP versus SALINE GROUP Protocol outcome 1: Pain severity (VAS/NRS) at 4 months or less - Actual outcome for Other image-guided injections: VAS at 4 months; Group 1: mean 4.28 (SD 1.4); n=23, Group 2: mean 6.72 (SD 0.43); n=22; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at > 4 months - Actual outcome for Other image-guided injections: VAS at 24 months; Group 1: mean 6.39 (SD 1.54); n=23, Group 2: mean 6.67 (SD 0.58); n=22; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at > 4 months - Actual outcome for Other image-guided injections: ODI at 4 months; Group 1: mean 32.1 (SD 7.91); n=23, Group 2: mean 46.7 (SD 4.94); n=22; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Other image-guided injections: ODI at 24 months; Group 1: mean 49.2 (SD 9.53); n=23, Group 2: mean 51 (SD 7.11); n=22; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at 4 months or less; Quality of life at >4 months; Function (disability scores) at 4 months or less; Responder criteria at 4 months or less; Responder criteria at > 4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at 4 months or less; Healthcare utilisation at > 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at 4 months or less; Psychological distress (HADS/GHQ/BDI/STAI) at > 4 months; Adverse events (mortality) at 4 months or less; Adverse events (mortality) at > 4 months; Adverse events (morbidity) at 4 months or less; Adverse events (morbidity) at >4 months

H.16 Radiofrequency denervation

Study	**Barendse 2001[23]**

Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=32)
Countries and setting	Conducted in Netherlands; Setting: Hospital research centre
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Follow-up at 8 weeks and 1 year post-Tx
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic non-specific LBP. Age 20-60. LBP >12 months. Initial mean VAS >4 for pain. Conservative therapy performed without success.
Exclusion criteria	Previous back surgery. Clinical signs of lumbar radiculopathy. Neurological abnormalities. >1 pain syndrome or specific causes of LBP such as herniated disc, spondylolisthesis, spondylosis ankylopoetica, spinal stenosis, malignancy or infection.
Recruitment/selection of patients	Referalls of LBP pts from various medical specialists
Age, gender and ethnicity	Age - Mean (SD): VAS Pain (0-10): Sham = 5.4 (1.5); RF = 5.3 (1.8). Gender (M:F): 9M/19F. Ethnicity:
Further population details	
Extra comments	VAS pain, mean (SD): sham = 5.4 (1.5); RF = 5.3 (1.8). Pts with >50% pain relief 30mins after nerve block with local anaesthetic were randomised.
Indirectness of population	No indirectness

Interventions	(n=16) Intervention 1: Radiofrequency ablation - Denervation. Anaesthetic: 1ml lidocaine 1%. RF zygapophysial joint denervation 80oC lesion for 60 secs RESULTS ARE FOR THE EFFECT ON MUSCLE DENERVATION not FACET JOINT NERVE DENERVATION. CANNOT USE RESULTS THEREFORE.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Prior nerve block used (patients underwent diagnostic medial branch nerve block with a local anesthetic). (n=16) Intervention 2: Placebo/Sham. As for RF arm, but no RF lesion was made. RESULTS ARE FOR THE EFFECT ON MUSCLE DENERVATION not FACET JOINT NERVE DENERVATION. CANNOT USE RESULTS THEREFORE.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block:
Funding	Other (NWO (netheralnds organisation))
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define; Adverse events at 4 months or less; Adverse events at >4 months; Responder criteria at follow-up

Study	Civelek 2012[94]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=100)
Countries and setting	Conducted in Turkey; Setting: Not reported
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Follow-up at 1, 6 and 12 months post-intervention
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Chronic and debilitating LBP leading to a diagnosis of lumbar facet syndrome. Pain not responsive to conservative Tx for up to 6 weeks.
Exclusion criteria	Radicular pain. Neurogenic claudication. Neurological deficits. Acute or uncontrolled medical illness. Known history of adverse reactions to local anaesthetics. Pregnant or lactating women.
Recruitment/selection of patients	Not reported
Age, gender and ethnicity	Age - Mean (SD): Injection: 56.5 (17.7); RF 51.8 (17). Gender (M:F): 70% female. Ethnicity:
Further population details	
Extra comments	Baseline scores - EQ-5D: RF = 13.8, inject = 14.7. VNS: RF = 8.2, inject = 8.5.
Indirectness of population	--
Interventions	(n=50) Intervention 1: Radiofrequency ablation - Denervation. 80oC for 120 secs. NOTE: those who responded favourably to treatment after 1 week were then placed in a spine rehabilitation programme for 4-6 weeks to maximise the functional gains.Those who partially responded or did not respond, were offered surgery or physical therapy.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Not stated / Unclear (n=50) Intervention 2: Facet joint injection - Medial nerve block. Medial branch block with methylprednisolone and bupivacaine. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block:

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DENERVATION versus MEDIAL NERVE BLOCK Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: EQ-5D at <4 months (1 month); Risk of bias: Very high; Indirectness of outcome: Serious indirectness - Actual outcome for Overall (acute, chronic) without sciatica: EQ-5D at >4 months (12 months); Risk of bias: Very high; Indirectness of outcome: Serious indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: VNS - visual numeric pain scale at <4 months (1 month); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: VNS - visual numeric pain scale at >4 months (12 months); Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Gallagher 1994[160]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60)
Countries and setting	Conducted in United Kingdom; Setting: Not reported
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 1 month and 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Diagnostic block given; pts with good or equivocal response were randomised to study arms
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP >3 months. Age 25-55 yrs. 4 or more of the following: tenderness on palpatation, more pain on extension than flexion, pain on rotation of teh spine, referred pain (above knee), pain exacerbated by exercise and relieved by rest, pain exacerbated by sitting or standing, pain not excaerbated by coughing or sneezing, radiological evidence of facet joint degeneratuin or predisposing factors, such as loss of disc height or spondylolisthesis at the painful level.
Exclusion criteria	Previous back operations. Neurological signs of nerve root compression in lower limbs. Pts with major mental illness or severe personality disorder. Pending compensation claims. General ill health.
Age, gender and ethnicity	Age - Range: 25-55. Gender (M:F): Not reported. Ethnicity:
Further population details	
Extra comments	Baseline: Pain (VAS - converted to 0-10) Grp A n=18, 5.8 (SD 1.78), Grp B n=6, 6.8 (SD 1.32), Grp C n=12, 7.2 (SD 1.94), Grp D n=5, 6.0 (SD 1.63); Pain (McGill): Grp A 15 (SD 2.3), Grp B 22 (SD 2.4), Grp C 19 (SD 2.4), Grp D 16 (SD 1.6). Grp A = good response to Dx block (=randomised to denervation); Grp B = equivocal response to Dx block (=randomised to denervation); Grp C = good response to Dx block (=randomised to placebo/sham); Grp D = equivocal response to Dx block (=randomised to placebo/sham).RSULTS FOR THIS REVIEW WILL BE PEOPLE WHO RESOPINDED WELL TO Dx BLOCK ONLY
Indirectness of population	No indirectness
Interventions	(n=18) Intervention 1: Radiofrequency ablation. Facet joint denervation using radiofrequency lesion generator. Nerves above and below the painful joint were denervated. Anaethestetic: lignocaine 2% (0.5 ml). Radiofrequency lesion at 80oC for 90sec was made.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Prior nerve block used (All patients were given an initial injection of local

	anesthetic (bupivacaine 0.5 per cent 0.5 m) into and around the facet joint as assesed by examination under iamge intensifier. Patients who felt clear relief from the diagnostic block were randomised to RF denervation or placebo denervation.). Comments: group A good repsonse to Dx block, n=18; group B equivocal response to Dx block, n=6). USING DATA HERE FOR THE GROUPS WITH GOOD RESPONSE ONLY (n=12) Intervention 2: Placebo/Sham. As for denervation group but no heat lesion was made.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Comments: group C good repsonse to Dx block, n=12; group D equivocal response to Dx block, n=5. USING DATA HERE FOR THE GROUPS WITH GOOD RESPONSE ONLY
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: RADIOFREQUENCY ABLATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS) 0-10 - converted as paper reported 0-100 at 1 month; Group 1: mean 3.4 (SD 2.93); n=18, Group 2: mean 6 (SD 3.39); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain (McGill) 0-78 at 1 month; Group 1: mean 9 (SD 9.8); n=18, Group 2: mean 16 (SD 9.7); n=12; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: Pain (VAS) 0-10 - converted as paper reported 0-100 at 6 months; Group 1: mean 4.4 (SD 2.94); n=18, Group 2: mean 7 (SD 2.94); n=12; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Pain (McGill) 0-78 at 6 months; Group 1: mean 12 (SD 30.5); n=18, Group 2: mean 17 (SD 11.1); n=12; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Leclaire 2001[308]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=)
Countries and setting	Conducted in Canada; Setting: Outpatients
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	18-65 years. LBP >3 months. Had significant relief of pain for at least 24hrs during the week after IA facet injections.
Exclusion criteria	Known allergy to local anaesthetic. Blood coagulation disorder. Cardiac pasce-maker. Sciatic pain with a neurologic deficit. LBP not related to a mechanical disorder. Low back surgery. Concomitant medical illness likely to compromise abilty to participate.
Age, gender and ethnicity	Age - Mean (SD): 46.6 (9.6). Gender (M:F): 25/45. Ethnicity:
Further population details	
Extra comments	RMDQ (0-100): Neurotomy = 52.9 (SD 18.2), Placebo = 51.6 (SD 22.8). ODI (0-100): Neurotomy = 38.3 (SD 14.7), Placebo = 36.4 (SD 14.6). Pain VAS(0-10): Neurotomy = 5.19 (SD 2.67), Placebo = 5.15 (SD 2.08).
Indirectness of population	No indirectness
Interventions	(n=36) Intervention 1: Radiofrequency ablation - Denervation. Anaesthetic: lidocaine 1% (2 ml). Medial branch of the distal portion of the spinal posterior rami nerve. Neurotomy performed at minimum of 2 levels: L4-L5 and L5-S1 unilaterally on the painful side or bilaterally. Temperature 80oC for 90 secs. 2 neurotomies performed for each nerve (one at proximal portion, and one at distal of the articular facet nerve). . Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Prior nerve block used (Not true diagnostic nerve block given (into joint injection); responders were randomised). (n=34) Intervention 2: Placebo/Sham. As for denervation group, except temperature of electrode tip was not raised, but maintained at 37oC.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block:

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DENERVATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain, VAS (0-10) - converted from 0-100 in paper at 12 weeks; Group 1: mean -0.05 0-10 (SD 2.5); n=35, Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: RMDQ 0-100 at 12 weeks; Group 1: mean 9.8 (SD 19.5); n=35, Group 2: mean 7.2 (SD 17); n=31; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: ODI 0-100 at 12 weeks; Group 1: mean 4.7 (SD 12); n=35, Group 2: mean 2.7 (SD 9.1); n=31; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Nath 2008[404]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in Sweden
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	LBP at least 2 yrs duration and not repsonded to previous Tx. At least 1 component of their pain attributed to 1 or more lumbar zygapophysial joints. Paravertebral tenderness. Obtained at leaast 80% relief of pain following controlled medial branch blocks (a recognisable component or region of thier pain was consistently relieved).
Exclusion criteria	Pregnancy. Coagulopathies. Malignancy. Infections. Mental handicap. Psychiatric disorders. Motor deficit or ay other indication for surgical treatment. Lived too far away to participate in follow-up.
Age, gender and ethnicity	Age - Range: 36-79. Gender (M:F): 15/25. Ethnicity:
Further population details	
Extra comments	Generalised pain (VAS 0-10): Tx group = 6.03, control = 4.35. Back pain (VAS 0-10): Tx group = 5.98, control = 4.38. Analgesic consumption (global perceived improvement, 1-6): Tx = 3.95, control = 3.80. No SDs given
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Radiofrequency ablation. Had two Dx blocks: 1. Screening bleck (pts with at least 80% relief went to have second block); 2. Second block (pts with at least 80% relief and able to participate in the trial were randomised. Procedure (RF ablation/neurotomy): anaesthetic bupivacaine 0.5% (2 ml). RF 85oC for 60 seconds. Multiple lesions made (6 lesions in total, lateral and medial to the first 2 lesions).. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Prior nerve block used (Patients had two diagnostic blocks: 1. Screening block (patients with at least 80% relief went to have second block); 2. Second block (patients with at least 80% relief and able to participate in the trial were randomised). (n=20) Intervention 2: Placebo/Sham. As for neurotomy arm; except no current applied and temperature of electrode kept at 37oC.. Duration Immediate. Concurrent medication/care: n/a

	Further details: 1. Use of prior nerve block:
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: RADIOFREQUENCY ABLATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome: Generalised pain VAS 0-10 at 6 months; MD -1.9 (95%CI -3 to -0.8) VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Back pain VAS 0-10 at 6 months; Mean -1.4 (95%CI -3 to 0.17) VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Analgesic consumption at 6 months; MD -0.8 (95%CI -1.56 to -0.04) Global perception of improvement QoL scale: analgesic consumption 0-6 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (morbidity) at Define

Study	Tekin 2007[513]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=60 (20 in each of 3 groups))
Countries and setting	Conducted in Turkey; Setting: Outpatients
Line of therapy	Mixed line
Duration of study	Intervention + follow up: 6 months and 1 year follow-up post-Tx
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Age >17 years. Symptoms for >6 months (continuous LBP with or without radiating into the upper leg, focal tenderness over the facet joints, pain on hyperextension, no finding of obvious neurologic defect, no indication for LBP surgery, no radicular syndrome, unresponsiveness to traditional conservative Tx.
Exclusion criteria	Prior RF Tx. Coagulation disturbances. Allergies to radiopaque contrast media or local anaesthetics. Malignancy. Mental handicap or psychiatric condition precluding adequate communication. Language problems. Pergnancy.
Age, gender and ethnicity	Age - Range of means: 57.9 to 60.5 yrs. Gender (M:F): 43%/57%. Ethnicity:
Further population details	
Extra comments	Pain VAS (SD): RF = 6.5 (1.5) and Sham = 6.8 (1.6). ODI (SD): RF = 39.2 (3.5) and Sham = 40.1 (2.8).
Indirectness of population	--
Interventions	(n=20) Intervention 1: Radiofrequency ablation - Denervation. Anaesthetic 0.5ml prilocaine 2%. RF lesion 80oC for 90 secs at the levels concerned. . Duration Immediate. Concurrent medication/care: If VAS score was >4 during follow-up then NSAIDs were given to the pts in each group. Further details: 1. Use of prior nerve block: Prior nerve block used (Patients underwent diagnostic medial branch block orocedure using 0.3 ml Lidocaine , postive responders were randomised). (n=20) Intervention 2: Placebo/Sham. As for RF group except no current applied. and only anaesthetic 0.3ml bupivacaine 0.5% was injected.. Duration Immediate. Concurrent medication/care: If VAS score was >4 during follow-up then NSAIDs were given to the pts in each group. Further details: 1. Use of prior nerve block:

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DENERVATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) 0-10 at Post-procedure; Group 1: mean 2.3 0-10 (SD 1.4); n=20, Group 2: mean 4.3 0-10 (SD 1); n=20; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) 0-10 at 1 year; Group 1: mean 2.4 (SD 1.1); n=20, Group 2: mean 3.9 (SD 1.2); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: ODI 0-100 at 1 year; Group 1: mean 28 (SD 7.1); n=20, Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: ODI 0-100 at Post-procedure; Group 1: mean 25.6 (SD 6.5); n=20, Group 2: mean 30.5 (SD 5.7); n=20; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Analgesic use, % pts at 1 year; Mean RF = 40% and sham = 95%; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) without sciatica: Complications, no. of events at 1 year; Group 1: mean 0 (SD 0); n=20, Group 2: mean 0 (SD 0); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up

Study	Van kleef 1999[542]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=31)
Countries and setting	Conducted in Netherlands
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 8 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 20-60 years. LBP >12 months duration. Man VAS >4 or VAS high score >7. Conservative therapy attempted without success. Absence of any neurologic deficit by routine neurologic examination.
Exclusion criteria	Previous back surgery. Known specific causes of LBP. Diabetes mellitus. More than 1 pain syndrome.
Recruitment/selection of patients	Referrals from specialists
Age, gender and ethnicity	Age - Range of means: 41.4 and 46.6. Gender (M:F): 11/20. Ethnicity:
Further population details	
Extra comments	Pain (VAS 0-10): Tx = 5.2 (SD 1.7) and control = 5.2 (SD 1.6). ODI (60 items): Tx = 31.0 (SD 14.2) and control = 38.0 (SD 13.1). No. of analgesic tablets/4 days (media, range): Tx = 0 (0-15) and control = 0 (0-12).
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Radiofrequency ablation - Denervation. Dx nerve block given and pts who had good relief (at least 50% relief) or free of pain were randomised.RF lesion 80oC for 60 secs of medial branch of posterior primary ramus of segmental nerves L3-L5 on one or both sides. Anaesthetic lignocaine 1% (1ml). Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Prior nerve block used (patients were selected for a diagnostic nerve block of the posterior primary ramus of the segmental nerves L3, L4 and L5 (patients with unilateral symptoms underwent unilateral blocks and patients with bilateral pain underwent bilateral diagnostic blocks)). (n=16) Intervention 2: Placebo/Sham. As for Tx group but without a RF lesion being made and no current applied.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block:

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DENERVATION versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome: Pain (VAS) 0-10 - average of 3 daily measurements over 4 days. at 8 weeks; MD -2.46 (90% CI -4.2 to -0.72); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: ODI at 8 weeks; MD 10.90 (90% CI 1.76 to 20.0); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: No. of analgesic tablets/4 days at 8 weeks; MD -3.24 (90% CI -6.60 to 0.13); Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome: ≥50% pain reduction (Global perceived effect) at 8 weeks; OR 9.53 (95%CI 1.5 to 60.5) (90% CI); Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: ≥50% pain reduction (Global perceived effect) at 3 months; Group 1: 9/15, Group 2: 4/16; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: ≥50% pain reduction (Global perceived effect) at 12 months; Group 1: 7/15, Group 2: 2/16; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define

Study	Van wijk 2005[543]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=81)
Countries and setting	Conducted in Netherlands; Setting: Multicentre; outpatients
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 3 months and 1 year (1 year results only reported in graph - large dropouts mentioned)
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Age >17 years; continuous LBP with/without radiating pain into the upper leg for >6 months, with focal tenderness over the facet joints. No radicular syndrome. No indication for LB surgery. At least 50% pain reducation (VAS) after 30mins fo a Dx block.
Exclusion criteria	Prior RF Tx. Coagulation disturbances. Allergies for radiopaque contrast or local anaesthetics. Malignanc. Mental handicap or psychiatric condition precluding adequate communication. Language problems. Pregnancy.
Age, gender and ethnicity	Age - Range of means: 46.9 and 48.1. Gender (M:F): 23/58. Ethnicity:
Further population details	
Extra comments	Baseline scores for RF and sham groups (mean, SD) - back pain: 5.8 (1.8), 6.5 (1.8); analgesic intake: 1.0 (1.0), 1.5 (1.7); SF-36 physical functioning: 42.9 (19.3), 33.8 (17.0); social functioning: 59.7 (23.1), 53.0 (24.7); physical role: 20 (37.7), 18.4 (21.8); emotional role: 55.8 (45.5), 70.3 (41.4); mental health: 62.9 (21.8), 70.2 (16.8); vitality: 43.5 (21.6), 49.2 (19.6); pain: 37.3 (15.6), 31.2 (15.3); general health: 56.8 (21.9), 57.3 (19.8); health changes: 36.3 (22.6), 28.4 (20.5). 1 year data was supposed to be reported by the study, howeverat this time-point most patients were unblinded and there was loss-to follow-up (details not given). Actual numbers for data was not reported for 1 year results (just graphs).
Indirectness of population	No indirectness
Interventions	(n=40) Intervention 1: Radiofrequency ablation - Denervation. Pts with at least 50% pain reduction (VAS) after 30mins of beig given a Dx block, were randomised. 3 or 6 electrodes palced at site of dorsal ranus medial branches. Anaesthetic mepivacaine 2% (0.5 ml). RF lesion made at 80oC for 60 secs. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block: Prior nerve block used (Diagnostic nerve blocks were performed of the lumbar facet joints involved. If patients had 50% pain reduction on a standard VAS applied after 30 minutes, they were

	included in the trial). (n=41) Intervention 2: Placebo/Sham. As for RF group, except RF current was not switched on.. Duration Immediate. Concurrent medication/care: n/a Further details: 1. Use of prior nerve block:
Funding	Academic or government funding (Dutch Health Insurance Council and Pain Expertise Center, The Netherlands.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DENERVATION versus PLACEBO/SHAM

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF-36 Physical functioning (mean difference) at 3 months; Group 1: mean 4.7 0-100 (SD 16.9); n=40, Group 2: mean 7.8 0-100 (SD 19.7); n=41; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning (mean difference) at 3 months; Group 1: mean 5.3 0-100 (SD 36.1); n=40, Group 2: mean 2.6 0-100 (SD 29.6); n=41; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health (mean difference) at 3 months; Group 1: mean 2.7 0-100 (SD 26.8); n=40, Group 2: mean 0.7 0-100 (SD 23.9); n=41; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality (mean difference) at 3 months; Group 1: mean 5.3 0-100 (SD 14.6); n=40, Group 2: mean -2.4 0-100 (SD 17.7); n=41; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Pain (mean difference) at 3 months; Group 1: mean 11.8 0-100 (SD 22.9); n=40, Group 2: mean 11.6 0-100 (SD 20.6); n=41; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health (mean difference) at 3 months; Group 1: mean 1.8 0-100 (SD 13.6); n=40, Group 2: mean -1.3 0-100 (SD 17.5); n=41; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 General health (mean difference) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Pain (mean difference) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Vitality (mean difference) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Mental health (mean difference) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Social functioning (mean difference) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF-36 Physical functioning (mean difference) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: Back Pain (VAS 0-10) at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome: Back Pain (VAS 0-10) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Mean change in analgesics intake (median value of 4 measurements during 2 weeks) at 3 months; MD ; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Mean change in analgesics intake (median value of 4 measurements during 2 weeks) at 1 year; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome: Teatment related pain (moderate or severe), no. of patients at 3 months; Group 1: 23/39, Group 2: 14/39; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Change of sensibility (irritating or evident dysaesthesia or allodynia), no. of patients at 3 months; Group 1: 2/39, Group 2: 0/40; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Loss of motor function (irritating or evident motor loss), no. of patients at 3 months; Group 1: 0/38, Group 2: 1/41; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at follow-up - Actual outcome: Back Pain reduction (VAS) >50% no of pts at 3 months; Group 1: 13/40, Group 2: 14/41; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome: Back Pain reduction (global perceived effect) >50% at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Back Pain reduction (VAS) >50% no of pts at 1 year; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Back Pain reduction (global perceived effect) >50% at 3 months; Group 1: 24/39, Group 2: 16/41; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up

H.17 Epidural injections for sciatica

Study (subsidiary papers)	**Arden 2005[14] (Price 2005[438])**

Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=228)
Countries and setting	Conducted in United Kingdom; Setting: 4 centres in the UK
Line of therapy	Unclear
Duration of study	Intervention + follow up: 6 weeks treatment. 52 weeks = follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Clinical diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	All patients aged between 18-70 years old. Clinical diagnosis of unilateral sciatica (defined as leg pain radiating below the knee reduced straight leg raising, and a positive sciatic nerve stretch test)
Exclusion criteria	Spinal canal stenosis, or previous lumbar spine surgery; previous epidurals; depression; bleeding diathesis; use of anticoagulants; and current litigation
Recruitment/selection of patients	All patients reffered to orthopaedics, or rheumatology outpatients with sciatica
Age, gender and ethnicity	Age - Mean (SD): Intervention= 43 (12), control 44 (12). Gender (M:F): %female: intervention=48.3%, control= 46.3%. Ethnicity:
Further population details	
Extra comments	Baseline values: Oswestry disability score: intervention 44(15), control 45 (18), VAS leg pain: intervention 52 (23),control 56 (22), VAS back pain: intervention 40 (24), control 44 (25); HADS anxiety: intervention 9 (3), control 9 (4); HADS depression: intervention 7 (4), control 8 (4).
Indirectness of population	No indirectness
Interventions	(n=120) Intervention 1: Non image-guided steroid + anaesthetic. Lumbar epidural injection of triamcinolone acetonide (80mg) + 10 mls 0.25% bupivacaine given at week 0, 3 and 6.. Duration 6 weeks. Concurrent medication/care: Injections at 3 and 6 weeks were omitted if the patient's ODI score had improved by >75% from baseline. All patients had regular analgesics and phsyiotherapy Further details: 1. Route of administration: Not applicable / Not stated / Unclear (ESI via the lumbar route). Comments: Patients were withdrawn from the study at 12 weeks if the ODI had not improved by 10%, or had any neurological deteriation. (n=108) Intervention 2: Placebo/Sham. 2 mls of saline into the interspinous ligament. . Duration 6 weeks. Concurrent

	medication/care: Injections at 3 and 6 weeks were omitted if the patient's ODI score had improved by >75% from baseline. All patients had regular analgesics and phsyiotherapy Further details: 1. Route of administration: Not applicable / Not stated / Unclear Comments: Patients were withdrawn from the study at 12 weeks if the ODI had not improved by 10%, or had any neurological deteriation.
Funding	Academic or government funding (Nathional Health Service R&D programme)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS back pain at 12 weeks; Group 1: mean 0.4 (SD 2.8); n=85, Group 2: mean 0.7 (SD 3.2); n=76; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: VAS leg pain at 12 weeks; Group 1: mean 1.3 (SD 3.3); n=85, Group 2: mean 1.8 (SD 3.3); n=86; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome: VAS leg pain at 52 weeks; Group 1: mean 1.7 (SD 3.6); n=120, Group 2: mean 2 (SD 3.4); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: VAS back pain at 52 weeks; Group 1: mean 0.08 (SD 0.31); n=120, Group 2: mean 0.09 (SD 0.33); n=108; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome: Oswestry disability score at 12 weeks; Group 1: mean 12 (SD 19); n=85, Group 2: mean 12 (SD 21); n=86; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: Oswestry disability score at 52 weeks; Group 1: mean 16 (SD 23); n=120, Group 2: mean 14 (SD 24); n=108; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up
- Actual outcome: HAD anxiety at 12 weeks; Group 1: mean -2 (SD 4); n=120, Group 2: mean -3 (SD 4); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: HAD depression at 12 weeks; Group 1: mean -2 (SD 4); n=120, Group 2: mean -2 (SD 4); n=108; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome: HAD depression at 52 weeks; Group 1: mean -2 (SD 5); n=120, Group 2: mean -2 (SD 5); n=108; Risk of bias: High; Indirectness of outcome: No indirectness

- Actual outcome: HAD anxiety at 52 weeks; Group 1: mean -3 (SD 5); n=120, Group 2: mean -3 (SD 4); n=108; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome: Analgesic use (average number per week) at 52 weeks; Group 1: mean 14 (SD 28); n=48, Group 2: mean 16 (SD 48); n=42; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Surgery % at 52 weeks; Group 1: 18/120, Group 2: 15/108; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Further physiotherapy at 52 weeks; Group 1: 37/120, Group 2: 27/108; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome: Other injections at 52 weeks; Group 1: 19/120, Group 2: 13/108; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Minor complications at 12 weeks; Group 1: 11/120, Group 2: 11/108; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Autio 2004[19]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=160)
Countries and setting	Conducted in Unknown; Setting: Unclear
Line of therapy	Unclear
Duration of study	Intervention + follow up: Single injection + 1 year follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Nonoperated patients with unilateral sciatica; symptom duration 3-28 weeks.
Exclusion criteria	Underwent a back operation before the scheduled rescanning; claustrophobia.
Recruitment/selection of patients	Consecutive patients; MRI evaluation and slected on willingness, age, and current MRI capacity of teh radiologic department.
Age, gender and ethnicity	Age - Range of means: Mean 41 and 44 years. Gender (M:F): 65 and 74% male in each group. Ethnicity:
Further population details	
Extra comments	N/A as no relevant outcome measures reported. NO RELEVANT OUTCOMES REPORTED
Indirectness of population	--
Interventions	(n=80) Intervention 1: Image-guided steroid + anaesthetic. Periradicular transforaminal infiltration using methylprednisolone (40mg/l) + bupivacaine (5mg/ml); Fluoroscopic screening. Duration Single injection. Concurrent medication/care: None mentioned Further details: 1. Route of administration: Not applicable / Not stated / Unclear (n=80) Intervention 2: Placebo/Sham. Saline . Duration Single injection. Concurrent medication/care: None reported Further details: 1. Route of administration: Not applicable / Not stated / Unclear
Funding	No funding
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function

	(disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Beliveau trial: Beliveau 1971[26]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=48)
Countries and setting	Conducted in United Kingdom; Setting: not reported
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 1 month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: clinical diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	moderate or sever unilateral sciatica +/- neurological signs thought to be caused by a disc lesion, before or after conservative treatments had been tried
Exclusion criteria	Gross bone or joint disease determined by x ray and ESR serology.
Recruitment/selection of patients	not reported
Age, gender and ethnicity	Age - Mean (range): 40.6 (19-71). Gender (M:F): 36 males: 12 females. . Ethnicity:
Further population details	
Extra comments	No baseline data . Electro myographic exploration was performed in patients developing motor weakness to localise the exact level of the lesion.
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Non image-guided steroid + anaesthetic. Epidural of 40mls of procaine 0.5% in normal saline, with 2 mls of methylprednisolone . Duration 2 months . Concurrent medication/care: simple analgesia Further details: 1. Route of administration: Not applicable / Not stated / Unclear (n=24) Intervention 2: Non image-guided Local anaesthetic. Epidural of 42 mls of procaine 0.5% in normal saline. Duration 2 months . Concurrent medication/care: simple analgesia Further details: 1. Route of administration: Not applicable / Not stated / Unclear
Funding	Funding not stated

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Breivik 1976[48]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=35)
Countries and setting	Conducted in Norway; Setting: 1 st injection given whilst inpatient, subsequent given on outpatient basis.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 3-19 months follow up range
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: clinical diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	incapacitating chronic low back pain +sciatica unresponsive to conservative treatment for several months to several years.
Exclusion criteria	Define
Recruitment/selection of patients	not reported
Age, gender and ethnicity	Age - Range: intervention (steroid +LA) group: 30-64, control group (LA alone): 30-61 . Gender (M:F): 16 males: 18 females . Ethnicity:
Further population details	
Extra comments	No baseline data as no outcomes. 11 patients had previouly undergone surgery for prolapsed discs , 32 patient had radiculography with metrizamide before the injections showing arachnoditis in 8, prolapsed disc in 8, no abnormality in 11, and inconclusive findings in 5.
Indirectness of population	No indirectness
Interventions	(n=16) Intervention 1: Non image-guided steroid + anaesthetic. Epidurals of 20mls bupivacaine 0.25% with 80mg depot methyl prednisolone. Repeated in 3 weeks if no improvement upto 3 times. . Duration upto 9 weeks . Concurrent medication/care: similar regimens of medical and physical therapy Further details: 1. Route of administration: Caudal (n=19) Intervention 2: Non image-guided Local anaesthetic. Epidurals of 20mls bupivacaine 0.25% followed by 100mls saline. Repeated upto 3 times every 3 weeks if no response . Duration upto 9 weeks . Concurrent medication/care: similar regimen of medical and physical therapy Further details: 1. Route of administration: Caudal

Funding	Equipment / drugs provided by industry (Depot methyl prednisolone was supplied by The Upjohn Company Oslo)
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Bronfort 2004[53]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=32)
Countries and setting	Conducted in USA
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Up to 3 injections (over 12 weeks) + 52 weeks follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Unilateral or bilateral radiating pain of lumbar origin
Exclusion criteria	Define
Age, gender and ethnicity	Age - --: . Gender (M:F): Define. Ethnicity:
Further population details	
Extra comments	Baseline details (mean SD) for combined, steroid and self management, respectively - leg pain: 4.3±2.3, 5.5±1.8, 5.0±2.3; RMDQ: 42.5±21.2, 55.5±18.2, 40.7±23.1; ODI: 39.6±12.7, 44.9±12.9, 39.7±13.2; depression: 7.3±5.8, 8.9±6.5, 6.2±4.8
Indirectness of population	No indirectness
Interventions	(n=11) Intervention 1: Image-guided steroid. Steroid (details of dose and regimen not reported). Duration Up to 3 injections,(over 12 weeks) + 52 weeks follow-up. Concurrent medication/care: N/A Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Not stated). (n=10) Intervention 2: Self management - Self-management . Self-management (self-care education). Duration Up to 3 injections,(over 12 weeks) + 52 weeks follow-up. Concurrent medication/care: N/A Further details: 1. Route of administration: (n=11) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. Manual therapy -mixed modality (manipulation/mobilisation + massage) + heat/cold. Duration • Up to 3 injections,(over 12 weeks) + 52 weeks follow-up. Concurrent medication/care: N/A Further details: 1. Route of administration:

