National Institute for Health and care Excellence

Final version

Low back pain and sciatica in over 16s: assessment and management

Low back pain and sciatica in over 16s

NICE guideline NG59

Appendices K-Q

November 2016

Final, 2016

Developed by theNational Guideline Centre, hosted by the Royal College of Physicians

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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Contents

Appendix K: Forest plots

K.1 Clinical examination

None.

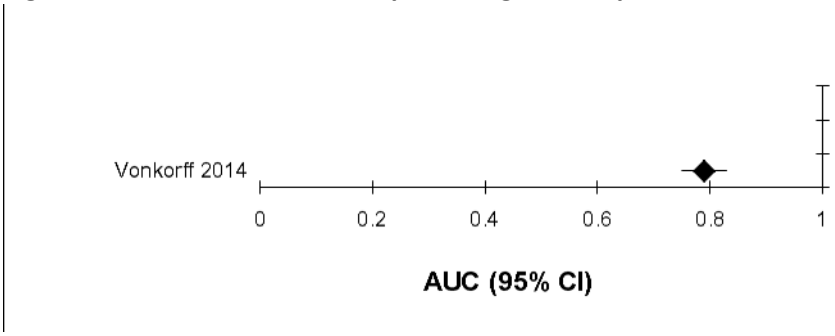
K.2 Risk assessment tools and stratification

K.2.1 Risk assessment tools

K.2.1.1 AUC plots

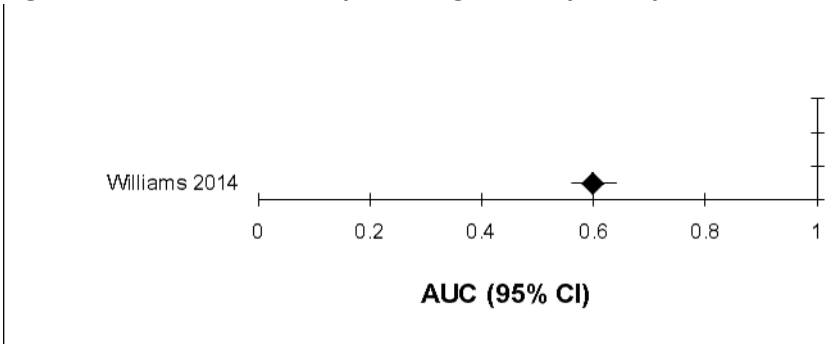
K.2.1.1.1 Risk assessment tool: Chronic Pain Risk Item

Figure 1: Chronic risk item for predicting chronic pain at 4 months



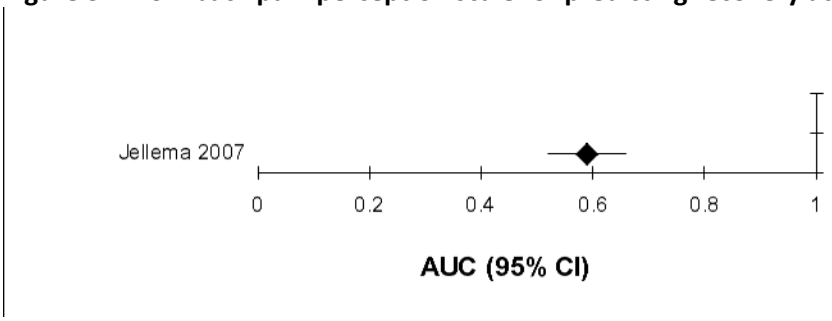
K.2.1.1.2 Risk assessment tool: Hancock clinical prediction rule

Figure 2: Hancock CPR for predicting recovery from pain at 12 weeks



K.2.1.1.3 Risk assessment tool: low back pain perception scale

Figure 3: Low back pain perception scale for predicting recovery at 1 year (self-reported)



K.2.1.1.4 Risk assessment tool: ÖREBRO

Figure 4: ÖREBRO – ÖMSPQ for predicting functional status at 8 weeks and 6 months

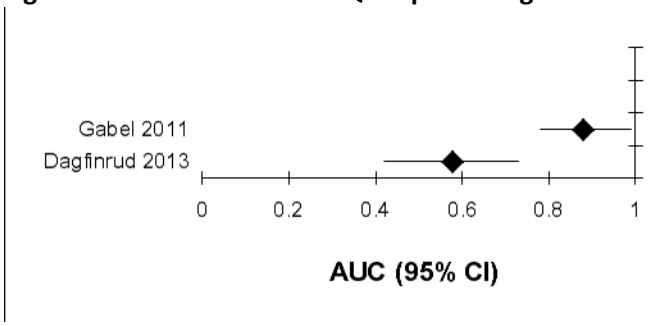


Figure 5: ÖREBRO – ÖMSPQ for predicting problem severity at 6 months

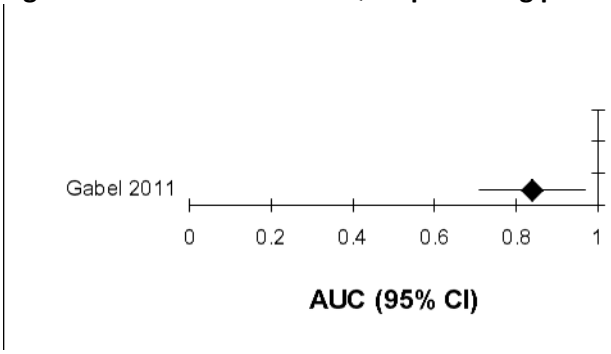
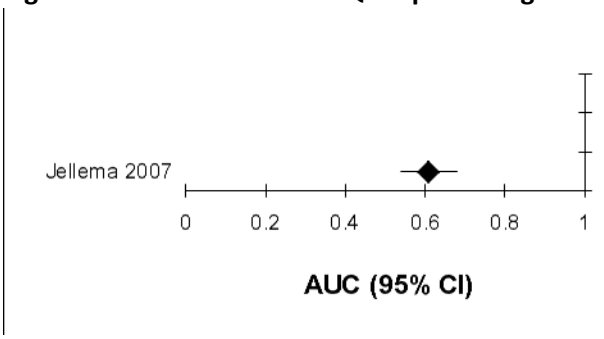
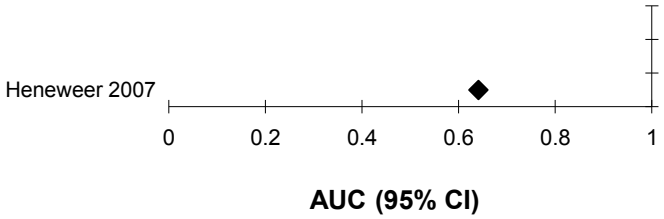


Figure 6: ÖREBRO – ÖMSPQ for predicting recovery at 1 year (self-reported)



K.2.1.1.5 Acute Low Back Pain Screening Questionnaire (ALBPSQ)

Figure 7: ALBPSQ for predicting recovery at 12 weeks



K.2.1.1.6 Risk assessment tool: Modified ÖREBRO

Figure 8: Modified ÖREBRO (ÖMSPQ) for predicting functional status at 6 months

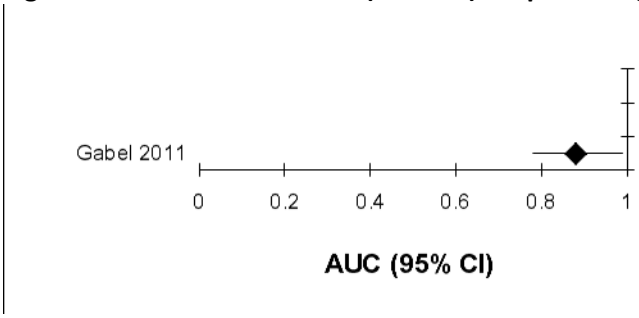
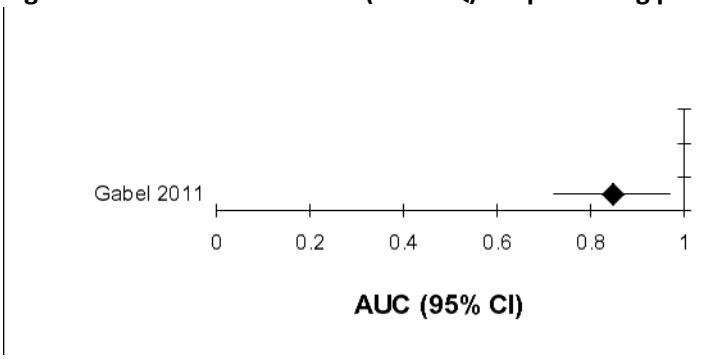


Figure 9: Modified ÖREBRO (ÖMSPQ) for predicting problem severity at 6 months



K.2.1.1.7 Risk assessment tool: STarT Back

Figure 10: STarT Back for predicting functional disability at 3-6 months

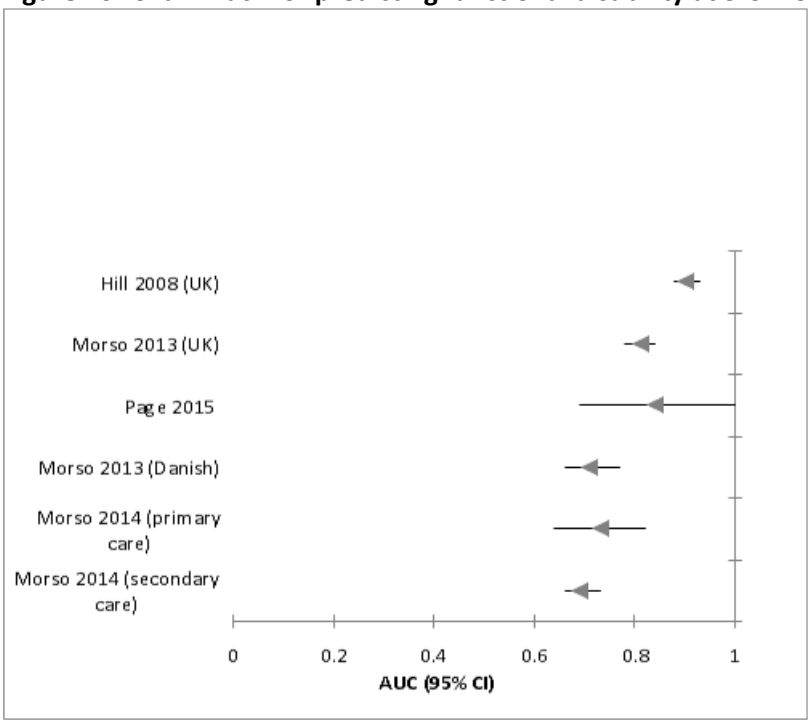


Figure 11: STarT Back for predicting functional disability at 7-12 months

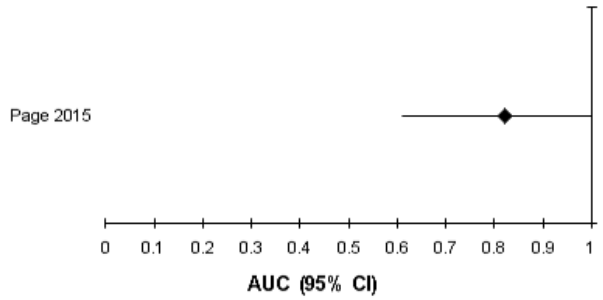


Figure 12: STarT Back for predicting pain at 3-6 months

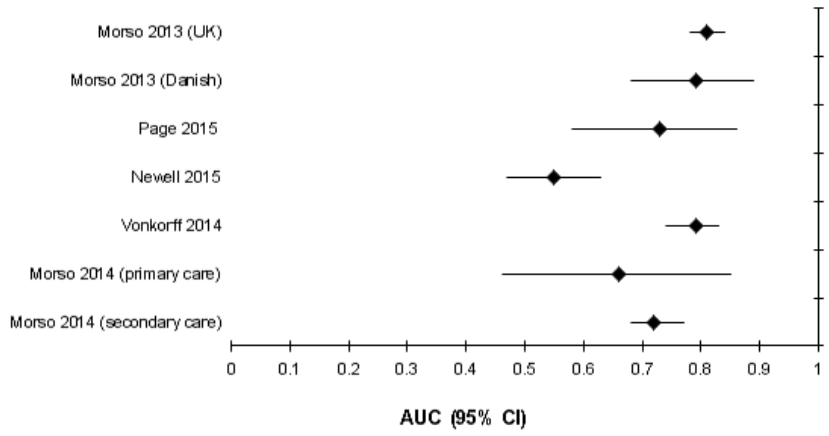
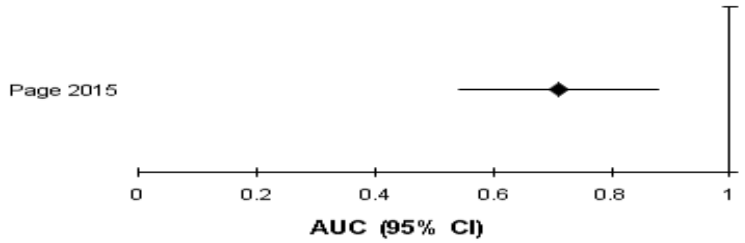
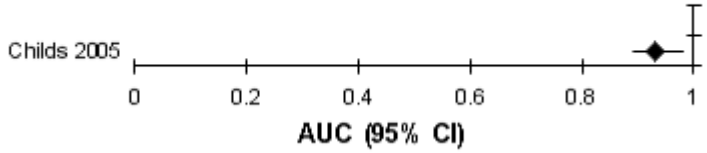


Figure 13: STarT Back for predicting pain at 7-12 months



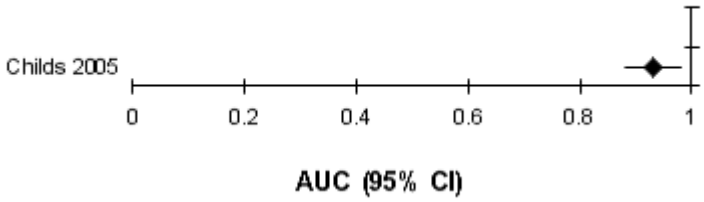
K.2.1.1.8 Risk assessment tool: Functional Rating Index (FRI)

Figure 14: Functional Rating Index (FRI) for predicting functional improvement at 4 weeks



K.2.1.1.9 Risk assessment tool: Oswestry Disability Questionnaire (ODI)

Figure 15: Oswestry Disability Questionnaire for predicting functional improvement at 4 weeks



K.2.2 Risk stratification

K.2.2.1 Hicks/Delitto classification versus no risk tool stratification

Figure 16: Quality of life(SF-36,Physical Component Score(PCS),0-100) ≤4 months (4 weeks)

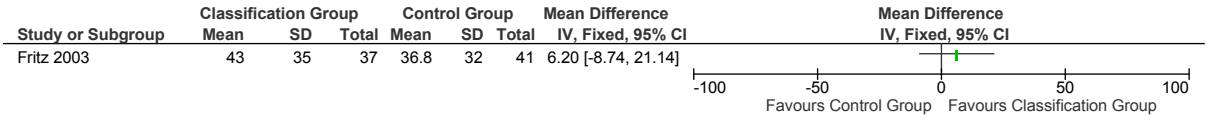


Figure 17: Quality of life(SF-36,Physical Component Score(PCS),0-100)>4 months - 1 year

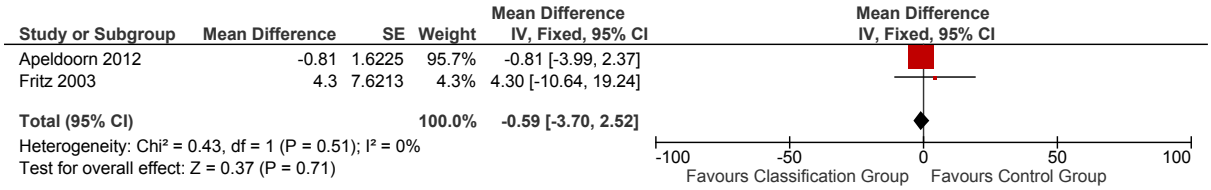


Figure 18: Quality of life(SF-36,Mental Component Score(MCS),0-100) ≤4 months (4 weeks)

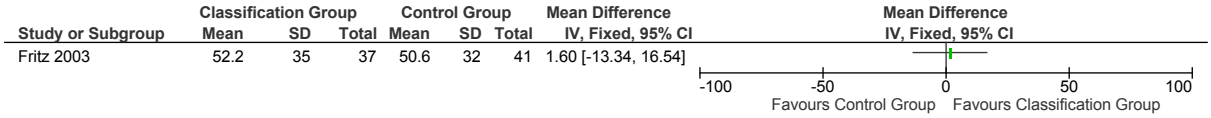


Figure 19: Quality of life(SF-36,Mental Component Score(MCS),0-100) >4 months - 1 year

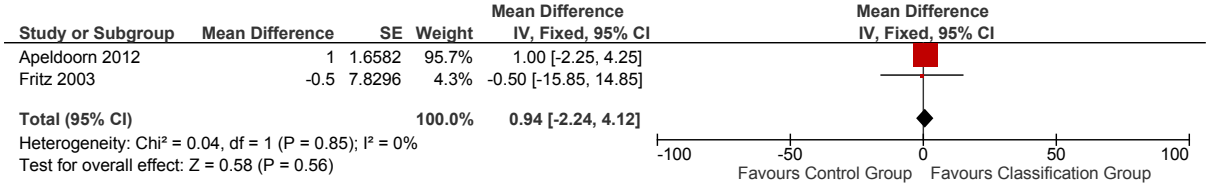


Figure 20: Pain Severity(NRS,0-10) ≤4 months (8 weeks)

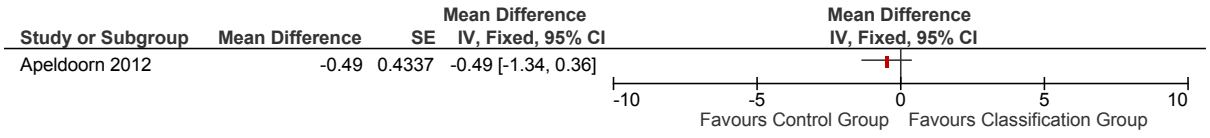


Figure 21: Pain Severity(NRS,0-10) >4 months - 1 year (1 year)

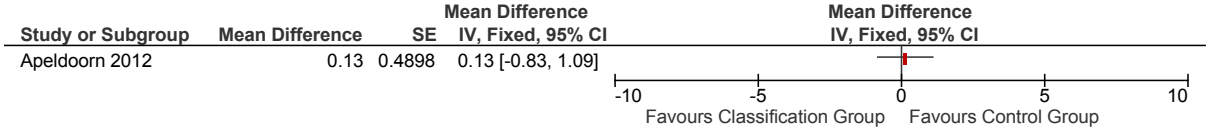


Figure 22: Function (ODI, 0-100) ≤4 months

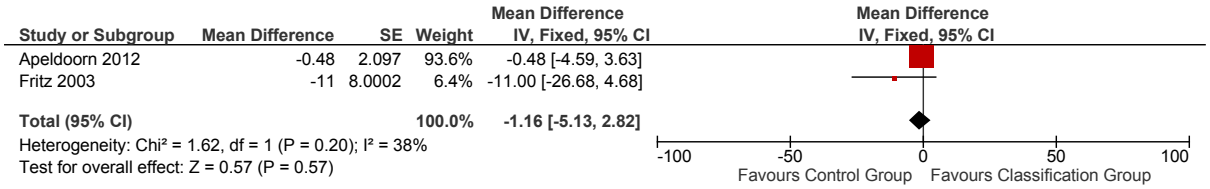


Figure 23: Function (ODI, 0-100) >4 months - 1 year

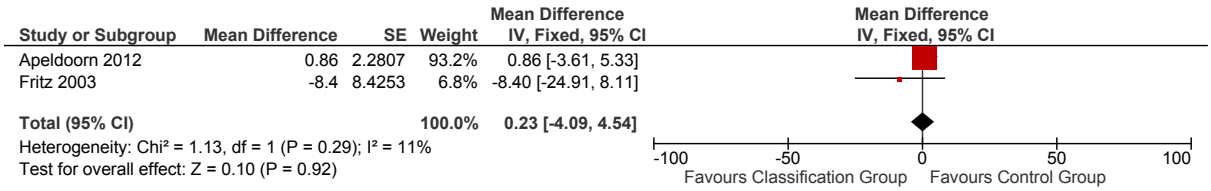


Figure 24: Responder criteria (NRS > 30% improvement) ≤4 months (8 weeks)

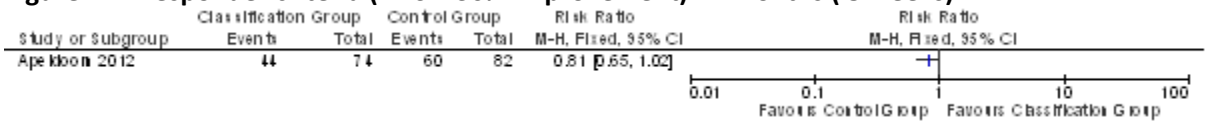


Figure 25: Responder criteria (NRS > 30% improvement) >4 months - 1 year **(1 year)**

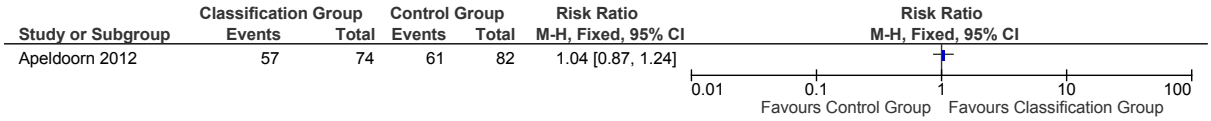


Figure 26: Responder criteria (ODI > 30% improvement) ≤4 months (8 weeks)

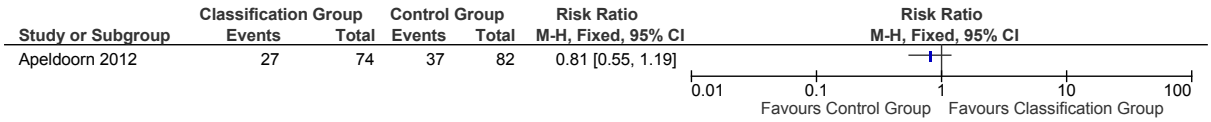


Figure 27: Responder criteria (ODI > 30% improvement) >4 months (1 year)

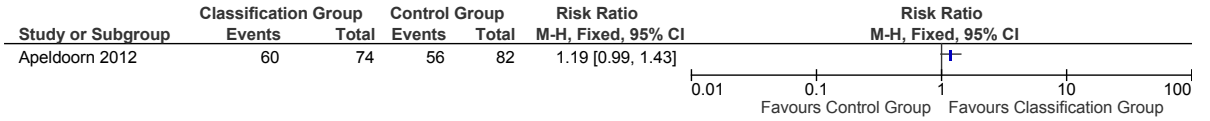


Figure 28: Healthcare utilisation (Number of therapy appointments) ≤4 months (4 weeks)

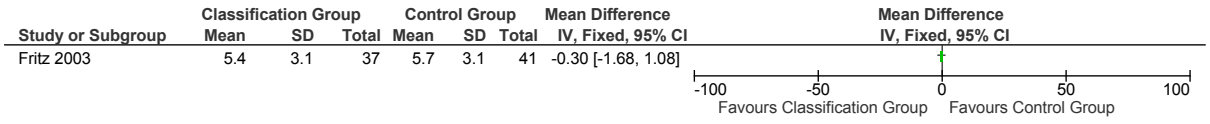
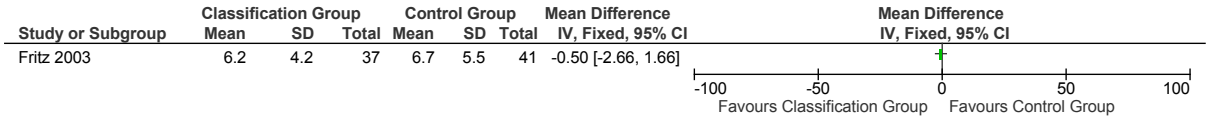


Figure 29: Healthcare utilisation (Number of therapy appointments) >4 months (1 year)



K.2.2.2 O'Sullivan classification versus no risk tool stratification

Figure 30: Pain Severity(VAS,0-10) ≤4 months (3 months)

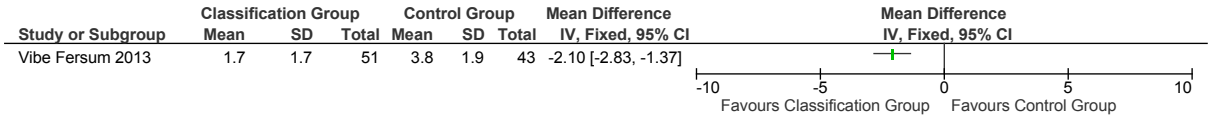


Figure 31: Pain Severity(VAS,0-10) >4 months (1 year)

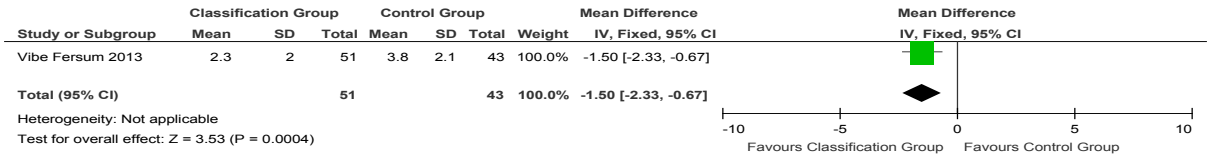


Figure 32: Function (ODI, 0-100) ≤4 months (3 months)

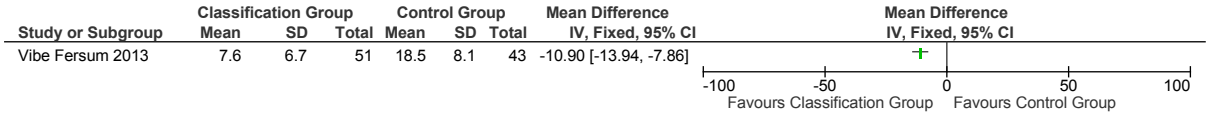
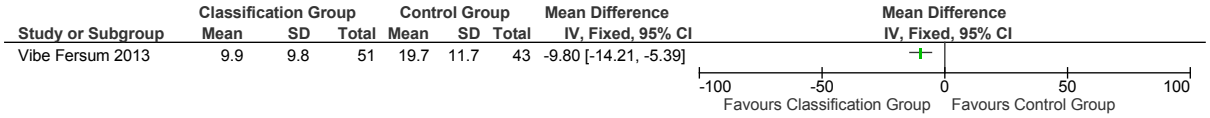


Figure 33: Function (ODI, 0-100) >4 months (1 year)



K.2.2.3 STarT Back risk tool versus no risk tool stratification

Figure 34: Quality of life(EQ-5D,0-1) ≤4 months (4 months)

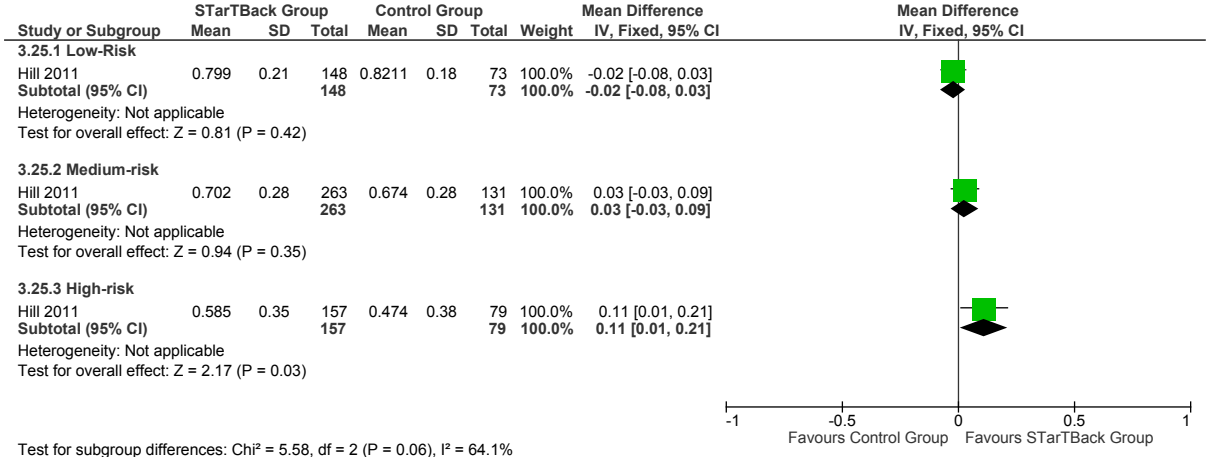


Figure 35: Quality of life(EQ-5D,0-1) >4 months (1 year)