Funding	--
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Buchner 2000 trial: Buchner 2000[60]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=36)
Countries and setting	Conducted in Germany; Setting: Inpatients of an orthopaedic centre
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI and clinical examination
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	the presence of a lumber disc herniation confimred by MRI at least 5mm with corresponding clinical symptoms of nerve root compression such as radicular pain extending below the knee, a postivie straight leg raising test result below 60 degrees, and an age <50 YO
Exclusion criteria	Previous surgery to the lumbar spine, lumbar spinal stenosis (an MRI sagittal diameter of the spinal canal less thenn 12 mm with corresponding clinical symptoms, symptoms or signs of cauda equina syndrome, acute sever motor paresis
Recruitment/selection of patients	Patients admitted to an orthopaedic cente
Age, gender and ethnicity	Age - Mean (range): Intervention group 37 years (20-50), control 32 years (22-42). Gender (M:F): 23:13. Ethnicity: NA
Further population details	
Extra comments	Baseline:VAS intervention group: 8.4 (70-100), control group 8.1 (25-100) . Duration of pain: median 8 weeeks (1-52)
Indirectness of population	No indirectness
Interventions	(n=17) Intervention 1: Non image-guided steroid + anaesthetic. Lumbar epidural injections of 100mg of methylprednisolone in 10mls of bupivacaine (0.25%) within the first 14 days of hospitalisation. Duration 1 episode within first 14 days of admission. Concurrent medication/care: Combination of interventions (same as the interventions in the comparison arm) Further details: 1. Route of administration: Transforaminal (Lumbar route). Comments: 2 patients underwent surgery within 4 week due to non response. results included in ITT. (n=19) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. usual care = combination of non-invasive interventions. Duration followup 6 months. Concurrent medication/care: Bed rest, administration of analgesic (worst pain treated with tramadol) and non steroidal anti-inflamatory drugs for the intial

	pain period. After initial improvement the patients recieved a standard program of graded rehabilitation including hydrotherapy, electroanlagesia, postural exercise classes (back school) and later spinal mobiising physiotherapy (soft tissue and joint mobilisation, muscle stabilisation program, strenghtening by dynamic and static exercises) Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Not applicable). Comments: 4 patients underwent surgery within 4 week due to non response. results included in ITT.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus COMBINED NON-INVASIVE INTERVENTIONS Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain score at 6 weeks; Group 1: mean 3.29 (SD 0); n=17, Group 2: mean 3.81 (SD 0); n=19; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain score at 6 months; Group 1: mean 3.29 (SD 0); n=17, Group 2: mean 3.92 (SD 0); n=19; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 6 months; Group 1: 2/17, Group 2: 4/19; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Adverse procedural events at 6 months; Group 1: 0/17, Group 2: 0/19; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up

Study	Bush 1991 trial: Bush 1991[61]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=28)
Countries and setting	Conducted in United Kingdom; Setting: tertiary rheumatology centre outpatients.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 2 weeks+50 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: clinical diagnosis, no MRI/CT imaging.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Unilateral sciatica extending below the knee, associated with paraessthesia and root tension signs in the form of a positive straight leg raise. +/- signs of root compression (impaired or absent reflexes, muscle weakness, or reduced sensation)
Exclusion criteria	Symptoms or signs of cauda equina syndrome, symptoms present <1 month, Nonorganic physical signs (psychosomatic symptoms were excluded), other serious pathology, inadequate contraceptive precautions in women of child bearing age.
Recruitment/selection of patients	Patients presenting with unilateral sciatica to an outpatients department
Age, gender and ethnicity	Age - Range: 26-71. Gender (M:F): 15 males: 8 females . Ethnicity: NA
Further population details	
Extra comments	Baseline values for VAS pain, intervention group:3.85, control group 4.92. Before entering the study the patients underwent routine blood analysis, urinalysis and roentgenographs of the lumbar spine including the pelvis and sacrum. Range of duration of symptoms from 1 month to 13 months.
Indirectness of population	--
Interventions	(n=11) Intervention 1: Placebo/Sham. two caudal injections of normal saline at day 1 and 2 weeks given via the sacral hiatus via a 21 gauge, 2 inch needle. . Duration 2 weeks. Concurrent medication/care: bed rest, analgesics (not NSAIDS) for first 4 weeks of study, corsets and manipulation Further details: 1. Route of administration: Caudal Comments: 4 patients withdrawn from study becase of deteriation of symptoms. " went on to have decompressive surgery, and the remaining 2 had the active treatment given which controlled symptoms

	(n=12) Intervention 2: Non image-guided steroid + anaesthetic. two caudal injections of 25 mls containing 80 mg tiamcinolone in normal saline, and 0.5% procaine hydrochloride at day 1 and 2 weeks given via the sacral hiatus via a 21 gauge, 2 inch needle. . Duration 2 weeks. . Concurrent medication/care: two caudal injections of normal saline at day 1 and 2 weeks given via the sacral hiatus via a 21 gauge, 2 inc needle. Further details: 1. Route of administration: Caudal Comments: 1 patient was withdrawn from the study due to deteriation of symptoms, they went on to have decompressive surgery.
Funding	Study funded by industry (E R Squibb &sons and the Boots Company PLC)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity at 4 weeks ; Group 1: mean 1.6 (SD 1.57); n=12, Group 2: mean 4.5 (SD 3.22); n=11; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain intensity at 12 months; Group 1: mean 1.42 (SD 2.85); n=12, Group 2: mean 2.96 (SD 3.99); n=11; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Carette 1997 trial: Carette 1997[68]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=158)
Countries and setting	Conducted in Canada; Setting: Hospital outpatients
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: CT confirmed herniated disc at a level corresponding to the symptoms and clinical findings.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged oved 18 YO, first or reccurent episode of sciatica (defined as the prescense of constant or intermittent pain in one or both legs, radiating below the knee, signs of nerve root irritation- a positive straight leg test, defined as reproduction of radicular pain by elevation of the leg, or nerve root compression- motor, sensory or reflux deficits) that lasted for a minimum of four weeks but less than one year. Baseline score >20 on the oswestry low back pain disability questionnaire.
Exclusion criteria	Symptoms or radiological findings suggestive of cauda equina syndrome, if the CT showed evidence of nerve root compression from causes other than a herniated disc. If they'd recieved epidural corticosteroid injections for the current episode in the preceding year, or if they had undergone low back surgery. Patients who were pregnant or who had a known blood coagulation disorder or an allergy to local anaesthetics were also excluded.
Recruitment/selection of patients	Referred from GPs
Age, gender and ethnicity	Age - --: . Gender (M:F): male sex: intervention 71.8%, control 58.8%. Ethnicity: NA
Further population details	
Extra comments	Baseline values: Mcgill score - present intensity of pain, intervention group 2.6 (1.1), control 2.8 (1.0), Mcgill score -pain rating index 27.8 (12.0), 26.2 (10.7), Oswestry score intervention: 29.6 (15.7), control 50.0 (15.5), VAS pain previous week: intervention 65.6 (21.6), control 61.5 (21.4).. First epsiode of sciatica, intervention group 75.6%, control 76.2%. Mean duration of sciatica, intervention group 12.9 weeks, control 13.0 weeks
Indirectness of population	--
Interventions	(n=78) Intervention 1: Non image-guided steroid. 80mg of methylprednisolone acetate, mixed with 8 mls of istonic saline, non image guided using the technique described by Barry and Kendall. Duration upto 6 weeks. Concurrent

	medication/care: the injections were repeated after 3 and 6 weeks who did not improve or had a score >20 on oswestry questionnaire. GPs asked not to give concurrent treatments. Patients given acetaminophen tablets (325mg) Further details: 1. Route of administration: Not applicable / Not stated / Unclear (n=80) Intervention 2: Placebo/Sham. 1 ml of isotonic saline injected inoto the epidural space non image guided using the Barry and Kendall technique . Duration upto 6 weeks. Concurrent medication/care: the injections were repeated after 3 and 6 weeks who did not improve or had a score >20 on oswestry questionnaire. GPs asked not to give concurrent treatments. Patients given acetaminophen tablets (325mg) Further details: 1. Route of administration: Not applicable / Not stated / Unclear
Funding	Academic or government funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome: VAS pain score previous week at 3 months; Group 1: mean -2.65 (SD 3.6); n=78, Group 2: mean -2.25 (SD 3.44); n=80; Risk of bias: Low; Indirectness of outcome:
- Actual outcome: McGill score, present pain intensity at 3 months; Group 1: mean -0.7 (SD 1.6); n=78, Group 2: mean -0.9 (SD 1.5); n=80; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome: McGill score, pain rating index at 3 months; Group 1: mean -9.1 (SD 18.9); n=78, Group 2: mean -8 (SD 19.1); n=80; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: Owestery low back pain disability questionnaire score at 3 months; Group 1: mean -17.3 (SD 20.6); n=78, Group 2: mean 15.4 (SD 25.5); n=80; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Adverse events (morbidity) at Define
- Actual outcome: Dura punctured at 6 weeks ; Group 1: 1/78, Group 2: 1/80; Risk of bias: --; Indirectness of outcome: No indirectness
- Actual outcome: Transient headache at 6 weeks ; Group 1: 21/78, Group 2: 16/80; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Cohen 2009[96]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=24)
Countries and setting	Conducted in USA; Setting: Unclear
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate (1 or 2 injections depending how many levels affected) + 3 and 6 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI confirmed
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	lumbosacral radiculopathy for at least 2 months but less than 1 yr in duration, failure to respond to conservative therapy, magnetic resonance imaging (MRI) evidence of a herniated disc concordant with the patient's symptoms, and a normal leukocyte count within 30 days of the first injection.
Exclusion criteria	severe spinal stenosis, grade II or higher spondylolisthesis, coagulopathy, pregnancy, contrast allergy, systemic infection, unstable medical or psychiatric condition, any condition known to be amenable to TNF inhibitors (e.g., spondylarthropathy or Crohn disease), age less than 18 yr or greater than 70 yr.
Recruitment/selection of patients	Unclear
Age, gender and ethnicity	Age - Range: 29-69. Gender (M:F): 17/7. Ethnicity:
Further population details	
Extra comments	Etanercept - mean of all doses: leg pain (NRS): 6.3 (1.6); ODI 36.7 (14.9). Saline: leg pain (NRS): 8.2 (1.0); ODI 48.7 (15.1)
Indirectness of population	No indirectness
Interventions	(n=6) Intervention 1: Image-guided Anti-TNF. 3 arms of different doses: 2mls of etanercept mixed in sterile water – doses of 2mg, 4mg, and 6mg. Duration Immediate (1 or 2 injections depending how many levels affected) . Concurrent medication/care: both groups could receive rescue medication (NSAID or tramadol) if they had debilitating pain. Further details: 1. Route of administration: Transforaminal (n=18) Intervention 2: Placebo/Sham. Saline, 2mls. Duration Immediate (1 or 2 injections depending how many levels affected) . Concurrent medication/care: both groups could receive rescue medication (NSAID or tramadol) if they had debilitating pain.

	Further details: 1. Route of administration: Transforaminal
Funding	Academic or government funding (Congressional Grant from the John P. Murtha Neuroscience and Pain Institute, Johnstown, Pennsylvania, by the United States Army, and by the Army Regional Anesthesia & Pain Medicine Initiative, Washington, D.C.)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED ANTI-TNF versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain (NRS) 0-10 at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain (NRS) 0-10 at 6 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 6 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Reduction in medication, percentage at 6 months; Mean ; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Reduction in medication, percentage at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: AEs at 3 months; Group 1: 0/6, Group 2: 0/18; Risk of bias: --; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: AEs at 6 months; Group 1: 0/6, Group 2: 0/18; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up

Study	Cohen 2012[97]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=84)
Countries and setting	Conducted in USA; Setting: Secondary care
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 1, 3 and 6 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	age 18 years or older and age younger than 70 years, lumbosacral radiculopathy more than 4 weeks but 6 months or less in duration, leg pain that is more than or as severe as back pain, failure of conservative therapy, and evidence on magnetic resonance imaging of a pathologic disc condition correlating with symptoms (for example, herniated disc or annular tear).
Exclusion criteria	coagulopathy or systemic infection, an unstable medical or psychiatric condition, previous spinal surgery, previous epidural steroid injection, or an allergy to contrast dye.
Recruitment/selection of patients	Military medical centres
Age, gender and ethnicity	Age - Mean (SD): 42.3 (10.8). Gender (M:F): 59/25. Ethnicity:
Further population details	
Extra comments	Ster+anaest: ODI 42.9 (15.6); leg pain NRS 5.37 (1.9). Anti-TNF+anaest: ODI 41.1 (18.3); leg pain NRS 6.6 (1.7). Anaest: ODI 40.9 (17.5); leg pain NRS 6.3 (2.0).
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Image-guided steroid + anaesthetic. 60 mg methylprednisolone + 0.5% bupivacaine. Duration Immediate (1 or 2 injections); 1, 3 and 6 months follow-up. Concurrent medication/care: groups could receive rescue medication (opioid increase, or NSAID or tramadol) if they had debilitating pain. Further details: 1. Route of administration: Transforaminal (n=30) Intervention 2: Image-guided Local anaesthetic. 0.5% bupivacaine. Duration Immediate (1 or 2 injections); 1, 3 and 6 months follow-up. Concurrent medication/care: groups could receive rescue medication (opioid increase, or NSAID or tramadol) if they had debilitating pain.

	Further details: 1. Route of administration: Transforaminal (n=26) Intervention 3: Image-guided Anti-TNF + anaesthetic. 4mg etanercept + 0.5% bupivacaine. Duration Immediate (1 or 2 injections); 1, 3 and 6 months follow-up. Concurrent medication/care: groups could receive rescue medication (opioid increase, or NSAID or tramadol) if they had debilitating pain. Further details: 1. Route of administration: Transforaminal
Funding	Academic or government funding (John P. Murtha Neuroscience and Pain Institute, the International Spinal Intervention Society, and the Center for Rehabilitation Sciences Research.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain (NRS) 0-10 at 1 month; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: ODI 0-100 at 1 month; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 month; Group 1: 6/28, Group 2: 5/30; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Medication reduction (>20% reduction in opioid us or cessation of non-opioids) at 1 month; Group 1: 17/28, Group 2: 14/30; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Medication reduction (>20% reduction in opioid us or cessation of non-opioids) at 6 months; Group 1: 11/12, Group 2: 9/12; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 6 months; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED ANTI-TNF + ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain (NRS) 0-10 at 1 month; Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up

- Actual outcome for Overall (acute, chronic) with sciatica: ODI 0-100 at 1 month; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 month; Group 1: 6/28, Group 2: 6/26; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Medication reduction (>20% reduction in opioid us or cessation of non-opioids) at 1 month; Group 1: 17/28, Group 2: 9/26; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Medication reduction (>20% reduction in opioid us or cessation of non-opioids) at 6 months; Group 1: 11/12, Group 2: 7/11; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 3 months; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 6 months; Risk of bias: Low; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED ANTI-TNF + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain (NRS) 0-10 at 1 month; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI 0-100 at 1 month; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 month; Group 1: 6/26, Group 2: 5/30; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Medication reduction (>20% reduction in opioid us or cessation of non-opioids) at 1 month; Group 1: 9/26, Group 2: 14/30; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Medication reduction (>20% reduction in opioid us or cessation of non-opioids) at 6 months; Group 1: 7/11, Group 2: 9/12; Risk of bias: Low; Indirectness of outcome: No indirectness Protocol outcome 4: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 3 months; Group 1: 11/26, Group 2: 13/30; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 6 months; Group 1: 10/26, Group 2: 12/30; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at

follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Coomes 1961 trial: Coomes 1961[100]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in United Kingdom; Setting: inpatient settings
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 9 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: clinical diagnosis with X rays to exclude gross bone/joint disease.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Sciatica with severe pain not controlled by simple analgesics.
Exclusion criteria	Organic causes of sciatica
Recruitment/selection of patients	referals with sciatica to inpatient centre
Age, gender and ethnicity	Age - Other: Not reported . Gender (M:F): Not reported . Ethnicity:
Further population details	
Extra comments	No baseline as no relevant outcomes . poorly reported paper
Indirectness of population	--
Interventions	(n=20) Intervention 1: Image-guided Local anaesthetic. Outpatient epidural into the sacral region: 50mls 0.5% Procaine. No advice on bed rest given. . Duration unclear . Concurrent medication/care: simple analgesics only Further details: 1. Route of administration: Caudal (n=20) Intervention 2: Usual care. Bed rest at home on a fracture board +/- inpatient admission for analgesia. Duration unclear . Concurrent medication/care: simple analgesics only Further details: 1. Route of administration: Not applicable / Not stated / Unclear
Funding	Funding not stated
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity)

at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define	

Study	Cuckler 1985 trial: Cuckler 1985[103]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=73)
Countries and setting	Conducted in USA; Setting: private practice.
Line of therapy	Not applicable
Duration of study	Intervention + follow up: between 13-30 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: clinical and imaging diagnosed
Stratum	Overall (acute, chronic) with sciatica: Patients were stratified into sciatica and claudication groups. Only claudication groups data has been extracted.
Subgroup analysis within study	Not applicable
Inclusion criteria	patients were admitted with both prolapsed nucleas discs and diagnosis of sciatica, and with spinal stenosis and diagnosis of nuerogenic claudication. Only admitted after failing to improve with >2 weeks of conservative therapy that included bed rest, and the use of NSAIDS regularly. CT myelography or epidural venography findings corresponding with the presentation
Exclusion criteria	if patients had surgery on spine and they had smptoms same as prior presentation and <6 months of being pain free after lumbar surgery.
Recruitment/selection of patients	Obtained from private practice patients
Age, gender and ethnicity	Age - Mean (SD): 48.5 (1.3) intervention group, 49.5 (2.8) control group. Gender (M:F): 37 males:36 females . Ethnicity:
Further population details	
Extra comments	No relevant baseline scores. patients hopsitalised only for performance of appropriate diangostic studies and epidural injections.
Indirectness of population	No indirectness
Interventions	(n=22) Intervention 1: Non image-guided steroid + anaesthetic. Epidural injections into 3rd and 4th vertebral space, of 2 mls sterile water, 80mg of methyl prednisolone, and 5 mls of 1 % procaine . Duration 24 hours. Concurrent medication/care: Concomitant treatment of mild analgesics only Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Between the third and fourth vertebrae). (n=14) Intervention 2: Non image-guided Local anaesthetic. Epidural injections into 3rd and 4th vertebral space of 2 mls

	of saline, 5mls of 1% procaine . Duration 24 hours . Concurrent medication/care: Concomitant treatment of mild analgesics only. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Between the third and fourth vertebrae).
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus NON IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: total failures with and without surgery at between 13 and 30 months, mean f/u at 20 months ; Group 1: 17/22, Group 2: 11/13; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Datta 2011 trial: Datta 2011[107]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=163)
Countries and setting	Conducted in India; Setting: India
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Clinical and confirmed by imaging
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged 20-70 YO, BMI 18-30, recurrent episodes of sciatica(defined as the prescence of constant or intermittent pain in one or both legs, radiating below the knee) >4 weeks but <1 year, with failure of at least 6 weeks of conservative treatment, confirmed evidence of herniated disc at a level corresponding to symptoms and clinical findings, >20 on RMDQ
Exclusion criteria	Symptoms requiring early surgical treatment (severe motor weakness, cauda equina, hyperalgic sciatica), structural spinal deformities (scoliosis >40 degrees, spondylolisthesis), symptoms from causes other then herniated discs, recieved any spinal injection in the past year, undergone low back surgery, pregnancy, known allergy to corticosteroids, ongoing treatment with tricyclic antidepressent drugs or lithium
Recruitment/selection of patients	From one tertiary centre
Age, gender and ethnicity	Age - Mean (SD): Group a=43 +/-7.4, Group b=40 +/-5.6, Group c=39 +/-6.8, Group d=42 +/-9.2. Gender (M:F): 190:17. Ethnicity: NA
Further population details	
Extra comments	Baseline values, RMDQ, group a=21.67 (1.582), group b=21.40 (1.52), group c= 22.33 (1.37), group d=21.12 (1.84). VAS pain, group a=7.2 (0.79), group b=7.4 (0.95), group c=7.4 (0.57), group d=7.3 (0.65). All patints were ASA grade 1-2
Indirectness of population	No indirectness
Interventions	(n=55) Intervention 1: Non image-guided Local anaesthetic. Group A- Caudal injecton of 10-15 mls 0.125% bupivacaine. Duration repeated upto 3 times at follow up at 3, 6 and 12 weeks . Concurrent medication/care: Diclofenac 50mg PRN QDS Further details: 1. Route of administration: Caudal

	(n=50) Intervention 2: Non image-guided steroid + anaesthetic. Caudal injection of 10-15mls 0.125% bupivicaine and 80mg methyl prednisolone . Duration repeated upto 3 times at follow up at 3, 6 and 12 weeks . Concurrent medication/care: Diclofenac 50mg PRN QDS Further details: 1. Route of administration: Caudal (n=52) Intervention 3: Non image-guided steroid + anaesthetic. Caudal injection of 10-15ml 0.125% bupivicaine and 80mg of tiamcinolone . Duration repeated upto 3 times at follow up at 3, 6 and 12 weeks . Concurrent medication/care: Diclofenac 50mg PRN QDS Further details: 1. Route of administration: Caudal (n=50) Intervention 4: Non image-guided steroid + anaesthetic. Caudal injection of 10-15ml 0.125% bupivacaine and 15mg dexamethasone . Duration repeated upto 3 times at follow up at 3, 6 and 12 weeks . Concurrent medication/care: Diclofenac 50mg QDS PRN Further details: 1. Route of administration: Caudal
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED LOCAL ANAESTHETIC versus NON IMAGE-GUIDED STEROID + ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 12 weeks ; Group 1: mean 6.8 (SD 0.79); n=55, Group 2: mean 6.3 (SD 0.79); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Consumption of diclofenac tablets at 12 weeks ; Mean 26 Bupivacaine: 18 Bupivacaine +Methylprednisolone ; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: percentage use of physiotherapy at 6 weeks to 3 months ; Group 1: 16/42, Group 2: 6/39; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED LOCAL ANAESTHETIC versus NON IMAGE-GUIDED STEROID + ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 12 weeks ; Group 1: mean 6.18 (SD 0.79); n=55, Group 2: mean 4.8 (SD 0.92); n=50; Risk of bias: High; Indirectness of outcome: No indirectness	

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: percentage use of physiotherapy at 6 weeks to 3 months ; Group 1: 16/42, Group 2: 5/42; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Consumption of diclofenac tablets at 12 weeks ; Risk of bias: High; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED LOCAL ANAESTHETIC versus NON IMAGE-GUIDED STEROID + ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 12 weeks ; Group 1: mean 6.18 (SD 0.79); n=55, Group 2: mean 5.2 (SD 1.59); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: percentage use of physiotherapy at 6 weeks to 3 months ; Group 1: 16/42, Group 2: 10/40; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Consumption of diclofenac tablets at 12 weeks ; Mean bupivacaine + dexamethasone group:18 (3-21). bupivacaine group: 26 (6-30); Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Dincer 2007 trial: Dincer 2007[115]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=64)
Countries and setting	Conducted in Turkey; Setting: outpatient
Line of therapy	Not applicable
Duration of study	Follow up (post intervention): 3 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: presentation+MRI imaging
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	subacute or chronic low back pain +radicular pain (defined as unilateral leg pain below the knee with at least one nerve root compression sign (reproduction of radicular pain by raising the leg or distal paraesthsia or sensory, motor, or reflex deficits compatabile with the radicular pain) caused by disc herniation (on MRI). Lasting between 1-12 months. >4 on VAS pain.
Exclusion criteria	spondyloarthropathies, spondylolisthesis, congential lumbar vertebral anomalies, lumbar spinal stenosis, systemic infectious disase, local skin infection, vertebral operation history, cardiopulmonary disease, any chronic disease, and extrude/sequestered disc herniation
Recruitment/selection of patients	consecutive patients that presented
Age, gender and ethnicity	Age - Mean (SD): Intervention group 28.2 (5.5), control group 28.7 (5.7). Gender (M:F): 46 males:18 females. Ethnicity:
Further population details	
Extra comments	Baseline values: VAS pain: Intervention group:6.9 (1), control group 6.8 (1), Oswestry score: intervention group 35.8 (6.7), control group 34.4 (6.7).
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Non image-guided steroid + anaesthetic. Caudal epidural injection x 1 at the sacral hiatus: 40mg methyl prednisolone, 8mg dexamthasone and 7mls 2% prilocaine HCL, 10ml NACL . Duration 1 day. Concurrent medication/care: after the 15th day both groups were allowed to use paracetamol PRN only. Plus a therapeutic exrcise group. Further details: 1. Route of administration: Caudal (n=30) Intervention 2: Usual care. Diclophenac sodium 75mg BD PO. Duration 14 days. Concurrent medication/care:

	after the 15th day both groups were allowed to use paracetamol PRN only. Plus a therapeutic exrcise group. Further details: 1. Route of administration: Not applicable / Not stated / Unclear
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 3 months ; Group 1: mean 3.3 (SD 1.3); n=34, Group 2: mean 4.1 (SD 1.5); n=30; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Oswestry disability scores at 3 months ; Group 1: mean 16.2 (SD 9.4); n=34, Group 2: mean 20.3 (SD 10.1); n=30; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Use of paracetamol at 3 months ; Group 1: 5/34, Group 2: 6/30; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	El Zahaar trial: Zahaar 1991[583]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=63)
Countries and setting	Conducted in Egypt; Setting: outpatient setting of a hospital
Line of therapy	Not applicable
Duration of study	Intervention + follow up: upto 36 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Clinical diagnosis + CT/Myelographic confirmation.
Stratum	Overall (acute, chronic) with sciatica: Mixed population
Subgroup analysis within study	Not applicable
Inclusion criteria	Complaints of radicular pain in the lower limb who had failed at least 2 weeks of conservative therapy inclduing bed rest at home and the use of an oral NSAIDs (usually 2 tablets of aspirin QDS). If the patient had a history of spinal surgery, on the lumbar spine, were admitted only if ther their sympotms were clearly different from preoperative symptoms and there had been at least a 6 month sympotm free period following the intial lumbar surgery.
Exclusion criteria	evidence of compression to the cauda equina or a progressive nerual deficit.
Recruitment/selection of patients	referred patients
Age, gender and ethnicity	Age - Mean (SD): intervention group: 46.5, control group 49. Gender (M:F): 37 males:26 females . Ethnicity: NA
Further population details	
Extra comments	No baseline data for outcomes. patients with unilateral sciatica and well defined discrete neruological findings were assigned the clinical diagnosis of acute herniated disc. those who had neurogenic claudication which was often bilateral and relieeeved by a change in posture without specific neural deficits were assigned the clinical diagnosis of spinal stenosis. Confirmed on imaging.
Indirectness of population	No indirectness
Interventions	(n=37) Intervention 1: Image-guided steroid + anaesthetic. Caudal route epidural: Hydrocortisone 5mls , + 2 mls of carbocaine 4%, made up to 30 mls with normal saline . Duration 1 epidural . Concurrent medication/care: instructed to continue activities as their sympotms permitted Further details: 1. Route of administration: Caudal (n=26) Intervention 2: Non image-guided Local anaesthetic. Caudal route epidural: Hydrocortisone 5mls , + 2 mls of carbocaine 4%, made up to 30 mls with normal saline . Duration 1 epidural. Concurrent medication/care: instructed to

	continue activities as their sympotms permitted Further details: 1. Route of administration: Caudal
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus NON IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: surgerical intervention for spinal stenosis at long term followup > average 20.85 months ; Group 1: 8/18, Group 2: 7/12; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: surgerical intervention for disc herniation at long term followup > average 20.85 months ; Group 1: 5/19, Group 2: 3/14; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Responder outcome (pre-injection symptoms)- this has been grouped as responder criteria for radicular pain from inference in the study - Actual outcome for Overall (acute, chronic) with sciatica: improvement >75 % in pain (subjective) for spinal stenosis at 24 hours ; Group 1: 10/18, Group 2: 6/12; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: improvement >75% in pain (subjective) for disc herniation at 24 hours ; Group 1: 14/19, Group 2: 10/14; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: improvement of >75 % in pain (subjective) for disc herniation at long term followup > average 20.85 months ; Group 1: 11/19, Group 2: 9/14; Risk of bias: ; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: improvement of >75 % in pain (subjective) for spinal stenosis at long term followup > average 20.85 months ; Group 1: 7/18, Group 2: 4/12; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Freeman 2013 trial: Freeman 2013[140]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=49)
Countries and setting	Conducted in Australia; Setting: Study conducted between March 2009 and December 2010 at 6 centres in Australia
Line of therapy	2nd line
Duration of study	Intervention + follow up: 28 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica:
Subgroup analysis within study	Not applicable
Inclusion criteria	Subjects between the ages of 18-70 years with a current diagnosis of lumbrosacral radicular pain between 6 and 26 weeks of duration. Pain must radiate into the leg in a dermatomal/myotomal distribution consistent with suspected involved nerve root and the diagnosis if lumbroscaral radicular pain.Diagnosis must be confirmed by CT or MRI related to the symptoms present at screening which should demonstrate disc herniation at a location consistent with the clinical symptoms of radicular pain and nerve root irritation. Subject must have a mean score of atleast 5/10 for average leg pain during the past 24 hours before randomisation visit.Negative QuantiFERON-TB Gold Test or negative Tuberculin skin test. Analgesic medication and other therapy usage stable or decreased and only use the protocol prescribed rescue pain medication as needed.
Exclusion criteria	Patients were excluded if subjects had history of sciatica in the same leg as the current episode and if previous radicular leg pain was accompanied by intervertebral disc herniation or b) required prescription mmedicationor visits to the health professional in the year before the onset of the current episode of Sciatica. BMI>35.HAD's score >10 on either subscale or major psychiatric disorder. previous epidural coricosteroids injection in the last 6 months. injection. use of anti-TNF medication. Severe spinal stenosis or higher spondylolisthesis.
Recruitment/selection of patients	Potential candiadtes were screened for eligibility and underwent baseline asseesments 3-14 days before administration of the first dose. Those that met the inclusion criteria were included
Age, gender and ethnicity	Age - Range: 18-70 years. Gender (M:F): not stated. only given for analysed groups. Ethnicity:
Further population details	
Extra comments	Baseline (mean SD) - Daily Worst Leg Pain: 7.85(1.19) 0.5 mg anti-TNF group, 6.83(1.03) 2.5 mg anti-TNF group, 7.36(1.82) 12.5 mg anti-TNF group, 6.95(1.29) Pacebo group; ODI: 36.6(17.4) 0.5 mg anti-TNF group, 29.6(12.0) 2.5 mg anti-TNF group, 36.3(16.5) 12.5 mg anti-TNF group, 31.5(9.0) Pacebo group.