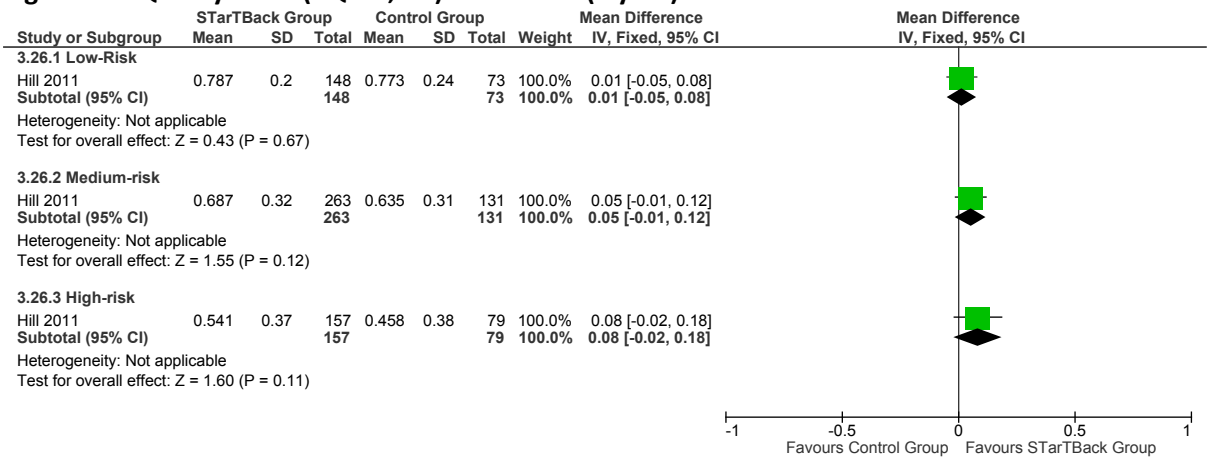


Figure 36: Quality of life(SF-12,Physical Component Score(PCS),0-100) ≤4 months (4 months)

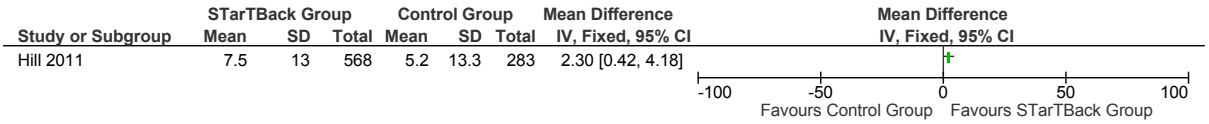


Figure 37: Quality of life(SF-12,Physical Component Score(PCS),0-100) ≤4 months (4 months)- STRATIFIED RISK GROUPS

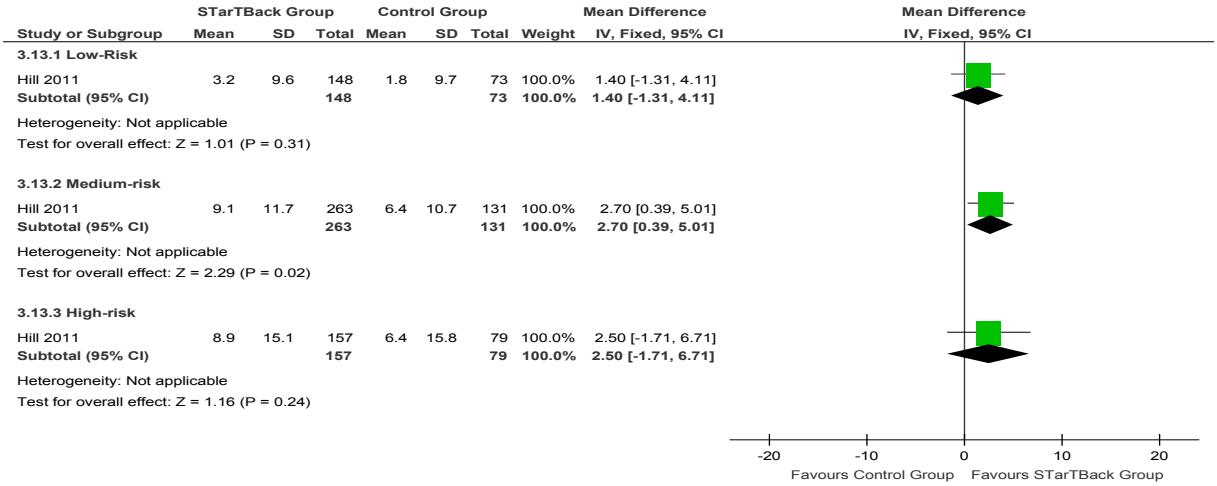


Figure 38: Quality of life(SF-12,Physical Component Score(PCS),0-100) >4 months (1 year)

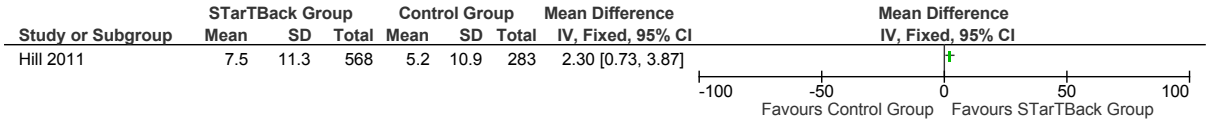


Figure 39: Quality of life(SF-12,Physical Component Score(PCS),0-100) >4 months (1 year) STRATIFIED RISK GROUPS

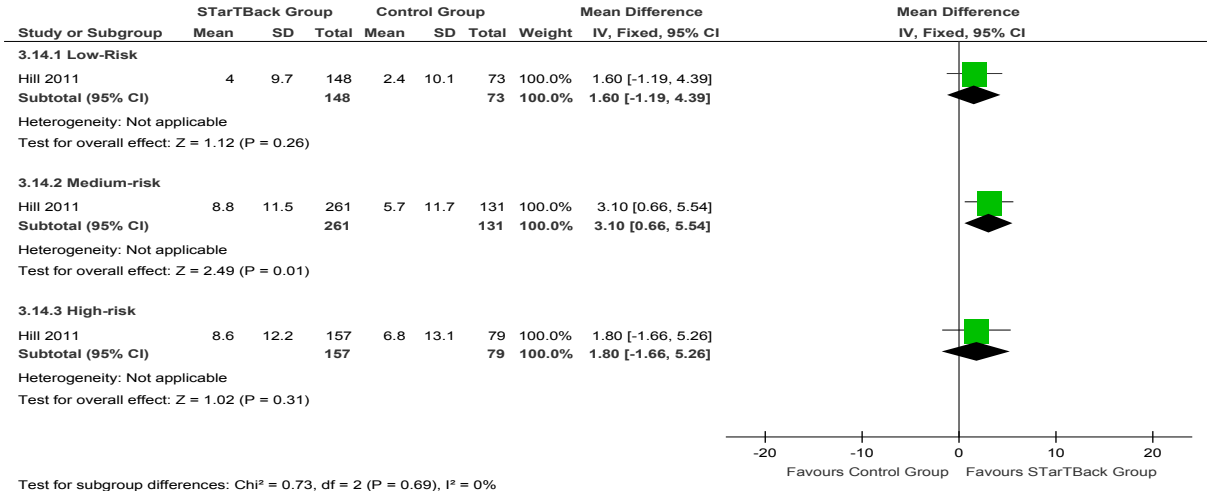


Figure 40: Quality of life(SF-12,Mental Component Score(MCS),0-100) ≤4 months(4 months)

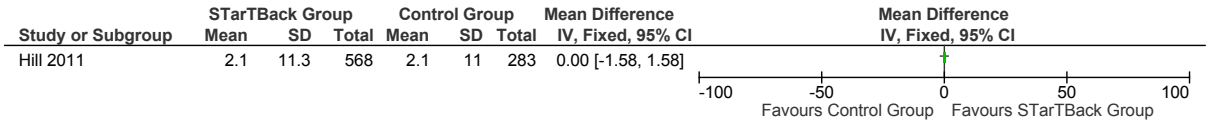


Figure 41: Quality of life(SF-12MentalComponent Score(MCS),0-100) ≤ 4 months(4 months)- STRATIFIED RISK GROUPS

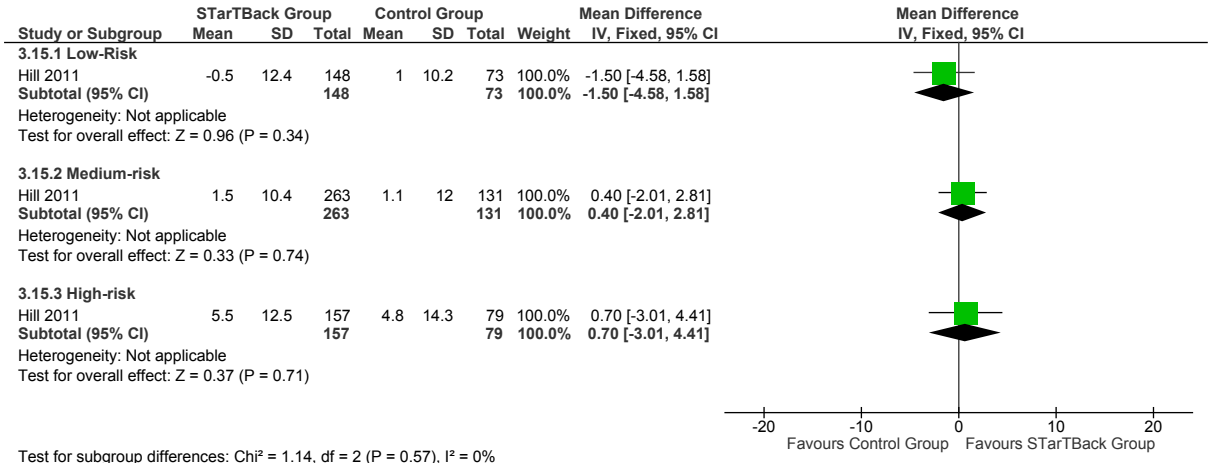


Figure 42: Quality of life(SF-12,Mental Component Score(MCS),0-100) >4 months (1 year)

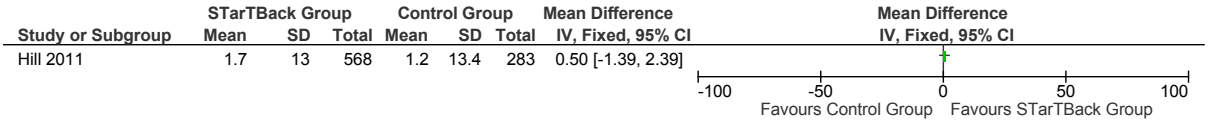


Figure 43: Quality of life(SF-12,Mental Component Score(MCS),0-100) >4 months (1 year)- STRATIFIED RISK GROUPS

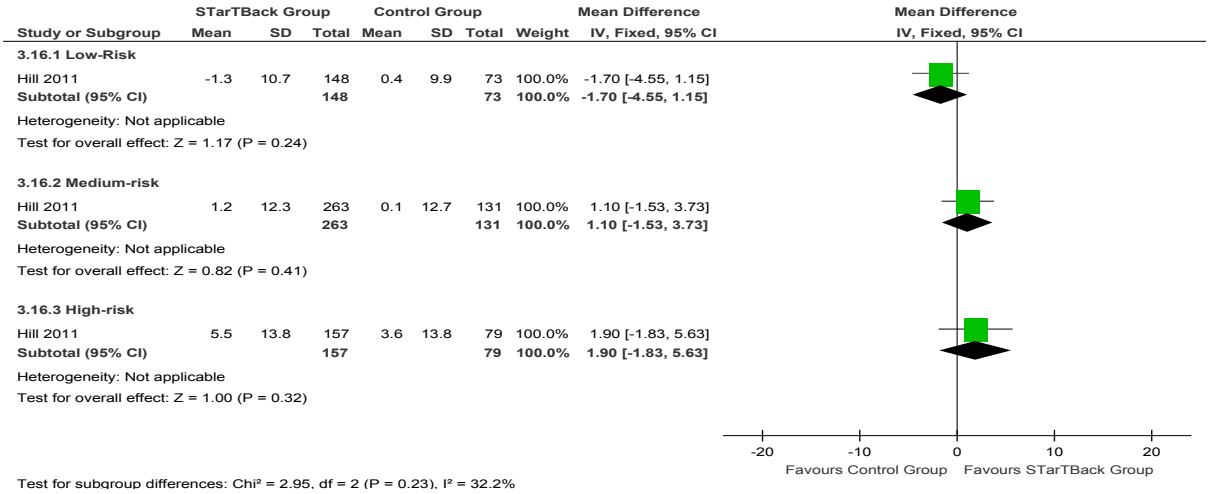


Figure 44: Pain Severity(VAS/NRS change scores,0-10) ≤4 months (4 months)

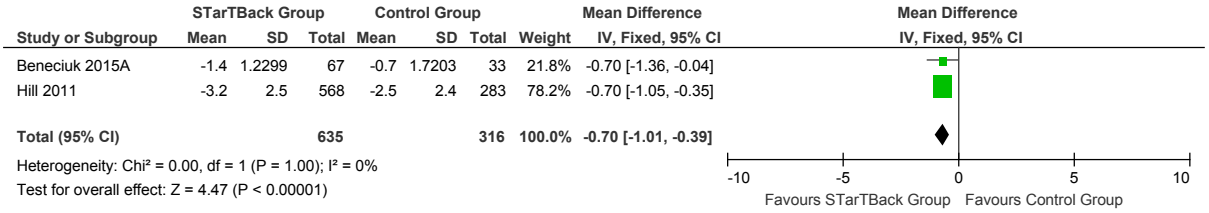


Figure 45: Pain Severity(VAS/NRS, change scores,0-10) ≤4 months (4 months)- STRATIFIED RISK GROUPS

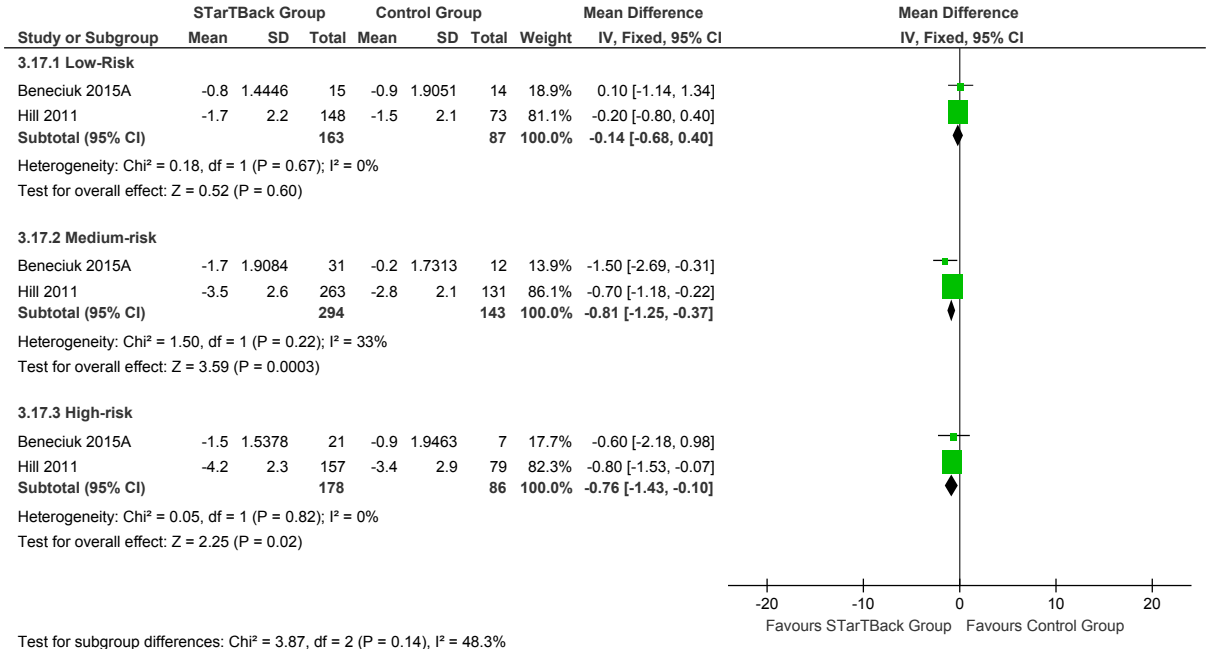


Figure 46: Pain Severity(VAS,0-10) >4 months (1 year)