Indirectness of population	--
Interventions	(n=10) Intervention 1: Image-guided Anti-TNF. Subjects were randomised in 1:1:1:1 block manner to 0.5 mg dose of etanercept as a transforminal injection.After randomisation, each subject recieved 2 consecutive injections (0.5 mg etanercept), 2 weeks apart of the same treatment and dose. Doses of treatment were administered at study week 2 and 4 with follow uop visits at study week 6,8,12.1 6 and 28 (2, 4, 8, 12, and 26 weeks weeks after the second injection respectively). Duration 28 weeks. Concurrent medication/care: Subjects to keep all analgesic medication and other therapy usage (e.g physiotherapy, acupuncture or electrotherapy) stable or decreased and use the protocol prescribed rescue pain medication as needed Further details: 1. Route of administration: Transforaminal (subjects with a history of Sciatics in the same leg as current episode excluded). (n=10) Intervention 2: Image-guided Anti-TNF. Subjects were randomised in 1:1:1:1 block manner to 2.5 mg dose of etanercept as a transforminal injection..After randomisation, each subject recieved 2 consecutive injections (2.5 mg etanercept), 2 weeks apart of the same treatment and dose. Doses of treatment were administered at study week 2 and 4 with follow uop visits at study week 6,8,12.1 6 and 28 (2, 4, 8, 12, and 26 weeks weeks after the second injection respectively). Duration 28 weeks. Concurrent medication/care: Subjects to keep all analgesic medication and other therapy usage (e.g physiotherapy, acupuncture or electrotherapy) stable or decreased and use the protocol prescribed rescue pain medication as needed Further details: 1. Route of administration: Transforaminal (subjects with a history of Sciatics in the same leg as current episode excluded). (n=10) Intervention 3: Image-guided Anti-TNF. Subjects were randomised in 1:1:1:1 block manner to 12.5 mg dose of etanercept as a transforminal injection..After randomisation, each subject recieved 2 consecutive injections (12.5 mg etanercept), 2 weeks apart of the same treatment and dose. Doses of treatment were administered at study week 2 and 4 with follow uop visits at study week 6,8,12.1 6 and 28 (2, 4, 8, 12, and 26 weeks weeks after the second injection respectively). Duration 28 weeks. Concurrent medication/care: Subjects to keep all analgesic medication and other therapy usage (e.g physiotherapy, acupuncture or electrotherapy) stable or decreased and use the protocol prescribed rescue pain medication as needed Further details: 1. Route of administration: Transforaminal (subjects with a history of Sciatics in the same leg as current episode excluded). (n=10) Intervention 4: Placebo/Sham. Subjects were randomised in 1:1:1:1 block manner to placebo.After randomisation, each subject recieved 2 consecutive injections (placebo), 2 weeks apart of the same treatment and dose. Doses of treatment were administered at study week 2 and 4 with follow uop visits at study week 6,8,12.1 6 and 28 (2, 4, 8, 12, and 26 weeks weeks after the second injection respectively). Duration 28 weeks. Concurrent

	medication/care: Subjects to keep all analgesic medication and other therapy usage (e.g physiotherapy, acupuncture or electrotherapy) stable or decreased and use the protocol prescribed rescue pain medication as needed Further details: 1. Route of administration: Transforaminal (subjects with a history of Sciatics in the same leg as current episode excluded).
Funding	Study funded by industry (Funds were received in support of work and there were financial activities outside the submitted work)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED 0.5 MG ANTI-TNF versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Change from baseline in Mean Daily Worst Leg Pain at 5 weeks; Group 1: mean 2.71 (SD 1.19); n=8, Group 2: mean 5 (SD 2.65); n=10; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Change from baseline in ODI at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED 2.5 MG ANTI-TNF versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Change from baseline in Mean Daily Worst Leg Pain at 5 weeks; Group 1: mean 4.06 (SD 2.51); n=10, Group 2: mean 5 (SD 2.65); n=10; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED 12.5 MG ANTI-TNF versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Change from baseline in Mean Daily Worst Leg Pain at 5 weeks; Group 1: mean 4.67 (SD 2.29); n=9, Group 2: mean 5 (SD 2.65); n=10; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Adverse Events at 5 weeks; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Friedly trial: Friedly 2014[141]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=400)
Countries and setting	Conducted in USA; Setting: Multicentered trial
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI+ clinical diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	>50 YO, evidence of central lumbar spinal stenosis on MRI, average pain rating of more than 4/10 for pain in the lower back, buttock, leg, or a combination ofthese sites on standing, walking, or spinal extension, in the past week; worse pain in the buttock or leg or both than in the back; >7 on RMDQ
Exclusion criteria	Those with spondylolisthesis requiring surgery, hisotry of lumbar surgery, or had recieved previous epidurals in the last 6 months
Recruitment/selection of patients	Patients refered for epidurals
Age, gender and ethnicity	Age - Mean (SD): Steroid +anaesthetic:68.1 (10.1), anaesthetic:68 (9.8) . Gender (M:F): 179:221. Ethnicity: NA
Further population details	
Extra comments	Baseline values - RMDQ: anaesthetic 15.7±4.3, Steroid +anaesthetic 16.1±4.5; NRS: anaesthetic: 7.2±1.8, Steroid +anaesthetic: 7.2±1.9; EQD5: anaesthetic 0.59±0.20, Steroid +anaesthetic 0.57±0.20; GAD: anaesthetic 4.7±5.4, Steroid +anaesthetic 4.7±4.7; EQ5D: anaesthetic 0.59±0.20, steroid+anaesthetic 0.57±0.20.
Indirectness of population	No indirectness
Interventions	(n=200) Intervention 1: Image-guided steroid + anaesthetic. fluoroscopic guided epidurals at the interlaminar or transforaminal region: 1 to 3 ml of 0.25% to 1% lidocaine followed by 1 to 3 ml or of triamcinolone (60 to 120 mg), betamethasone (6 to 12 mg), dexamethasone (8 to 10 mg), or methylprednisolone (60 to 120 mg). They could receive a repeat injection at 3 weeks if they wished. Duration upto 3 weeks. Concurrent medication/care: Not reported. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Transforaminal or interlaminar). (n=200) Intervention 2: Image-guided Local anaesthetic. fluoroscopic guided epidurals at the interlaminar or transforaminal region: 1 to 3 ml of 0.25% to 1% lidocaine followed by 1 to 3 ml. They could receive a repeat injection at

	3 weeks if they wished. Duration upto 3 weeks. Concurrent medication/care: Not reported Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Transforaminal or interlaminar).
Funding	Academic or government funding (Agency for Healthcare Research and Quality.)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: EQ-5D at 6 weeks; Group 1: mean 0.7 (SD 0.2); n=193, Group 2: mean 0.68 (SD 0.19); n=193; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: NRS at 6 weeks; Group 1: mean 4.4 (SD 2.9); n=193, Group 2: mean 4.6 (SD 2.9); n=193; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: RMDQ at 6 weeks; Group 1: mean 11.8 (SD 6.3); n=193, Group 2: mean 12.5 (SD 6.4); n=193; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Serious adverse event - hospitalisation, surgery, or both at 6 weeks; Group 1: 4/200, Group 2: 5/200; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: no. patients improved >30% in RDQ from baseline at 6 weeks; Group 1: 61/193, Group 2: 72/193; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: no. patients improved >30% in leg pain from baseline at 6 weeks; Group 1: 96/193, Group 2: 95/193; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Ghahreman 2010[164]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=150)
Countries and setting	Conducted in Australia; Setting: Secondary care
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 1 and 12 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI or CT
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	adult patient capable of providing consent and capable of complying with the outcome instruments used, with pain radiating into the lower limb, of a lancinating, burning, stabbing, or electric quality; associated with limitation of straight-leg raise to less than 30°; and demonstration of a disc herniation by computerized tomography (CT) or magnetic resonance imaging (MRI) at a segmental level consistent with the clinical features. (Patients with a straight-leg-raise greater than 30° but less than 45° were included only if they gave a clear history of lancinating pain and imaging demonstrated a disc herniation.) Pain of appropriate quality was the primary indication for treatment. Neurological signs of radiculopathy were not required, but served to consolidate the diagnosis when they were present. All patients had been classified by their referring surgeon as eligible for surgery, meaning that surgery would be the next intervention if injections did not relieve the pain.
Exclusion criteria	foraminal stenosis, severe motor deficit, a history of substance abuse, inability to comply with the instruments for outcome assessment, previous surgery at the affected segmental level, or conditions that rendered the conduct of an injection unsafe such as pregnancy recent infection, or spinal deformity. patients who did not have lancinating pain in thelower limb; i.e., they had only deep aching pain characteristic of somatic referred pain. Although foraminal stenosis was an exclusion criterion, lateral recess stenosis was tolerated provided that the patient also had a disc herniation that was affecting the target nerve. Patients were not excluded on the basis of duration of pain. Pain was defined as acute if it had lasted less than 3 months and chronic if it had lasted longer than this.
Age, gender and ethnicity	Age - Median (range): 46 (33-66) years. Gender (M:F): 59/91. Ethnicity:
Further population details	
Extra comments	Steroid+anaesthetic: Pain (0-10) = 7.0 (SD 1.7). Anaesthetic: Pain (0-10) = 7.4 (SD 2.1). Saline: Pain (0-10) = 6.6 (SD 2.2).
Indirectness of population	No indirectness

Interventions	(n=27) Intervention 1: Image-guided Local anaesthetic. Anaesthetic 0.75ml of 0.5% bupivacaine. Duration Immediate (up to 3 injections) + 1 year follow-up. Concurrent medication/care: rescue therapy (analgesics, surgery or open-label steroids) Further details: 1. Route of administration: Transforaminal (n=28) Intervention 2: Image-guided steroid + anaesthetic. Steroid + anaesthetic (1.75 ml of triamcinolone 40mg/L + 0.75ml of 0.5% bupivacaine).. Duration Immediate (up to 3 injections) + 1 year follow-up. Concurrent medication/care: rescue therapy (analgesics, surgery or open-label steroids) Further details: 1. Route of administration: Transforaminal (n=37) Intervention 3: Placebo/Sham. Saline. Duration Immediate (single injection) + 1 year follow-up. Concurrent medication/care: rescue therapy (analgesics, surgery or open-label steroids) Further details: 1. Route of administration: Transforaminal
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED LOCAL ANAESTHETIC versus PLACEBO/SHAM

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg pain (0-10) at 1 month; Group 1: mean 6.7 (SD 2.8); n=27, Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 1 month; Group 1: 2/27, Group 2: 7/37; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg pain (0-10) at 1 month; Group 1: mean 4.1 (SD 3); n=28, Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 1 month; Group 1: 5/28, Group 2: 2/27; Risk of bias: Low; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain (0-10) at 1 month; Group 1: mean 4.1 (SD 3); n=28, Group 2: mean 5.5 (SD 2.6); n=37; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain at 1 month; Group 1: 5/28, Group 2: 7/37; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Ghai 2015[165]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=69)
Countries and setting	Conducted in India; Setting: Tertiary care; referred patients from various specialist departments
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediat + 1 year follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Adults aged 18 to 60 years with CLBP and unilateral LRP of ≥12 weeks duration not responding to medications and physical therapies, having pain score of ≥ 5 on 0 – 10 NRS. Inclusion criteria focused on unilateral radiculitis and disc herniation.
Exclusion criteria	Severe spinal pathology (large disc herniation occupying more than 60% of spinal canal, severe central spinal stenosis, spondylolisthesis, tumor, or synovial cysts).Sensory or motor loss; referred pain because of facet or sacroiliac joint arthropathy, unstable neurological deficits, and cauda equine syndrome; previous lumbar spine surgery; clinically significant or unstable medical or psychiatric illness; or inability to understand the questionnaires. Those having received lumbar EI in past, corticosteroids or anesthetics allergy, taking anticoagulants or bleeding diathesis, taking systemic corticosteroids, pregnant and lactating women, or being treated with investigational drug within 30 days of trial were also excluded.
Recruitment/selection of patients	Consecutive patients
Age, gender and ethnicity	Age - Mean (SD): 45.3 (12). Gender (M:F): 51%/49%. Ethnicity:
Further population details	
Extra comments	Pain (VAS 0-10): Anaesth = 8.0 (SD 1.4) and Ste + anaesth = 8.0 (SD 1.6). ODI: Anaesth = 49.6 (SD 12.8) and Ste + anaesth = 46.8 (SD 14.3).
Indirectness of population	No indirectness
Interventions	(n=35) Intervention 1: Image-guided steroid + anaesthetic. Epidural injection of 6 mL of 0.5% lidocaine mixed with 80 mg (2 mL) of methylprednisolone acetate using a parasaggital interlaminar (PIL) approach route. Duration Immediate. Concurrent medication/care: All patients received conservative management including analgesics (adjuvant; pregabalin, amitriptyline, opioid, or non-opioid) and/or exercise program during the study. Dose titration of analgesics

	was done as per patient requirement. Job attendance continued. All patients were encouraged to engage in physical activities. No additional occupation/physical therapy or any other interventions were offered beyond the protocol.Additional epidural injections (EI) were administered of same injectate if there was deterioration in pain relief to < 50% after initial achievement of pain relief or no pain relief with the initial injection. The subsequent EI were administered with a minimum gap of 15 days at least. The patient received no further injection if he developed TEAE, experienced ≤ 10% pain relief, or pain relief lasting for ≤ 7 days with 2 successive injections. Unblinding was performed for such treatment failure cases and alternative treatments were offered in an open label manner. Further details: 1. Route of administration: Interlaminar (parasaggital interlaminar (PIL) approach route). (n=34) Intervention 2: Image-guided Local anaesthetic. Epidural 8ml of 0.5% lidocaine. Duration Immediate. Concurrent medication/care: As per steroid + anaesthetic group Further details: 1. Route of administration: Interlaminar (As per steroid + anaesthetic group).
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS (0-10) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS 0-10 at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Modified ODQ (0-100) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Modified ODQ (0-100) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) with sciatica: Number of pts having additional injections at 1 year; Group 1: 20/35, Group 2: 23/34; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 5: Adverse events (morbidity) at Define
- Actual outcome for Overall (acute, chronic) with sciatica: Complications at 1 year; Group 1: 0/35, Group 2: 1/34; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 6: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ≥ 50% reduction in pain (NRS) at 3 months; Group 1: 30/35, Group 2: 17/34; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ≥ 50% reduction in pain (NRS) at 1 year; Group 1: 31/35, Group 2: 20/34; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up

Study	Hagihara 2009[191]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=69)
Countries and setting	Conducted in Japan; Setting: Outpatients
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate (single injection) + 1 week follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI confirmed sciatica
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Root pain with low back pain and/or leg pain. Sciatica on MRI
Exclusion criteria	Postoperative patients
Age, gender and ethnicity	Age - Mean (range): 47.5 years (15-80). Gender (M:F): N=46/23. Ethnicity:
Further population details	
Extra comments	Steroid+ anaesthetic: 20 men/14 women; age 15-80 years; VAS 0-10 pain = 6.08 (1.93); PPI score 0-54 = 2.55 (0.82) points. Anaesthetic: 26 men/9 women; age 17-78 years; VAS 0-10 pain = 5.47 (2.20); PPI score 0-5 = 2.16 (0.74) points.
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Image-guided steroid + anaesthetic. Steroid + anaesthetic (6mg betamethosone or 40mg methylprednisolone +lidocaine 0.5%). NOTE: injections were performed only once in 27 patientsand twice or more in 7 patients. Duration Single or >1 injection. Concurrent medication/care: None reported Further details: 1. Route of administration: Transforaminal (Injection at nerve root). (n=35) Intervention 2: Image-guided Local anaesthetic. Anaesthetic (3ml lidocaine). NOTE: injections were performed only once in 23 patients and twice or more in 12 patients. Duration Immediate - most had single injection. Concurrent medication/care: None reported Further details: 1. Route of administration: Transforaminal (Injection at nerve root).
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS (0-10) at 1 week; Group 1: mean 4.24 (SD 2.55); n=34, Group 2: mean 4.17 (SD 2.45); n=35; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: PPI (0-5) present pain intensity at 1 week; Group 1: mean 1.8 (SD 0.9); n=34, Group 2: mean 1.76 (SD 0.74); n=35; PPI 0-5 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 week; Group 1: 3/34, Group 2: 7/35; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study (subsidiary papers)	Karppinen 2001 trial: Karppinen 2001[262] (Karppinen 2001[263])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	2 (n=160)
Countries and setting	Conducted in Finland; Setting: Depratment of Physical Medicine, University hospital Oulu
Line of therapy	Unclear
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	unilateral pain radiating dermatomally from the back to below knee that had lasted 3 to 28 weeks and leg pain intensity comparable to atleast with that of back pain.
Exclusion criteria	earlier back operation, clinical depression, aticoagulation , unstable diabetes, epidural injection in the preceding 3 months, allergy to any ingredient of the treatment agents and rarecauses of Sciatica such as non-degenerative spondylolisthesis.
Recruitment/selection of patients	Patients with Sciatica referred from the catchment area (population 360,000) of the University Hospital Oulu.
Age, gender and ethnicity	Age - Mean (SD): 43.8± 13 in the Steroiud+Anesthetic Group and 43.7 ± 13 in the Saline Group. Gender (M:F): 98:62. Ethnicity:
Further population details	
Extra comments	Baseline Leg VAS: Steroid +Anesthetic group 71.0±18, saline group 75.2±19; Back VAS: Steroid +Anesthetic group 52.8±16, saline group 59.8.2±25; ODI: Steroid +Anesthetic group 42.9.0±16, saline group 43.5±15..
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Image-guided steroid + anaesthetic. Periradicular infiltration was performed using conventionl teachnique under fluorpscopic guidance ans 40 mg/mL of methylprednisolone and 5mg/mL of bupivacaine was injected. Duration 1 year. Concurrent medication/care: School instructions were given to every patient by the physiotherapistat the 2 week follow up assesment. Inn cases of persisting Sciatic pain, the patients recieved pain medication and traditional physiotherapy Further details: 1. Route of administration: Transforaminal (Periradicular (transforaminal) inflitration). (n=80) Intervention 2: Placebo/Sham. Periradicular infiltration was performed using conventionl teachnique under

	fluorpscopic guidance and 0.9% sodium chloride solution was injected. Duration 1 year. Concurrent medication/care: School instructions were given to every patient by the physiotherapistat the 2 week follow up assesment. Inn cases of persisting Sciatic pain, the patients recieved pain medication and traditional physiotherapy Further details: 1. Route of administration: Transforaminal (Periradicular (transforaminal) infiltration).
Funding	Other (supported by grants from the Yrjo Jahnsson Foundation, Finnish office for HTA, the Finnish Work Environment Fund and the Internatiopnal Spinal Injection Society)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Intensity of leg pain at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Intensity of back pain at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Intensity of leg pain at 12 months; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Intensity of back pain at 12 months; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 3 months; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 12 months; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Klenerman 1984 trial: Klenerman 1984[286]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=74)
Countries and setting	Conducted in United Kingdom
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 70 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: clinical diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	unilateral sciatica +/- neurological signs who had never previously been treated in hospital for their backs. Symptoms>6 months
Exclusion criteria	Not reported
Recruitment/selection of patients	referals to one hospital
Age, gender and ethnicity	Age - Other: not reported. Gender (M:F): not reported . Ethnicity:
Further population details	
Extra comments	No baseline information
Indirectness of population	--
Interventions	(n=16) Intervention 1: Placebo/Sham. Epidural of 20 mls normal saline . Duration 2 months . Concurrent medication/care: physiotherapy if not responded Further details: 1. Route of administration: Not applicable / Not stated / Unclear ("lumbar epidural injection"). (n=12) Intervention 2: Placebo/Sham. Needling into the intraspinous ligament but no injection. Duration 2 months . Concurrent medication/care: Physiotherapy as needed Further details: 1. Route of administration: Not applicable / Not stated / Unclear (No injection). (n=16) Intervention 3: Non image-guided Local anaesthetic. Epidural of 20 mls Bupivacaine 0.25% (made up in normal saline). Duration 2 months . Concurrent medication/care: Physiotherapy as needed Further details: 1. Route of administration: Not applicable / Not stated / Unclear ("lumbar epidural injection").

	(n=19) Intervention 4: Non image-guided steroid. Epidural of 80mg of depo-medrone in normal saline 0.25% (made up in normal saline). Duration 2 months . Concurrent medication/care: Physiotherapy if needed Further details: 1. Route of administration: Not applicable / Not stated / Unclear ("lumbar epidural injection").
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED LOCAL ANAESTHETIC versus NON IMAGE-GUIDED STEROID Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 month; Group 1: 2/16, Group 2: 0/16; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Koc 2009[287]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=33)
Countries and setting	Conducted in Turkey; Setting: Secondary care.
Line of therapy	Adjunctive to current care
Duration of study	Intervention + follow up: 2 weeks + 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Physical and neurologic examination as well as MRI imaging.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients diagnosed with lumbar spinal stenosis.
Exclusion criteria	Patients with a history of coronary artery disese, peripheral artery disease, spinal surgery, recent vertebral fracture, progressive neurologic deficit, or cauda equina syndrome.
Recruitment/selection of patients	Not reported.
Age, gender and ethnicity	Age - Mean (SD): Group 1 - 52.6(12.5); group 2 - 61.1 (9.8); group 3 - 53.1(8.3).. Gender (M:F): 9/24. Ethnicity: Not reported.
Further population details	
Extra comments	Baseline characteristics (median): VAS: Combination of non-invasive treatments - 54.1 mm; Image-guided steroids + anaesthetics - 56.3 mm; usual care - 58.6 mm. RMDQ: Combination of non-invasive treatments - 41.8; Image-guided steroids + anaesthetics - 41.8; usual care - 41.8 ..
Indirectness of population	No indirectness: Meets protocol.
Interventions	(n=11) Intervention 1: Usual care. Patients used a home-based theraputic exercise program consisting of stretching exercises for the hip flexors, hamstrings and lumbar paraspinal muscles, and strengthening exercises for adominal and gluteal muscles to be performed twice daily for a period of 6 months,and oral diclofenac sodium 75 mg twice a day for 2 weeks.. Duration 6 months. Concurrent medication/care: None reported. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (No injection). (n=10) Intervention 2: Image-guided steroid + anaesthetic. Patients were given lumbar epidural steroid injections through the most stenoic level under fluroscopic imaging using intralaminar method. Using the "loss of resistance" technique, a 20-gauge epidural catheter (Perifix 401 epidural set; B. Braun, Melsungen, Germany) was inserted through

	the epidural space. After injecting 3 mL of contrast medium and verifying that the catheter was in the epidural space, 10 mL of solution containing 60 mg of triamcinolon acetonide (1.5 mL), 15 mg of 0.5% bupivacain hydrochloride (3 mL), and 5.5 mL of physiologic saline (0.9% NaCl) was injected in 3.5 minutes.. Duration 6 months. Concurrent medication/care: Patients used a home-based theraputic exercise program consisting of stretching exercises for the hip flexors, hamstrings and lumbar paraspinal muscles, and strengthening exercises for adominal and gluteal muscles to be performed twice daily for a period of 6 months,and oral diclofenac sodium 75 mg twice a day for 2 weeks. Further details: 1. Route of administration: Interlaminar (n=13) Intervention 3: Combinations of non-invasive interventions - Combined non-invasive interventions. Patients recieved a conservative inpatient physical therapy program 5 days a week for 2 weeks. Physical therapy included application of ultrasound 1.5 W/cm^2 for 20 minutes, and TENS (Bio Tens ST-606 M model) for 20 minutes to the lumbar region.. Duration 2 weeks. Concurrent medication/care: Patients used a home-based theraputic exercise program consisting of stretching exercises for the hip flexors, hamstrings and lumbar paraspinal muscles, and strengthening exercises for adominal and gluteal muscles to be performed twice daily for a period of 6 months,and oral diclofenac sodium 75 mg twice a day for 2 weeks. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (No injection).
Funding	No funding (As reported.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Pain severity by VAS at 6 months; Other: Image-guided steroids + anaesthetics - 23.0; usual care - 20.1 Visual analogue scale 0 - 100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Pain severity by VAS at 3 months; Other: Image-guided steroids + anaesthia - 20.5; usual care - 27.7 Visual analogue scale 0 -100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Physical mobility at 3 months; Other: Image-guided steroids + anasthetics - 31.2; usual care - 31.0 . Roland Morris Disability Index 0 - 24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Physical mobility at 6 months; Mean Image-guided steroids + anaethetics - 31.2; usual care - 20.5 . Roland Morris Disability Index 0 - 24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: COMBINED NON-INVASIVE INTERVENTIONS versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain severity by VAS at 3 months; Other: Combined non-invasive treatments - 18.2; Usual care - 27.7 Visual analog scale 0 - 100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Pain severity by VAS at 6 months; Other: Combination of non-invasive treatments - 23.2; usual care - 20.1. Visual analogue scale 0 - 100 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Physical mobility at 6 months; Other: Combination of non-invasive treatments - 37.1; usual care - 20.5 . Roland Morris Disability Index 0 - 24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Physical mobility at 3 months; Other: Combination of non-invasive treatments - 32.5; usual care - 31.0. Roland Morris Disability Index 0 - 24 Top=High is poor outcome; Risk of bias: Low; Indirectness of outcome: Serious indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kraemer 1997[294]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=49)
Countries and setting	Conducted in Germany; Setting: Hospitalised patients
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate (single injection); unclear follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Not reported
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	well-known signs of single lumbar nerve root compression. Root pain exemplified by unilateral sciatica extending below the knee and associated with paraesthesia and tension signs in the form of a positive straight leg raise (SLR), limited movement of the trunk and aggravation of pain by certain movements and coughing. Paraesthesia, reflex changes and muscle weakness were registered. Predominant symptom prior to injection was leg pain rather than back pain.
Exclusion criteria	Other concomitant diseases like osteoporosis, diabetes or comraindications for steroids.
Age, gender and ethnicity	Age - Other: . Gender (M:F): Not reported. Ethnicity:
Further population details	
Extra comments	No baseline data
Indirectness of population	No indirectness
Interventions	(n=24) Intervention 1: Image-guided steroid. Steroid (triamcinolone – 10mg). Duration Immediate (single injection). Concurrent medication/care: Physiotherapy, back school and a dynamic flexion orthosis (Discoflex) to relieve the load on the posterior part of the lumbar disc. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (epidural perineural injection). (n=25) Intervention 2: Placebo/Sham. Saline. Duration Immediate (single injection). Concurrent medication/care: Physiotherapy, back school and a dynamic flexion orthosis (Discoflex) to relieve the load on the posterior part of the lumbar disc Further details: 1. Route of administration: Not applicable / Not stated / Unclear (epidural perineural injection).
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID versus PLACEBO/SHAM Protocol outcome 1: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Major side effects at <4 months; Group 1: 0/24, Group 2: 0/25; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Laiq 2009 trial: Laiq 2009[297]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=52)
Countries and setting	Conducted in Pakistan
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Stratified then randomised
Inclusion criteria	lumbar radicular pain, hvaing pretreatment VAS >6 and of >2 weeks origin, including low back pain and uni or bilateral leg pain. Those with pain caused by lumbar intervertebral disc herniation and single level disc herniation on recent MRI(1 week) corresponding with the patient clinical symptoms.
Exclusion criteria	Known contraindications for epidural steroid injections, previous lumbar spine surgery, unstable neurological deficits cuada equina syndrome and radiologically proven facet syndrome
Recruitment/selection of patients	referals to an outpatient clinic.
Age, gender and ethnicity	Age - Mean (SD): Intervention group:41(2.45) Control group:40 (2.15). Gender (M:F): 17 males:8 females. Ethnicity:
Further population details	
Extra comments	No baseline data available for outcomes. baseline values are not supplied
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Non image-guided steroid + anaesthetic. Epidural injection of 80mg methyl prednisolone and 3 mls of 2% xylocaine diluted to 8mls with normal saline. Ibuprofen 400mg if needed. Duration 6 months . Concurrent medication/care: analgesics when needed after 3 months Further details: 1. Route of administration: Not applicable / Not stated / Unclear (n=25) Intervention 2: Usual care. Ibuprofen 400mg TDS during 1st month. Tramadol SR 100mg OD during 1st 2 months. Tinizidine 2 mg BD for 1st 3 months. Famotadine 40mg throughout treatment. Bed rest for 1st month with limited activity. Activity was gradually increased to walking 2-3 hours per day. Lifitng of hevy weights and strenous exercise were forbidden for 3-6 months. . Duration 6 months . Concurrent medication/care: analgesics when needed after 3 months

	Further details: 1. Route of administration: Not applicable / Not stated / Unclear Comments: adherence checked by a responsible person at home who completed a diary.
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus USUAL CARE Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 3 months ; Group 1: mean 4.5 (SD 1.5); n=25, Group 2: mean 5 (SD 1.1); n=25; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 6 months ; Group 1: mean 6 (SD 1.45); n=25, Group 2: mean 6.5 (SD 1.3); n=25; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: referal to neurosurgery at 6 months ; Group 1: 4/25, Group 2: 6/25; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: minor complications at 6 months ; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up

Study (subsidiary papers)	Manchikanti 2008[344] (Manchikanti 2012[348], Manchikanti 2012[341])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=100)
Countries and setting	Conducted in USA; Setting: Secondary care: ambulatory surgery center
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate (at least 1 injection) + 2 year follow-up
Method of assessment of guideline condition	Method of assessment /diagnosis not stated
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Central spinal stenosis with radicular pain of at least 6 months duration. pain must have been function-limiting, 30 years or older, and the ability to understand the study protocol and provide voluntary, written informed consent and participate in outcome measurement. failed conservative management.
Exclusion criteria	History of uncontrollable or unstable opioid use, uncontrolled psychiatric disorders, uncontrolled medical illness, those suffering with conditions that could interfere with the interpretation of outcome assessments, pregnant or lactating women, and those with a history or potential for adverse reactions to lidocaine or betamethasone.
Recruitment/selection of patients	From a pain management program
Age, gender and ethnicity	Age - --: . Gender (M:F): 41/59. Ethnicity:
Further population details	
Extra comments	Steroid + anaesthetic: Pain (NRS 0-10) = 7.6 ± 0.8, ODI (0-100) = 56.2 ± 9.2, opiod use = 49.2 ± 42.4. Anaesthetic: Pain (NRS 0-10) = 7.9 ± 0.9, ODI (0-100) = 79.6 ± 8.4, opiod use = 45.66 ± 53
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Image-guided steroid + anaesthetic. 1ml nonparticulate betamethosone, 6mg + 9ml lidocaine 0.5%. Duration Immediate (at least 1 injection) + 2 year follow-up. Concurrent medication/care: both groups continued with previous exercise programs, drug therapy, and work. medication adjustments were made based on the medical necessity and indications. Further details: 1. Route of administration: Caudal (n=50) Intervention 2: Image-guided Local anaesthetic. lidocaine 0.5%). Duration Immediate (at least 1 injection) + 2 year follow-up. Concurrent medication/care: As for intervention arm

	Further details: 1. Route of administration: Caudal
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: NRS 0-10 at 3 months; Group 1: mean 4.1 (SD 1.9); n=50, Group 2: mean 4.1 (SD 1.8); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: NRS 0-10 at 2 years; Group 1: mean 4.7 (SD 2.2); n=50, Group 2: mean 4.6 (SD 1.8); n=50; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI 0-100 at 3 months; Group 1: mean 33.6 (SD 15.8); n=50, Group 2: mean 34.4 (SD 13.6); n=50; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI 0-100 at 2 years; Group 1: mean 34 (SD 15.2); n=50, Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Opioid use, mg at 3 months; Group 1: mean 33.1 mg (SD 27.5); n=50, Group 2: mean 33.3 mg (SD 35.7); n=50; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Opioid use, mg at 2 years; Group 1: mean 32.5 mg (SD 34.8); n=50, Group 2: mean 35.7 mg (SD 43.3); n=50; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Major AEs at 3 months; Group 1: 0/50, Group 2: 0/50; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Major AEs at 2 years; Group 1: 0/50, Group 2: 0/50; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 6: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: >50% improvement in pain at 3 months; Group 1: 31/50, Group 2: 33/50; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% improvement in pain at 2 years; Group 1: 22/50, Group 2: 21/50; Risk of bias: ; Indirectness of outcome:	

No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% improvement in ODI at 3 months; Group 1: 25/50, Group 2: 29/50; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% improvement in ODI at 2 years; Group 1: 23/50, Group 2: 21/50; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up

Study	Manchikanti 2012 trial: Manchikanti 2012[353]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=120)
Countries and setting	Conducted in USA; Setting: New patients presenting to a single pain management centre.
Line of therapy	Unclear
Duration of study	--: Immediate + 2 year follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Disc herniation with radiculitis; age >18 years; function limiting LBP and lower extremity pain of at least 6 months; competent and willing to participate in study.
Exclusion criteria	Previous history of lumbar surgery; radiculitis secondary to either central or foraminal stenosis; no disc herniation; uncontrollable or unstable opioid use; uncontrollable psychiatric disorders; uncontrolled medical illness (acute or chronic); pregnant or lactating; history of potential adverse reactions from steroid or local anaesthetic; any conditions that could interfere with interpretation of outcome measures.
Age, gender and ethnicity	Age - Range of means: 43 to 49 years. Gender (M:F): 70% male/30% female. Ethnicity:
Further population details	
Extra comments	Pain (NRS): S+A = 7.8 (SD 0.9) and A = 8.1 (SD 0.9). ODI: S+A = 27.9 (SD 4.8) and A = 29.2 (SD 4.6). opioid intake: S+A = 45.0 (SD 57.8) and A = 51.8 (SD 58.6).
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Image-guided steroid + anaesthetic. Caudal epidural injection under fluoroscopy. 10ml Lidocaine hydrochloride 0.5% mixed with 1 of 3 steroids (20 patients each received 1 of the 3 steroids): 6mg betamethasone (brand name); 6mg betamethasone non-particulate; 40mg methylprednisolone.. Duration Immediate, single injection. Concurrent medication/care: Additional or repeat epidural injections were provided on the basis of teh patient's response. All pts continued previous exercise programs, drug therapy, and work. Further details: 1. Route of administration: Caudal (n=60) Intervention 2: Image-guided Local anaesthetic. Caudal epidural injection under fluoroscopy. 10ml Lidocaine hydrochloride 0.5% . Duration Immediate - single injection. Concurrent medication/care: Additional or repeat epidural

	injections were provided on the basis of teh patient's response. All pts continued previous exercise programs, drug therapy, and work. Further details: 1. Route of administration: Caudal
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS at 3 months; Group 1: mean 3.4 (SD 1.7); n=60, Group 2: mean 4.1 (SD 1.8); n=60; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: NRS at 24 months; Group 1: mean 3.6 (SD 1.8); n=60, Group 2: mean 4.2 (SD 1.8); n=60; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 24 months; Group 1: mean 13.5 (SD 7.2); n=60, Group 2: mean 15.6 (SD 7.3); n=60; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 3 months; Group 1: mean 13.6 (SD 6.5); n=60, Group 2: mean 16.5 (SD 7.2); n=60; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Morphine use mg/week at 3 months; Group 1: mean 30.1 (SD 31.8); n=60, Group 2: mean 32.8 (SD 31.6); n=60; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Morphine use in Mg/week at 24 months; Group 1: mean 31.1 (SD 37.5); n=60, Group 2: mean 32.8 (SD 31.6); n=60; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Significant pain relief (>50%) at 24 months; Group 1: 40/60, Group 2: 38/60; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Manchikanti 2014[351]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=120)
Countries and setting	Conducted in USA; Setting: Pain management practice (secondary care)
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate (single injection at each nerve root level) + 2 year follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI or CT
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Disc herniation and unilateral radiculitis in patients who were at least 18 years old with chronic low back and lower extremity pain of at least 6 months with pain intensity limiting function and an NRS score above 5 on a scale of 0 to 10. In addition, all patients must have been capable of understanding the trial protocol, able to provide voluntary written informed consent, and had an unrestricted ability to participate in outcomes assessments, including functional status with the ODI. Only disc herniations at L4-5 and L5-S1 were included. All patients must have undergone structured, physician-ordered physical therapy along with an exercise program and nonsteroidal anti-inflammatory therapy.
Exclusion criteria	history of previous lumbar surgery; radiculitis secondary to spinal stenosis, either foraminal or central; radiculitis without disc herniation; and patients with bilateral radiculitis. In addition, patients with uncontrolled medical illnesses, unstable psychiatric disorders, extremely high dose opioid users not amenable to reductions, and those with an inability to participate in outcomes assessments were excluded. Pregnant and lactating women and patients with a history of or potential for any type of adverse reactions to steroids or local anesthetics.
Age, gender and ethnicity	Age - Mean (SD): 42.8 (11.5). Gender (M:F): 37/88. Ethnicity:
Further population details	
Extra comments	Steroid + anesthetic: Pain (NRS 0-10) = 8.3 (SD 0.9); ODI (0-50) = 29.9 (SD 4.8); opiod use = 62.9 ±(SD 49.3). Anesthetic: Pain (NRS 0-10) = 8.2 (SD 0.9); ODI (0-50) = 28.0 (SD 5.3), opiod use = 68.9 (SD 51.9)
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Image-guided steroid + anaesthetic. Steroid + anaesthetic (3mg or 0.5ml betamethosone + lidocaine 1%) . Duration Immediate (single injection at each nerve root level) + 2 year follow-up. Concurrent medication/care: Both groups were given structured exercise programs. Employed people continued working. Drug therapy was decreased or stopped if required; if increase in opioid therapy then the patient was withdrawn