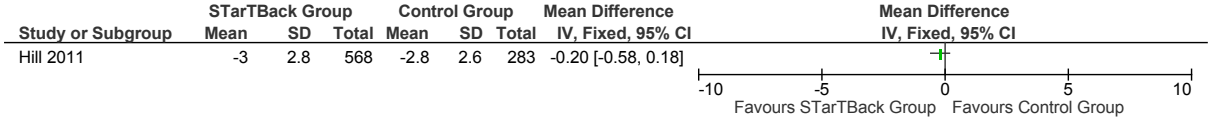


Figure 47: Pain Severity(VAS,0-10) >4 months (1 year)- STRATIFIED RISK GROUPS

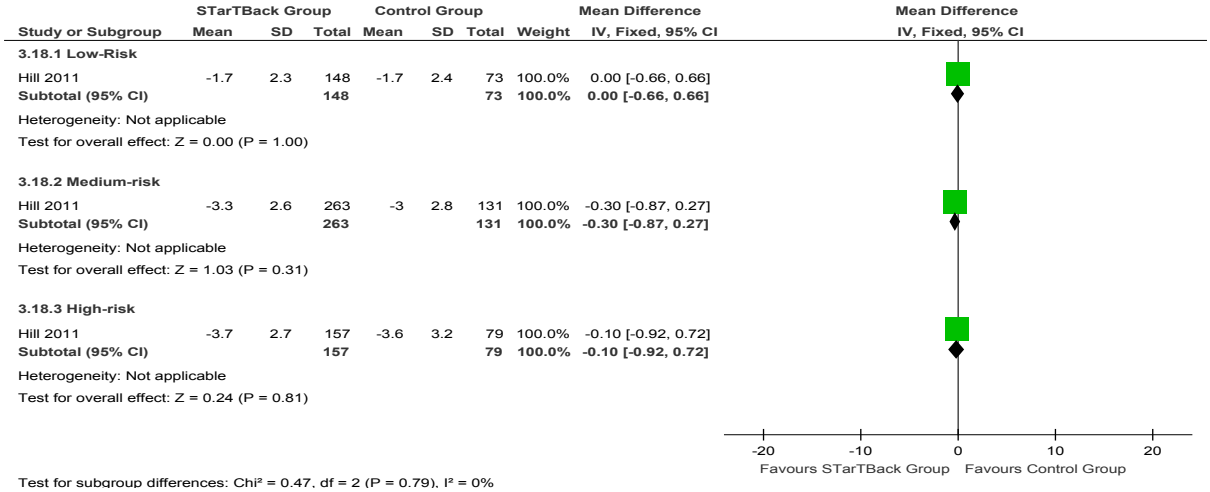


Figure 48: Function (RMDQ, 0-24, ODI, 0-100 change scores) ≤4 months (4 months)

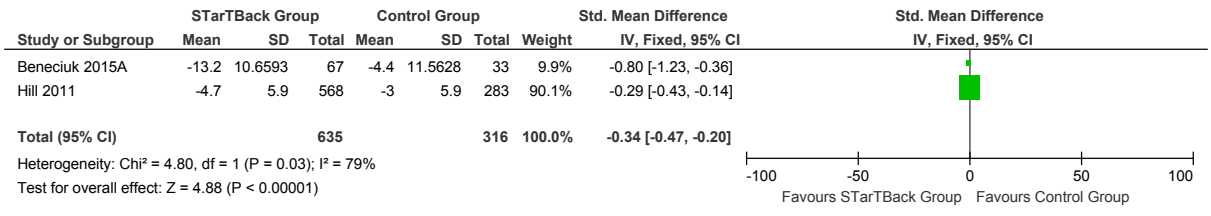


Figure 49: Function (RMDQ, 0-24, ODI, 0-100 change scores)) ≤4 months (4 months)- STRATIFIED RISK GROUPS

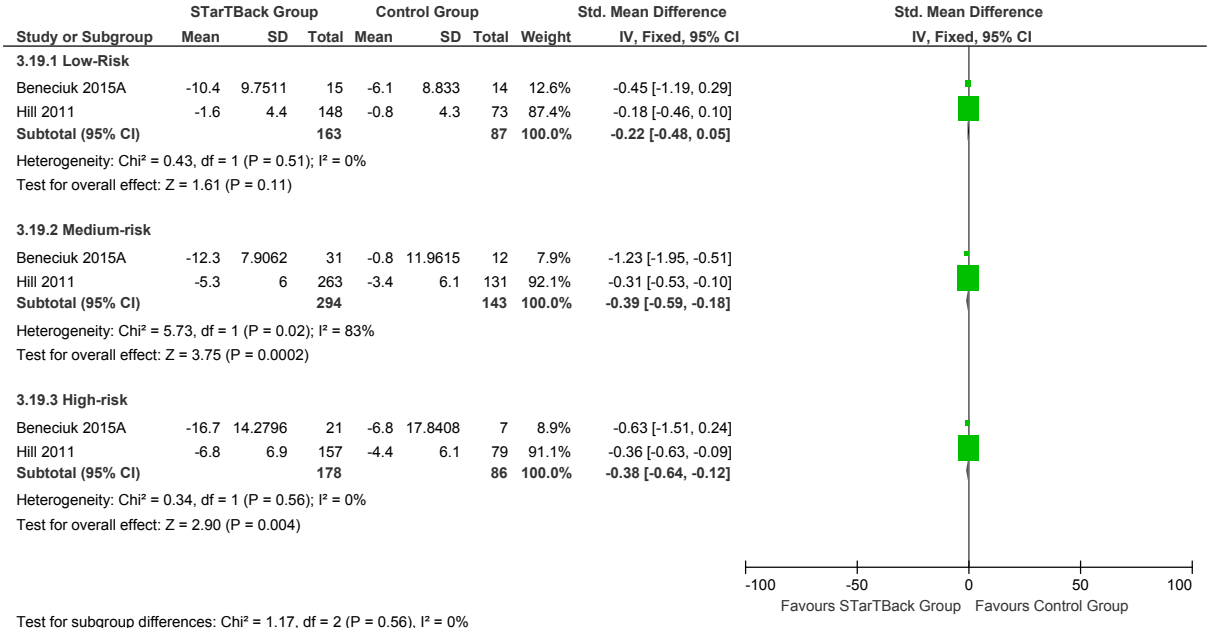


Figure 50: Function (RMDQ, 0-24) >4 months (1 year)

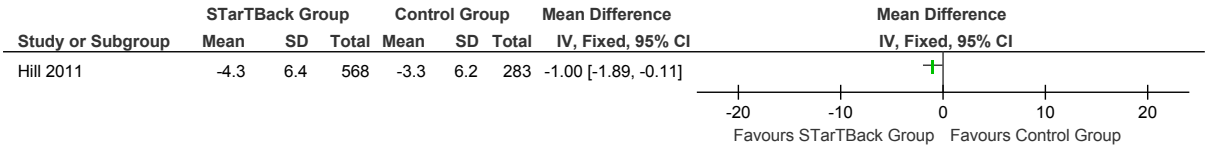


Figure 51: Function (RMDQ, 0-24) >4 months (1 year)- STRATIFIED RISK GROUPS

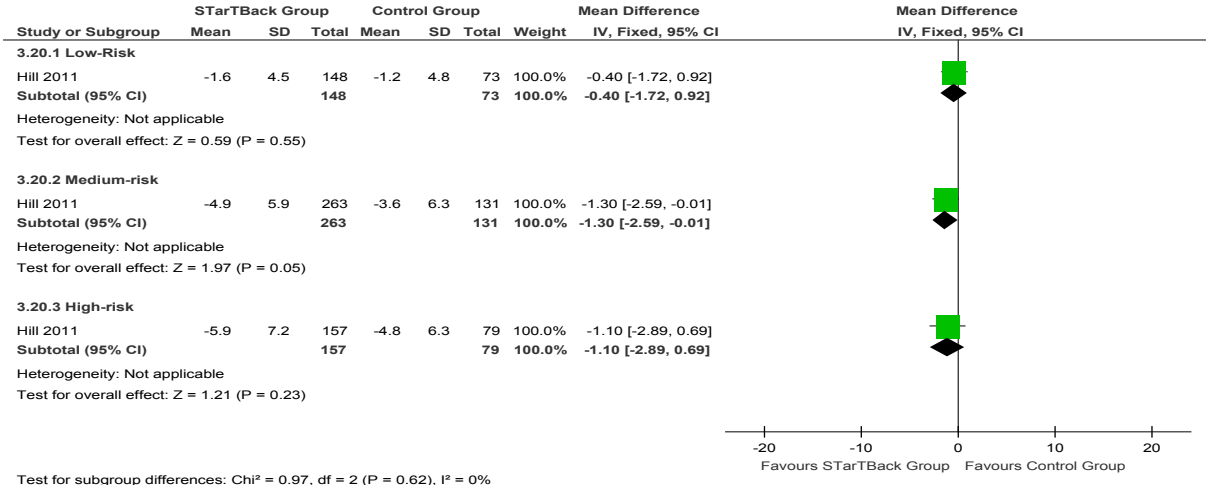


Figure 52: Psychological Distress (HADS, anxiety subscale, 0-21) ≤4 months (4 months)

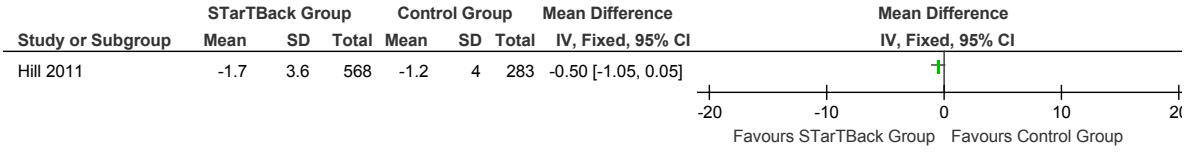


Figure 53: Psychological Distress (HADS, anxiety subscale, 0-21) ≤4 months (4 months)- STRATIFIED RISK GROUPS

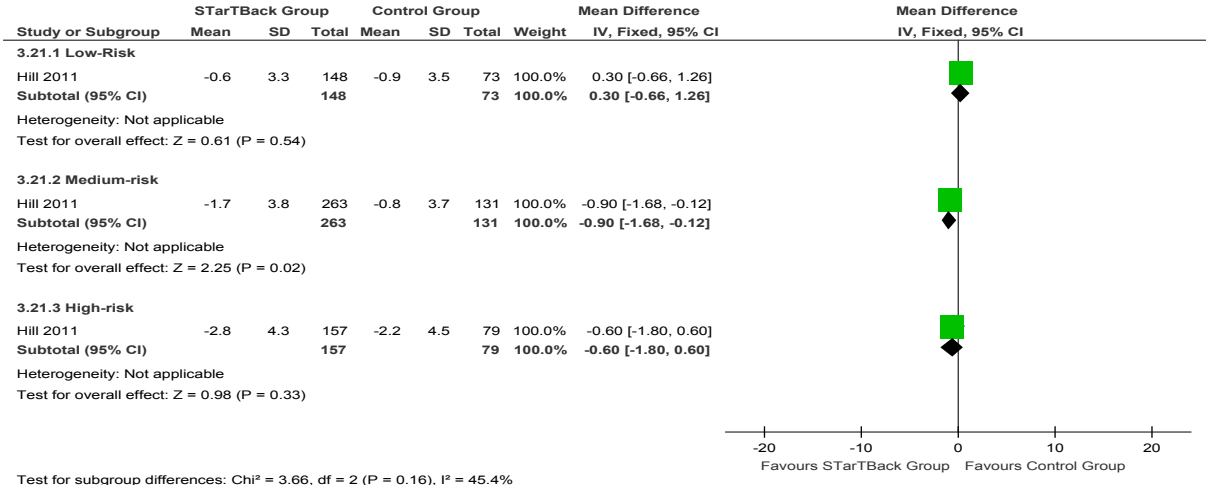


Figure 54: Psychological Distress (HADS, anxiety subscale, 0-21) >4 months (1 year)

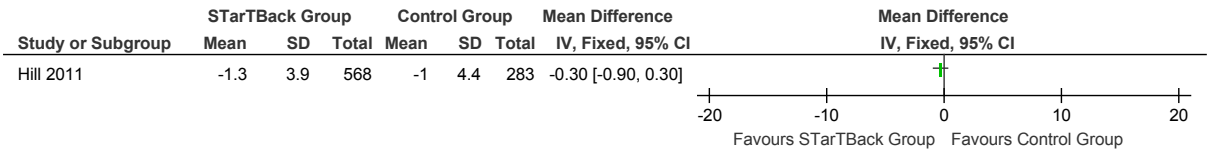


Figure 55: Psychological Distress (HADS, anxiety subscale, 0-21) >4 months (1 year)- STRATIFIED RISK GROUPS

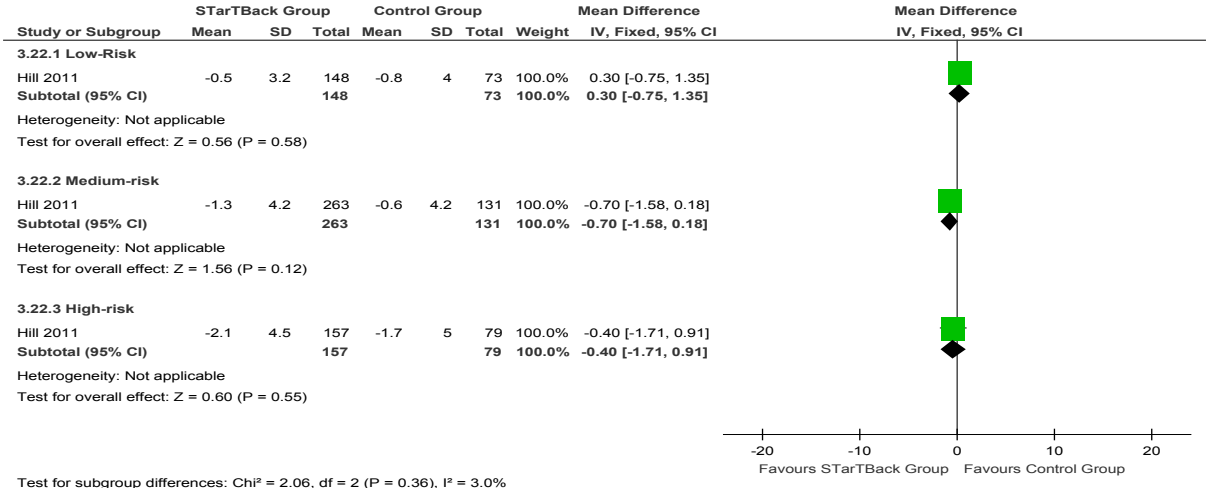


Figure 56: Psychological Distress (HADS, depression subscale, 0-21) ≤4 months (4 months)

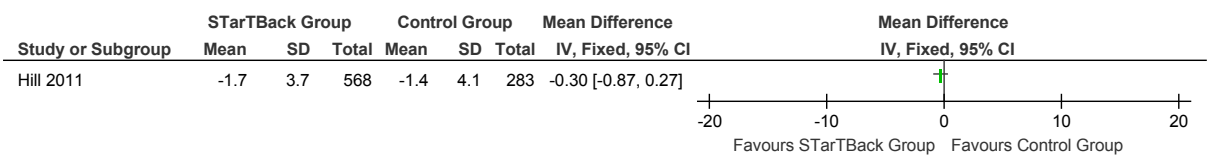


Figure 57: Psychological Distress (HADS, depression subscale, 0-21) ≤4 months (4 months)- STRATIFIED RISK GROUPS

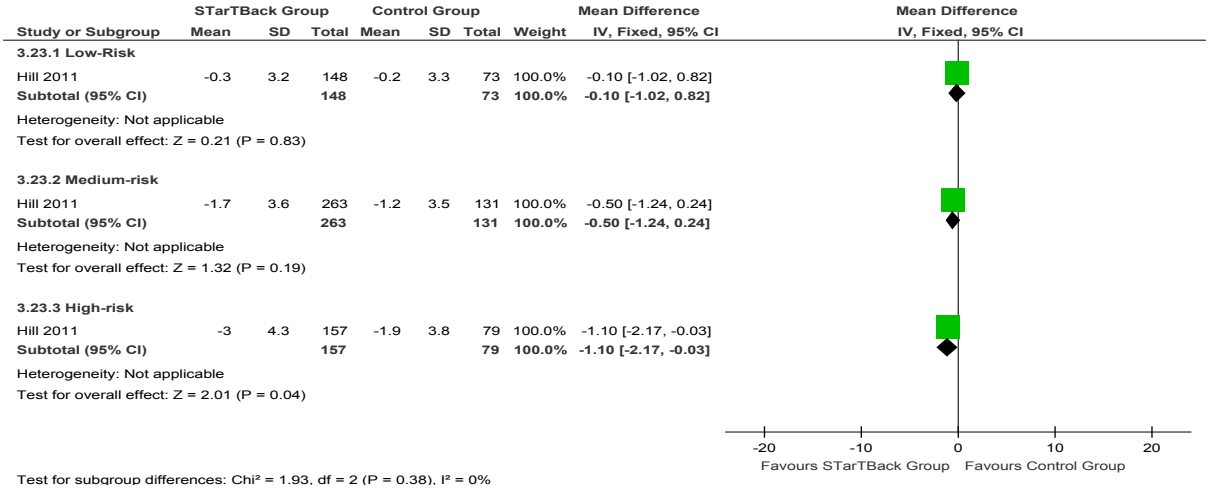


Figure 58: Psychological Distress (HADS, depression subscale, 0-21) >4 months (1 year)

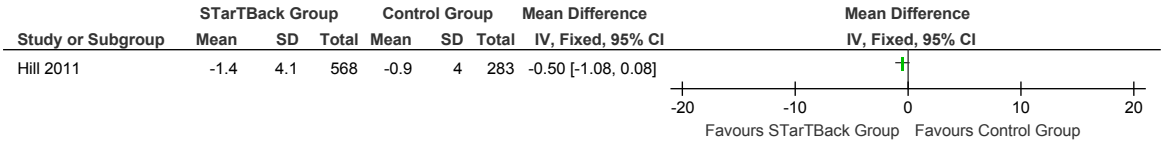


Figure 59: Psychological Distress (HADS, depression subscale, 0-21) >4 months (1 year)- STRATIFIED RISK GROUPS

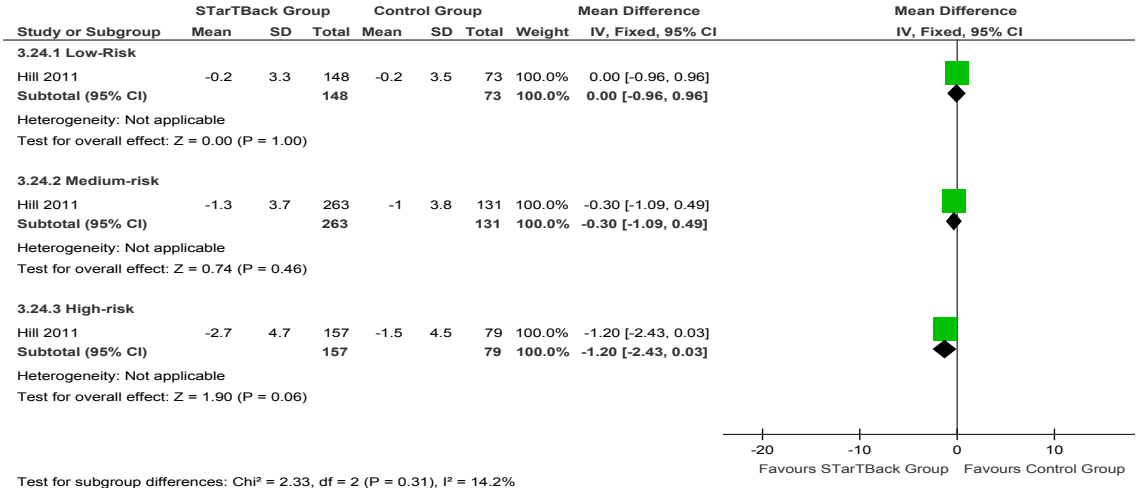


Figure 60: Responder criteria (patients with >30% improvement in pain)≤4 months-

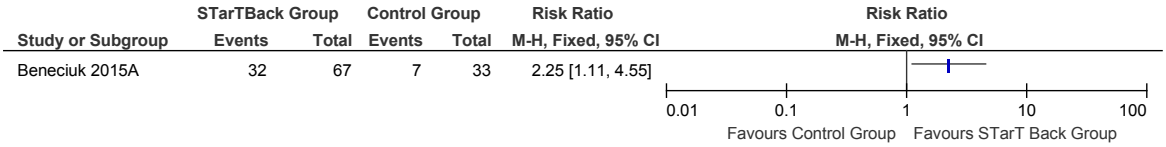


Figure 61: Responder criteria (patients with >30% improvement in pain)≤4 months- STRATIFIED RISK GROUPS

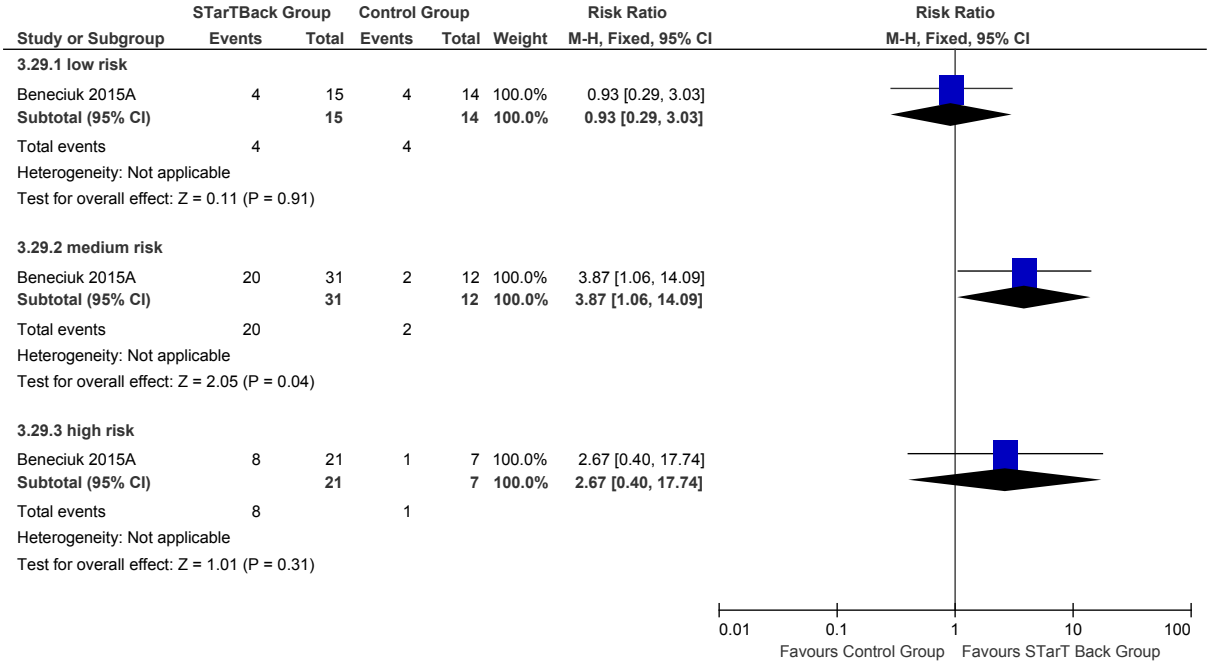


Figure 62: Responder criteria (patients with >30% improvement in function)≤4 months

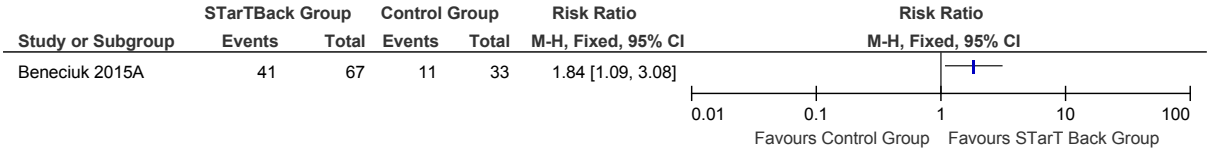
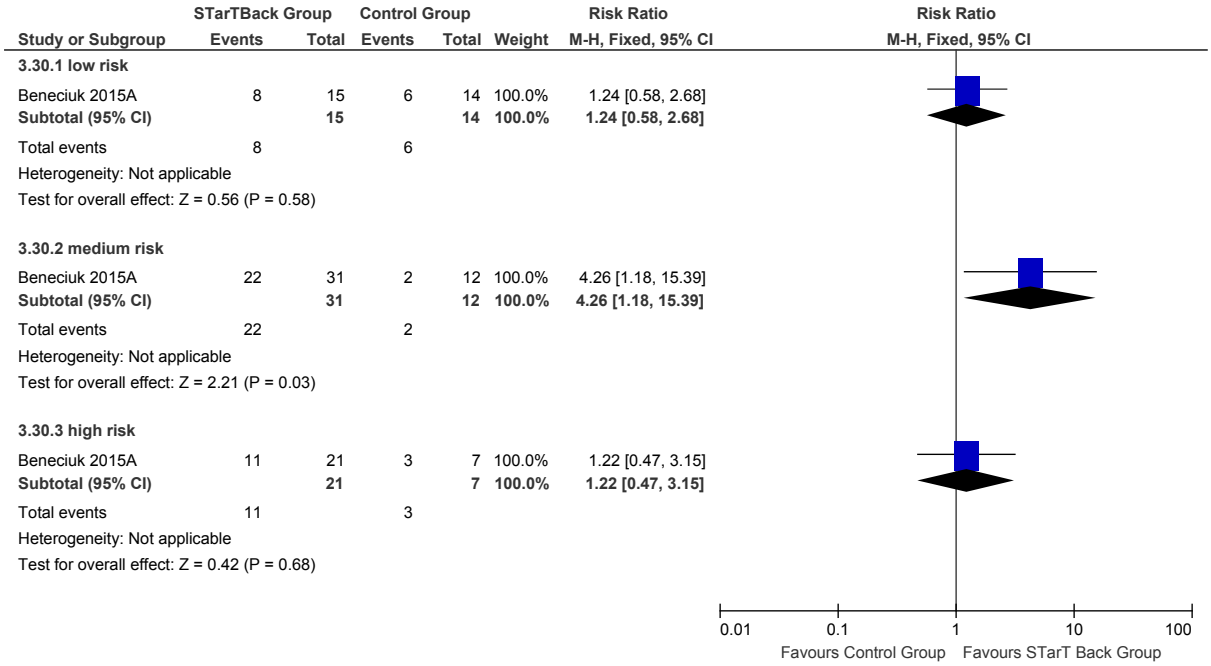


Figure 63: Responder criteria (patients with >30% improvement in function)≤4 months- STRATIFIED RISK GROUPS



K.2.2.4 STarT Back risk tool versus no risk tool stratification (IMPaCT cohort)

Figure 64: Quality of life(EQ-5D,0-1) ≤4 months (2 months)

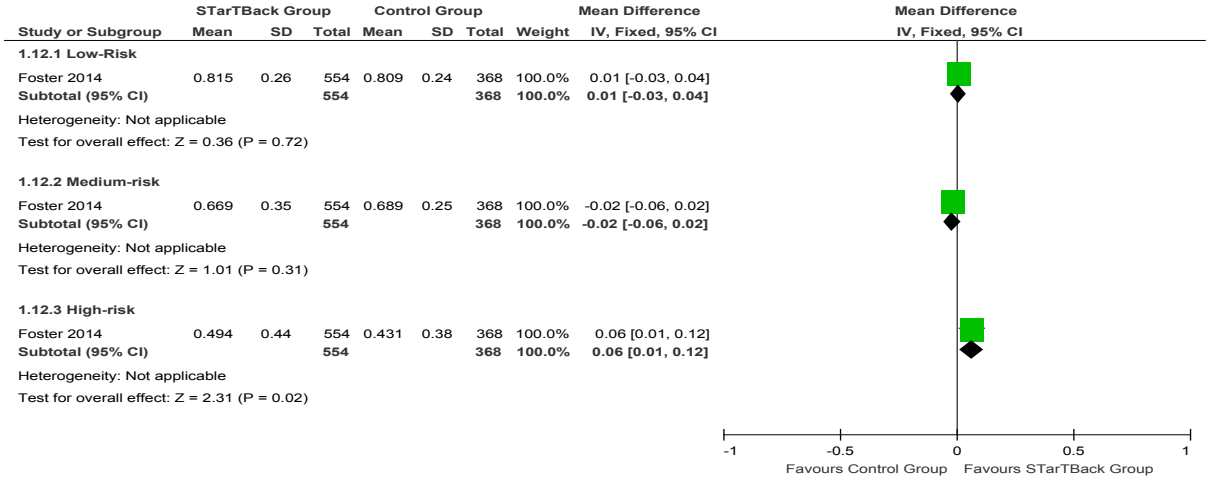


Figure 65: Quality of life(EQ-5D,0-1) >4 months (6 months)