	Further details: 1. Route of administration: Transforaminal (n=60) Intervention 2: Image-guided Local anaesthetic. Anaesthetic (lidocaine 1%, 1.5ml). Duration Immediate (single injection at each nerve root level) + 2 year follow-up. Concurrent medication/care: Both groups were given structured exercise programs. Employed people continued working. Drug therapy was decreased or stopped if required; if increase in opioid therapy then the patient was withdrawn Further details: 1. Route of administration: Transforaminal
Funding	No funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS (0-10) at 3 months; Group 1: mean 4 (SD 1.5); n=60, Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS (0-10) at 24 months; Group 1: mean 4.2 (SD 1.6); n=60, Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: ODI (0-100) at 3 months; Group 1: mean 14.7 (SD 6.4); n=60, Group 2: mean 16.5 (SD 7.2); n=60; Risk of bias: --; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: ODI (0-100) at 24 months; Group 1: mean 14.1 (SD 6.5); n=60, Risk of bias: Low; Indirectness of outcome: No indirectness

Protocol outcome 4: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) with sciatica: Opioid intake (dose, mg in last 12 months) at 24 months; Group 1: mean 36.6 (SD 32.4); n=60, Group 2: mean 42.9 (SD 37.5); n=60; Risk of bias: Low; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Opioid intake (dose, mg in last 12 months) at 3 months; Group 1: mean 40.8 (SD 31.8); n=60, Group 2: mean 48.6 (SD 45.1); n=60; Risk of bias: --; Indirectness of outcome: No indirectness

Protocol outcome 5: Responder criteria at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain (NRS) at 3 months; Group 1: 44/60, Group 2: 46/60; Risk of bias: Low; Indirectness of outcome: No indirectness

- Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in pain (NRS) at 24 months; Group 1: 35/60, Group 2: 40/60; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in ODI at 24 months; Group 1: 39/60, Group 2: 43/60; Risk of bias: Low; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: >50% reduction in ODI at 3 months; Group 1: 41/60, Group 2: 45/60; Risk of bias: Low; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Manchikanti 2015[342]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=120)
Countries and setting	Conducted in USA; Setting: Private interventional pain management practice and speciality referral center in the United States
Line of therapy	Unclear
Duration of study	Follow up (post intervention): 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Radiologic investigations, physical examination, pain rating scores using Numeric Rating Scale (NRS), ODI
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Only patients with central spinal stenosis with radicular pain (sciatica) of at least 6 months duration, at least 30 years of age with history of chronic function-limiting low back and lower extremity pain of at least 6 months
Exclusion criteria	Foraminal stenosis without central spinal stenosis, previous history of surgery, and uncontrollable or unstable psychiatric disorders, medical disorders, or opioid use, pregnancy or lactating women, history of adverse reactions to local anesthetic or steroids
Recruitment/selection of patients	All patients were drawn from a single pain management practice
Age, gender and ethnicity	Age - Mean (range): 50.0-54.6. Gender (M:F): 43%/57%. Ethnicity: Not stated
Further population details	
Extra comments	Baseline (mean±SD): Numeric Pain Rating Scale - 8.0±0.7 (Group 1/LI with local anesthetics), 8.0±1.0 (Group 2/LI with local anesthetics and steroids); ODI - 31.0±6.3 (Group 1/LI with local anesthetics), 30.5±8.4 (Group 2/LI with local anesthetics and steroids)
Indirectness of population	No indirectness
Interventions	(n=60) Intervention 1: Image-guided Local anaesthetic. Patients received lumbar interlaminar epidural injections of local anesthetic, preservative-free lidocaine 0.5%, 6 mL. Duration 2 years. Concurrent medication/care: All procedures were performed under intermittent fluroscopy by a single physician. Received sedation (if requested) with midazolam and fentanyl. The lumbar interlaminar epidural space was identified with the loss of resistance technique, confirmed by an injection of nonionic contrast medium. Entry into the epidural space was made at L5/S1, or one space below the stenosis level. All patients received a structured therapeutic exercise program along with medical therapy, and

	continued employment. Majority of patients were taking opiods, nonopioid analgesics and adjuvant analgesics. Repeat procedures were performed in patients with deterioration of pain relief and/or functional status below 50%. Further details: 1. Route of administration: (n=60) Intervention 2: Image-guided steroid + anaesthetic. Patients lumbar interlaminar epidural injections of 0.5% preservative-free lidocaine, 5 mL, mixed with 1 mL or 6 mg of betamethasone, with a total volume of 6 mL. . Duration 2 years. Concurrent medication/care: All procedures were performed under intermittent fluroscopy by a single physician. Received sedation (if requested) with midazolam and fentanyl. The lumbar interlaminar epidural space was identified with the loss of resistance technique, confirmed by an injection of nonionic contrast medium. Entry into the epidural space was made at L5/S1, or one space below the stenosis level. All patients received a structured therapeutic exercise program along with medical therapy, and continued employment. Majority of patients were taking opiods, nonopioid analgesics and adjuvant analgesics. Repeat procedures were performed in patients with deterioration of pain relief and/or functional status below 50%. Further details: 1. Route of administration:
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED LOCAL ANAESTHETIC versus IMAGE-GUIDED STEROID + ANAESTHETIC

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Numeric Pain Rating Scale (NRS) at 3 months; Group 1: mean 3.7 (SD 1.3); n=60, Group 2: mean 3.7 (SD 1.5); n=60; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Numeric Pain Rating Scale (NRS) at 12 months; Group 1: mean 3.7 (SD 1.6); n=60, Group 2: mean 3.7 (SD 1.8); n=60; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Numeric Pain Rating Scale (NRS) at 24 months; Group 1: mean 3.8 (SD 1.8); n=60, Group 2: mean 3.6 (SD 1.7); n=60; NRS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index (ODI) at 3 months; Group 1: mean 15.3 (SD 5.3); n=60, Group 2: mean 15.2 (SD 6.2); n=60; ODI 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index (ODI) at 12 months; Group 1: mean 15 (SD 6.4); n=60, Group 2: mean 14.4 (SD 6.4); n=60; ODI 0-50 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Oswestry Disability Index (ODI) at 24 months; Group 1: mean 15.1 (SD 7.2); n=60, Group 2: mean 13.7 (SD

6.4); n=60; ODI 0-50 Top=High is poor outcome;	Risk of bias: High; Indirectness of outcome: No indirectness
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Murakibhavi 2011 trial: Murakibhavi 2011[397]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=102)
Countries and setting	Conducted in India; Setting: outpatients
Line of therapy	Not applicable
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI confirmed
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	chronic low back pain with unilateral or bilateral sciatica>3months, refractory to analgesics, patients aged over 18 years
Exclusion criteria	Cases with history of surgery, or sever motor weakness, rapidly progressing neurological deficits, cauda equina syndrome, neurogenic claudication. Local infection at site of injection, use of steroids 3 weeks or loess before the study, allergy to steroids, bleeding diatheses, pregnancy, uncontrolled hypertension, diabetes
Age, gender and ethnicity	Age - Mean (SD): 44.64 (12.65). Gender (M:F): 66:34. Ethnicity:
Further population details	
Extra comments	Baseline scores: VAS pain: intervention 8.12, control 8.06. Owestery disability score: intervention group 35.87, control group 36.04, Becks depression inventory: intervention group: 18.93, control group 18.04. Health-related quality of life on numerical pain intensity questionnaire intervention 8.44, control 8.26. . 60% disc degeneration, 26% disc bulge, 14% disc herniation
Indirectness of population	No indirectness
Interventions	(n=52) Intervention 1: Image-guided steroid + anaesthetic. Epidural injection: 20mls normal saline, 2 ml of 2 % xylocaine, 2 ml triamcinolone acetate. Repeated every 2-3 weeks for 3 months as required. Repeated if no effect after 2-3 weeks. C-arm used to confirm position of needle. . Duration 3 months . Concurrent medication/care: Not listed. Further details: 1. Route of administration: Caudal Comments: 2 patients had procedure abandoned due to repeated hypotension (n=50) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Combination of non-invasive interventions (defined as a combination of pharmacological + manual therapy + electrotherapy + biomechanical exercise). Patients prescribed medications such as tizanidine (6-12 mg/24 hours), diclofenac 50-

	100mg/24 hours, amitryptiline 10-50mg ON, bilateral skin traction, physiotherapy, TENS, short wave diathermy, back extension exercises. If they had no improvement after 3 months they were allowed to drop out of the study. . Duration 3 months . Concurrent medication/care: Not listed Further details: 1. Route of administration: Not applicable / Not stated / Unclear (No injection).
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus COMBINED NON-INVASIVE INTERVENTIONS Protocol outcome 1: Quality of life at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Health-related quality of life on numerical pain intensity questionnaire at 6 months ; Group 1: mean 3.34 (SD 1); n=50, Group 2: mean 5.58 (SD 1.6); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain severity at 6 months ; Group 1: mean 2.69 (SD 0.8); n=50, Group 2: mean 6.08 (SD 0.5); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Owestery disability index at 6 months ; Group 1: mean 12.28 (SD 2.6); n=50, Group 2: mean 24.87 (SD 21.5); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Psychological distress (HADS/GHQ/BDI/STAI) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Becks depression index at 6 months ; Group 1: mean 8.59 (SD 2.2); n=50, Group 2: mean 13.26 (SD 2.2); n=50; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Complete relief of pain at 6 months ; Group 1: 43/52, Group 2: 12/50; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Adverse events (morbidity) at Define; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Ng 2005 trial: Ng 2005[408]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=88)
Countries and setting	Conducted in United Kingdom; Setting: Spine specialist clinic at University Hospital Liecester, UK
Line of therapy	2nd line
Duration of study	Follow up (post intervention): 12 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	patients included has unilateral leg pain where the leg pain intensity had to be atleast comparable to the back pain. They had to have completed atleast 6 weeks of non-operative management with non-steroidal anti-inflammatory medication and physical therapy with no benefit. Clinical symptoms must also be consistent with MRI diagnosis of nerve root compression.Patients also had to agree that oral analgesic medication should not be altered during the follow-up period without consent
Exclusion criteria	patients with acute back trauma, cauda equina syndrome, infection, previous back operation, periradicular infiltration during the preceding 12 months, epidural injections within the last 3 months
Recruitment/selection of patients	study patients were recruited from a spine specialist clinic at a university hospital from Nov 2001to June 2003
Age, gender and ethnicity	Age - Mean (SD): 49.7 ±17.1 in the Anesthetic Group and 51.2 ±14.5 in the Steroid +Anesthetic Group. Gender (M:F): 50:38. Ethnicity:
Further population details	
Extra comments	Baseline Mean Leg Pain VAS values with interquartile ranges in parentheses for Anesthetic Group was 76.9 (60-82.5) and 73 (60-80) for the Steroid+Anesthetic Group. Baseline Mean Back Pain VAS values with interquartile ranges in parentheses for Anesthetic Group was 34.4 (10-50) and 38.1 (10-50) for the Steroid+Anesthetic Group.Baseline ODI values with interquartile ranges in parentheses for Anesthetic Group was 48.4 (36-58) and 47.8 (36-56) for the Steroid+Anesthetic Group..
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Image-guided Local anaesthetic. Periradicular infiltration was carried out as a day procedure without premedication under fluoroscopic guidance . Each patient received 2 mL of 0.25% Bupivacaine.. Duration 12 weeks. Concurrent medication/care: None stated

	Further details: 1. Route of administration: Not applicable / Not stated / Unclear (n=43) Intervention 2: Image-guided steroid + anaesthetic. Periradicular infiltration was carried out as a day procedure without premedication under fluoroscopic guidance . Each patient received 2 mL of 0.25% Bupivacaine with 40 mg of Methylprednisolone. Duration 12 weeks. Concurrent medication/care: None stated Further details: 1. Route of administration: Not applicable / Not stated / Unclear
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain VAS at 12 weeks; Group 1: mean 2.3 (SD 0.5); n=41, Group 2: mean 2.2 (SD 0.52); n=40; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Back Pain VAS at 12 weeks; Group 1: mean 4.8 (SD 5.4); n=41, Group 2: mean 8 (SD 5.5); n=40; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 12 weeks; Group 1: mean 10.8 (SD 3.4); n=41, Group 2: mean 12.3 (SD 3.2); n=40; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	Riew 2000[445] (Riew 2006[446])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=55)
Countries and setting	Conducted in USA; Setting: Referred to spine surgeons (secondary care)
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 5 years follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: MRI or CT confirmed
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Aged >twenty-one years old and who had degenerative lumbar radicular pain with a disc herniation or central or foraminal spinal stenosis confirmed by MRI or C. Also included patients who had a previous operation and demonstrated persistent or new neurological compression. They had to have completed a course of nonoperative management including anti-inflammatory medication, physical therapy, and activity modification for at least six weeks without adequate benefit.
Exclusion criteria	Acute trauma, cauda equina syndrome, a progressive neurological deficit, a motor deficit, a pathological or infectious etiology, a patient who was not an operative candidate, involvement with a Workers' Compensation claim, a history of an adverse reaction to corticosteroids or local anesthetics, lack of a radiographically detectable abnormality, more than two radiographically abnormal and symptomatic levels on either side such that three or more separate injections would be necessary to alleviate the symptoms, and an absence of substantial radicular pain as the presenting symptom.
Age, gender and ethnicity	Age - Other: >21 years old. Gender (M:F): 27/28. Ethnicity:
Further population details	
Extra comments	Baseline details not given
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Image-guided steroid + anaesthetic. Steroid + anaesthetic (betamethasone, 1ml of 6mg/ml +bupivacaine 1ml of 0.25%) NOTE: 19 patients of the entire study received >1 injection. Duration Immediate (single injection) + mean 13 months, range 13-28 months follow-up. Concurrent medication/care: None reported Further details: 1. Route of administration: Transforaminal (Nerve root injection). (n=27) Intervention 2: Image-guided Local anaesthetic. Anaesthetic (1 ml bupivacaine 0.25%). NOTE: 19 patients of the

	entire study received >1 injection. Duration Immediate (mostly single injection) + mean 13 months, range 13-28 months follow-up. Concurrent medication/care: None reported Further details: 1. Route of administration: Transforaminal (Nerve root injection).
Funding	Academic or government funding (Barnes-Jewish Christian Health System's Innovations in Health Care Grant and Washington University School of Medicine)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at Mean 23 months; Group 1: 8/28, Group 2: 18/27; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Rogers 1992 trial: Rogers 1992[450]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=30)
Countries and setting	Conducted in United Kingdom; Setting: Not reported
Line of therapy	Not applicable
Duration of study	Follow up (post intervention): 1 month
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Clincial diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	clinical diagnosis of sciatica with neuritic pain limiting passive straight leg raising to less then 60 degrees from the horizontal.
Exclusion criteria	not reported
Recruitment/selection of patients	Not reported
Age, gender and ethnicity	Age - Median (range): steroid group: 42 (22-61), anaesthetic group: 41 (23-63). Gender (M:F): 14 males:16 females . Ethnicity:
Further population details	
Extra comments	No baseline scores reported. Duration of pain steroid group: 23 (1-240) months, anaethetic group: 25 (1-204) months
Indirectness of population	No indirectness
Interventions	(n=15) Intervention 1: Non image-guided steroid + anaesthetic. Epidural injection of 14 mls of lignocaine 2%, 80mg methyl prednisolone and 2 mls normal saline. Duration 1 month . Concurrent medication/care: not listed Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Lower lumbar level (L3/4/5)). Comments: 4 patients in the steroid group had already had epidural injections in the past (n=15) Intervention 2: Non image-guided Local anaesthetic. Epidural injection of 14mls of lignocaine 2%, with normal saline 6mls . Duration 1 month . Concurrent medication/care: Not reported Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Lower lumbar level (L3/4/5)). Comments: 2 patients in the group had already had epidural injections

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID + ANAESTHETIC versus NON IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: drug intake of patients at 1 month; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 month; Group 1: 4/15, Group 2: 4/15; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study	Snoek 1977[493]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=51)
Countries and setting	Conducted in Norway; Setting: Secondary care
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Imemdiate + 8 to 20 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Define
Exclusion criteria	Define
Recruitment/selection of patients	consecutive series
Age, gender and ethnicity	Age - Mean (range): 45.2 (26-67). Gender (M:F): Define. Ethnicity:
Further population details	
Extra comments	No baseline scores
Indirectness of population	No indirectness
Interventions	(n=27) Intervention 1: Non image-guided steroid. 80mg methylprednisolone acetate (through the interspinous ligament at the level of teh lesion). Duration Imemdiate + 8 to 20 months follow-up. Concurrent medication/care: restricted to bed for the first 7 days of hospitalization, but from the eighth day were allowed to walk about freely. Physiotherapy, mainly consisting of instruction and isometric training of the appropriate muscle groups, was identical for all. The duramuscle groups, was identical for all. The duration of stay at the department of neurology was 14 +- 4 days. Those patients who did not improve sufficiently were then transferred to the physiotherapy department or to the neurosurgery department if a complete evaluation indicated the need for laminectomy. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (n=24) Intervention 2: Placebo/Sham. Saline, 2mls. Duration Imemdiate + 8 to 20 months follow-up. Concurrent medication/care: As for intervention group Further details: 1. Route of administration: Not applicable / Not stated / Unclear

Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID versus PLACEBO/SHAM Protocol outcome 1: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Discontinuation of analgesic consumption at 2 days; Risk of bias: Very high; Indirectness of outcome: --	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Adverse events (morbidity) at Define

Study (subsidiary papers)	Spikker 2014 trial: Spijker-huiges 2014[498] (Spijker-huiges 2014[500], Spijker-huiges 2015[499])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=73)
Countries and setting	Conducted in Netherlands; Setting: General practice predominently, with the epidurals taking place by anaesthetics in a local hospital outpatients.
Line of therapy	Unclear
Duration of study	Intervention time: 52 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: diagnosed on clinical examination and history by GP. No imaging.
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Diagnosis of lumbar radicular syndrome (sciatica in combinaton with Lasegues sign and/or neurological symptoms, originating from a single nerve root). <4 weeks duration. Aged between 18- 60 YO.
Exclusion criteria	history of spinal surgery or spinal trauma, maintenance therapy with corticosteroids, pregnancy or active wish to become pregnant, breastfeeding and mental disability.
Recruitment/selection of patients	GP surgerys
Age, gender and ethnicity	Age - Mean (SD): 43.7 (9.8). Gender (M:F): 30 Males:33 females. Ethnicity: NA
Further population details	
Extra comments	patients with insulin-dependant diabetes were not excluded by instructed to measure their serum glucose levels regularly in the 48 hours after intervention . Baseline values: RMDQ score: intervention group 16.5 (4.2), control group 14.5 (6.1), NRS back pain: intervention group: 6.2 (2.6), control group 4.5 (2.7), NRS leg pain: intervention group 7.8 (1.7), control group 6.2 (2.3), NRS pain duing day: intervention group: 7.7 (1.6), control group 6.2 (2.1), NRS pain during night: intervention group: 6.4 (2.6), control 5.7 (2.7), NRS total pain score: intervention group 7.7 (1.2), control group 5.7 (2.7); Quality of life (SF-36)- physical functioning - intervention group 42.9 (9.8), control group - 45.6 (9.3); social functioning -intervention group 48 (15), control group 44 (19) ; role limitations, physical - intervention group 14 (29), control group 23 (38); role limitations, emotional - intervention group 70 (43), control group 70 (43) ; emotional well-being - intervention group 65 (27), control group 66 (20) ; energy/fatigue - intervention group 52 (24), control group 51 (17) ; pain - intervention group 45 (17), control group 45 (16); general health perception - intervention group 70 (18), control group 67 (16); change in perceived health - intervention group 40 (21) control group 40 (21) ; physical component score - intervention group 45 (11), control group 49 (15) ; mental component score - intervention group 58 (20), control group 58 (17)

Indirectness of population	No indirectness
Interventions	(n=37) Intervention 1: Non image-guided steroid. 80 mg triamcinolone in 10ml of normal saline. Performed by a non involved anaethetist administered within 48 hours of enrolment using a lumbar translaminar approach. one level above the presumed LRS in either sitting or lateral position. Local anaethetic was applied to the skin only. After patients were referred back to their GPs for usual care. . Duration 52 weeks. Concurrent medication/care: Usual care from GP. usual care not standardised, but followed the guidelines from the Dutch college of GP, and consited of advice and alagesic medication and/or referral as needed. Further details: 1. Route of administration: Interlaminar (Translaminar technique). Comments: 5 paitnets lost to follow up. 1 subject died during the study period of burkitt lymphoma not related to the study. (n=36) Intervention 2: Usual care. Usual care only. . Duration 52 weeks . Concurrent medication/care: usual care not standardised, but followed the guidelines from the Dutch college of GP, and consited of advice and analgesic medication and/or referral as needed. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (No injection). Comments: 6 lost to follow up, due to ending participation and not filling in questionnaires.
Funding	Other

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Physical functioning at 12 weeks; Group 1: mean 87.7 (SD 13.6); n=25, Group 2: mean 79 (SD 14.05); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Physical role limitations at 12 weeks; Group 1: mean 59.7 (SD 34.89); n=25, Group 2: mean 45.7 (SD 36.1); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Social functioning at 12 weeks; Group 1: mean 48.9 (SD 14.05); n=25, Group 2: mean 44.5 (SD 13.81); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Emotional role limitations at 12 weeks; Group 1: mean 87.5 (SD 28.59); n=25, Group 2: mean 74 (SD 29.8); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Emotional well-being at 12 weeks; Group 1: mean 69.8 (SD 14.54); n=25, Group 2: mean 71 (SD 14.78); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Energy/fatigue at 12 weeks; Group 1: mean 54.3 (SD 9.21); n=25, Group 2: mean 56.7 (SD 20.59); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Pain at 12 weeks; Group 1: mean 51.5 (SD 9.45); n=25, Group 2: mean 48.4 (SD 9.45); n=25; SF-36 0-

100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - General health perceptions at 12 weeks; Group 1: mean 73.5 (SD 13.57); n=25, Group 2: mean 66.7 (SD 13.57); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Change in perceived health at 12 weeks; Group 1: mean 57.9 (SD 24.23); n=25, Group 2: mean 55.3 (SD 24.71); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Physical component summary at 12 weeks; Group 1: mean 68.9 (SD 12.84); n=25, Group 2: mean 59.4 (SD 13.08); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Mental component summary at 12 weeks; Group 1: mean 65 (SD 11.39); n=25, Group 2: mean 61.2 (SD 11.87); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Physical functioning at 52 weeks; Group 1: mean 94.5 (SD 14.05); n=25, Group 2: mean 87 (SD 14.29); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Physical role limitations at 52 weeks; Group 1: mean 92.3 (SD 36.1); n=25, Group 2: mean 63.2 (SD 38.03); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Social functioning at 52 weeks; Group 1: mean 51.7 (SD 14.05); n=25, Group 2: mean 47.1 (SD 14.29); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Emotional role limitations at 52 weeks; Group 1: mean 94.3 (SD 29.6); n=25, Group 2: mean 85.2 (SD 30.52); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Emotional well-being at 52 weeks; Group 1: mean 67.4 (SD 14.78); n=25, Group 2: mean 72.2 (SD 15.26); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Energy/fatigue at 52 weeks; Group 1: mean 55.6 (SD 18.9); n=25, Group 2: mean 57 (SD 12.11); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Pain at 52 weeks; Group 1: mean 49.7 (SD 9.45); n=25, Group 2: mean 51.2 (SD 9.69); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - General health perceptions at 52 weeks; Group 1: mean 78.2 (SD 14.05); n=25, Group 2: mean 73.5 (SD 14.29); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Change in perceived health at 52 weeks; Group 1: mean 87.8 (SD 24.95); n=25, Group 2: mean 73.3 (SD 25.44); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Physical component summary at 52 weeks; Group 1: mean 79.5 (SD 12.36); n=25, Group 2: mean 67.6 (SD 13.81); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 - Mental component summary at 52 weeks; Group 1: mean 67 (SD 11.87); n=25, Group 2: mean 65.2 (SD 12.36); n=25; SF-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NRS pain during day at 13 weeks ; Group 1: mean 2.4 (SD 2.7); n=33, Group 2: mean 3.1 (SD 2.9); n=30; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: NRS pain during night at 13 weeks ; Group 1: mean 1.7 (SD 2.6); n=30, Group 2: mean 2.6 (SD 1.7); n=30; Risk

of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS pain back at 13 weeks ; Group 1: mean 2.1 (SD 2.5); n=33, Group 2: mean 3 (SD 3); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS pain leg at 13 weeks ; Group 1: mean 1.6 (SD 2.5); n=33, Group 2: mean 2.9 (SD 2.5); n=30; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: NRS total pain at 52 weeks ; Group 1: mean 1.3 (SD 2); n=33, Group 2: mean 2.1 (SD 3); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS pain day at 52 weeks ; Group 1: mean 1.2 (SD 2); n=33, Group 2: mean 2.2 (SD 3); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS pain night at 52 weeks ; Group 1: mean 0.8 (SD 1.7); n=33, Group 2: mean 1.8 (SD 2.9); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS pain back at 52 weeks ; Group 1: mean 1.3 (SD 1.9); n=33, Group 2: mean 2 (SD 2.9); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS pain leg at 52 weeks ; Group 1: mean 1 (SD 2); n=33, Group 2: mean 1.4 (SD 2.2); n=30; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: RMDQ at 52 weeks; Group 1: mean 2.3 (SD 3.7); n=33, Group 2: mean 4.1 (SD 6.32); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NRS total pain at 13 weeks ; Group 1: mean 2.5 (SD 2.5); n=33, Group 2: mean 3.2 (SD 2.8); n=30; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: RMDQ <4 months at 13 weeks ; Group 1: mean 5.3 (SD 5.9); n=33, Group 2: mean 7.6 (SD 6.3); n=30; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Tafazal 2009[512]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=150)
Countries and setting	Conducted in United Kingdom; Setting: specialist spine clinic
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	unilateral leg pain and MRI confirmed nerve root compression, due to either lumbar disc herniation or foraminal stenosis. Leg pain intensity at least comparable to back pain intensity. All patients had completed at least 6 weeks of conservative treatment with analgesia and physical therapy with no apparent benefit.
Exclusion criteria	Acute back trauma, Cauda equina syndrome Active local skin infection Previous back operation Peri-radicular infiltration during preceding 12 months Epidural injection in last 3 months, Pregnancy, Allergy to treatment agents, Anticoagulation treatment, Inability to complete spine assessment questionnaire,
Age, gender and ethnicity	Age - Range of means: 51-53 yrs. Gender (M:F): 71/52. Ethnicity:
Further population details	
Extra comments	Steroid + anaesthetic: ODI = 46.6, LBOS = 25, VAS leg pain 0-10 = 4.75. Steroid + anaesthetic: ODI = 46.6, LBOS = 25, VAS leg pain 0-10 = 4.75
Indirectness of population	No indirectness
Interventions	(n=74) Intervention 1: Image-guided steroid + anaesthetic. 2ml of 0.25% bupivacaine and 40mg of methylprednisolone. Duration Immediate + 1 year follow-up. Concurrent medication/care: not to alter their oral analgesic medication during the follow-up period and did not have any additional treatments such as physiotherapy. Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Peri-radicular infiltration). (n=76) Intervention 2: Image-guided Local anaesthetic. 2ml of 0.25% bupivacaine . Duration Immediate + 1 year follow-up. Concurrent medication/care: As for combined arm Further details: 1. Route of administration: Not applicable / Not stated / Unclear (Peri-radicular infiltration).

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: IMAGE-GUIDED STEROID + ANAESTHETIC versus IMAGE-GUIDED LOCAL ANAESTHETIC Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain, VAS 0-10 at 12 weeks; Group 1: mean -2.45 (SD 0.36); n=65, Group 2: mean -2.26 (SD 0.41); n=59; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI 0-100 at 12 weeks; Group 1: mean -9.3 (SD 2.3); n=65, Group 2: mean -10.7 (SD 2.6); n=59; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Surgery at 1 year; Group 1: 9/64, Group 2: 14/65; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Complications at 12 weeks; Group 1: 0/65, Group 2: 0/59; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Complications at 1 year; Group 1: 0/64, Group 2: 0/65; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up

Study	Valat 2003 trial: Valat 2003[537]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=85)
Countries and setting	Conducted in France, Unknown; Setting: multicentred trial.
Line of therapy	Not applicable
Duration of study	Intervention time: 35 days
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: no images to confirm disc herniation
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	First or recurrent episode sciatica(unilateral pain radiating below the knee, with at least one nerve root compression sign eg. reproduction of radicular pain by raising the leg or distal paraesthesia or sensory, motor or reflex deficits compatable with the radicular pain). Lasting between 15 and 180 days and >3 on VAS for pain
Exclusion criteria	Define
Recruitment/selection of patients	Inpatients refered for sciatica
Age, gender and ethnicity	Age - Mean (SD): 38.4 (8.8) Intervention group, 43.5 (11.8) control group. Gender (M:F): 52:33. Ethnicity:
Further population details	
Extra comments	Baseline values VAS pain 5.8(1.7) control group, 5.8 (1.6) intervention group, RMDQ 14.2 (4.2) control group, 15.1 (4.7) intervention group. . mean duration of symptoms 56.5 days control group, 40.9 days intervention group
Indirectness of population	No indirectness
Interventions	(n=43) Intervention 1: Non image-guided steroid. 3 epidurals of 50 mg prednisolone using a lumbar interlaminar approach using loss of resistance technique. Duration 6 days (2 day intervals between the epidurals). Concurrent medication/care: NSAIDs >20 days from first injection. Non opioid analgesics, bed rest, mild lumbar tractions and lumbar belts authorised. Further details: 1. Route of administration: Interlaminar Comments: 2 lost to follow up, 1 withdrawn due to incomplete treatment modalities. (n=42) Intervention 2: Placebo/Sham. 3 epidurals of 2mls normal saline using a lumbar interlaminar approach using loss of resistance technique. Duration 6 days (2 day intervals . Concurrent medication/care: NSAIDs >20 days from first injection. Non opioid analgesics, bed rest, mild lumbar tractions and lumbar belts authorised.

	Further details: 1. Route of administration: Interlaminar Comments: 3 withdrawn due to incomplete treatment modalities, 3 lost to follow up
Funding	Academic or government funding (Grant from PRHC 1995 Ministry of France)
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: NON IMAGE-GUIDED STEROID versus PLACEBO/SHAM Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: VAS pain at 35 days ; Group 1: mean 2.2 (SD 2.1); n=33, Group 2: mean 2.5 (SD 2.6); n=30; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: RolandMorris disability index at 35 days ; Group 1: mean 8.5 (SD 5.4); n=34, Group 2: mean 9.1 (SD 5.4); n=29; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: headache at 6 days; Group 1: 2/38, Group 2: 2/38; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: thoracic pain during injection at 6 days; Group 1: 0/42, Group 2: 1/39; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

H.18 Surgery and prognostic factors

Study	Cook *et al.* [99] Predictors of pain and disability outcomes in one thousand, one hundred and eight patients who underwent lumbar discectomy surgery. International Orthopaedics (SICOT) 2015; 39:2143-2151
Study type and analysis	Retrospective cohort study using data from a multi-institutional spine outcomes registry involving data compiled from 14 spine surgical institutions in the US and Canada. Participants included patients who underwent lumbar discectomy (Sciatica implied with or without decompression). Multiple logistic regression analysis
Number of participants and characteristics	N=1108. M: F= not stated Age range: no age restriction Participants for this study involved patients with lumbar disorders who received a discectomy surgery (with or without decompression) between the dates of 2002 to 2012
Prognostic variable(s)	Radicular symptoms (Leg Pain VAS score >6/10) Radicular symptoms-(Leg pain greater than back pain-calculated by subtracting total leg pain by the total back pain during baseline visit. Values >0 indicated leg pain greater than back pain whereas all other values (including equal findings) were considered otherwise
Confounders OR stratification strategy	Age, BMI, Gender, Presence/absence of complications, Levels of surgery and Diagnosis
Outcomes and effect sizes	• After adjusting for confounders above, the effects of leg pain greater than back pain on 50% improvement in pain assessed by VAS in one year reported as OR[95%CI]=1.02 [0.70,1.48] • After adjusting for confounders above, the effects of leg pain greater than back pain on 30% improvement in function assessed by ODI in one year reported as OR[95%CI]=1.71 [1.18, 2.47] • After adjusting for confounders above, the effects of leg pain greater than back pain on 50% improvement in function assessed by ODI in one year reported as OR[95%CI]=1.93 [1.35, 2.77] • Findings in the univariate analyses that yielded p values of 0.10 and under were considered for inclusion in four distinct MVA performed (VAS 30%, VAS 50%, ODI 30% and ODI 50%). Leg Pain VAS score >6/10 was not found significant for inclusion in any of the four MVA models whereas leg pain greater than back pain was not included in VAS 30% MVA.

Study	Cook *et al.* [99] Predictors of pain and disability outcomes in one thousand, one hundred and eight patients who underwent lumbar discectomy surgery. International Orthopaedics (SICOT) 2015; 39:2143-2151
Comments	Poor reporting of patient characteristics and overall population statistics not reported.

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Study	Lee *et al.* [310] An analysis of the prognostic factors affecting the clinical outcomes of conventional lumbar open discectomy: Clinical and radiological prognostic factors. Asian Spine Journal 2010; 4: 23-31
Study type and analysis	Retrospective cohort study based in Seoul, Korea following patients who underwent lumbar discectomy (Sciatica implied). Multiple logistic regression analysis
Number of participants and characteristics	N=40. M: F=23:17 Age range: 15-83 Duration of follow-up was 23.5 months (range 12-49 months). Smokers: Non-smokers=8:32 Patients were diagnosed with lumbar disc herniation and operated on at the Department of orthopaedic surgery and spine centre in Seoul, Korea. They had failed conservative treatment for 6 weeks prior to the study. The duration of pre-operative LBP (mean ± SD) was 66 ± 103 weeks and that of Sciatica was 9 ± 22 weeks. The mean LBP VAS was 3.8 ± 3.0 and mean Sciatica VAS was 7.5 ± 1.5. The mean preoperative ODI was 27 ± 8.
Prognostic variable(s)	Smoking BMI Radicular symptoms (Leg Pain VAS score)
Confounders OR stratification strategy	LBP Duration Age Sex Primary/Revision Surgery
Outcomes and effect sizes	• After adjusting for confounders above, the effects of Pre-op Leg Pain (VAS) on Function (ODI>10) at 1 year was reported as OR[95%CI]=0.523 [0.135,2.028] at 23.5 months (range 12-49 months) • Both smoking and BMI were not found significant in the univariate analysis and were therefore not included in the multiple logistic regression analysis
Comments	Poor reporting of the rationale for inclusion of prognostic factors that contributed to the multivariable analysis.