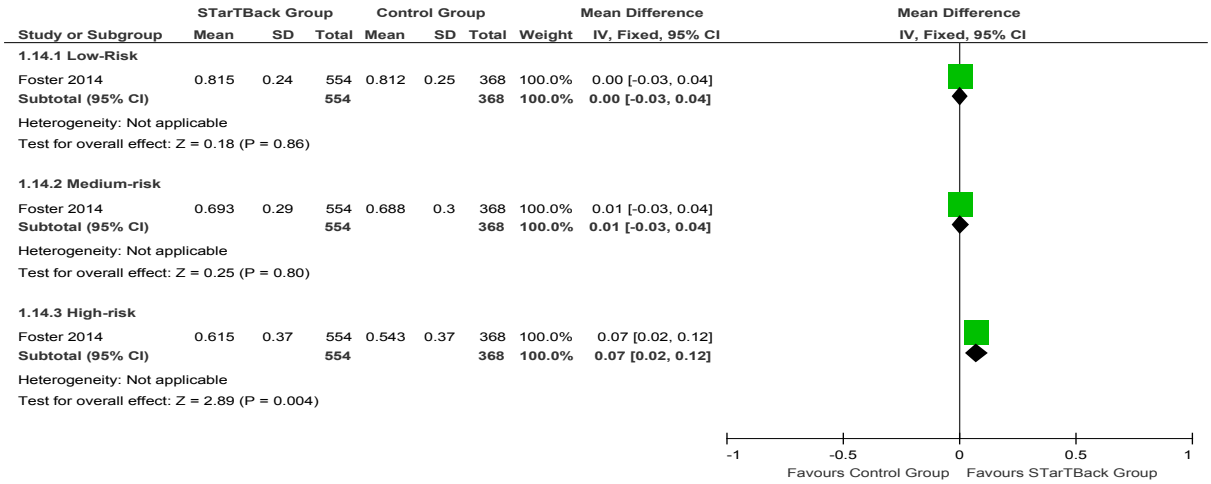


Figure 66: Quality of life(SF-12,Physical Component Score(PCS),0-100) >4 months (6 months)

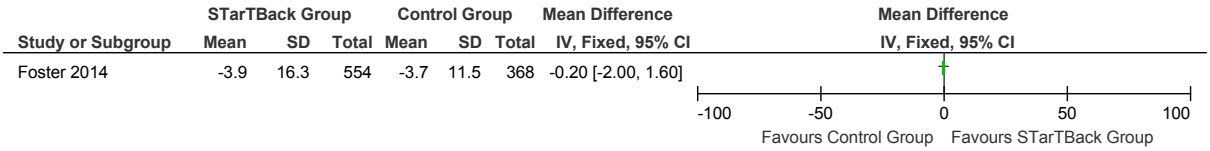


Figure 67: Quality of life(SF-12,Physical Component Score(PCS),0-100) >4 months (6 months) STRATIFIED RISK GROUPS

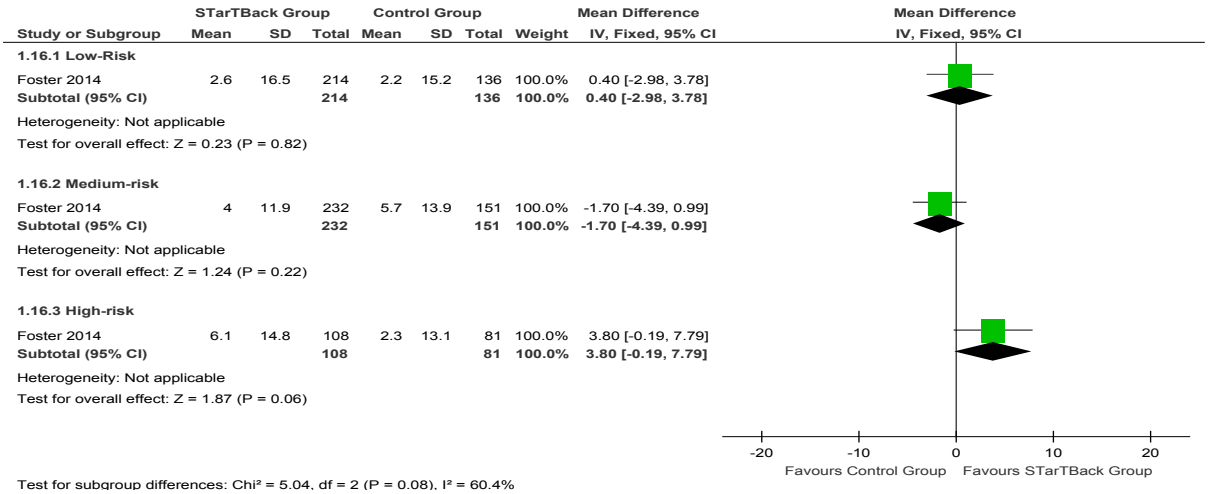


Figure 68: Quality of life(SF-12,Mental Component Score(MCS),0-100) >4 months (6 months)

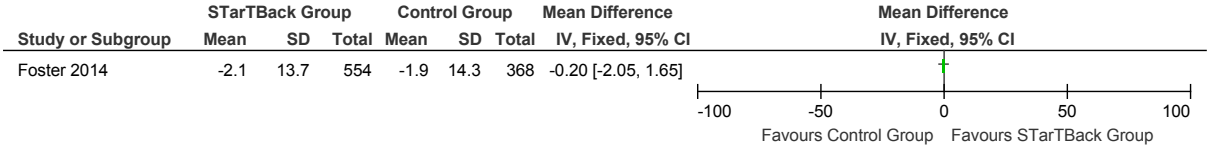


Figure 69: Quality of life(SF-12,Mental Component Score(MCS),0-100) >4 months (6 months)- STRATIFIED RISK GROUPS

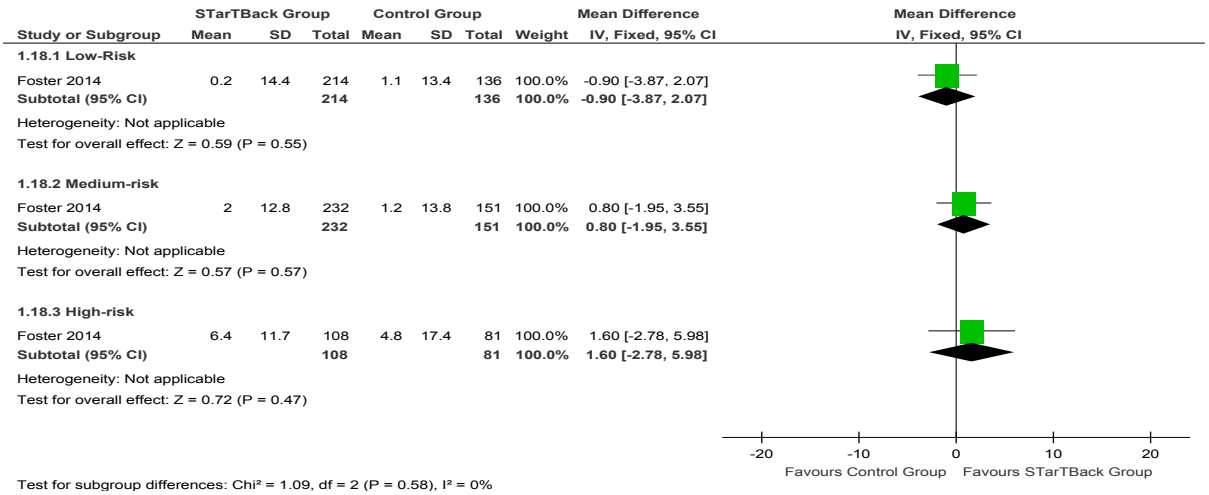


Figure 70: Pain Severity(VAS,0-10) >4 months (6 months)

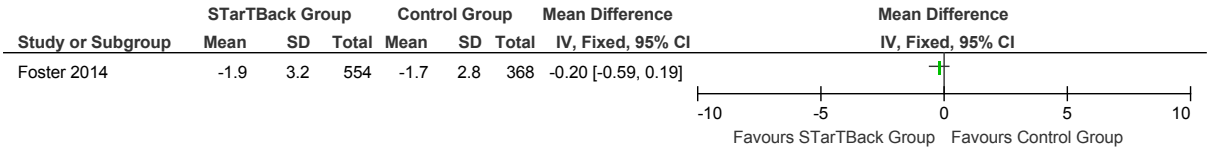


Figure 71: Pain Severity(VAS,0-10) >4 months (6 months)- STRATIFIED RISK GROUPS

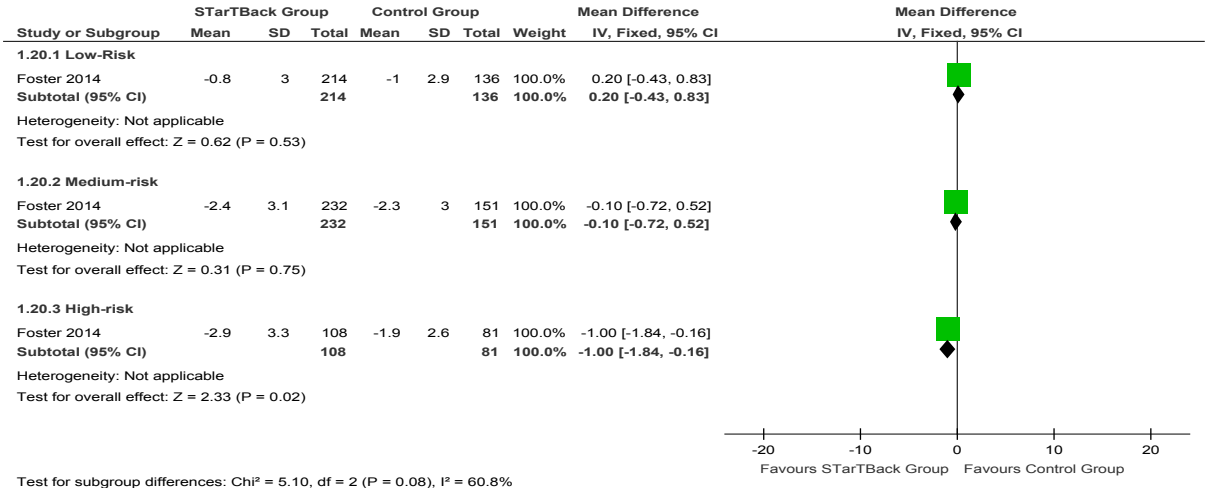


Figure 72: Function (RMDQ, 0-24) >4 months (6 months)

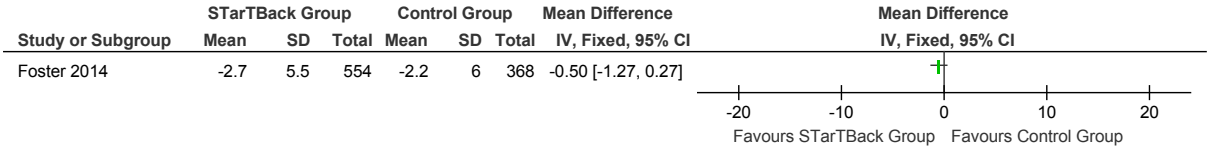


Figure 73: Function (RMDQ, 0-24) >4 months (6 months)- STRATIFIED RISK GROUPS

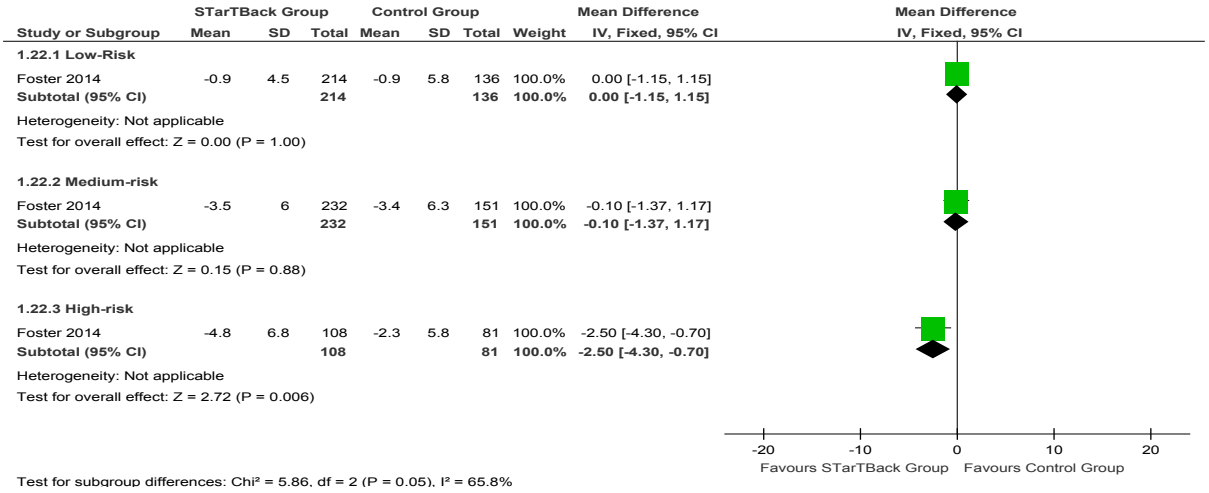


Figure 74: Psychological Distress (HADS, anxiety subscale, 0-21) >4 months (6 months)

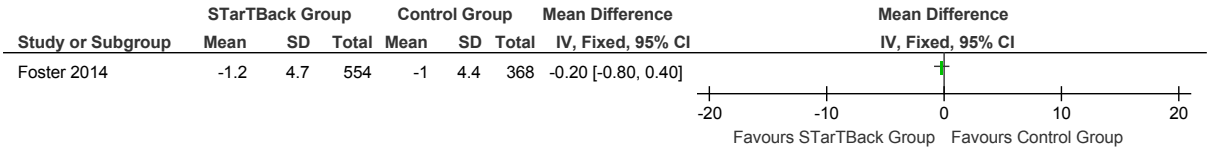


Figure 75: Psychological Distress (HADS, anxiety subscale, 0-21) >4 months (6 months)- STRATIFIED RISK GROUPS

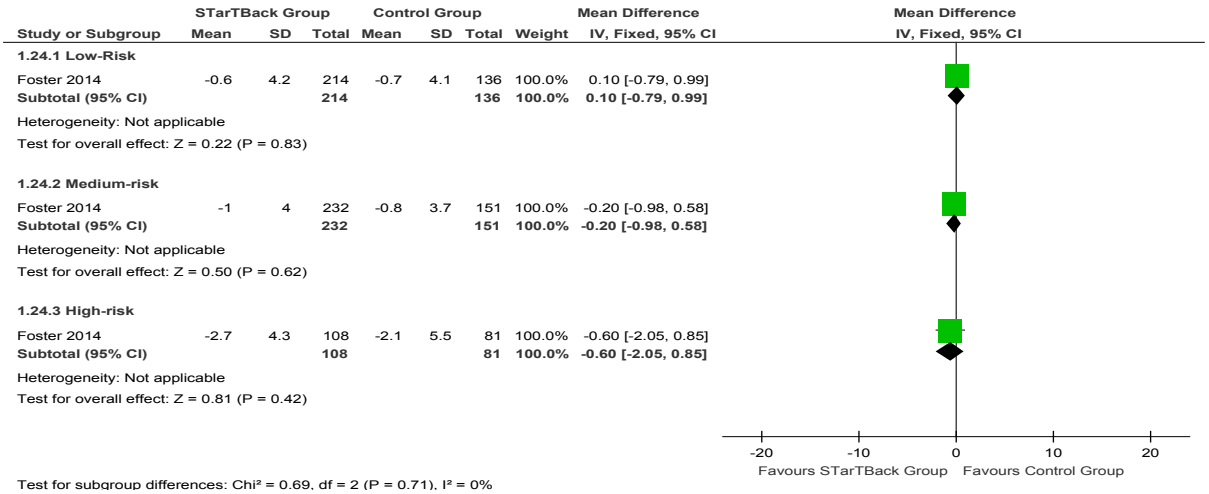


Figure 76: Psychological Distress (HADS, depression subscale, 0-21) >4 months (6 months)

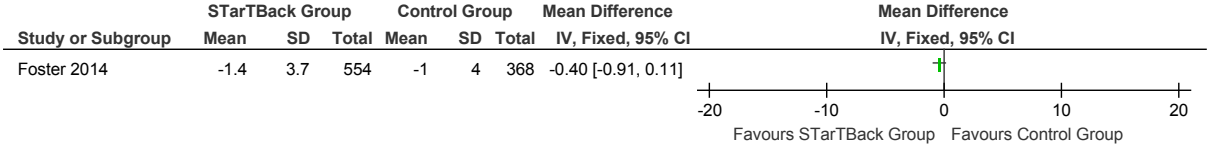
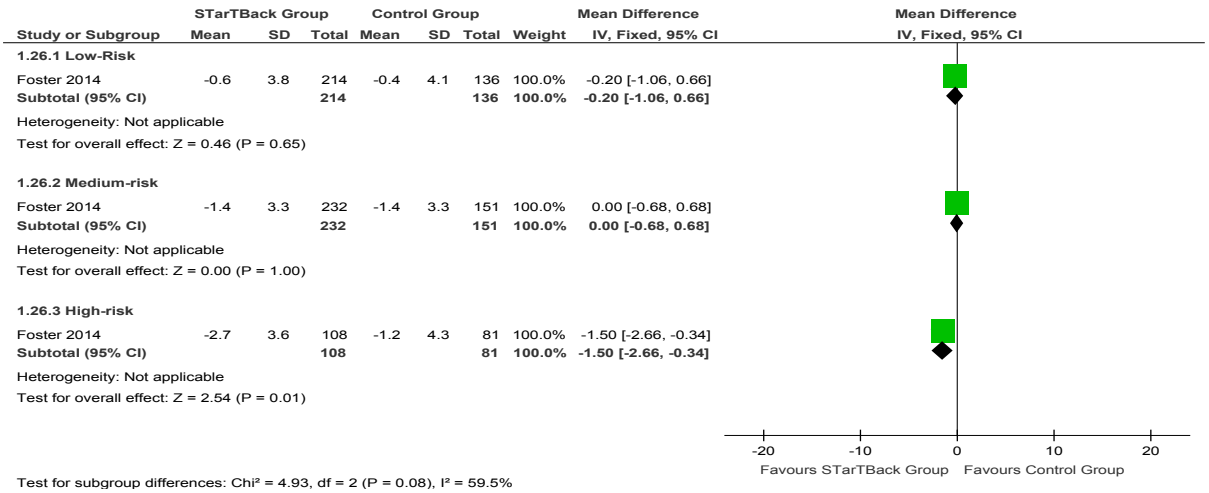


Figure 77: Psychological Distress (HADS, depression subscale, 0-21) >4 months (6 months)- STRATIFIED RISK GROUPS



K.3 Imaging

K.3.1 Imaging versus No imaging for Low back pain with/without sciatica

Figure 78: Health-related quality of life (SF-36, 0-100) ≤ 4 months (RCT)

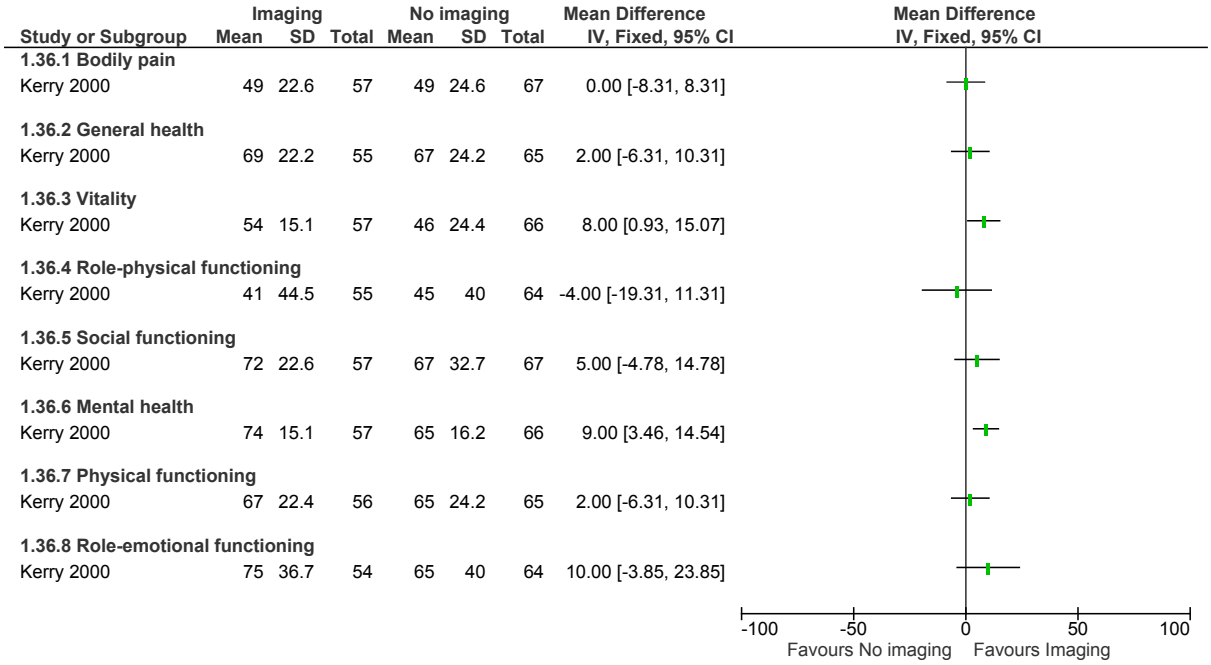


Figure 79: Health-related quality of life (SF-36, 0-100) ≤ 4 months (cohort study)

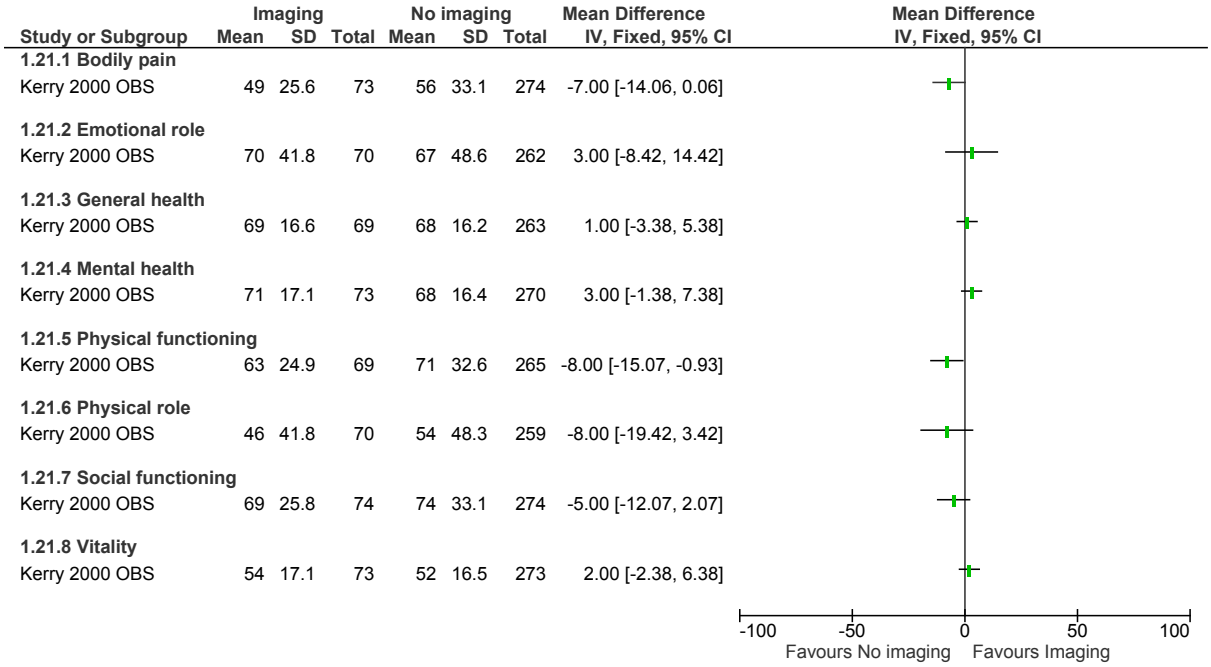


Figure 80: Health-related quality of life (EQ 5D VAS, 0-100) ≤ 4 months (RCT)

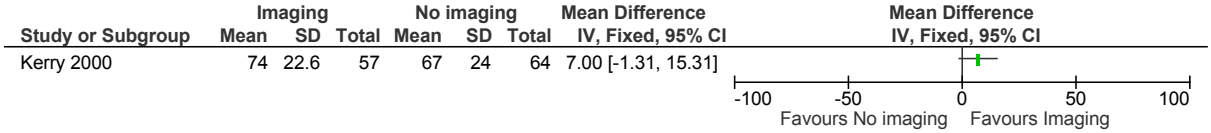


Figure 81: Health-related quality of life (EQ 5D VAS, 0-100) ≤ 4 months (cohort study)

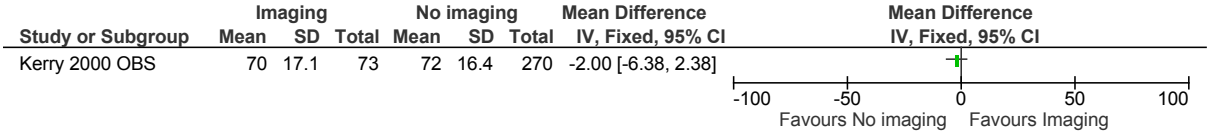
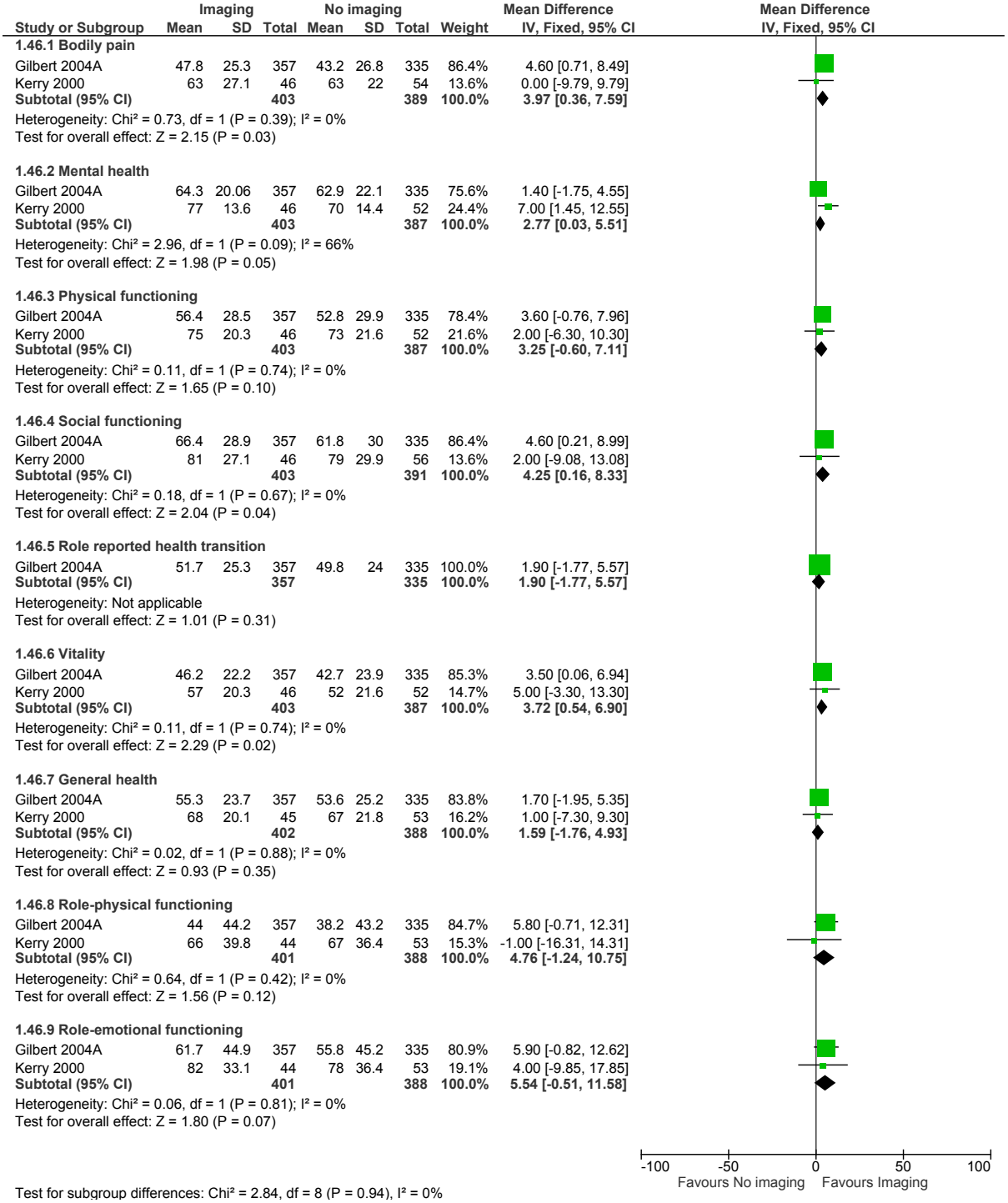