Study	Ostelo *et al.* [418] Residual complaints following lumbar disc surgery: prognostic indicators of outcome. Pain 2005, 114(177-185)
Study type and analysis	Prospective cohort study conducted within the framework of an RCT to identify indicators for the course of residual complaints during rehabilitation following lumbar disc surgery for patients with LBP or Sciatica in the Netherlands. Multivariable logistic regression analyses
Number of participants and characteristics	N=105 M:F= 45:60 Age=between 18-65 years No other baseline values reported From November 1997 until December 1999, 105 patients had been referred to physiotherapy because of the residual complaints from each of the four participating hospitals in the south of The Netherlands following the 6 week post-surgery visit.
Prognostic variable(s)	BMI Psychological Distress-Negative affectivity (Negative Emotionality sub-scale of the Multidimensional Personality Questionnaire)
Confounders OR stratification strategy	Duration of complaints before surgery Age Gender Confidence in recovery Medication at baseline
Outcomes and effect sizes	The effect of the following prognostic factors on function(RDQ ≤4) were reported as: • BMI≥30 versus BMI<25 at 3 months as OR (95% CI)=0.79 (0.21;2.94) • Results of univariate analysis demonstrated the effect of NEM on function (RDQ ≤4) as not significant; therefore not included in multivariable analysis • No significant results reported for either BMI or NEM for inclusion in multivariable analysis at 12 months The effect of the following prognostic factors on back pain(VAS ≤10 mm) were reported as: • Results of univariate analysis demonstrated the effect of BMI≥30 at 3 months on back pain(VAS ≤10 mm) as not significant; therefore not included in multivariable analysis • Negative affectivity >1 -≤4 (NEM) versus NEM ≤ 1 at 3 month as OR (95% CI)=0.55 (0.19;1.61) • Negative affectivity >4 (NEM) versus NEM ≤ 1 at 3 month as OR (95% CI)=0.21 (0.06;0.78) • No significant results reported for either BMI or NEM for inclusion in multivariable analysis at 12 months

Study	Ostelo *et al.* [418] Residual complaints following lumbar disc surgery: prognostic indicators of outcome. Pain 2005, 114(177-185)
	The effect of the following prognostic factors on leg pain(VAS ≤10 mm) were reported as: • Results of univariate analysis demonstrated the effect of BMI≥30 at 3 and 12 months on leg pain(VAS ≤10 mm) as not significant; therefore not included in multivariable analysis • Results of univariate analysis demonstrated the effect of NEM at 3 and 12 months on leg pain(VAS ≤10 mm) as not significant; therefore not included in multivariable analysis • Leg Pain (VAS>43) versus Leg Pain (VAS <43) at 3 months as OR (95% CI)=0.24(0.10, 0.58) • Leg Pain (VAS>43) versus Leg Pain (VAS <43) at 12 months as OR (95% CI)=0.38(0.16, 0.75)
Comments	The outcomes reported don't take into consideration the "improvements" in the outcome and change in baseline which is what we are interested in knowing I,e does the prognostic factor actually report an improvement

Study	Pearson *et al.*[425] Who should have surgery for spinal stenosis: treatment effect predictors in SPORT. SPINE 2012:37 (21):1791-1802
Study type and analysis	Combined prospective randomised controlled trial and observational cohort study based in the United States of spinal stenosis with an as-treated analysis to determine the variables which were significant independent Treatment Effect modifiers of surgery. Multivariate analyses for variables associated with treatment effect for time weighted average (area under the curve) ODI over 4 years. TE defined as the difference between the surgical and non-operative mean change from baseline (TE=change in $ODI_{surgery}$ – Change in $ODI_{non\text{-}operative}$. A minimal adjusted analysis was first performed to identify significant TE differences and the potential TE modifiers (p=<0.05) along with their treatment interaction terms were entered into a longitudinal regression model
Number of participants and characteristics	N= 634 M:F=385:249 The SPORT spinal stenosis investigation consisted of a RCT with a concurrent observational cohort study conducted in 11 states of the US; the data of these two trials were combined in the present study. Patients had neurogenic claudication or radicular pain for at least 12 weeks and confirmatory cross-sectional imaging study demonstrating stenosis at one or more level
Prognostic variable(s)	Smoking status BMI Radicular symptoms (predominant leg pain)
Confounders OR stratification strategy	Duration of symptoms ,Age, Gender, Center, Baseline ODI score income, treatment preference, compensation status ,baseline Stenosis Bothersomeness Index, joint problems, stomach problems and bowel problems
Outcomes and	Outcome: Treatment Effect, TE (defined by change in ODI)

Study	Pearson *et al.*[425] Who should have surgery for spinal stenosis: treatment effect predictors in SPORT. SPINE 2012:37 (21):1791-1802
effect sizes	After adjusting for confounders above, Smoking led to an increase in the change in ODI of 10.1 (3.055) compared to Non-Smoking at 4 years After adjusting for confounders above, Predominant Leg Pain (determined by Leg and Back Pain Bothersomeness Scale (0-6point Likert-type scale) led to an decrease in change in ODI of -4.2 (1.088) compared to Predominant Back Pain at 4 years The effect of BMI >30 on TE (change in ODI) was weak determined by univariate analysis and was not included in multivariate analysis
Comments	Analysis was done using a mixed model with random subject intercept term. Treatment is a time-varying covariate whereas patients experience prior to surgery is attributed to the non-operative arm and time is measured from enrolment and his/her post surgery outcomes are attributed to the surgical arm and time is measured from time of surgery

Study	Silver plats *et al.* [479] Clinical factors of importance for outcome after lumbar disc herniation surgery: long term follow-up. European Spine Journal 2010, 10: 1459-1467
Study type and analysis	Prospective cohort study studying the long term effect of disc herniation surgery in patients suffering from Sciatica in Sweden and Iceland. Multivariate logistic regression analyses in which all predictors that showed a potential influence in the bivariate analyses were only included i.e predictors that showed a p-value lower than 0.20. Furthermore, in an explorative manner, the logistic regression models were also analysed with a forward (likelihood ratio) stepwise selection procedure. Due to the explorative nature of the analyses and the large number of tests performed, low p-values should be regarded as interesting findings rather conclusive evidence.
Number of participants and characteristics	Between September 1996 and March 2002, consecutive patients surgically treated for a CT or MRI verified one-level disc herniation on L4-L5 or L5-S1 level at the Department of orthopaedics at Sahlgrenska Hospital in Sweden were assed for assessed for eligibility and those that met the inclusion criteria are shown below: N=171 M:F=95:76 Mean Age ± SD=39 ±11 years Smokers: Non-smokers= 45:126 The baseline VAS leg pain Mean ±SD =59 ±19 The baseline VAS back pain Mean ±SD =50 ±23 The baseline ODI(0-100) Mean (range)=59 (90) The baseline Zung Depression Scale(20-80) Mean (range)=43 (46)
Prognostic variable(s)	Radicular Symptoms (VAS Leg Pain) (Sciatica) Smoking (LBP) Psychological distress (Zung Depression Scale, ZDS)
Confounders OR	Duration of pain

Study	Silver plats *et al.* [479] Clinical factors of importance for outcome after lumbar disc herniation surgery: long term follow-up. European Spine Journal 2010, 10: 1459-1467
stratification strategy	Age Gender Use of analgesics
Outcomes and effect sizes	• The only predictor in improvement in leg pain among all potential predictors was baseline VAS leg pain (p=0.039). Baseline VAS leg pain was first and only predictor selected by the stepwise procedure at 2 year • ZDS was the only significant predictor for improvement in VAS back pain in both the full model (p=0.049) and the stepwise model at 2 years • Values from the MVA only reported for significant prognostic factors associated with TE--no values reported for Smoking.
Comments	

Study	Trief *et al.* [527] Psycological predictors of surgery outcome, 2000.Spine volume 25, number 20, pp 2616-2621
Study type and analysis	Prospective cohort study based in the United States in which patients with low back pain were evaluated with psychological assesement tests 1-2 weeks before surgery and outcomes were asseseed at 1 year. Study examined whether three aspects of psychological distress (depression, anxiety and hostility) predict several surgical outcomes (employment status, subjective pain ratings and changes in functional abilities)
Number of participants and characteristics	N=102 M:F= 52:50 Age=between 18-78 years with mean age of 47.3±14.9 years Average duration of pain=6.7 years 36 patients had undergone atleast one previous pain-related surgical procedure with the majority having undergone lumbar fusion Most of the subjects were white and married
Prognostic variable(s)	Psychological Distress- DPQ Dallas Pain Questionnaire (DPQ) is a 16 item self-report measure of the impact of back pain on the four aspects of patients' lives. Subscales 1 and 2 determine how much pain limits functional abilities (daily and work/leisure activities) and sub-scales 3 and 4 assess how much pain affecrs emotional capacities (anxiety-depression and social interest)
Confounders OR stratification strategy	Duration of pain Age Gender
Outcomes and	Subtracting the first year follow-up score of the DPQ from the pre-surgical score yielded a difference score (Dal-difff) for each subject that was

Study	Trief *et al.* [527] Psycological predictors of surgery outcome, 2000.Spine volume 25, number 20, pp 2616-2621
effect sizes	representative of the improvement or worsening of the functional limitations as a result of surgery. Four scores were developed, one for each subscales of the DPQ. Multivariate regression analysis revealed that depression (F=6.33 P < 0.0148) predicted improvement in in work-leisure activities function (model R^2=0.41)
Comments	The study reported other data/outcomes which did not meet the criteria set in the protocol. The statistic reported for the data that met the inclusion criteria is not interpretable and does not answer the question posed in this review.

H19 Disc replacement

Study (subsidiary papers)	Berg 2009[34,35] (Berg 2011[33,35], Fritzell 2011[150,151], Skold 2013[484,484], Berg 2009[35,35])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=152)
Countries and setting	Conducted in Sweden; Setting: Stockholm Spine Centre, Stockholm, Sweden.
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 5 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Back pain should be mechanical and discogenic in origin with interspinous tenderness on examination, disc narrowing on radiographs and signs of disc degeneration on MRI.
Stratum	LBP with/without sciatica: Patients had symptomatic degenerative disc disease (DDD) in one or two motion segment between L3 and S1, with LBP as a predominant symptom, although leg pain was not a contraindication.
Subgroup analysis within study	Stratified then randomised: Total disc replacement patients were randomised to one of three devices. The randomisation process was stratified for number of levels, one or two, to assure an equal proportion of one and two level patients with each prosthesis design.
Inclusion criteria	Age 20-55 years. LBP with or without leg pain for more than 1 year. If leg pain occured, then LBP should dominate. Conservative treatment scheduled for more than 3 months had failed. Conformation of disc degneration on MRI. ODI > 30 and pain (VAS)>50/100 the week before inclusion. Signed informed consent and open mind to the two treatment options. Low grade facet joint arthritis at the index level, as well as low-grade degeneration at other levels, was accepted.
Exclusion criteria	Spinal stenosis requiring decompression. Moderate or worse facet joint arthiritis. Three or more painful levels at clinical examination. No obvious painful level, at diagnostic injection evaluation (if done). Spondylolysis/olisthesis.Degenerative spondylolisthesis >3 mm. Major deformity. Manifest osteoporosis. Previous

Study (subsidiary papers)	Berg 2009[34,35] (Berg 2011[33,35], Fritzell 2011[150,151], Skold 2013[484,484], Berg 2009[35,35])
	lumbar fusion or decompression with postoperative instability. Compromised vertebral body. Previous spinal infection or tumour. Inability to understand information (abuse, psychological or medical reasons). Language difficulties. Pregnancy or other medical condition that would be contraindication to surgery.
Recruitment/selection of patients	All patients fulfilling inclusion criteria were consecutively selected for the study, except those with one belief that one treatment was better than the other.
Age, gender and ethnicity	Age - Mean (SD): Intervention group 40.2 (8.1); control group 38.5 (7.8). Gender (M:F): 62:90. Ethnicity: not stated
Further population details	
Extra comments	There were no differences in the groups in age, gender, smoking status, baseline ODI, surgical levels, prior surgical treatment, or back pain and function. A statistically significant difference after randomisation between the treatment groups after randomisation regarding leg pain was found. . Baseline values (mean (SD)) for intervention and control group respectively: back pain VAS 62.3(20.8), 58.5(21.7); leg pain VAS 32.8(26.4), 43.7(28.2); EQ5D 0.42(0.31), 0.36(0.33); ODI 41.8 (11.8), 41.2(14.6). 41 patients underwent preoperative diagnostic injection procedures, provocative discography and disc block to identify pain generating levels when there was clinical uncertainty whether to treat one or two levels. 16 patients smoked during the study (8 in each group).
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Disc replacement. Total disc replacement patients were randomised to one of 3 devices available in Sweden: Charite (Depuy SPine, Raynham, MA, USA), Prodisc (Synhes Spine, West Chester, PA, USA) or Maverick (Medtronic, Memphis, TE, USA). Randomisation was stratified for number of levels, one or two, to ensure an equal proportion of one and two level patients with each prosthesis design. . Duration 5 years follow up. Concurrent medication/care: All smokers were encouraged to give up smoking before treatment. Postoperatively, patients in both groups increased their activities as quickly as they could tolerate and were instructed to be as mobile as possible without restriction. A soft lumbar orthosis was used for 6 weeks in the total disc replacement group, as recommended by some suppliers. As soon as patients could take care of theirselves they were discharged from hospital. For both groups, walking, together with a small programme to activate back and trunk muscles was recommended. No sport was allowed for 6 weeks and no heavy lifting for 3 months. All patients were referred to outpatient physiotherapy. Comments: No patient left the study when informed of their randomisation. Follow-up rate was 100% at 2 years and 99% at 5 years. (n=72) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Fusion. The fusion technique was instrumented from a posterior approach; surgeons were allowed to use their normally preferred method for posterior instrumented fusion - posterolateral fusion (PLF) or posterior lumbar interbody fusion (PLIF) without complementary PLF. . Duration 5 years follow up. Concurrent medication/care: All smokers were encouraged to give up smoking before treatment. All smokers were encouraged to give up smoking before treatment.

Study (subsidiary papers)	Berg 2009[34,35] (Berg 2011[33,35], Fritzell 2011[150,151], Skold 2013[484,484], Berg 2009[35,35])
	Postoperatively, patients in both groups increased their activities as quickly as they could tolerate and were instructed to be as mobile as possible without restriction. As soon as patients could take care of theirselves they were discharged from hospital. For both groups, walking, together with a small programme to activate back and trunk muscles was recommended. No sport was allowed for 6 weeks and no heavy lifting for 3 months. All patients were referred to outpatient physiotherapy. Comments: No patient left the study when informed of their randomisation. Follow-up rate was 100% at 2 years and 99% at 5 years.
Funding	Study funded by industry (The study was sponsored by the following companies: DePuy Spine, Synthes, Medtronic. The companies had no influence in the planning, conduction, analysing or reporting of the study or the study results. The Authors declere they did not receive any compensation for this work)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISC REPLACEMENT versus SPINAL FUSION

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for LBP with/without sciatica: EQ5D at 2 years; Group 1: mean 0.67 (SD 0.33); n=80, Group 2: mean 0.69 (SD 0.25); n=72; EQ5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: EQ5D at 1 year; Group 1: mean 0.71 (SD 0.28); n=80, Group 2: mean 0.63 (SD 0.27); n=72; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for LBP with/without sciatica: Back pain VAS at 2 years; Group 1: mean 25.4 (SD 29.8); n=80, Group 2: mean 29.2 (SD 24.6); n=72; Back pain VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: Leg pain VAS at 2 years; Group 1: mean 16.4 (SD 24.5); n=80, Group 2: mean 20.7 (SD 24.3); n=72; Leg pain VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: Back pain VAS at 1 year; Group 1: mean 25.5 (SD 26.5); n=80, Group 2: mean 33.4 (SD 26.8); n=72; Back pain VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: Leg pain VAS at 1 year; Group 1: mean 13.2 (SD 21.9); n=80, Group 2: mean 20.6 (SD 25.1); n=72; Leg pain VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at >4 months
- Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 2 years; Group 1: mean 20 (SD 19.6); n=80, Group 2: mean 23 (SD 17); n=72; Oswestry Disability Index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 1 year; Group 1: mean 19.5 (SD 18.7); n=80, Group 2: mean 24.9 (SD 16.1); n=72;

Study (subsidiary papers)	Berg 2009[34,35] (Berg 2011[33,35], Fritzell 2011[150,151], Skold 2013[484,484], Berg 2009[35,35])
Oswestry Disability Index 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Revision rate at >4 months - Actual outcome for LBP with/without sciatica: Reoperations (number of patients) at 2 years; Group 1: 8/80, Group 2: 7/72; Risk of bias: Very high; Indirectness of outcome: No indirectness. Comments: reoperations included decompression, decompression together with extraction of pedicular screws, fusion at TDR level, TDR above fusion, haematoma removal, hernia repair, repair of dural tear. - Actual outcome for LBP with/without sciatica: Reoperations (number of patients) at 5 years; Group 1: 5/80, Group 2: 6/72; Risk of bias: Very high; Indirectness of outcome: No indirectness. Comments: reoperations included decompression, decompression together with extraction of pedicular screws, fusion at TDR level, TDR above fusion, haematoma removal, hernia repair, repair of dural tear. - Actual outcome for LBP with/without sciatica: Device-related reoperations (number of events) at 5 years; Group 1: 9/80, Group 2: 20/72; Risk of bias: Very high; Indirectness of outcome: No indirectness. Comments: Device-related reoperations included extraction of pedicle screws; fusion at total disc replacement level.	
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Pain severity (VAS/NRS) at ≤ 4 months; Function (disability scores) at ≤ 4 months; Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Failure rate at >4 months

Study	Gornet 2011[177,177]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=577)
Countries and setting	Conducted in USA; Setting: 4 spine clinics in the USA
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 24 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: Discogenic back pain with/without leg pain documented on plain films, CT or MRI
Stratum	LBP with/without sciatica: Discogenic back pain with or without leg pain
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 18-70 years; Degenerative disc disease; Discogenic Back pain with/without leg pain documented on plain films,

Study	Gornet 2011[177,177]
	CT or MRI; one or more of the following: modic changes, high-intensity zones in the annulus, loss of disc height, decreased hydration of the disc; single level, symptomatic involvement L4-S1 requiring surgery; intact facet joints at the involved vertebral levels; preoperative ODI of at least 30 and back pain score of at least 20 (intesity x duration); no response to nonoperative treatment for a period of 6 months
Exclusion criteria	Primary diagnosis of a spinal disorder other than the degenerative disc disease at the involved level; previous posterior lumbar fusion at the involved level; prior posterior lumbar surgery with significant morbidity (discectomy, laminotomy/laminectomy, and intradiscal procedures not excluded); any prior anterior lumbar spinal surgery at the involved level; requires arthroplasty/fusion at more than one level; severe pathology of the facet joints at the involved level; any posterior element insufficiency; spondylolesthesis, spinal can stenosis, rotary scoliosis at the involved level; any osteoporosis; any condition requiring postoperative medications that might interfere with fusion; active infection, malignancy, autoimmune or other disease that might preclude accurate clinical evaluation; documented metal allergy, bovine products allergy or history of anaphylaxis; endocrine or metabolic disorder known to affect osteogenesis; history of hypersensitivity to protein pharmaceuticals or collagen; previous exposure to any or all bone morphogenetic proteins (human or animal); mental incompetency; Waddell signs of inorganic behaviour score of 3 or greater; is a prisoner; has received drugs that may interfere with bone metabolism within 2 weeks before surgery date, excluding perioperative, nonsteroidal anti-inflammatory type of drugs; has received treatment with an investigational therapy (device and/or pharmaceutical) within 30 days before surgery or such treatment is planned during the 24 months after surgery.
Recruitment/selection of patients	From April 2003 to August 2004, study sites with institutional review board approvals enrolled eligible patients according the inclusion/exclusion criteria
Age, gender and ethnicity	Age - Mean (range): 40.1(18-70). Gender (M:F): 291:286. Ethnicity: mainly white
Further population details	
Extra comments	Baseline values (mean (SD)) for intervention and control group respectively: ODI 53.3 (13.0), 54.5 (12.6); Back pain (NRS) 71.7 (18.9), 73.3(19.4); Leg pain (NRS) 42.7 (31.0), 42.4 (29.7); SF36 (Physical component) 27.9 (6.1), 27.3 (5.6); SF36 (Mental component) 43.2 (12.4), 41.7(11.9). . The two treatment groups were similar demographically and preoperative evaluations of clinical endpoints were similar in each treatment group. Preoperative medical conditions, type of medications being used, number of previous lumbar surgeries and Waddell signs were all comparable. However, in preoperative medication use, the intervention group had a higher percentage of patients using non-narcotic medications before surgery. This study has also been included in the Spinal fusion review.
Indirectness of population	No indirectness
Interventions	(n=405) Intervention 1: Disc replacement. Lumbar disc arthroplasty with MAVERICK disc. All patients underwent an open transperitoneal or a retroperitoneal approach to the lumboscaral spine and a complete anterior disectomy was perfomed.. Duration 2 years follow up. Concurrent medication/care: Not stated.

Study	Gornet 2011[177,177]
	(n=172) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Fusion surgery - stand-alone anterior lumbar interbody fusion. . Duration 2 years follow up. Concurrent medication/care: Not stated.
Funding	Study funded by industry (Corporate/industry funds were received in support of this work. One or more of the authors has/have received or will reveice benefits for personal or professional use from a commercial party related directly or indirectly to the subject of this manuscript, eg honoraria, gifts, consultancies, royalties, stocks, stock options, decision making positions)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISC REPLACEMENT versus SPINAL FUSION

Protocol outcome 1: Quality of life at ≤ 4 months
- Actual outcome for LBP with/without sciatica: SF-36 Physical component summary (PCS) at 3 months; Group 1: mean 41.4 (SD 11); n=393, Group 2: mean 36.9 (SD 9); n=166; SF-36 Physical component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 Mental component summary (MCS) at 3 months; Group 1: mean 51.3 (SD 11.2); n=393, Group 2: mean 48.5 (SD 12.1); n=166; SF-36 Mental component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Quality of life at >4 months
- Actual outcome for LBP with/without sciatica: SF-36 Physical component summary (PCS) at 2 years; Group 1: mean 45.1 (SD 12.2); n=379, Group 2: mean 42.1 (SD 12.1); n=145; SF-36 Physical component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 Mental component summary (MCS) at 2 years; Group 1: mean 51.4 (SD 11); n=379, Group 2: mean 50 (SD 11); n=145; SF-36 Mental component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 Physical component summary (PCS) at 1 year; Group 1: mean 44.7 (SD 11.7); n=393, Group 2: mean 41.6 (SD 11.7); n=163; SF-36 physical component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 Mental component summary (MCS) at 1 year; Group 1: mean 51.3 (SD 10.9); n=393, Group 2: mean 49.3 (SD 11.7); n=163; SF-36 mental component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at ≤ 4 months
- Actual outcome for LBP with/without sciatica: Back pain (NRS) at 3 months; Group 1: mean 17.8 (SD 22.8); n=393, Group 2: mean 27 (SD 24.2); n=166; Back Pain NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: Leg pain (NRS) at 3 months; Group 1: mean 18 (SD 26.3); n=393, Group 2: mean 17.4 (SD 22.8); n=166; Leg pain NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Pain severity (VAS/NRS) at >4 months
- Actual outcome for LBP with/without sciatica: Back pain (NRS) at 2 years; Group 1: mean 18 (SD 26.4); n=379, Group 2: mean 23.6 (SD 27.7); n=145; Back pain NRS 0-

Study	Gornet 2011[177,177]
100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Leg pain (NRS) at 2 years; Group 1: mean 15.9 (SD 25.6); n=379, Group 2: mean 19.5 (SD 28); n=145; Leg pain NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Back pain (NRS) at 1 year; Group 1: mean 17.6 (SD 24.3); n=393, Group 2: mean 24.7 (SD 27.1); n=163; Back pain NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Leg pain (NRS) at 1 year; Group 1: mean 14.7 (SD 23.9); n=393, Group 2: mean 19.8 (SD 26.4); n=163; Leg pain NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Function (disability scores) at ≤ 4 months - Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 3 months; Group 1: mean 23.4 (SD 18.8); n=393, Group 2: mean 32 (SD 16.8); n=166; Oswestry Disability Index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Function (disability scores) at >4 months - Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 2 years; Group 1: mean 19.4 (SD 20.2); n=379, Group 2: mean 24.8 (SD 19.6); n=145; Oswestry Disability Index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 1 year; Group 1: mean 19.2 (SD 18.2); n=393, Group 2: mean 25.3 (SD 19.8); n=163; Oswestry disability index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 7: Adverse events (morbidity) at ≤ 4 months - Actual outcome for LBP with/without sciatica: Adverse events at Operative; Group 1: 59/405, Group 2: 15/172; Risk of bias: Very high; Indirectness of outcome: No indirectness. Comments: Adverse events in the investigational group included: n=9 anatomic/technical difficulty, n=1 cardiovascular, n=7 gastrointestinal-ileus, n=4 gastrointestinal-other, n=1 incision-related, n=1 infection, n=9 neurologic, n=4 other, n=1 other pain, n=3 peritoneal tear, n=1 rash, n=1 respiratory, n=3 spinal events, n=2 urogenital, n=14 vascular injury-intraoperative (total n=61). Adverse events in the control group included: n=1 anatomic/technical difficulty, n=2 gastrointestinal ileus, n=1 neurologic, n=1 other, n=2 peritoneal tear, n=1 spinal event at cervical level, n=2 urogenital, n=8 vascular injury-intraoperative (total n= 18). - Actual outcome for LBP with/without sciatica: Possible device-related adverse event at Operative; Group 1: 2/405, Group 2: 0/172; Risk of bias: Very high; Indirectness of outcome: No indirectness. Comments: Possible device-related adverse events included 2 anatomic/technical difficulties in the control group. Protocol outcome 10: Revision rate at >4 months - Actual outcome for LBP with/without sciatica: Second surgery at 2 years; Group 1: 37/379, Group 2: 15/145; Risk of bias: Very high; Indirectness of outcome: No indirectness. Comments: Gornet 2011 study: second surgeries included revisions (intervention group n=0,control group n= 0); removals (intervention group n=2,control group n= 0); supplemental fixations (intervention group n=13,control group n= 12); and reoperations (defined as surgical procedures at the treated spinal level that did not remove, modify or add any components: decompressions, removals of bone fragment, discectomies, others; intervention group n=22; control group n=3). The Authors note that 59% of investigational group patients that underwent reoperations were among the first five surgeries performed by an individual operator.
Protocol outcomes not reported by the study	Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations,

Study	Gornet 2011[177,177]
	hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Failure rate at >4 months

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Study	Lee 2015[312,315]
Study type	Retrospective cohort study
Number of studies (number of participants)	(n=74)
Countries and setting	Conducted in Singapore; Setting: University Spine Centre, National University Hospital, Singapore
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 5 years: 4.92 (2.1-9.3) years intervention group; 7.43 (3.7-10.2) control group
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	LBP without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Define
Exclusion criteria	Define
Recruitment/selection of patients	Hospital record of all patients who underwent single-level lumbar artificial disc replacement or transforaminal lumbar interbody fusion between 2002 and 2007 were retrieved and analysed
Age, gender and ethnicity	Age - Mean (range): 34 (21-55) years intervention group; 52 (37-70) control group. Gender (M:F): Define. Ethnicity: Asian
Further population details	
Indirectness of population	No indirectness
Interventions	(n=54) Intervention 1: Disc replacement. Artificial disc replacement with ProDisc-L (Synthesis, Paoli, PA, USA) via retroperitoneal approach at the level of the affected disc. . Duration 5 years follow up. Concurrent medication/care: Not stated Comments: 16 patients did not have follow-up for a minimum of 2 years and were excluded from subsequent analyses (n=20) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Transforaminal lumbar interbody fusion (TLIF) via the standard open midline posterior approach. LIF cage. . Duration 5 years follow

Study	Lee 2015[312,315]
	up. Concurrent medication/care: Not stated Comments: 4 patients did not complete at least two years of follow-up and were excluded from subsequent analyses
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISC REPLACEMENT versus OTHER Protocol outcome 1: Revision rate at >4 months - Actual outcome for LBP without sciatica: Revision surgery at 5 years; Group 1: 4/38, Group 2: 2/16; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at ≤ 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at ≤ 4 months; Function (disability scores) at >4 months; Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Failure rate at >4 months

Study	Li 2013[320,321]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=68)
Countries and setting	Conducted in China; Setting: Department of Spine Surgery, Beijing Jishuitan Hospital, China
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 3 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	LBP with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Lower lumbar pain during activities with or without radicular leg pain; lateral recess or spinal nerve canal stenosis; failed conservative therapy in >3 months treatment; symptomatic DLBP and >= degree III disc as confirmed by discography; single level DLBP at L4/5 or L5/S1; no lumbar instability on radiography (sagittal plane translation > 3 mm, rotation > 15 degrees on flexion-extension radiographs

Study	Li 2013[320,321]
Exclusion criteria	trauma, congenital deformity, lumbar instability, previous lumbar spine surgery
Recruitment/selection of patients	68 consecutive patients enrolled from March 2007 to June 2010
Age, gender and ethnicity	Age - Mean (SD): Intervention group: males 38.3 (5.2), females (46.2 (8.5); control group: males 35.1 (7.5), females 39.6 (5.4). Gender (M:F): 26/42. Ethnicity: Not stated
Further population details	
Indirectness of population	No indirectness
Interventions	(n=34) Intervention 1: Disc replacement. Total disc replacement (Aesculap Activ-L, B. Braun, Germany) through a standard anterior retroperitoneal approach. Complete discectomy was performed, including the removal of cartilaginous vertebral endplates. . Duration 3 years follow up. Concurrent medication/care: Lumbar orthosis was preserved at month 1. Early rehabilitation was implemented. Comments: All patients completed follow up (n=34) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Spinal fusion via posterior midline approach. After pedicle screws insertion, lamina decompression of uni- or bi-lateral side was performed. Posteriolateral facet joint arthrodesis with autograft bones. . Duration 3 years follow up. Concurrent medication/care: Lumbar orthosis was preserved at month 3 for the spinal fusion patients. Early rehabilitation was implemented. Comments: All patients completed follow up
Funding	Funding not stated
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at ≤ 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at ≤ 4 months; Function (disability scores) at >4 months; Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Revision rate at >4 months; Failure rate at >4 months

Study	Nabhan 2007[399,399]

Study	Nabhan 2007[399,399]
Study type	Prospective cohort study
Number of studies (number of participants)	(n=24)
Countries and setting	Conducted in Germany; Setting: Neurosurgical department, University of Saarland, Homburg, Germany
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients suffering from symptomatic degenerative disc disease with low back pain; age 20-50; failed conservative treatment for at least 6 months; negative facet joint test; positive discography test; no more than one level of degenerative disc disease L3-S1
Exclusion criteria	Osteoporosis, instability, spinal stenosis, deformities, infection or tumor, pregnancy, previous lumbar fusion, inflammation, severe facet degeneration, compromised vertebral bodies
Recruitment/selection of patients	34 patients treated between May 2005 and February 2007
Age, gender and ethnicity	Age - Mean (SD): 45 (2.5). Gender (M:F): 13/11. Ethnicity: not stated
Further population details	
Indirectness of population	No indirectness
Interventions	(n=13) Intervention 1: Disc replacement. Disc replacement (Aesculap AG, Germany) via anterior retroperitoneal approach. . Duration 1 year follow up. Concurrent medication/care: If foraminal stenosis was identifies on preoperative MRI, this was removed. In case where posterior longitudinal ligament was ossified, this was released. (n=11) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Lumbar fusion (Xia II Spinal System) with TLIF-PEEK Cage (PLIF). . Duration 1 year follow up. Concurrent medication/care: Not stated
Funding	Funding not stated
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Quality of life at >4 months; Pain severity (VAS/NRS) at ≤ 4 months; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at ≤ 4 months; Function (disability scores) at >4 months; Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress

Study	Nabhan 2007[399,399]
	(HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Revision rate at >4 months; Failure rate at >4 months

Study (subsidiary papers)	Norwegian Disc Prosthesis Study trial: Hellum 2011[212] (Johnsen 2014[256], Hellum 2012[210], Hellum 2012[211], Johnsen 2013[255])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=173)
Countries and setting	Conducted in Norway; Setting: 5 Norwegian university hospitals
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	LBP without sciatica: Low back pain as the main symptom for at least a year
Subgroup analysis within study	Stratified then randomised: Randomisation was stratified by centre (5 university hospitals) and whether the patient had had previous surgery (microsurgical decompression)
Inclusion criteria	Age 22-55 years, back pain as the main symptom for at least 1 year, structured physiotherapy or chiropractic treatment for at least six months without significant effect, a score of at least 30% in the Oswestry disability index, and degenerative intervertebral disc changes in L4/L5 or L5/S1, or both. Degeneration had to be restricted to the two lower levels. The following degenerative changes were evaluated: at least 40% reduction of disc height, Modic changes type I and II, or both, high intensity zone in the disc, and morphological changes classified as changes in signal intensity in the disc of grade 3 or 4. The disc was classified as degenerative if the first criterion alone or at least two changes were found on magnetic resonance imaging.
Exclusion criteria	Degeneration established in more than 2 levels; symptoms of spinal stenosis, generalized chronic pain; disc protrusion or recess stenosis with involvement of nerve roots; spondilolysis with or without spondylolysthesis; arthritis; former fracture of L1-S1; ongoing psychiatric or somatic disease that excluded either one or both treatment alternatives; not be able to understand Norwegian language; drug abuse; osteoporosis; congenital or acquired deformity. To be classified as normal, disc height had to be more than 60% of normal and all other criteria of degenerative disease disc absent. Degeneration of the facet joints was not an exclusion criterion, but symptoms of nerve root involvement were.

Study (subsidiary papers)	Norwegian Disc Prosthesis Study trial: Hellum 2011[212] (Johnsen 2014[256], Hellum 2012[210], Hellum 2012[211], Johnsen 2013[255])
Recruitment/selection of patients	Patients were included in the periodd between April 2004 and May 2007 and were treated within 3 months after randomisation
Age, gender and ethnicity	Age - Mean (SD): Intervention group> 41.1 (7.1) years; control group 40.8 (7.1) years. Gender (M:F): 82/91. Ethnicity: Not stated
Further population details	
Extra comments	Discography testing for pain provocation or imaging or facet injections was not used as a tool for inclusion or exclusion. Baseline values (mean (SD)) for intervention and control group, respectively: months of duration of back pain 76(72), 85(74); ODI score 41.8(9.1), 42.8(9.3); low back pain score 64.9(15.3), 73.6(13.9); SF-36 physical function 52.7(17.6), 50.6(17.7); SF-36 role physical 25.3(24.2), 23.9(18.7); SF-36 bodily pain 24.9(16.5), 24.4(12.1); SF-36 general health 57.9(19.7); 55.9(19.9); SF-36 vitality 37.8(20.2), 33.1(19.9); SF-36 social function 53.0(30.6), 57.6(26.7); SF-36 role emotion 72.5(33.3), 67.6(32.7); SF-36 mental health 71.7(18.0), 65.8(18.9); SF-36 physical component summary score 30.5(7.1), 30.8(6.5); SF-36 mental component summary score 47.7(13.0), 45.3(13.2).
Indirectness of population	No indirectness: Degeneration of the facet joints was not an exclusion criteria (agreed by GDG member not a reason for exclusion of paper)
Interventions	(n=86) Intervention 1: Disc replacement. Replacement of the degenerativ intervertebral lumbar disc with an artificial lumbar disc (ProDisc II, Synthes Spine). Surgeons used a Pfannenstiel or para-median incision with a retroperitoneal approach. One surgeon at each centre had main responsibility for the operation. Surgeons were required to have inserted at least 6 disc prosthese before performing surgery. . Duration 2 years follow-up. Concurrent medication/care: There were no major postoperative restrictions. Patients were not referred for post-operative physiotherapy, but at 6 weeks follow-up they could be referred for physiotherapy if required, emphasising general mobilisation and non-specific exercises. Comments: 9 patients did not receive surgery (3 had social reasons for not receiving treatment, 1 had work-related economic reasons, 5 wanted guaranteed success). 4 dropped out after treatment (1 had serious complications with a vascular injury and leg amputation, 2 did not want to attend follow-up and one could not be contacted). (n=87) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Rehabilitation, based on the treatment model described by Brox et al (Spine, 2003): a 3-elements multidisciplinary biopsychosocial rehabilitation programme (MBR) directed by a team of physiotherapists and specialists in physical medicine and rehabilitation. Other specialists (psychologist, nurse, social worker etc) could complete the team. The programme was organised as an outpatient treatment in groups and lasted for approx. 60 hours over 3 to 5 weeks for 12-15 days. Cognitive component: challenging patients' thoughts about, and participation in, physical activities previously labelled as not recommended (lifting, jumping, vacuum cleaning, dancing, and ball games). Physical component: daily

Study (subsidiary papers)	Norwegian Disc Prosthesis Study trial: Hellum 2011[212] (Johnsen 2014[256], Hellum 2012[210], Hellum 2012[211], Johnsen 2013[255])
	workouts for increased physical capacity *endurance, strength, coordination, specific training of abdominal mucles and the lumbar multifidus muscles). Education component: lectures and individual discussions focusing on relevant topics (anatomy and physiological aspect of the back, diagnostics, imaging, pain medicine, normal reactions, coping strategies, family and social life, working conditions). Follow-up consultations at 6 weeks, 3 and 6 months and 1 year.. Duration 2 years follow-up. Concurrent medication/care: Not stated Comments: 7 patients did not receive treatment (one had missing baseline data, 2 did not receive treatment for work-related economic reasons, 1 was treated elsewhere with surgery for lumbar disc herniation, 1 had social reasons, 2 needed to travel long distance/could not stay at a hotel). 6 patients dropped out during treatment (1 found the rehabilitation not good enough, 1 had lumbar disc herniation during treatment and underwent microdiscectomy, 1 did not manage to go through the training program, 1 developed diabetes during or just before treatment, 1 had psychosocial reasons, 1 had hypertension and the family doctor did not recommend training). 8 dropped out after treatment (1 took part in another study, 1 did not complete the questionnaire, 1 moved, 1 died of cancer, 3 did not want to attend follow-up, 1 dropped out for unknown reason)
Funding	Academic or government funding (The study was funded by the South Eaastern Norway Regional Health Authoruty and EXTRA funds from the Norwegian Fundation for Health and Rehabilitation, through the Norwegian Back Pain Association.)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISC REPLACEMENT versus 3 ELEMENTS MBR

Protocol outcome 1: Quality of life at >4 months
- Actual outcome for LBP with/without sciatica: SF-36 physical component summary at 2 years; Group 1: mean 43.3 (SD 11.7); n=86, Group 2: mean 37.7 (SD 10.1); n=86; SF-36 physical component summary 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 mental component summary at 2 years; Group 1: mean 50.7 (SD 11.6); n=86, Group 2: mean 48.6 (SD 12.8); n=86; SF-36 mental component summary 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: EQ-5D at 2 years; Group 1: mean 0.69 (SD 0.33); n=86, Group 2: mean 0.63 (SD 0.28); n=86; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 physical component summary at 1 year; Group 1: mean 42.8 (SD 12.2); n=86, Group 2: mean 37.3 (SD 11); n=86; SF-36 physical component summary 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: SF-36 mental component summary at 1 year; Group 1: mean 50.2 (SD 12); n=86, Group 2: mean 49.2 (SD 13.2); n=86; SF-36 mental component summary score 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: EQ-5D at 1 year; Group 1: mean 0.68 (SD 0.34); n=86, Group 2: mean 0.55 (SD 0.32); n=86; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study (subsidiary papers)	Norwegian Disc Prosthesis Study trial: Hellum 2011[212] (Johnsen 2014[256], Hellum 2012[210], Hellum 2012[211], Johnsen 2013[255])
Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for LBP with/without sciatica: Back pain VAS at 1 year; Group 1: mean 3.56 (SD 2.86); n=86, Group 2: mean 5.32 (SD 2.84); n=86; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Back pain VAS at 2 years; Group 1: mean 3.54 (SD 2.91); n=86, Group 2: mean 4.97 (SD 2.84); n=86; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at ≤ 4 months - Actual outcome for LBP with/without sciatica: Oswestry disability index (ODI) at 3 months; Group 1: mean 21.5 (SD 14.1); n=86, Group 2: mean 30.6 (SD 13.1); n=86; Oswestry disability index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome for LBP with/without sciatica: Oswestry disability index (ODI) at 2 years; Group 1: mean 19.8 (SD 16.7); n=86, Group 2: mean 26.7 (SD 14.5); n=86; Oswestry disability index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Oswestry disability index (ODI) at 1 year; Group 1: mean 20.3 (SD 17.2); n=86, Group 2: mean 29.2 (SD 16.1); n=86; Osswestry disability index (ODI) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Pain severity (VAS/NRS) at ≤ 4 months; Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Revision rate at >4 months; Failure rate at >4 months

Study	Sasso 2008[460,461]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	(n=76)
Countries and setting	Conducted in USA; Setting: Indiana University School of Medicine, Indianapolis, and Neuroscience Specialists, Oklahoma City, USA
Line of therapy	Mixed line
Duration of study	Follow up (post intervention): 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis: 'To confirm the diagnosis of degenerative disc disease (DDD), the patient

Study	Sasso 2008[460,461]
	had to report a greater percentage of axial pain than radicular pain, and to have a magnetic resonance imaging, computed tomography (CT), myelography, or lateral flexion/extension films demonstrating either (1) translational instability defined as greater than or equal to 3 mm, (2) angular instability defined as greater than or equal to 5 degrees, or (3) disc height decreased by greater than 2 mm compared to adjacent disc height. Preoperative discography was not required in the design of the study; however, the senior authors (RCS and MH) used this modality exclusively for the diagnosis of DDD before any surgical intervention.'
Stratum	LBP with/without sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients must be skeletally mature, between 18 and 60 years of age, and have disc degenerative disease (DDD) at a single level between L1 and S1.To confirm the diagnosis of degenerative disc disease (DDD), the patient had to report a greater percentage of axial pain than radicular pain, and to have a magnetic resonance imaging, computed tomography (CT), myelography, or lateral flexion/extension films demonstrating either (1) translational instability defined as greater than or equal to 3 mm, (2) angular instability defined as greater than or equal to 5 degrees, or (3) disc height decreased by greater than 2 mm compared to adjacent disc height. Before enrollment, patients were administered ODI and VAS questionnaires. To be included in the study, a patient had to report VAS and ODI scores of at least 40 on a 0-100 scale. In addition, the patient must have completed and failed at least 6 months of conservative treatment.
Exclusion criteria	Patients were excluded if they had previous bilateral lumbar decompression or a unilateral decompression in which greater than 50% of the facet had been resected, microdiscectomy if a facet fracture was suspected, or any lumbar fusion. Patients having any of the following conditions were also excluded: spondylolysis or isthmic spondylolisthesis at the level to be treated or at an adjacent level, moderate to severe spinal stenosis, lumbar scoliosis greater than 10 degrees, confirmed facet joint arthritic changes at the level to be treated or at an adjacent level, or significant motion segment instability. Other exclusion criteria were Paget disease, osteopenia (including osteoporosis or osteomalacia), or any other metabolic bone disease; long-term use of corticosteroids; rheumatoid arthritis, acrive hepatitis, acquired immune deficiency syndrome, ARC, HIV virus; active malignancy within the last 15 years; cervical myelopathy; or BMI greater than 40.
Recruitment/selection of patients	Enrolled by the authors at two study sites.
Age, gender and ethnicity	Age - Other: Intervention group mean 36 years; control group mean 41 years. Gender (M:F): Intervention group 23/21; control group 10/13. Ethnicity: Not stated
Further population details	
Extra comments	Intervention group: average BMI of 28, 7 (16%) smokers. Control group: average BMI of 28, 4 (17%) smokers.. The authors participated in a prospective, randomised, controlled, multicenter investigational device exemption study.

Study	Sasso 2008[460,461]
	The entire study cohort includes 401 patients randomised to either the Flexicore group or the fusion group (control) using a ratio of 2:1. The report describes the initial results of the 76 patients enrolled by the authors at two study sites. Baseline values (avreage) for intervention and control group, respectively: ODI 62, 58; VAS 86, 82.
Indirectness of population	No indirectness
Interventions	(n=50) Intervention 1: Disc replacement. FlexiCore Intervertebral Disc (Stryker Spine, Allendale, NJ). Duration 2 years follow up. Concurrent medication/care: Not stated Comments: 32 surgeries were performed at L5-S1, 12 were performed at L4-L5. 4 patients withdrew from intervention, 1 was later assigned to the control group, 1 who was randomised to the Flexicore group instead received a fusion. (n=26) Intervention 2: Other invasive and non-invasive treatments included in this guideline - Other. Fusion surgery. Each patient in the fusion treatment group received a circumferential fusion using a femoral ring allograft, posterior pedicle screw instrumentation, and autogenous iliac crest bone graft, except for one patient who received an anterior lumbar interbody fusion with LT cages. . Duration 2 years follow up. Concurrent medication/care: Not stated. Comments: 17 of the control surgeries were performed at L5-S1, 5 were performed at L4-L5, one was a 2-level fusion performed at L4-L5 and L5-S1. 5 patients withdrew before surgery, one patient initially assigned to the intervention group was later assigned to the control group, one patient who was randomised to the intervention group instead received a fusion
Funding	Study funded by industry ('Corporate/industry funds were received in support of this work, No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this manuscript')

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISC REPLACEMENT versus FUSION

Protocol outcome 1: Pain severity (VAS/NRS) at ≤ 4 months
- Actual outcome for LBP with/without sciatica: Visual Analog Scale (VAS) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for LBP with/without sciatica: Visual Analog Scale (VAS) at 2 years; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for LBP with/without sciatica: Visual Analog Scale (VAS) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at ≤ 4 months
- Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 3 months; Risk of bias: Very high; Indirectness of outcome: No indirectness

Study	Sasso 2008[460,461]
Protocol outcome 4: Function (disability scores) at >4 months - Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 2 years; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for LBP with/without sciatica: Oswestry Disability Index (ODI) at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at ≤ 4 months; Quality of life at >4 months; Responder criteria at ≤ 4 months; Responder criteria at >4 months; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at ≤ 4 months; Healthcare utilisation at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at ≤ 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at >4 months; Adverse events (mortality) at ≤ 4 months; Adverse events (mortality) at >4 months; Adverse events (morbidity) at ≤ 4 months; Adverse events (morbidity) at >4 months; Failure rate at ≤ 4 months; Revision rate at ≤ 4 months; Revision rate at >4 months; Failure rate at >4 months

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H20 Spinal fusion

Study (subsidiary papers)	Berg 2009[34] (Berg 2011[33], Fritzell 2011[150], Skold 2013[484], Berg 2009[35])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	4 (n=152)
Countries and setting	Conducted in Sweden; Setting: Stockholm Spine Centre, Stocholm, Sweden
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: LBP with or without leg pain. If leg pain occured, then LBP should dominate
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients with age ranging from 20-55 years.LBP with or without leg pain for more than 1 year. If leg pain occured, then LBP should dominate. Conservative treatment scheduled for more than 3 months had failed. Conformation of disc degneration on MRI. ODI > 30 and pain (VAS)>50/100 the week before inclusion. signed informed consent and open mind to the two treatment options.
Exclusion criteria	Spinal Stenosis requiring decompression. moderate or worse facet joint arthiritis. Three or more painful levels at clinical examination. No obvious painful level, at diagnostic injection evaluation(if done). Spondylolysis/olsthesis.Degeneratibe Spondylolisthesis >3 mm. Major deformity. Manifest osteoporosis. Previous

	lumbar fusion or decompression with postoperative instability. compromised vertebral body. Previous spinal infection or tumour.Inability to understand infotrmation. Language difficulties.Preganancy or other medical condition that would be contraiindication to surgery
Recruitment/selection of patients	All patients fulfilling inclusion criteria were consecutively selected for the study except those with one belief that one treatment was better than the other
Age, gender and ethnicity	Age - Mean (SD): 39.4 (8.0). Gender (M:F): 62:90. Ethnicity: Not described
Further population details	
Extra comments	here were no differences in the groups in age, gender,,smokinh status, baseline ODI, surgical levls, prior surgical treatment, or back pain and function.A statistically significant difference after randomisation between the treatment groupos after randomisation regarding leg pain was found. 16 patients smoked during the study (8 in each group). 41 patients underwent preoperative diagnostic injection procedures, provocative discography and disc block to identify pain generating levels when there was clinical uncertainty whethyer to treat one or two levels.
Indirectness of population	No indirectness
Interventions	(n=80) Intervention 1: Surgery. Total Disc Repalcement.Disc was completely removed except for the outer lateral annulus. Disc space was distracted and posterior ligament released ti ensure mobilisation of the segment.For both groups, walking, together with a small programme to activate back and trunk muscles was recommended.All patients were referred to outpatient physiotherapy. Duration 2 years. Concurrent medication/care: None reported. 16 smoker in total (8 in each group) Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear (n=72) Intervention 2: Surgery. Fusions were either PLIF or PLF according to surgeons habbit. 44 patients in the Fusion group had PLF surgery whilst 28 had PLIF without posterior fusion. For both groups, walking, together with a small programme to activate back and trunk muscles was recommended.All patients were referred to outpatient physiotherapy. Duration 2 years. Concurrent medication/care: dd Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION GROUP versus TOTAL DISC REPLACEMENT

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: EQ5D at 2 years; Group 1: mean 0.69 (SD 0.25); n=72, Group 2: mean 0.67 (SD 0.33); n=80; Risk of bias: Very high; Indirectness of outcome: No indirectness

- Actual outcome: SF36 at 2 years; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: EQ5D at 1 year; Group 1: mean 0.63 (SD 0.27); n=72, Group 2: mean 0.71 (SD 0.28); n=80; EQ5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF36 at 1 year; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain (VAS) at 2 years; Group 1: mean 29.2 (SD 24.6); n=72, Group 2: mean 25.4 (SD 29.8); n=80; VAS(back pain) 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Back pain (VAS) at 1 year; Group 1: mean 33.4 (SD 26.8); n=72, Group 2: mean 25.5 (SD 26.5); n=80; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: ODI % at 2 years; Group 1: mean 23 (SD 17); n=72, Group 2: mean 20 (SD 19.6); n=80; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: ODI % at 1 year; Group 1: mean 24.9 (SD 16.1); n=72, Group 2: mean 19.5 (SD 18.7); n=80; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (post-op complications) at follow-up - Actual outcome: Complications at 2 years; Group 1: 15/72, Group 2: 14/80; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Complications at 5 years; Group 1: 9/72, Group 2: 13/80; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up - Actual outcome: Reoperation at an adjacent level at 2 years; Group 1: 6/72, Group 2: 1/80; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Revision rate at follow-up - Actual outcome: Reoperations at 5 years; Group 1: 7/72, Group 2: 9/80; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Reoperations at 2 years; Group 1: 7/72, Group 2: 8/80; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study (subsidiary papers)	Brox 2003[58] (Froholdt 2012[154], Brox 2010[56], Froholdt 2011[153], Keller 2004[268], Keller 2008[269])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	5 (n=64)
Countries and setting	Conducted in Norway; Setting: Multi-centre trial including departments of orthopedic surgery in Norway
Line of therapy	2nd line
Duration of study	Intervention + follow up: 1 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: spinal fusion versus other treatment
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 25–60 years.Pain duration for at least 1 year.score of at least 30 of 100 points on the ODI and degeneration at L4–L5 and/or L5–S1 (spondylosis) on plain radiographs.
Exclusion criteria	Widespread myofascial pain.Spinal stenosis with reduced walking distance and neurologic signs.Recurrent disc herniation or lateral recess stenosis with clinical signs of radiculopathy.Inflammatory disease.Previous spinal fracture.Previous surgery of the spine.Pelvic pain.Generalized disc degeneration on plain radiographic examination.Ongoing somatic or psychiatric disease that excluded either one or both treatment alternatives.Registered medical abuse.Reluctance to accept one or both of the treatment regimens
Recruitment/selection of patients	Patients with CLBP, consecutively referred from the departments of orthopedic surgery, neurosurgery and physical medicine and rehabilitation from all regions in Norway during the period 1997–2000 were eligible to participate in the study
Age, gender and ethnicity	Age - Other: age (yr)=44.1 (8.1) ub Fusion group and 42.4(7.8) in MBR group. Gender (M:F): 25:39. Ethnicity:
Further population details	
Extra comments	Baseline Back pain (VAS) values for the Fusion group were 62.1(14.5) and for the MBR was 64.1(13.7).Baseline ODI values for the Fusion group were 42.0(11.0) and for the MBR was 43.0(13.0).Baseline GFS values for the Fusion group were 35.9(18.6) and for the MBR was 44.6(13.7).. The groups did not differ in age, duration of disease, or occupational education
Indirectness of population	No indirectness
Interventions	(n=35) Intervention 1: Surgery. Posterolateral fusion with transpedicular screws of the L4-L5 and/or L5-S1 segment. autologoiys bone was used in all cases. Postoperative rehabilitation was at the choice of the surgeon. Patients had follow-up consultations with the surgeon at 3 and 6 months. At 3 month follow up visit, the surgeon customarily

	prescribed physiotherapy, including excercises (number of which varied). Duration 1 years. Concurrent medication/care: Consumption of analgesics, anxiololytics, hypnotics, sedatives, antidepressants, anti-inflammatory agents and muscle relaxants were recorded 1 week before follow up and daily till 1 year follow up. consumption of each drug was calculated and daily doses defined. Further details: 1. Number of levels fused: >1 level (L4-L5 and/or L5-S1). (n=26) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Duration of supervised treatment period was 1 week at first, followed by 2 weeks at home and another supervised period of two weeks. Average duration of the rehabilitation program was about 25 hours per week. Patients stayed at a patient hotel and treatments were conducted in the outpatient clinic during the day. Three daily workouts were performed; aerobics or outdoor activities, water gymnastics, and individual exercises. Endurance and co-ordination exercises were also recommended. Additionally, individual consultations, group lessons and discussions were given. During the first week, a specialist in physical medicine gave a lecture to the patients to describe pain receptors in the discs, facet joints and muscles; the reflexive interplay between various structures and the ability to suppress and reinforce various peripheral stimuli. Fear avoidance techniques were used to reinforce that patients could not harm the discs by engaging in normal activities and patients were constantly challenged in their thoughts about participation in physical activities previously labelled as not recommended.. Duration 1 year. Concurrent medication/care: consumption of analgesics, anxiololytics, hypnotics, sedatives, antidepressants, anti-inflammatory agents and muscle relaxants were recorded 1 week before follow up and daily till 1 year follow up. consumption of each drug was calculated and daily doses defined. Further details: 1. Number of levels fused:
Funding	Academic or government funding (Federal or foundation funds used were reciveved in support of the work)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION GROUP versus 3 ELEMENT MBR GROUP

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back Pain(VAS) at 1 year; Group 1: mean 39.4 (SD 25.5); n=32, Group 2: mean 48.7 (SD 24); n=25; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: ODI at 1 year; Group 1: mean 26.4 (SD 16.4); n=32, Group 2: mean 29.7 (SD 19.6); n=25; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: General Function Score at 1 year; Group 1: mean 18.3 (SD 17.3); n=32, Group 2: mean 22.6 (SD 18.9); n=25; GFS 0-100 Top=High is poor outcome; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 3: Revision rate at follow-up - Actual outcome: Re-operations at 4 year; Risk of bias: Very high; Indirectness of outcome: Serious indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (post-op complications) at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	Brox 2006[57]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=57)
Countries and setting	Conducted in Norway; Setting: Multi-centre trial including departments of orthopedic surgery in Norway
Line of therapy	2nd line
Duration of study	Intervention + follow up: 1 year
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: Spinal Fusion versus Other treatment
Subgroup analysis within study	Not applicable
Inclusion criteria	Age 25–60 years.Pain duration for at least 1 year.score of at least 30 of 100 points on the ODI and degeneration at L4–L5 and/or L5–S1 (spondylosis) on plain radiographs.
Exclusion criteria	Widespread myofascial pain.Spinal stenosis with reduced walking distance and neurologic signs.Recurrent disc herniation or lateral recess stenosis with clinical signs of radiculopathy.Inflammatory disease.Previous spinal fracture.Previous surgery of the spine.Pelvic pain.Generalized disc degeneration on plain radiographic examination.Ongoing somatic or psychiatric disease that excluded either one or both treatment alternatives.Registered medical abuse.Reluctance to accept one or both of the treatment regimens
Recruitment/selection of patients	Patients with CLBP, consecutively referred from the departments of orthopedic surgery, neurosurgery and physical medicine and rehabilitation from all regions in Norway during the period 1997–2000 were eligible to participate in the study
Age, gender and ethnicity	Age - Median (range): 42.5(35-50). Gender (M:F): 31:29. Ethnicity:
Further population details	
Extra comments	Baseline Back pain (VAS) values for the Fusion group were 64.6(15.4) and for the MBR was 64.7(11.1).Baseline ODI values for the Fusion group were 47.0(9.4) and for the MBR was 45.1(9.1).Baseline GFS values for the Fusion group were 40.3(20.0) and for the MBR was 39.1(17.1).. Study design and methods except the history of surgery for disc herniation are similar in this study and Brox 2003.The purpose of the present study was to compare the effect of transpedicular fusion with cognitive intervention and exercise in a prospective randomized study of patients with previous surgery for disc herniation.
Indirectness of population	No indirectness
Interventions	(n=29) Intervention 1: Surgery. Patients in the fusion group were operated on by nine experienced back surgeons at

	four different hospital departments.The fusion procedure used was posterolateral fusion with transpedicular screws of either the L4–L5 and/or the L5–S1 segment.Postoperative rehabilitation was at the choice of the surgeon. Patients had follow-up consultations with the surgeon at 3 and 6 months. At 3 month follow up visit, the surgeon customarily prescribed physiotherapy, including excercises (number of which varied). Duration 1 year. Concurrent medication/care: Consumption of analgesics, anxiololytics, hypnotics, sedatives, antidepressants, anti-inflammatory agents and muscle relaxants were recorded 1 week before follow up and daily till 1 year follow up. Consumption of each drug was calculated and daily doses defined. Further details: 1. Number of levels fused: >1 level (L4-L5 and/or L5-S1). (n=31) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Duration of supervised treatment period was 1 week at first, followed by 2 weeks at home and another supervised period of two weeks. Average duration of the rehabilitation program was about 25 hours per week. Patients stayed at a patient hotel and treatments were conducted in the outpatient clinic during the day. Three daily workouts were performed; aerobics or outdoor activities, water gymnastics, and individual exercises. Endurance and co-ordination exercises were also recommended. Additionally, individual consultations, group lessons and discussions were given. During the first week, a specialist in physical medicine gave a lecture to the patients to describe pain receptors in the discs, facet joints and muscles; the reflexive interplay between various structures and the ability to suppress and reinforce various peripheral stimuli. Fear avoidance techniques were used to reinforce that patients could not harm the discs by engaging in normal activities and patients were constantly challenged in their thoughts about participation in physical activities previously labelled as not recommended.. Duration 1 year. Concurrent medication/care: Consumption of analgesics, anxiololytics, hypnotics, sedatives, antidepressants, anti-inflammatory agents and muscle relaxants were recorded 1 week before follow up and daily till 1 year follow up. Consumption of each drug was calculated and daily doses defined. Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear
Funding	Academic or government funding (study was supported by grants from the Norwegian back association and Foundation for Health and Rehabilitation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION versus 3 ELEMENT MBR

Protocol outcome 1: Function (disability scores) at follow-up
- Actual outcome: ODI at 1 year; Group 1: mean 38.1 (SD 20.1); n=28, Group 2: mean 32.3 (SD 19.1); n=29; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: General Function Score at 1 year; Group 1: mean 30.8 (SD 21.6); n=28, Group 2: mean 23.8 (SD 21); n=29; GFS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Back Pain (VAS) at 1 year; Group 1: mean 50.7 (SD 27.3); n=28, Group 2: mean 49.5 (SD 20); n=29; Pain(VAS) 0-100 Top=High is poor outcome; Risk

of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (post-op complications) at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	Fritzell 2001[152]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=294)
Countries and setting	Conducted in Sweden; Setting: 19 swedish orthopedic departments during the period 1992-1998
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall
Subgroup analysis within study	Not applicable
Inclusion criteria	atients aged 25–65 years and of both sexes with severe CLBP.Pain duration at least 2 years.The treating surgeon should interpret the pain as emanating from L4–L5 and/or L5–S1 using the patients' history, physical examination, and radiographic signs.The patient must have been on sick leave (or have had "equivalent" major disability) for at least 1 year, and non- surgical treatment efforts should have been unsuccessful.A score of at least 7 of 10 points for 10 questions reflecting "Function and Working Disability," where 10 was equivalent to "severe pain, no function" in combination with "total handicap, no working ability". Degenerative changes at L4 –L5 and/or L5–S1 ("spondy- losis") on plain radiographs and \ or computed tomography (CT), and/or magnetic resonance imaging (MRI). The presence of a herniated disc was allowed in the absence of clinical signs of nerve root compression and Good understanding of the swedish language.
Exclusion criteria	bvious ongoing psychiatric illness.Previous spine surgery except for successful removal of a herniated disc more than 2 years before entering the study and with no persistent nerve root symptoms. Specific radiologic findings, such as spondylolisthesis, new or old fractures, infection, inflammatory process, or neoplasm.Obvious painful and disabling arthritic hipjoints and also anamnestic and radiologic signs of spinal stenosis.
Recruitment/selection of patients	consecutively referred patients from primary care physicians and other clinicians to a spine surgeon at 19 orthopedic departments during the period 1992-1998
Age, gender and ethnicity	Age - Other: age (range)=43.5(25-64 . Gender (M:F): 145:149. Ethnicity:
Further population details	
Extra comments	Baseline VAS back for the surgical group was 64.2(14.3) and 62.6 (14.3) in the nonsurgical groups.Baseline ODI for the surgical group was 47.3(11.4) and 48.4 (11.9) in the nonsurgical groups. Baseline MVAS for the surgical group was 63.7(11.3) and 65.5 (11.5) in the nonsurgical groups.Baseline GFS for the surgical group was 49.1(15.9) and 47.6 (16.3) in the nonsurgical groups.. Patients in both groups were matched for age, sex, mean pain duration and mean time of

	sick leave. Co-morbidities was higher surgical group and there were more smokers in the non-surgical group
Indirectness of population	No indirectness
Interventions	(n=222) Intervention 1: Usual care. Non surgical treatment was constructed on a consensus basis to serve as a guideline within the study.Main component was physical therapy which could be supplemented with other forms of treatment such as information and education, treatment aimed at pain relief (TENS,acupuncture, injections), cognitive and functional training and coping strategies. Thus treatment could vary within broad but commonly used limits reflecting the non-surgical treatment policy in the society. Duration 2 years. Concurrent medication/care: Not stated Further details: 1. Number of levels fused: >1 level (L4-L5 and/or L5-S1). (n=72) Intervention 2: Surgery. Group 1a=PLF Group 1b=PLF+ external fixation device and Group 1c=circumferential group (ALIF or PLF). 26 surgeons carried out the fusions and only the segments L4-L5 and /or L5-S1 were addressed.. Duration 2 years. Concurrent medication/care: Not stated Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear
Funding	Study funded by industry (Financial support was granted by the Acromed Corporation and Ossano Scandanavia)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SURGICAL GROUPS versus NON-SURGICAL GROUP

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back Pain(VAS) at 2 years; Group 1: mean 43.2 (SD 25.2); n=201, Group 2: mean 58.3 (SD 18.8); n=63; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome: ODI at 2 years; Group 1: mean 35.7 (SD 18); n=201, Group 2: mean 45.6 (SD 16.1); n=63; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Million Visual Analogue Score (MVAS) at 2 years; Group 1: mean 45.6 (SD 23.1); n=201, Group 2: mean 65.5 (SD 11.5); n=63; MVAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: General Function Score (GFS) at 2 years; Group 1: mean 34.1 (SD 22.4); n=201, Group 2: mean 45.5 (SD 20.3); n=63; GFS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Adverse events (post-op complications) at follow-up
- Actual outcome: Complications at 2 years; Group 1: 48/211, Group 2: 0/72; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Revision rate at follow-up

- Actual outcome: Reoperations at 2 years; Group 1: 16/211, Group 2: 0/72; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	Gornet 2011[177]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=577)
Countries and setting	Conducted in USA; Setting: 4 spine clinics in the US
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: Discogenic Back pain with/without leg pain
Subgroup analysis within study	Not applicable: NA
Inclusion criteria	Patients were aged 18-70 years. Had degenerative disc disease;Discogenic Back pain with/without leg pain. Had one more of the following: modic changes, high-intensityu zones in the annulus, loss of disc height, decreased hydration of the disc. Had single level, symptomatic involvement L4-S1 ewquiring surgery. Inatct facet joints at the involved vertebral levls.Preoperative ODI of atleast 30 and back pain score of atleast 20 (intesity x duration) and were not responsive to nonoperative treatment for a period of 6 months
Exclusion criteria	Primary diagnosis of a spinal disorder other than the degenerative disc disease at the involved level, previous posterior lumbar fusion at the involved level, prior posterior lumbar surgery with significant morbidity.Spondylolesthesis, spinal can sytenosis, rotary scoliosis at the involved level. Any osteoperosis.Any condition requiring postoperative medications that might interfere with fusion. Active infection, malignency,autoimmune or other disease that might preclude accurate clinical evaluation.
Recruitment/selection of patients	From April 2003 to August 2004, stydy sites with institutional review board approvals enrolled eligible patients according the inclusion/exclusion criteria
Age, gender and ethnicity	Age - Mean (range): 40.1(18-70). Gender (M:F): 291:286. Ethnicity: mainly white
Further population details	
Extra comments	Baseline ODI , mean (SD) for Disc arthroplasty group was 53.3 (13.0) and 54.5(12.6) in the Fusion group.Baseline Back pain(NRS) , mean (SD) for Disc arthroplasty group was 71.7 (18.9) and 73.3(19.4) in the Fusion group. Baseline SF36 (Physical component) , mean (SD) for Disc arthroplasty group was 27.9 (6.1) and 27.3(5.6) in the Fusion group.Baseline SF36 (Mental component) , mean (SD) for Disc arthroplasty group was 43.2 (12.4) and 41.7(11.9) in the Fusion group.. The two treatment groups were similar demographically and preoperative evaluations of clinical endpoints were similar in each treatment group. Preoperative medical cionditions, type of medications being used, number of previous lumbar surfgeries and waddell signs were all comparable. However, preoperative medication use, the disc arthroplasty had a

	higher percentage of patients using non-narcotic medications before surgery
Indirectness of population	No indirectness
Interventions	(n=405) Intervention 1: Surgery. Lumbar disc arthroplasty. All patients underwent an open transperitoneal or a retroperitoneal approach to the lumboscaral spine and a complete anterior disectomy was perfomed. . Duration 2 years. Concurrent medication/care: None reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear (n=172) Intervention 2: Surgery. Anterior interbody fusion with rhBMP-2 on an absorbable collagen sponge and tapered fusion cages.All patients underwent single level open interior surgical procedure between the L4 and S1 levels. Inatct facet joints at the involved vertebral level. Duration 2 years. Concurrent medication/care: None reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear
Funding	Study funded by industry

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION versus DISC ARTHROPLASTY

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF36 (Physical component summary , PCS) at 2 years; Group 1: mean 45.1 (SD 12.2); n=405, Group 2: mean 42.1 (SD 12.1); n=172; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF36 (Mental Component Summary , MCS) at 2 years; Group 1: mean 51.4 (SD 11); n=405, Group 2: mean 50 (SD 11); n=172; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF36 (Physical component summary , PCS) at 1 year; Group 1: mean 44.7 (SD 11.7); n=405, Group 2: mean 41.6 (SD 11.7); n=172; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF36 (Physical component summary , PCS) at 3 month; Group 1: mean 41.4 (SD 11); n=405, Group 2: mean 36.9 (SD 9); n=172; sf36 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF36 (Mental Component Summary , MCS) at 1 year; Group 1: mean 51.3 (SD 10.9); n=405, Group 2: mean 49.3 (SD 11.7); n=172; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF36 (Mental Component Summary , MCS) at 3 month; Group 1: mean 51.3 (SD 11.2); n=405, Group 2: mean 48.5 (SD 12.1); n=172; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Back pain (NRS) at 3 month; Group 1: mean 17.8 (SD 22.8); n=405, Group 2: mean 27 (SD 24.2); n=172; NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Back pain (NRS) at 2 years; Group 1: mean 18 (SD 26.4); n=405, Group 2: mean 23.6 (SD 27.7); n=172; NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Back pain (NRS) at 1 year; Group 1: mean 17.6 (SD 24.3); n=405, Group 2: mean 24.7 (SD 27.1); n=172; NRS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome: Oswestry Disability Index Questionnaire at 2 years; Group 1: mean 19.4 (SD 20.2); n=405, Group 2: mean 24.8 (SD 19.6); n=172; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Disability Index Questionnaire at 3 month; Group 1: mean 23.4 (SD 18.8); n=405, Group 2: mean 32 (SD 16.8); n=172; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Oswestry Disability Index Questionnaire at 1 year; Group 1: mean 19.2 (SD 18.2); n=405, Group 2: mean 25.3 (SD 19.8); n=172; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (mortality) at follow-up - Actual outcome: Adverse Events-Mortality at 2 years; Group 1: 3/405, Group 2: 1/172; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Adverse events (post-op complications) at follow-up - Actual outcome: Adverse Events-Post-op complications at 2 years; Group 1: 345/405, Group 2: 153/172; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	Lee 2013[309]
Study type	Retrospective cohort study
Number of studies (number of participants)	1 (n=50)
Countries and setting	Conducted in South Korea; Setting: Department of Neurosurgery, Spine Center, Seoul National University, Bundang Hospital, Republic of Korea
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: Spinal stenosis
Subgroup analysis within study	Not applicable
Inclusion criteria	Define
Exclusion criteria	Define
Recruitment/selection of patients	retrospective review of all elderly patients diagnosed with spinal stenosis that underwent fusion between May 2003 and September 2010
Age, gender and ethnicity	Age - Median (range): Mean age in the Fusion Group was 79.7 (75-93) and 79.2 (75-90) in the Decompression Group. Gender (M:F): Define. Ethnicity: Suth Korean
Further population details	
Extra comments	Baseline VAS=
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Surgery. PLIF procedure was performed as follows: 1) midline skin incision and paraspinal muscle splittiing 2) bilateral partial hemilaminectomy and flavectomy 3) discectomy 4) cage packed with an autologous bone insertion and 5) insertion and fixation of pedicle screws . Duration 2 years. Concurrent medication/care: none reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear (n=25) Intervention 2: Surgery. DLF procedure was performed as follows: 1) midline skin incision and paraspinal muscle splittiing 2) bilateral partial hemilaminectomy and flavectomy (DLF procedure was the same as the PLIF until the flavectomy step) Midline structures, inclusing the spinous process were saved as much as possible.. Duration 2 years. Concurrent medication/care: None reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear

Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION versus DECOMPRESSION Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 6 months; Other: change in VAS; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS at 24 months; Other: change in VAS; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 6 months; Other: change in VAS; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS at 24 months; Other: change in VAS; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 24 months; Other: change in ODI; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 6 months; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (post-op complications) at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	MRC grant number G94431172 trial: Fairbank 2005[132]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=349)
Countries and setting	Conducted in United Kingdom; Setting: Trial set in 15 hospitals in the UK for the Spine Stabilisation Trial group
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: patients with chronic low back pain
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients aged between 18 and 55 with more than 12 month history of chronic low back pain (with or without referred pain) and iirespective of whether they had previous root decompression or disectomy
Exclusion criteria	Patients were ineligible if the surgeon considered that any medical or other reasons made one of the trial interventions unsuitable. These included infection or other co-morbidities (inflammatory disease, tumours, fractures), psychiatric disease, inability or unwillingness to complete the trial questionnaires, pregnancy. If patients had previous surgical stablisation of the spine, they were also included
Recruitment/selection of patients	Eligibility for trial was based on the uncertainty of outcome principle which was felt to bring the process of informed consent closer to standard medical practise.Each centre employed a trial research therapist to organise the trial locally, recruit patients, book treatment appointments and carry out assesments.
Age, gender and ethnicity	Age - Range: 18-55 years. Gender (M:F): Define. Ethnicity: Not reported
Further population details	
Extra comments	The two treatments group were matched for all comparable factors. Baseline ODI in the Fusion group was 46.5(14.6) and 44.8(14.8) in the Rehabilitation Group. Baseline SF36-Physical Component Score in the Fusion group was 19.4(8.8) and 20 (9.7) in the Rehabilitation Group. Baseline SF36-Mental Component Score in the Fusion group was 43.2(10.9) and 44.2 (12.6) in the Rehabilitation Group. 20 (11.4%) patients had Spondylolisthesis in the Fusion Group and 18 (10.4%) patients had Spondylolisthesis in the Rehabilitation Group
Indirectness of population	No indirectness
Interventions	(n=176) Intervention 1: Surgery. The particular technique used for spinal fusion was left to the discretion of the operating surgeon. This led to the choice of the most appropiate surgical approach. A small number of surgeons used flexible stabilisation of the spine (the Graf or Global technique). This was recorded for each pateint before

	randomisation.. Duration 2 years. Concurrent medication/care: None reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear (n=173) Intervention 2: Combinations of non-invasive interventions - Combined non-invasive interventions. Intensive rehabilitation programme modelled on a daily outpatient programme of education and exercise running 5 days per week for 3 weeks continuously. Most centres offered 75 hours of intervention (range 60-110 hours) with one day of follow-up sessions at 1.2,6 or 12 months after treatment. Program was led by physiotherapists and clinical psychologists as well as medical support. Daily exercise included stretching of the major muscle groups, spinal flexibility exercises, general muscle strengthening, spine stabilisation exercise, and cardiovascular endurance exercise using any mode of aerobic exercise. Hydrotherapy was also used in all but one centre. Lastly, principles of cognitive behaviour therapy was used to identify and overcome fears/unhelpful beliefs that many patients develop when in pain.. Duration 2 years. Concurrent medication/care: None reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear
Funding	Academic or government funding (Treatement through NHS but Medical Research Council supported financially)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION versus 3 ELEMENT MBR

Protocol outcome 1: Quality of life at follow-up
- Actual outcome: SF36-Physical Component Score (PCS) at 2 years; Group 1: mean 28.8 (SD 14.9); n=115, Group 2: mean 27.6 (SD 14.6); n=131; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: SF36-Mental Component Score (MCS) at 2 years; Group 1: mean 47.4 (SD 12.2); n=115, Group 2: mean 48.1 (SD 12.6); n=131; SF36(MCS) 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Domain of SF36-General Health Perception at 2 years; Group 1: mean 57.7 (SD 23.6); n=115, Group 2: mean 53.8 (SD 24.5); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Domain of SF36-Physical functioning at 2 years; Group 1: mean 50 (SD 28.2); n=115, Group 2: mean 49.8 (SD 28.7); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Domain of SF36-Role limitation(emotional) at 2 years; Group 1: mean 65.2 (SD 42.7); n=115, Group 2: mean 65.4 (SD 43.4); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Domain of SF36-Role limitation(physical) at 2 years; Group 1: mean 39.6 (SD 42.1); n=115, Group 2: mean 38.6 (SD 42.7); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Domain of SF36-Pain at 2 years; Group 1: mean 48.1 (SD 26.4); n=115, Group 2: mean 44.9 (SD 25.1); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome: Domain of SF36-Social Functioning at 2 years; Group 1: mean 53.6 (SD 26.2); n=115, Group 2: mean 55.6 (SD 26.2); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

- Actual outcome: Domain of SF36-Mental Health at 2 years; Group 1: mean 66.5 (SD 21.5); n=115, Group 2: mean 68.4 (SD 23.1); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: Domain of SF36-Energy and vitality at 2 years; Group 1: mean 46.7 (SD 22.8); n=115, Group 2: mean 46.4 (SD 24.9); n=131; SF36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome: ODI at 2 years; Group 1: mean 34 (SD 21.1); n=138, Group 2: mean 36.1 (SD 20.6); n=146; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (post-op complications) at follow-up - Actual outcome: Complications due to surgery at 2 years; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Revision rate at follow-up - Actual outcome: Further surgery or surgery(rehabilitation group only) at 2 years; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	Ohtori 2011[415]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=41)
Countries and setting	Conducted in Japan; Setting: Department of orthopaedic surgery, graduate school of medicine,Chiba university, Chiba, Japan
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) without sciatica: Strictly low back pain only patients
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients only had LBP continuing for atleast 2 years with no accompanying radicular pain. Patients showed disc degeneration only at 1 level (L4/5 or L5/S1) on MRI, pain provocation on discography and pain relief by discoblock as a method of diagnosis of DLBP.
Exclusion criteria	Patients with severe Spondylosis or disc degradation with two or multilevel lesions were excluded. Patients who had previosuly undergone spinal surgery were also excluded. Patientys with LBP after traffic accidents or who were recipients of workers compensation were excluded.
Recruitment/selection of patients	98 patients with LBP that met the inclusion criteria were selected and evaluated in the study
Age, gender and ethnicity	Age - Mean (range): 35(21-50). Gender (M:F): 24:17. Ethnicity: Japanese
Further population details	
Extra comments	Baseline values pain(VAS) were reported as 7.7(8.94) for the Excercise group, 7.4(5.81) for the Surgery ABF group, 6.5(3.18) for the 7.7(8.94) for the Surgery PLF group. Basline ODI values were reported as 64(44.72) for the Excercise group, 62(38.73) for the Surgery ABF group, 66(26.95) for the 7.7(8.94) for the Surgery PLF group.. Patients were comparable for age, sex,s ymptom duration, follow-up after surgery, MRI findings, VAS/ODI outcome scores. Basline pain(JOAS) values were reported as 0.7 (0.89) for the Excercise group, 1.1 (0.77) for the Surgery ABF group, 66(26.95) for the 0.7(0.37) for the Surgery PLF group.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Mixed exercise. Conservative excercise treatment (minimal treatment control group). Daily walking (30 minutes x 2 per day) and muscle stretching (body and leg) (15 minutes x 2 per day). Instruction for daily walking was made by one physician and was performed independently by the patient at home. Muscle stretching was

	performed at one hospital by a physiotherapist. These treatments were performed over the two year period. One physician checked to see if the patients performed both treatments precisely as sintructed every month. If the patients did not perform the walking and stretching excercises, they were excluded from the current study. Duration 2 years. Concurrent medication/care: Only non-steroidal anti-inflammatory drugs were used in both conservative excercise treatment and surgical groups. Opioids were not permitted. Further details: 1. Number of levels fused: Single level (Fusion surgery was only performed on only one level). (n=15) Intervention 2: Surgery. Patients underwent disectomy and anterior interbody fusion (ABF). No additional posterior fusion and/or instrumentation were used.. Duration 2 years. Concurrent medication/care: Only non-steroidal anti-inflammatory drugs were used in both conservative excercise treatment and surgical groups. Opioids were not permitted. Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear (n=6) Intervention 3: Surgery. Patients underwent posterolateral fusion with pedicle screws (PLF) without decompression because of difficulty from anterior vessels.If the distance between the two major anterior vessels covered on the intervertbral disc was less than 20 mm as evaluated on an axial MRI section, we selcted PLF.. Duration 2 years. Concurrent medication/care: Only non-steroidal anti-inflammatory drugs were used in both conservative excercise treatment and surgical groups. Opioids were not permitted. Further details: 1. Number of levels fused: Single level (only at one level). (n=21) Intervention 4: Surgery. 15 patients underwent anterior disectomy and ABF.6 patients underwent PLF without decompression. Duration 2 years. Concurrent medication/care: only non-steroidal anti-inflammatory drugs were used in both conservative excercise treatment and surgical groups. Opioids were not permitted. Further details: 1. Number of levels fused:
Funding	No funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SURGERY ABF versus MIXED EXCERCISE MODALITY (ANAEROBIC+ BIOMECHANICAL) Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 2 years; Group 1: mean 1.3 (SD 1.55); n=15, Group 2: mean 4.7 (SD 6.71); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 1 year; Group 1: mean 2.5 (SD 1.94); n=15, Group 2: mean 5.6 (SD 6.26); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain(JOAS) at 1 year; Group 1: mean 2 (SD 1.16); n=15, Group 2: mean 0.9 (SD 0.89); n=20; JOAS 0-3	

Top=High is good outcome; Risk of bias: ; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain(JOAS) at 2 year; Group 1: mean 2.5 (SD 1.16); n=15, Group 2: mean 1.2 (SD 1.34); n=20; JOAS 0-3 Top=High is good outcome; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: ODI at 1 year; Group 1: mean 25.6 (SD 26.34); n=15, Group 2: mean 53.2 (SD 42.5); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: ODI at 2 years; Group 1: mean 10.3 (SD 20.14); n=15, Group 2: mean 40 (SD 37.1); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SURGERY PLF versus MIXED EXCERCISE MODALITY (ANAEROBIC+ BIOMECHANICAL)

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 2 years; Group 1: mean 2.5 (SD 1.23); n=6, Group 2: mean 4.7 (SD 6.71); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (JOAS) at 1 year; Group 1: mean 1.5 (SD 0.73); n=6, Group 2: mean 0.9 (SD 0.89); n=20; JOAS 0-3 Top=High is good outcome; Risk of bias: ; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (VAS) at 1 year; Group 1: mean 3.5 (SD 1.23); n=6, Group 2: mean 5.6 (SD 6.26); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain (JOAS) at 2 year; Group 1: mean 2 (SD 0.98); n=6, Group 2: mean 1.2 (SD 1.34); n=20; JOAS 0-3 Top=High is good outcome; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 2: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) without sciatica: ODI at 1 year; Group 1: mean 31 (SD 19.35); n=6, Group 2: mean 53.2 (SD 42.5); n=20; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: ODI at 2 year; Group 1: mean 21.2 (SD 14.2); n=6, Group 2: mean 40 (SD 37.1); n=20; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SURGERY(ABF+ PLF) versus MIXED EXCERCISE MODALITY (ANAEROBIC+ BIOMECHANICAL)

Protocol outcome 1: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) without sciatica: Pain(JOAS) at 1 year; Group 1: mean 1.86 (SD 1.08); n=21, Group 2: mean 0.9 (SD 0.89); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain(JOAS) at 2 year; Group 1: mean 2.36 (SD 1.13); n=21, Group 2: mean 1.2 (SD 1.34); n=20; JOAS 0-3 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) without sciatica: Pain(VAS) at 1 year; Group 1: mean 2.77 (SD 1.82); n=21, Group 2: mean 5.6 (SD 6.26); n=20; VAS 0-10

Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: Pain(VAS) at 2 year; Group 1: mean 1.64 (SD 1.56); n=21, Group 2: mean 4.7 (SD 6.71); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) without sciatica: ODI at 1 year; Group 1: mean 27.14 (SD 24.67); n=21, Group 2: mean 53.2 (SD 42.5); n=20; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) without sciatica: ODI at 2 year; Group 1: mean 13.41 (SD 19.28); n=21, Group 2: mean 40 (SD 37.1); n=20; ODI 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (post-op complications) at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

Study	Smith 2014[492]
Study type	Retrospective cohort study
Number of studies (number of participants)	1 (n=96)
Countries and setting	Conducted in USA; Setting: Single instituation (Thomas Jefferson University, Philadelphia,Pennsylvania,USA)
Line of therapy	2nd line
Duration of study	Intervention + follow up:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall: patients with symptoms of axial low back pain
Subgroup analysis within study	Not applicable
Inclusion criteria	symptoms of axial low back pain , attempted conservative treatment therapy for a minimum of 6 weeks, and a one level or two adjacent level positive discogram that was concordant with lumbar DDD based on MRI. All patients expressed interest in surgery and felt to be surgical candidates before obtaining discography.
Exclusion criteria	Patients with discogenic pain along with other surgical indications (e.g. spondylolisthesis, tumour infection, and stenosis, and patients who had undergone previous lumbar decompression/discectomy or a previous lumbar fusion) were excluded
Recruitment/selection of patients	retrospective review of consecutive patients who were referred for a diagnostic lumbar discography procdure between 2003 and 2009 at a a single instituation (Thomas Jefferson University)
Age, gender and ethnicity	Age - Mean (SD): 47.0(8.9) in the Fusion Group and 47.3(10.0) in the Usual care group. Gender (M:F): 48:48. Ethnicity:
Further population details	
Extra comments	Baseline values only reported for NRS pain score. Pain (NRS) at baseline for Fusion Group= 7.8(0.9) and 8.0(1.2) for the usual care group.. in general, a disogram was ordered after documentation of abnormal MRI findings and surgery (instrumented lumbar fusion)was subsequently offered to those who had a one level or two adjascent level positive discogram that was concordant with lumbar DDD based on MRI scans
Indirectness of population	No indirectness
Interventions	(n=53) Intervention 1: Surgery. Instrumented lumbar fusion. Duration mean length of follow-up was 63 months . Concurrent medication/care: None reported Further details: 1. Number of levels fused: Not applicable / Not stated / Unclear (n=43) Intervention 2: Usual care, non-operative treatment modalities including physical therapy, epidural injections,

	and medications. Duration mean leNgth of follow-up was 58 months. Concurrent medication/care: none reported Further details: 1. Number of levels fused:
Funding	Funding not stated
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: FUSION versus USUAL CARE Protocol outcome 1: Quality of life at follow-up - Actual outcome: SF-12(PCS) at >4 months; Group 1: mean 45.7 (SD 8); n=53, Group 2: mean 43.8 (SD 7.1); n=43; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome: SF-12(MCS) at >4 months; Group 1: mean 46.1 (SD 11.9); n=53, Group 2: mean 48.7 (SD 9.9); n=43; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at >4 months - Actual outcome: NRS (0-10) at >4 months; Group 1: mean 3.6 (SD 3); n=53, Group 2: mean 4.4 (SD 2.7); n=43; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome: ODI at >4 months; Group 1: mean 35.3 (SD 25.5); n=53, Group 2: mean 34.2 (SD 19.3); n=43; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (mortality) at follow-up; Responder criteria at follow-up; Adverse events (post-op complications) at follow-up; Adverse events (increased risk of requiring surgery at adjacent segments) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at follow-up

H21 Spinal decompression

Study	**Cao 2014[66]**

Study type	Retrospective cohort study
Number of studies (number of participants)	1 (n=91)
Countries and setting	Conducted in China; Setting: Secondary care
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 18 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	age 20−60 years, MRI evidence of a single LDH-MC at the corresponding segment; coexistence of low back pain and radicular leg pain, both of which were not improved after conservative treatment for at least six months; and with low back pain equal to or greater than leg pain.
Exclusion criteria	Mult-ilevel disc herniation and spinal lesions other than primary disc pathology, such as facet joint arthritis, spondylolisthesis, spinal stenosis, scoliosis, tumor, and infection. Prior lumbar surgery.
Recruitment/selection of patients	Recruited from 2 hospitals - patients with lumbar disc herniation
Age, gender and ethnicity	Age - Mean (range): 40 (26-57). Gender (M:F): 53%/47%. Ethnicity:
Further population details	
Extra comments	SF-36 physical component: discectomy = 25.4 (SD 7.6) and iPLIF = 23.9 (SD 9.2). SF-36 mental component: discectomy = 47.3 (SD 8.7) and iPLIF = 45.4 (SD 10.3).
Indirectness of population	No indirectness
Interventions	(n=47) Intervention 1: Discectomy. 3.5 cm long incisions directly lateral to the corresponding segment of spinous processes. After dissection of the paravertebral musculature, a sparing interlaminar fenestration was performed with ablation of a small amount of the cranial or caudal vertebral arch depending on the localization of the prolapsed disc tissue. Subsequently, the flavous ligament was incised, dura and nerve root were mobilized, and the underlying disc prolapse was removed. Following irrigation, the wound was closed in layers.. Duration Immediate. Concurrent medication/care: None reported Further details: 1. Method of decompression: (n=44) Intervention 2: Fusion. iPLIF was considered for patients with LDH-MC and whose low back pain was not less than radicular leg pain. In this study, all the patients met these criteria. However, some patients refused iPLIF due to concerns of operation- and implant-related complications and financial costs. For these patients, simple discectomy was performed IPLIF (instrumented posterior lumbar interbody fusion). 8cm posterior midline incision was made, and

	bilateral paravertebral muscles were dissected. Pedicle screws were placed under image intensifier control, and then total laminectomy of the involved segment was performed. After decompressing the neural element, both total facetectomy and radical discectomy were done. Subsequently, the vertebrae were distracted and the cartilaginous endplates were removed. The cages filled with bone harvested from the lamina and facet joints were inserted in the intervertebral space for fusion. Finally, a rod was inserted into the heads of the pedicle screws at each side, and the screws were compressed into screws at each side, and the screws were compressed into each other to create lordosis of the lumbar spine.. Duration Immediate. Concurrent medication/care: None reported Further details: 1. Method of decompression:
Funding	Academic or government funding
RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISCECTOMY versus FUSION Protocol outcome 1: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Leg pain (VAS, 0-10) at 18 months; Mean NS difference between the 2 groups; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Back pain (VAS, 0-10) at 18 months; Mean Study just reports SS difference (favouring fusion) between the 2 groups; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 2: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Complications at 18 months; Group 1: 0/47, Group 2: 0/44; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at Up to 4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Erginousakis 2011[127]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=62)
Countries and setting	Conducted in Greece; Setting: Diagnosis made in secondary care
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 3, 12 and 24 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	Adult patients who were capable of providing consent with a small- to medium-sized intervertebral disk herniation (occupying less than one-third of the canal diameter at magnetic resonance [MR] imaging) that was symptomatic (leg pain with or without back pain; leg pain greater than back pain when these two coexisted; lancinating, burning, stabbing, or electrical sensation of pain; straight leg raise limited to less than 30°), with the symptoms consistent with the segmental level where herniation was seen at MR imaging (an L4-5 right foraminal herniation is expected to produce right L4 root neuralgia). Presence of pain of the appropriate quality with neurologic signs of radiculopathy. Patients in both groups had undergone different conservative therapies without success.
Exclusion criteria	None reported
Age, gender and ethnicity	Age - Range of means: 36 and 38 years. Gender (M:F): 58%/42%. Ethnicity:
Further population details	
Extra comments	Pain (NVS 0-10): surgery = 7.4 (SD 1.4), control = 6.9 (SD 1.9).
Indirectness of population	No indirectness
Interventions	(n=31) Intervention 1: Spinal decompression. Fluoroscopically guided PDD. Each patient underwent physical examination and coagulation laboratory tests at least 24 hours prior to PDD. Just prior to PDD, percutaneous provocative discography was performed to verify that the disk was symptomatic. Provocative discography yielded positive results in all patients in the decompression group. Intervertebral disk decompression (17-gauge Decompressor ; Stryker, Kalamazoo, Mich) was performed by the aforementioned interventional musculoskeletal radiologist. This procedure was performed with fluoroscopic guidance and use of a sterile technique (including prophylactic antibiotics) in accordance with the Cardiovascular and Interventional Radiological Society of Europe Standards of Practice for percutaneous treatment of intervertebral disks. In the decompression group, we removed approximately 1–3 g of disk material. According to the guidelines provided by the manufacturer in the operative technique guide, approximately 1 mL of tissue has been removed once the tissue becomes visible at the collection chamber entrance. In general, when

	the technique was interrupted, the material gathered at the collection chamber entrance was approximately three times greater than the material seen the first time. Decompression may also have been stopped when the substance removed was gray or black, either because it was charred or because it was substantially degenerated. We did not weigh the removed material. The average duration of PDD and percutaneous provocative discography performed prior to PDD was approximately 45–60 minutes and depended on the difficulty of trocar placement. Each patient was observed for 2 hours after the procedure and then discharged. Duration Immediate. Concurrent medication/care: Prescription for post-procedure NSAIDs and muscle relaxants. NOTE: Exclusion criteria for the procedure included response to a 6-week course of rigorous conservative treatment; untreatable coagulopathy; active, systemic, or local infections; herniation occupying more than one-third of the spinal canal diameter; and non-correlating pain. The presence of significant degenerative disease of the intervertebral disk with a disk height reduction of more than 50%–60% was considered a relative contraindication. Further details: 1. Method of decompression: Not applicable / Not stated / Unclear (n=31) Intervention 2: Usual care. 6-week course of monitored and registered conservative therapy (during which they received analgesics, anti-inflammatory drugs, muscle relaxants, and physiotherapy) and experienced pain reduction and mobility improvement. The recommended protocol of conservative therapy included education and counseling of the patient, physical therapy, and use of non-steroidal anti-inflammatory drugs, muscle relaxants, and analgesics. Patients who underwent conservative therapy were tracked prospectively by means of personal communication once every week between the prescribing physician and the patient. The mean duration of conservative treatment was 22 days (range, 7–35 days) and depended on symptom regression. Our initial study design was set up to provide supervised conservative therapy for 6 weeks. However, when symptoms cleared and patients were free of pain for 3 consecutive days, conservative therapy was interrupted. Duration 6 weeks (planned); actual mean = 22 days. Concurrent medication/care: None reported Further details: 1. Method of decompression: Not applicable / Not stated / Unclear
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SPINAL DECOMPRESSION versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NVS, 0-10 at 3 months; Group 1: mean 4.4 (SD 2.1); n=31, Group 2: mean 6 (SD 3.2); n=31; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: NVS, 0-10 at 12 months; Group 1: mean 5.7 (SD 2.4); n=31, Group 2: mean 2.9 (SD 2.5); n=31; Risk of bias:

Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: NVS, 0-10 at 24 months; Group 1: mean 5.9 (SD 2.4); n=31, Group 2: mean 2.8 (SD 3); n=31; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Complications at 3 months; Group 1: 0/31, Group 2: 0/31; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Complications at 12 months; Group 1: 0/31, Group 2: 0/31; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Complications at 24 months; Group 1: 0/31, Group 2: 0/31; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Gerszten 2010[163]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=90)
Countries and setting	Conducted in USA; Setting: Multicentre traial in which 12 clinical sites in the US contributed patients to the study between February 2005 and March 2007. Main author was based in the Department of Neurological Surgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania
Line of therapy	2nd line
Duration of study	Intervention + follow up: 6 months
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	BMI<40, had radicular pain score of >50 or greater as measured using a 0-100 mm VAS and had received an epidural corticosteroid injection for the same symptoms between 3 weeks and 6 months previously. Patients may have received some, temporary or no response to this injection. Candidates demonstrated normal neurologicak function and were require dto have imaging confirming focal lumbar disc protrusion. Disc height was also 50% of that of normal adjacent discs.
Exclusion criteria	Candidates demonstrating evidence of extruded or sequestered disc herniation were not considered for participation. Patients with Sciatica originating from more than one disc level, more severe axial back pain than radicular pain, clinical evidence of cauda equina syndrome, progressive neurological deficit, sponylolisthesis or moderate or severe stenosis at the level to be treated, history of previous surgery at or directly adjacent to the level being treated, spinal fracture, tumour and infection were excluded from study. Ongoing treatment with antipsychotic medication or participation in litigation were reasons for exclusion
Recruitment/selection of patients	All patients who met inclusion criteria and were folowed for 6 months
Age, gender and ethnicity	Age - Mean (SD): Range: 18–66 years old Mean (SD)=46(12 years in Decompression Group and 42 (11) in Epidural Injections Group. Gender (M:F): 42:43. Ethnicity:
Further population details	
Extra comments	Baseline VAS leg pain in Spinal Decompression Group= 7.2 (1.3) and 7.5(1.4) in the Injections Group. Baseline VAS back pain in Spinal Decompression Group= 4.4 (2.4) and 5.3(2.3) in the Injections Group. Baseline ODI in Spinal Decompression Group= 42(14) and 43(17) in the Injections Group.
Indirectness of population	No indirectness
Interventions	(n=45) Intervention 1: Spinal decompression. Procedure performed under fluoroscopic in an outpatient basis using the

	Coblation DLR or DLG SpineWand surgical device (ArthroCare Group). Duration 6 months. Concurrent medication/care: Patients in both treatment groups were allowed to receive additional conservative therapies including bed rest, physical therapy, narcotic analgesics or NSAID'S at the discretion of the treating investigator Further details: 1. Method of decompression: Not applicable / Not stated / Unclear (n=40) Intervention 2: Image-guided steroid. Patients assigned to this group received two injections (3 weeks apart).One week prior to the second injection, patients were contacted to be reminded. Injections were under fluoroscopic guidance and the location of the injection was determined by the treating physician with the goal of delivering corticosteroids to the site of disc protrusion and nerve irritation. Type of steroid included methylprednisolone acetate (30 patients), betamethasone (5 patients),, methylprednisolone (4 patients) and triamcinolone acetonide (1 patient). 30 of the 40 patients opted to have the second injection. Duration 6 months. Concurrent medication/care: Patients in both treatment groups were allowed to receive additional conservative therapies including bed rest, physical therapy, narcotic analgesics or NSAID'S at the discretion of the treating investigator Further details: 1. Method of decompression:
Funding	-- (Financial support for the conduct of this study was provided by the ArthroCare Group. Authors were also consultants for this Group)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SPINAL DECOMPRESSION GROUP versus IMAGE-GUIDED STEROID

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain VAS at 3 months; Group 1: mean 3.6 (SD 3.35); n=45, Group 2: mean 1.8 (SD 2.53); n=40; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back Pain VAS at 3 months; Group 1: mean 1.5 (SD 2.68); n=45, Group 2: mean 0.7 (SD 1.9); n=40; VAS 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain VAS at 6 months; Group 1: mean 3.4 (SD 3.35); n=45, Group 2: mean 1.6 (SD 2.53); n=40; VAS 0-10 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back Pain VAS at 6 months; Group 1: mean 1.6 (SD 2.68); n=45, Group 2: mean 0.02 (SD 2.53); n=40; vas 0-10 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: ODI at 3 months; Group 1: mean 10 (SD 2.01); n=45, Group 2: mean -2 (SD 1.26); n=40; ODI 0-100 Top=High

is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI at 6 months; Group 1: mean 12 (SD 2.01); n=45, Group 2: mean 4 (SD 1.26); n=40; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 4: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Procedure related adverse events at 6 months; Group 1: 5/45, Group 2: 7/40; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Kim 2015[280]
Study type	Prospective cohort study
Number of studies (number of participants)	1 (n=55)
Countries and setting	Conducted in North Korea; Setting: Secondary care
Line of therapy	Mixed line
Duration of study	Intervention + follow up: Immediate + 12 months follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica
Subgroup analysis within study	Not applicable
Inclusion criteria	age 40-80 years, diagnosed with LFS (lumbar foraminal stenosis) in the mid and exit zones of the foramen. Scheduled to undergo spinal surgery. Diagnosis of LFS required 1 or more of the following: leg pain, numbness of moter deficits in the lower extremities and buttocks. With confirmation of a stenotic lesion in the mid and exit zones of the foramen of the lumbar spine on MRI.
Exclusion criteria	Spinal instability, including spondylosis, foraminal stenosis caused by only extruded disc, stenosis severe central stenosis >Grade C Schiza's classification, and stenosis with an element of entry zone foraminal stenosis. History of peripheral vascular disease, concurrent serious medical condition causing disability, or general health status including sepsis or cancer.
Recruitment/selection of patients	Pts with lumbar foramnial stenosis (LFS) who were scheduled to undergo spinal surgery
Age, gender and ethnicity	Age - Mean (SD): 71.6 (6.1). Gender (M:F): Define. Ethnicity:
Further population details	
Extra comments	SF36- physical component: decompression = 26.35 (SD 6.95) and fusion = 26.55 (SD 6.57). SF36- mental component: decompression = 38.61 (SD 11.91) and fusion = 37.7 (SD 12.81). ODI: decompression = 46.45 (SD 15.98) and fusion = 53.52 (SD 13.73). VAS leg pain: decompression = 7.81 (SD 1.63) and fusion = 7.75 (SD 2.42). VAS back pain: decompression = 6.05 (SD 3.02) and fusion = 7.21 (SD 2.80).
Indirectness of population	No indirectness
Interventions	(n=25) Intervention 1: Spinal decompression. According to the patient's preference and shared decision, the pt was allocated to either decompression or the fusion group.-MeFD (microsurgical extra-foraminal decompression). Lateral portion of pars inter-articularis and facet joint was exposed by para-median approach. Using operating microscope and high-speed drill, the supero-lateral portion of the facet joint and the upper and lateral margins of the intra-articualr part were drilled away. The intertransverse ligament was partially excised or released to expose the nerve root lateral to the foramen. The affected nerve root was followed along the intervertebral foramen. Sufficient nerve root

	decompression was carefully confirmed by moving a small nerve hook from the lateral side through the foramen. If necessary, the disc space was also exposed for complete nerve root decompression. In this technique, and inter transverse interval approach is used via a para-spinal muscle-splitting route, and the supero-lateral part of the superior articular process of the lower vertebrae, the lateral part of the pars intera-articularis, and the superomedial part of the superior articular process are resected. This results in an un-roofing of the stenotic foramen. . Duration Immediate. Concurrent medication/care: None reported. Further details: 1. Method of decompression: Not applicable / Not stated / Unclear (n=30) Intervention 2: Fusion. According to the patient's preference and shared decision, the patient was allocated to either decompression or the fusion group (PLIF; posterior lumbar inter-body fusion). PLIF (posterior lumar interbody fusion). Single midline incision (approximately 8cm long) followed by exposure of the spine to facet joints and the lateral tips of te transverse processes to allow clear identification of the bony landmarks. Pedicle screw was inserted using Weinstein method. Following the decompression procedures, including laminectomy and facetectomy, the compressed nerve root in the extra-foraminal area was identified and the final decompression state was confirmed. In teh case of unilateral LFS (lumar- foraminal stenosis), unilateral decompression and inter-body fusion with bilateral fixation was performed. Finally, discectomy was performed and the cage filled with auto-bone was inserted. Duration Immediate. Concurrent medication/care: None reported. Further details: 1. Method of decompression: Not applicable / Not stated / Unclear
Funding	Funding not stated

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: SPINAL DECOMPRESSION versus FUSION

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Physical component at 12 months; Mean NS difference between groups (p=0.643); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 Mental component at 12 months; Mean NS difference between groups (p=0.818); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain (VAS, 0-10) at 12 months; Mean NS difference between groups (p=0.909); Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back Pain (VAS, 0-10) at 12 months; Mean NS difference between groups (p=0.626); Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI (0-100) at 12 months; Group 1: mean 25.68 (SD 14.49); n=25, Group 2: mean 27.2 (SD 12.56); n=30; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Revision rate at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Rates of revision surgery (no. of pts) at 12 months; Group 1: 3/25, Group 2: 0/30; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at Up to 4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	NCT00000411: 654SPORT trial: Weinstein 2008[562]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=654)
Countries and setting	Conducted in USA; Setting: investigator initiated study conducted in 11 states in 13 U.S medical centers with muti-disciplinary spine practices
Line of therapy	2nd line
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: Sciatica due to spinal stenosis
Subgroup analysis within study	Not applicable
Inclusion criteria	All patients had a history of neurogenic claudication or radicular leg symptoms for at-least 12 weeks and confirmatory cross-sectional imaging showing lumbar spinal stenosis at one or more levels; all patients were judged to be surgical candidates.
Exclusion criteria	Patients with degenerative spondylolisthesis and lumbar instability were excluded.
Recruitment/selection of patients	Patients were enrolled between March 2000 and March 2005 that fit the inclusion criteria
Age, gender and ethnicity	Age - Mean (SD): 65.5(10.5) in the RCT and 63.9(12.5) in the cohort. Gender (M:F): 249:385. Ethnicity:
Further population details	
Extra comments	. Baseline SF-36 score for bodily pain in the RCT group was 31.9(17.5) and 31.4(0.6) in the combined RCT+-observational group. Baseline SF-36 score for physical function in the RCT group was 35.4(22.6) and 34.9(0.8) in the combined RCT+ observational group. Baseline score for ODI In in the RCT group was 42.7(17.9) and 43.2(0.6) in the combined RCT +observational group. Baseline score for leg pain bothersomeness index In in the RCT group was 4.3(1.7) and 4.3(0.1) in the combined RCT+ observational group. Baseline score for back pain bothersomeness index In in the RCT group was 4.0(1.9) and 4.1(0.1) in the combined RCT+ observational group .Baseline SF-36 score for bodily pain in the RCT group was 31.9(17.5) and 31.4(0.6) in the combined RCT+ observational group. Baseline SF-36 score for physical function in the RCT group was 35.4(22.6) and 34.9(0.8) in the combined RCT+ observational group. Baseline score for ODI In in the RCT group was 42.7(17.9) and 43.2(0.6) in the combined RCT+ observational group. Baseline score for leg pain bothersomeness index In in the RCT group was 4.3(1.7) and 4.3(0.1) in the combined RCT+ observational group. Baseline score for back pain bothersomeness index In in the RCT group was 4.0(1.9) and 4.1(0.1) in the combined RCT+ observational group.
Indirectness of population	No indirectness
Interventions	(n=357) Intervention 1: Laminectomy. Standard posterior laminectomy. Duration 2 years. Concurrent medication/care:

	none reported Further details: 1. Method of decompression: Not applicable / Not stated / Unclear (n=297) Intervention 2: Usual care. Intervention was recommended to include at-least physical therapy, education or counseling with home exercise instruction, and the administration of non-steroidal anti-inflammatory drugs if tolerated.. Duration 2 years. Concurrent medication/care: None reported Further details: 1. Method of decompression:
Funding	Other (Combination of grants from government bodies and industry. National institute of arthritis and musculoskeletal and skin diseases and the office of research on Women's Health, National Institute of Health. Authors received grant support from industry)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: LAMINECTOMY versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily pain (RCT) at 1 year; Group 1: mean 23 (SD 25.2); n=120, Group 2: mean 17.5 (SD 24.7); n=126; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily pain (RCT) at 3 months; Group 1: mean 13.5 (SD 26.93); n=116, Group 2: mean 11.1 (SD 26.72); n=135; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily pain (RCT) at 2 years; Group 1: mean 23.4 (SD 23.9); n=108, Group 2: mean 15.6 (SD 23.39); n=113; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical functioning (RCT) at 3 months; Group 1: mean 7.4 (SD 26.93); n=116, Group 2: mean 11.6 (SD 26.72); n=135; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical functioning (RCT) at 1 year; Group 1: mean 18 (SD 25.2); n=120, Group 2: mean 16.4 (SD 24.7); n=126; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical functioning (RCT) at 2 year; Group 1: mean 17 (SD 24.94); n=108, Group 2: mean 17.1 (SD 24.45); n=113; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: leg pain bothersomeness(RCT) at 3 months; Group 1: mean -1.5 (SD 3.23); n=116, Group 2: mean -1.2 (SD 2.32); n=135; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: back pain bothersomeness (RCT) at 3 months; Group 1: mean -0.6 (SD 2.15); n=116, Group 2: mean -1 (SD 2.32); n=135; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months

- Actual outcome for Overall (acute, chronic) with sciatica: back pain bothersomeness (RCT) at 1 year; Group 1: mean -1.3 (SD 2.19); n=120, Group 2: mean -1.3 (SD 2.24); n=126; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: leg pain bothersomeness (RCT) at 1 year; Group 1: mean -2.3 (SD 2.19); n=120, Group 2: mean -1.7 (SD 2.24); n=126; Risk of bias: ; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: leg pain bothersomeness (RCT) at 2 year; Group 1: mean -2.2 (SD 2.08); n=108, Group 2: mean -1.8 (SD 2.13); n=113; Risk of bias: ; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: back pain bothersomeness(RCT) at 2 year; Group 1: mean -1.3 (SD 2.08); n=108, Group 2: mean -1.6 (SD 2.13); n=113; Risk of bias: ; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI (RCT) at 3 months; Group 1: mean -7.6 (SD 22.62); n=116, Group 2: mean -8.1 (SD 22.07); n=135; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI(RCT) at 1 year; Group 1: mean -14.9 (SD 20.8); n=120, Group 2: mean -12.7 (SD 20.2); n=126; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI(RCT) at 2 year; Group 1: mean -16.4 (SD 19.74); n=108, Group 2: mean -12.9 (SD 19.13); n=113; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	NCT00415220 trial: Mcmorland 2010[368]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=40)
Countries and setting	Conducted in Canada; Setting: University of Calgary Spine Program and Division of Neurosurgery, Foothills Hospital and Medical Centre
Line of therapy	2nd line
Duration of study	Intervention + follow up: 52 weeks
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: unilateral lumbar radiculopathy secondary to Lumbar Disc Herniation
Subgroup analysis within study	Not applicable
Inclusion criteria	Leg dominant symptoms with objective signs of nerve root tethering and neurologic deficit correlated with evidence of appropriate root compression on MRI. Patients must have failed 3 months of non-operative management including treatment with analgesics, physiotherapy etc.
Exclusion criteria	Radicular symptoms of less than 3 months duration. Patients receiving concurrent or previous spinal manipulation were excluded as were those suffering from major neurological deficits such as cauda equina syndrome etc. People having undergone previous surgery at symptomatic level were also excluded as well as those with a prolonged use of corticosteroids. Spondylolisthesis patients were also excluded.
Recruitment/selection of patients	Three spinal neurosurgeons acreened patients between December 2000 and May 2004 for symptoms of unilateral lumbar radiculopathy secondary to Lumbar Disc Herniation at L3-L4,L4-L5 or L5-S1.
Age, gender and ethnicity	Age - Mean (SD): Mean age in Surgery group=41.475 years and Manipulation Group= 42.3 years. Gender (M:F): 24:16. Ethnicity:
Further population details	
Extra comments	. Baseline McGill Pain score was 32.5(12.9) in micro-discectomy group and 28.7(17.4) in the Manipulation group. Baseline RMDQ score was 10.1(5.7) in micro-discectomy group and 12.0(5.4) in the Manipulation group. Baseline SF-36 Total Score was 379.5(149.8) in micro-discectomy group and 381.3(161.9) in the Manipulation group. . Baseline SF-36 Bodily Pain was 28.5(21.8) in micro-discectomy group and 17.5(32.5) in the Manipulation group. Baseline SF-36 Role Physical was 17.5(32.5) in micro-discectomy group and 18.8(26.7) in the Manipulation group. Baseline SF-36 Role Emotional was 60.8(41.0) in micro-discectomy group and 53.4(50.0) in the Manipulation group. Baseline SF-36 Vitality was 40.1(21.0) in micro-discectomy group and 41.5(23.1) in the Manipulation group. Baseline SF-36 Physical Function was 42.7(22.7) in micro-discectomy group and 47.4(24.8) in the Manipulation group. Baseline SF-36 Social Function was 50.2(29.0) in micro-discectomy group and 52.9(33.0) in the Manipulation group. Baseline SF-36 Mental Health was 83.2(10.6) in micro-discectomy group and 82.8(8.7) in the Manipulation group. Baseline SF-36

	General Health was 71.8(19.5) in micro-discectomy group and 75.2(18.0) in the Manipulation group.
Indirectness of population	No indirectness
Interventions	(n=20) Intervention 1: Discectomy. Laminotimies were created as required at the level of the LDH, Both sequestrectomy and intra-annular discectomy were performed to ensure adequate nerve root decompression. All wounds were closed primarily without drainage.. Duration 12 weeks. Concurrent medication/care: not reported Further details: 1. Method of decompression: Not applicable / Not stated / Unclear (n=20) Intervention 2: Postural therapy. Manual therapy + biomechanical exercise + self-management: All spinal manipulation therapies were performed by one chiropacter. Cryotherapy or thermotherapy (ice or heat) were used on as needed basis during treatment sessions to increase patient ability to tolerate treatment. Patients were moved from passive care to active and then finally self-directed care. This involved providing patient with an education/information pack and introducing them to rehabilitative exercise. Patients also participated I nan supervised rehabilitative (core stability) exercise regimen. Treatments typically required 2-3 treatments per week for the first 4 weeks reducing to 1-2 visits per week for the next 3-4 weeks. At the 8 week mark, follow up visits were scheduled based on patients symptoms and initial treatment holiday was given for 2 weeks, Upon follow up if the patients symptoms had not deteriorated, no treatment was given at the follow up and the next treatment holiday time doubled with another follow-up visit scheduled a month later if the patients symptoms had worsened at follow -up, treatment was administered and and another 2 week holiday was scheduled. This process of treatment withdrawal and follow-up visits was continued until the patients symptoms was deemed stable.. Duration 12 weeks. Concurrent medication/care: not stated Further details: 1. Method of decompression:
Funding	Study funded by industry (Study supported by a grant from the Foundation for Chiropractic Education and Research)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: MICRODISCECTOMY GROUP versus MANUAL THERAPY + BIOMECHANICAL EXERCISE + SELF-MANAGEMENT GROUP

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Total Score at 12 weeks; Group 1: mean 500.3 (SD 179.7); n=20, Group 2: mean 484.6 (SD 148.9); n=20; SF36 0-800 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily Pain at 12 weeks; Group 1: mean 57.4 (SD 22.3); n=20, Group 2: mean 47.1 (SD 18.4); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Role Physical at 12 weeks; Group 1: mean 28.8 (SD 37.4); n=20, Group 2: mean 32.5 (SD 38.1); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Role Emotional at 12 weeks; Group 1: mean 65 (SD 43.9); n=20, Group 2: mean 74.5 (SD 36.4); n=20;

SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Vitality at 12 weeks; Group 1: mean 65 (SD 19.6); n=20, Group 2: mean 56.8 (SD 17.7); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical Function at 12 weeks; Group 1: mean 65.8 (SD 27.6); n=20, Group 2: mean 59 (SD 25.4); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Social Function at 12 weeks; Group 1: mean 67.3 (SD 34.7); n=20, Group 2: mean 73.6 (SD 19.7); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36-General Health at 12 weeks; Group 1: mean 83.2 (SD 13); n=20, Group 2: mean 77.8 (SD 15.3); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Mental Health at 12 weeks; Group 1: mean 83.2 (SD 10.6); n=20, Group 2: mean 82.8 (SD 8.7); n=20; SF-36 0-100 Top=High is good outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: McGill Pain Questionnaire at 12 weeks; Group 1: mean 13 (SD 16.3); n=20, Group 2: mean 19.4 (SD 14.3); n=20; McGill 0-78 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness Protocol outcome 3: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: RMDQ at 12 weeks; Group 1: mean 7.2 (SD 6.9); n=20, Group 2: mean 9 (SD 6.2); n=20; RMDQ 0-24 Top=High is poor outcome; Risk of bias: High; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Pain severity (VAS/NRS) at >4 months; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study	Osterman 2006[419]
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=56)
Countries and setting	Conducted in Finland; Setting: The study was conducted from November 1996 to December 1999 at the Jorvi Hospital (a primary referral center with a catchment population of 220,000 inhabitants situated in Espooin southern Finland) and at the Finnish university hospitals of Kuopio, Tampere, and Oulu.
Line of therapy	Unclear
Duration of study	Intervention + follow up: 2 years
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: Sciatica due to herniated intervertebral disc
Subgroup analysis within study	Not applicable
Inclusion criteria	Inclusion criteria were 1)below knee radicular pain of 6 to 12 weeks duration at randomization,) a CT finding of intervertebral disc extrusion or sequester, and 3) at least one specific physical finding (a straight leg positive raising test , muscle weakness, altered deep tendon reflex, or a dermatomal sensory change).
Exclusion criteria	Exclusion criteria were 1) previous back surgery, 2) spondylolisthesis, 3)symptomatic spinal stenosis, 4) over 3 months' continuous sick leave because of low back pain or leg pain preceding randomization,5) a condition confounding evaluation of treatment outcomes (vascular claudication, symptomatic osteoarthritis, previous major trauma, diabetic polyneuropathy), or 6) a contraindication to conservative treatment (cauda equina syndrome, progressive neurologic deficit, or intolerable pain).
Recruitment/selection of patients	Eligible patients had been referred to elective orthopedic consultation because of Sciatica who were 20-50 years of age and had to have radiating pain below the knee with clinical findings suggestive of nerve root decompression.
Age, gender and ethnicity	Age - Mean (SD): range =2-50 years, Discectomy Group=37 (7) and 38(7). Gender (M:F): 34:22. Ethnicity:
Further population details	
Extra comments	Baseline Leg Pain VAS score were 6.1 (2.0) in the Discectomy Group and 5.7 (2.1 in the Control Group. Baseline Back Pain VAS score were 5.3 (2.5) in the Discectomy Group and 4.7 (2.8) in the Control Group. Baseline ODI score were 3.9(1.5) in the Discectomy Group and 3.9(1.4) in the Control Group.
Indirectness of population	No indirectness
Interventions	(n=28) Intervention 1: Discectomy. A microdiscectomy by a spinal orthopedic surgeon was performed within 2 weeks of randomization in the surgical group.. Duration 2 years. Concurrent medication/care: Analgesia was prescribed according to individual requirements. Further details: 1. Method of decompression:

	(n=28) Intervention 2: Usual care. Control group received physiotherapeutic instructions initially and continued with isometric exercises after randomisation.no other details reported. Duration 2 years. Concurrent medication/care: Analgesia was prescribed according to individual requirements. Further details: 1. Method of decompression:
Funding	Academic or government funding

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISCECTOMY GROUP versus USUAL CARE

Protocol outcome 1: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain VAS at 3 months; Group 1: mean 0.9 (SD 1.6); n=26, Group 2: mean 1.6 (SD 2.5); n=26; VAS 0-100 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain VAS at 1 year; Group 1: mean 0.6 (SD 1.12); n=21, Group 2: mean 0.9 (SD 1.9); n=20; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Leg Pain VAS at 2 year; Group 1: mean 0.6 (SD 1.1); n=26, Group 2: mean 1.5 (SD 1.1); n=24; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back Pain VAS at 3 months; Group 1: mean 1.5 (SD 2); n=26, Group 2: mean 2.2 (SD 2.3); n=26; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back Pain VAS at 1 year; Group 1: mean 1.9 (SD 2.5); n=21, Group 2: mean 1.7 (SD 2.3); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back Pain VAS at 2 year; Group 1: mean 1.1 (SD 1.8); n=26, Group 2: mean 2.1 (SD 2.7); n=24; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: ODI at 3 months; Group 1: mean 8 (SD 11); n=26, Group 2: mean 14 (SD 14); n=26; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: ODI at 1 year; Group 1: mean 10 (SD 13); n=21, Group 2: mean 11 (SD 14); n=20; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: ODI at 2 year; Group 1: mean 6 (SD 9); n=26, Group 2: mean 11 (SD 16); n=24; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define
- Actual outcome for Overall (acute, chronic) with sciatica: Additional physical therapy at 2 years; Group 1: 8/28, Group 2: 15/28; Risk of bias: ; Indirectness of outcome: No indirectness

Protocol outcome 3: Revision rate at follow-up

- Actual outcome for Overall (acute, chronic) with sciatica: Reoperations at 2 years; Group 1: 2/28, Group 2: 0/28; Risk of bias: ; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Quality of life at follow-up; Pain severity (VAS/NRS) at >4 months; Function (disability scores) at follow-up; Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Failure rate at follow-up; Adverse events (morbidity) at Define

Study (subsidiary papers)	Peul 2007[434] (Peul 2007[432], Peul 2008[433], Van den hout 2008[540])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	1 (n=283)
Countries and setting	Conducted in Netherlands; Setting: Primary and secondary care
Line of therapy	1st line
Duration of study	Intervention + follow up: Immediate + 1 and 2 years follow-up
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: Sciatica due to herniated intervertebral disc
Subgroup analysis within study	Not applicable: n/a
Inclusion criteria	6-12 weeks of severe sciatica. 18 to 65 years of age, radiological confirmed disk herniation, received a diagnosis from an attending neurologist of an incapacitating lumbosacral radicular syndrome that had lasted for 6 to 12 weeks. Correlation of MRI findings with symptoms.
Exclusion criteria	cauda equina syndrome, muscle paralysis, or insufficient strength to move against gravity. Occurrence of another episode of symptoms similar to those of the current episode during the previous 12 months, previous spine surgery, bony stenosis, spondylolisthesis, pregnancy, or severe coexisting disease.
Recruitment/selection of patients	GP identification
Age, gender and ethnicity	Age - Mean (SD): 42.5 (9.7). Gender (M:F): 66%/34%. Ethnicity:
Further population details	
Extra comments	Duration of sciatica (weeks): surgery = 9.43 and UC = 9.48. RMDQ: surgery = 16.5 (4.4) and UC = 16.3 (3.9). Leg pain (VAS 0-10): surgery = 6.72 (2.77) and UC = 6.44 (2.12). SF-36 bodily pain: surgery = 21.9 (16.6) and UC = 23.9 (18.1). SF-36 physical functioning: surgery = 33.9 (19.6) and UC = 34.6 (19.0). SF-36 social functioning: surgery = 44.6 (30.1) and UC = 43.3 (27.1). SF-36 physical role: surgery = 8.2 (20.7) and UC = 8.3 (21.0). SF-36 emotional role: surgery = () and UC = ().
Indirectness of population	No indirectness
Interventions	(n=141) Intervention 1: Discectomy. Early surgery: 2 weeks after assignment. Symptomatic disc herniation removed by minimal unilateral trans-flaval approach with magnification. Patient under general or spinal anesthesia .Goal of surgery to decompress the nerve root and reduce risk of recurrent herniation by performing an annular fenestration, curettage, and removal of loose degenerated disc material from the disc space, using a rongeur, without attempting to perform a subtotal discectomy .NOTE: cancelled surgery only if spontaneous recovery occurred before the date of surgery. duration of hospital stay depended upon patientt's mobility after surgery.. Duration Immediate. Concurrent medication/care: Usual care was provided according to protocol of the surgical department. Rehabilitation of the pt at

	home was supervised by physiotherapists using a standardised exercise protocol. Patients were advised to resume their regular jobs when they were able, depending upon the nature of their work. Further details: 1. Method of decompression: Not applicable / Not stated / Unclear (n=142) Intervention 2: Usual care. Prolonged conservative treatment (surgery offered at 6 months if needed): intended 6 months of conservative Tx. provided by GPs. informed about their favorable prognosis and invited to visit the trial website (provided info about the natural course of their illness and the expectation of successful recovery, irrespective of initial intensity of pain). Tx aimed mainly at enabling patients to resume daily activities. If needed, prescription of pain medication was adjusted according to clinical guidelines. Pts fearful of moving were referred to a physiotherapist. NOTE: if sciatica persisted for 6 months after the patient underwent randomisation, discectomy was offered. Surgery was offered earlier than 6 months after randomisation if patients had increasing leg pain not responsive to medication, or progressive neurologic deficits.. Duration Length of study / intended 6 months. Concurrent medication/care: None reporteed Further details: 1. Method of decompression: Not applicable / Not stated / Unclear
Funding	Academic or government funding (Netherlands Organisation for Health Research and Development and the Holden Foundation)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISCECTOMY versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 bodily pain at <4 months (8 weeks); Group 1: mean 62.8 (SD 2.1); n=140, Group 2: mean 54.4 (SD 2); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 bodily pain at >4 months (6 months /26 weeks); Group 1: mean 76.1 (SD 1.1); n=140, Group 2: mean 72.8 (SD 1.9); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical functioning at <4 months (8 weeks); Group 1: mean 71.2 (SD 1.7); n=140, Group 2: mean 61.9 (SD 1.9); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical functioning at >4 months (6 months /26 weeks); Group 1: mean 79.1 (SD 1.9); n=140, Group 2: mean 77.6 (SD 1.7); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 social functioning at <4 months (8 weeks); Group 1: mean 69.9 (SD 2.3); n=140, Group 2: mean 67.6 (SD 2.3); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 social functioning at >4 months (6 months /26 weeks); Group 1: mean 86.9 (SD 1.8); n=140, Group 2: mean 82.4 (SD 1.9); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical role at <4 months (8 weeks); Group 1: mean 29.5 (SD 3.1); n=140, Group 2: mean 29.3 (SD 3.2); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness

- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 physical role at >4 months (6 months /26 weeks); Group 1: mean 69.1 (SD 3.5); n=140, Group 2: mean 61.9 (SD 3.6); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 emotional role at <4 months (8 weeks); Group 1: mean 69.3 (SD 3.5); n=140, Group 2: mean 66.2 (SD 3.7); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 emotional role at >4 months (6 months /26 weeks); Group 1: mean 84.9 (SD 2.7); n=140, Group 2: mean 81 (SD 3); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 mental health index at <4 months (8 weeks); Group 1: mean 82.1 (SD 1.3); n=140, Group 2: mean 73 (SD 1.7); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 mental health index at >4 months (6 months /26 weeks); Group 1: mean 83.2 (SD 1.3); n=140, Group 2: mean 80.5 (SD 1.5); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 vitality at <4 months (8 weeks); Group 1: mean 67.5 (SD 1.7); n=140, Group 2: mean 57.1 (SD 1.7); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 vitality at >4 months (6 months /26 weeks); Group 1: mean 71.7 (SD 1.5); n=140, Group 2: mean 68.5 (SD 1.6); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 general health perception at <4 months (8 weeks); Group 1: mean 75.7 (SD 1.5); n=140, Group 2: mean 65.2 (SD 1.6); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36 general health perception at >4 months (6 months /26 weeks); Group 1: mean 74.1 (SD 1.7); n=140, Group 2: mean 71.6 (SD 1.6); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: EQ-5D at <4 months (3 months); Group 1: mean 0.63 (SD 0.18); n=140, Group 2: mean 0.57 (SD 0.22); n=141; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: EQ-5D at >4 months (1 year); Group 1: mean 0.84 (SD 0.18); n=140, Group 2: mean 0.82 (SD 0.19); n=141; EQ-5D 0-1 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS 0-10 at <4 months (8 weeks); Group 1: mean 1.02 (SD 0.19); n=140, Group 2: mean 2.79 (SD 0.19); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS 0-10 at <4 months (8 weeks); Group 1: mean 1.44 (SD 0.21); n=140, Group 2: mean 2.57 (SD 0.21); n=141; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 3: Pain severity (VAS/NRS) at >4 months
- Actual outcome for Overall (acute, chronic) with sciatica: Leg pain VAS 0-10 at >4 months (6 months /26 weeks); Group 1: mean 0.84 (SD 0.19); n=140, Group 2: mean 1.45 (SD 0.19); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: Back pain VAS 0-10 at >4 months (6 months /26 weeks); Group 1: mean 1.55 (SD 0.22); n=140, Group 2: mean 1.78 (SD 0.21); n=141; VAS 0-10 Top=High is poor outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 4: Function (disability scores) at follow-up

- Actual outcome for Overall (acute, chronic) with sciatica: RMDQ 0-23 at <4 months (8 weeks); Group 1: mean 6.1 (SD 0.5); n=140, Group 2: mean 9.2 (SD 0.5); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: RMDQ 0-23 at >4 months (6 months/26 weeks); Group 1: mean 4 (SD 0.5); n=140, Group 2: mean 4.8 (SD 0.5); n=141; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Responder criteria at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Recovery: complete or nearly complete disappearance of symptoms on a 7-point Likert scale at <4 months (8 weeks); Group 1: 86/140, Group 2: 44/141; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Recovery: complete or nearly complete disappearance of symptoms on a 7-point Likert scale at >4 months (6 months /26 weeks); Group 1: 127/140, Group 2: 93/141; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Adverse events (morbidity) at Define; Adverse events (mortality) at follow-up; Revision rate at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

Study (subsidiary papers)	SPORT trial: Pearson 2008[426] (Kerr 2015[274], Lurie 2014[332], Weinstein 2006[561], Weinstein 2006[563], Tosteson 2008[523], Tosteson 2008[524])
Study type	RCT (Patient randomised; Parallel)
Number of studies (number of participants)	3 (n=1191)
Countries and setting	Conducted in USA; Setting: Patients were enrolled from 13 medical centers with multidisciplinary spine practices in 11 US states.
Line of therapy	Unclear
Duration of study	--:
Method of assessment of guideline condition	Adequate method of assessment/diagnosis
Stratum	Overall (acute, chronic) with sciatica: Sciatica due to herniated intervertebral disc
Subgroup analysis within study	Not applicable
Inclusion criteria	Patients were eligible for SPORT if they had radicular pain and evidence of nerve root compression with a positive nerve root tension sign (positive straight leg raise test or femoral tension sign). Alternatively, they had a reflex(asymmetric depressed reflex), sensory (asymmetric decreased sensation in a dermatomaml distribution), or motor (asymmetric weakness in a myotomal distribution) deficit with associated radicular symptoms and positive nerve root tension signs. In addition, a confirmatory imaging study (MRI or CT) must indicate an intervertebral disc herniation (a protrusion, extrusion, or sequestered fragment) at a location (level and side) corresponding with the patient's radicular signs or symptoms.20 Patients with only a bulging disc(circumferential symmetric extension beyond the interspace) are not eligible.
Exclusion criteria	insufficient trial of non-surgical treatment (6 weeks),cauda equina syndrome or progressive neurologic deficit requiring urgent surgery; overall health that makes spine surgery too life threatening to be appropriate;, dramatic improvement with non-surgical care; possible pregnancy; active malignancy (patients with a history of any invasive malignancy except for non-melanoma skin cancer must have been treated with curative intent and have been free from clinical signs and symptoms of the malignancy for at least 5 years);a current fracture, infection, or significant deformity (greater than 15° lumbarscoliosis) of the spine; less than 18 years of age; prior lumbar spine surgery; current enrollment in another experimental spine-related protocol; or not available for follow-up or unable to complete questionnaires.
Recruitment/selection of patients	patients who had symptomatic and imaging confirmed lumbar radiculopathy with persistent symptoms for atlease 6 weeks.
Age, gender and ethnicity	Age - Mean (SD): 40.7(10.8) in the Discectomy Group and 43.8(12.1) in the Usual Care Group. Gender (M:F): 684:507. Ethnicity:
Further population details	

Extra comments	At baseline, the surgery group was approximately 3 years younger, less likely to be working full time and more likely to be receiving disability compensation. They had SF-36,ODI and Sciatica Index Scores indicative of more severe disease and reported more bothersome back pain.
Indirectness of population	No indirectness
Interventions	(n=775) Intervention 1: Discectomy. Standard open discectomy with examination and decompression of the nerve root. Surgeons were encouraged to use loupe magnification or a microscope.. Duration 2 year. Concurrent medication/care: None reported Further details: 1. Method of decompression: (n=416) Intervention 2: Usual care. Included at least physical therapy, education and counseling with home exercise instruction and non-steroidal anti-inflammatory drugs if tolerated. Physicians were instructed to individualise non-operative treatment and explore a wide range of non-operative options. Duration 2 year. Concurrent medication/care: Not reported Further details: 1. Method of decompression:
Funding	Other (Combination of grants from government bodies and industry .National institute of arthritis and musclo-skeletal and skin diseases and the office of research on Women's Health, National Institute of Health. Authors received grant support from industry)

RESULTS (NUMBERS ANALYSED) AND RISK OF BIAS FOR COMPARISON: DISCECTOMY GROUP versus USUAL CARE

Protocol outcome 1: Quality of life at follow-up
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily pain (RCT) at 3 months; Group 1: mean 30.5 (SD 26.7); n=198, Group 2: mean 27.6 (SD 26.15); n=211; sf-36 0-100 Top=High is good outcome; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily pain (RCT) at 1 year; Group 1: mean 39.7 (SD 25.58); n=202, Group 2: mean 36.9 (SD 26.27); n=213; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Bodily pain (RCT) at 2 year; Group 1: mean 40.3 (SD 25.91); n=186, Group 2: mean 37.1 (SD 25.98); n=187; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical functioning (RCT) at 3 months; Group 1: mean 27.7 (SD 26.73); n=198, Group 2: mean 24.9 (SD 27.6); n=211; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical functioning (RCT) at 1 year; Group 1: mean 36.74 (SD 27); n=202, Group 2: mean 35.2 (SD 27.2); n=213; Risk of bias: Very high; Indirectness of outcome: No indirectness
- Actual outcome for Overall (acute, chronic) with sciatica: SF-36-Physical functioning (RCT) at 2 year; Group 1: mean 35.9 (SD 27.28); n=186, Group 2: mean 35.9 (SD 25.98); n=187; Risk of bias: Very high; Indirectness of outcome: No indirectness

Protocol outcome 2: Pain severity (VAS/NRS) at Up to 4 months - Actual outcome for Overall (acute, chronic) with sciatica: Sciatica Pain bothersomeness (RCT) at 3 months; Group 1: mean -9 (SD 6.47); n=198, Group 2: mean -6.8 (SD 6.54); n=211; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 3: Pain severity (VAS/NRS) at >4 months - Actual outcome for Overall (acute, chronic) with sciatica: Sciatica Pain bothersomeness (RCT) at 1 year; Group 1: mean -10.3 (SD 6.54); n=202, Group 2: mean -6.8 (SD 6.54); n=211; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Sciatica Pain bothersomeness (RCT) at 2 year; Group 1: mean -10.1 (SD 6.55); n=186, Group 2: mean -8.5 (SD 6.43); n=187; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 4: Function (disability scores) at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: ODI (RCT) at 3 months; Group 1: mean -26 (SD 23.92); n=198, Group 2: mean -21.3 (SD 23.24); n=211; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI (RCT) at 1 year; Group 1: mean -30.6 (SD 24.16); n=202, Group 2: mean -27.4 (SD 23.35); n=213; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: ODI (RCT) at 2 year; Group 1: mean -31.4 (SD 23.18); n=186, Group 2: mean -28.7 (SD 23.24); n=187; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 5: Adverse events (morbidity) at Define - Actual outcome for Overall (acute, chronic) with sciatica: Adverse events (intraoperative treatments) (RCT) at <4 months; Group 1: 13/243, Group 2: 0/258; Risk of bias: Very high; Indirectness of outcome: No indirectness - Actual outcome for Overall (acute, chronic) with sciatica: Adverse events (postoperative complications/events) (RCT) at 8 weeks; Group 1: 13/243, Group 2: 0/250; Risk of bias: Very high; Indirectness of outcome: No indirectness Protocol outcome 6: Revision rate at follow-up - Actual outcome for Overall (acute, chronic) with sciatica: Reoperations (RCT) at 2 years; Group 1: 25/243, Group 2: 0/250; Risk of bias: Very high; Indirectness of outcome: No indirectness	
Protocol outcomes not reported by the study	Psychological distress (HADS/GHQ/BDI/STAI) at follow-up; Responder criteria at follow-up; Adverse events (mortality) at follow-up; Failure rate at follow-up; Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) at Define

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