Figure 82: Health-related quality of life (SF-36, 0-100) >4 months - 1 year (RCTs)



Test for subgroup differences: Chi² = 2.84, df = 8 (P = 0.94), I² = 0%

Figure 83: Health-related quality of life (SF-36, 0-100) >4 months - 1 year (cohort study)

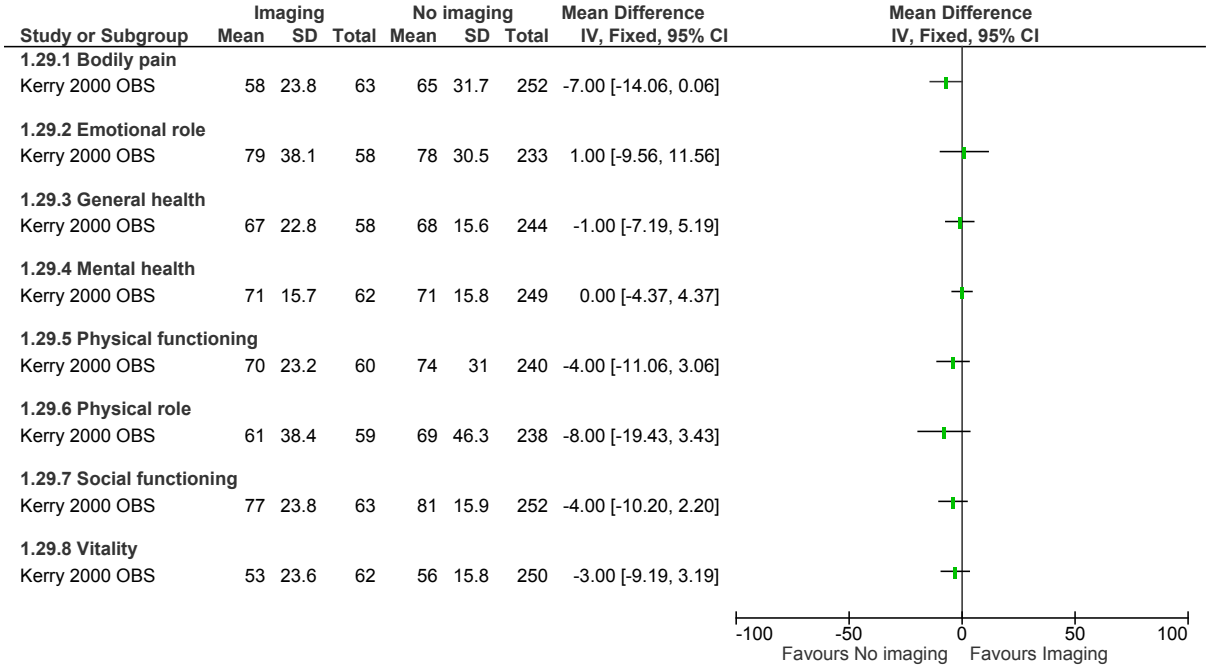


Figure 84: Health-related quality of life (EQ-5D, 0-1) >4 months - 1 year (RCT)

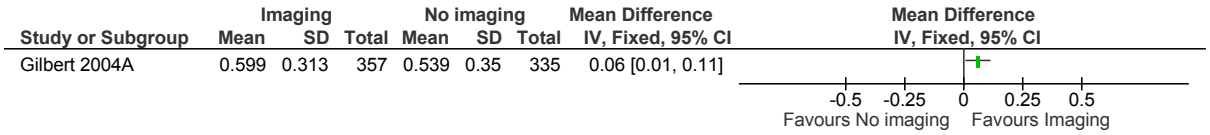


Figure 85: Health-related quality of life (EQ-5D VAS, 0-100) >4 months - 1 year (RCT)

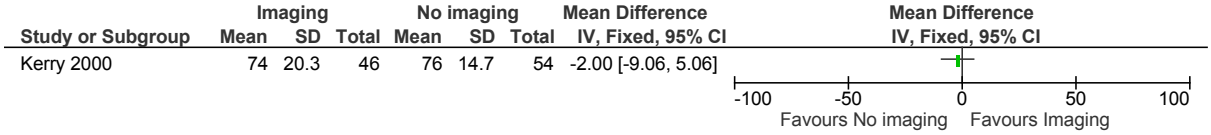


Figure 86: Health-related quality of life (EQ-5D VAS, 0-100) >4 months - 1 year (cohort study)

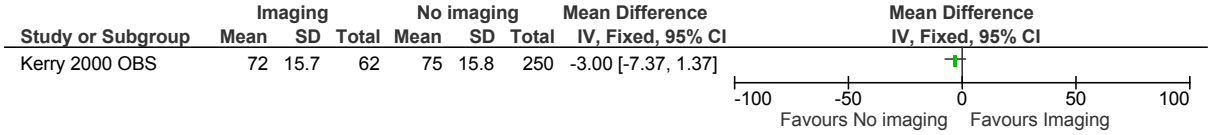


Figure 87: Pain severity (Aberdeen Low Back Pain scale (ALBP), 0-100) >4 months - 1 year (RCT)

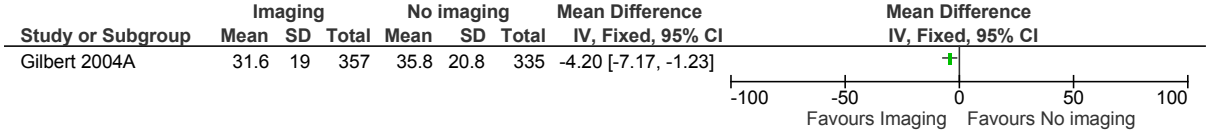


Figure 88: Function disability (Roland Morris Disability Questionnaire (RMDQ), 0-24) ≤ 4 months (RCT)

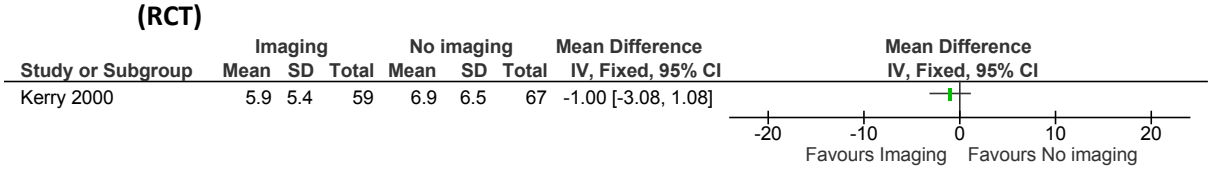


Figure 89: Function disability (Roland Morris Disability Questionnaire (RMDQ), 0-24) ≤ 4 months (cohort study)

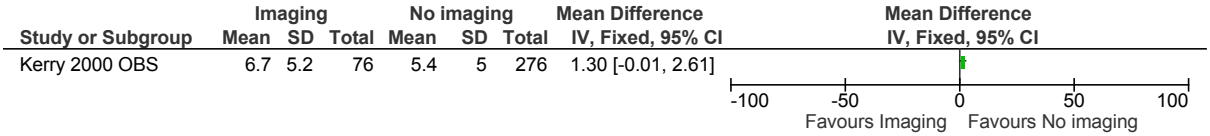


Figure 90: Function disability (Roland Morris Disability Questionnaire (RMDQ), 0-24) >4 months - 1 year (RCT)

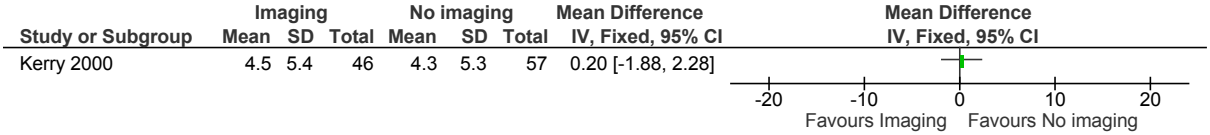


Figure 91: Function disability (Roland Morris Disability Questionnaire (RMDQ), 0-24) >4 months - 1 year (cohort study)

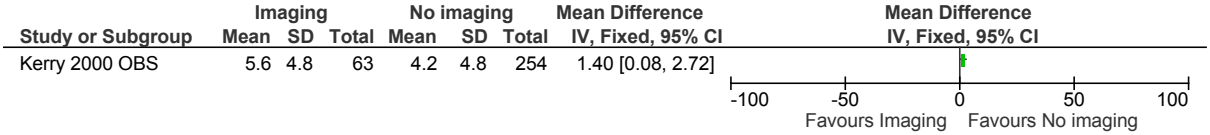


Figure 92: Psychological distress (HADS Anxiety, 0-21) ≤ 4 months (RCT)

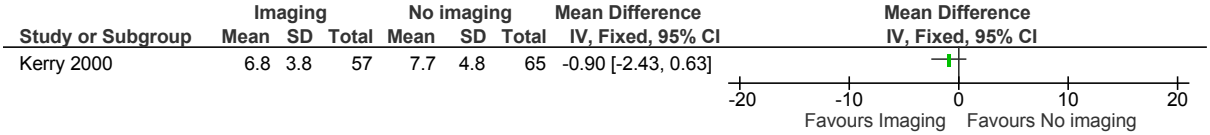


Figure 93: Psychological distress (HADS Anxiety, 0-21) ≤ 4 months (cohort study)

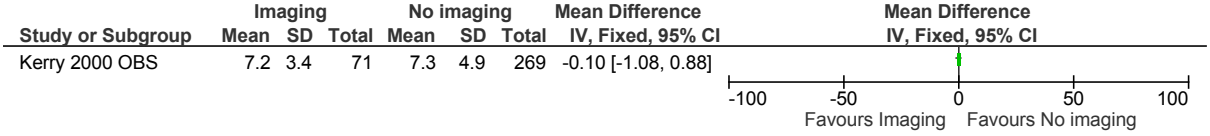


Figure 94: Psychological distress (HADS Anxiety, 0-21) >4 months - 1 year (RCT)

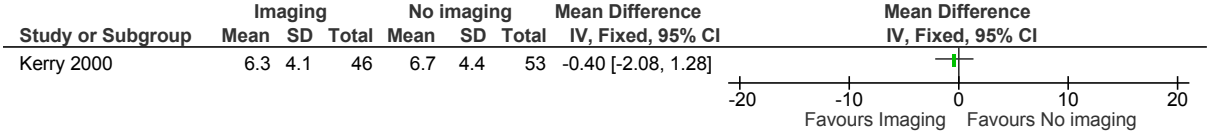


Figure 95: Psychological distress (HADS Anxiety, 0-21) >4 months - 1 year (cohort study)

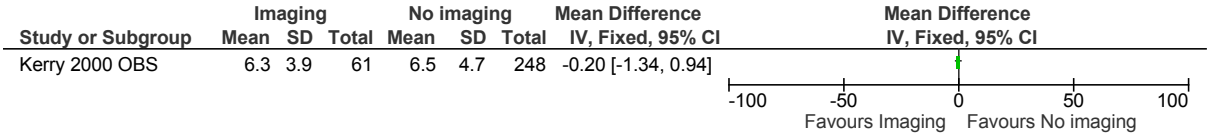


Figure 96: Psychological distress (HADS Depression, 0-21) ≤ 4 months (RCT)

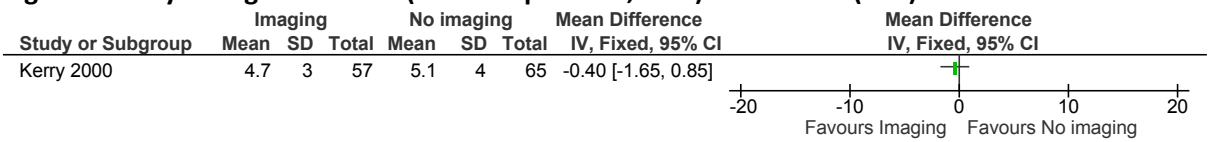


Figure 97: Psychological distress (HADS Depression, 0-21) ≤ 4 months (cohort study)

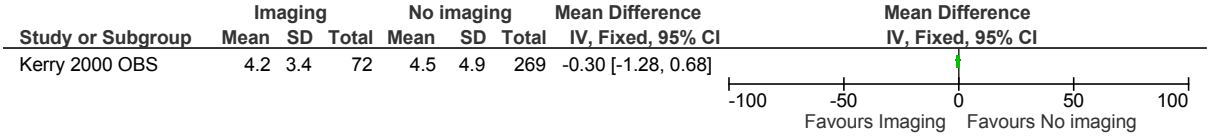


Figure 98: Psychological distress (HADS Depression, 0-21) >4 months - 1 year (RCT)

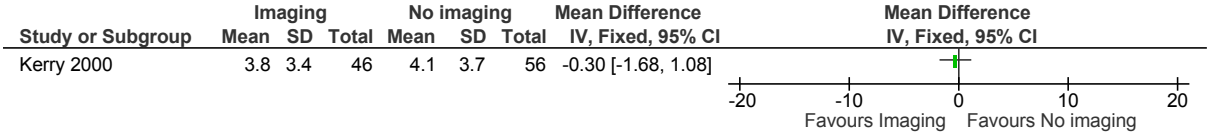


Figure 99: Psychological distress (HADS Depression, 0-21) >4 months - 1 year (cohort study)

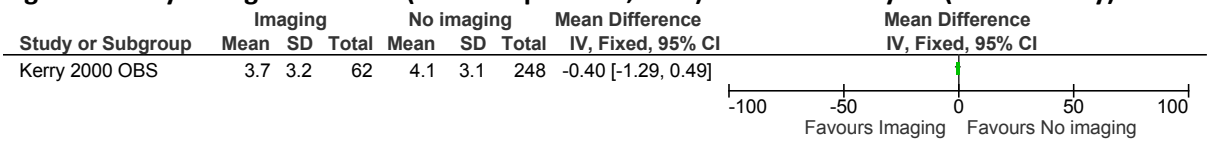


Figure 100: Healthcare utilisation ≤ 4 months (RCT)

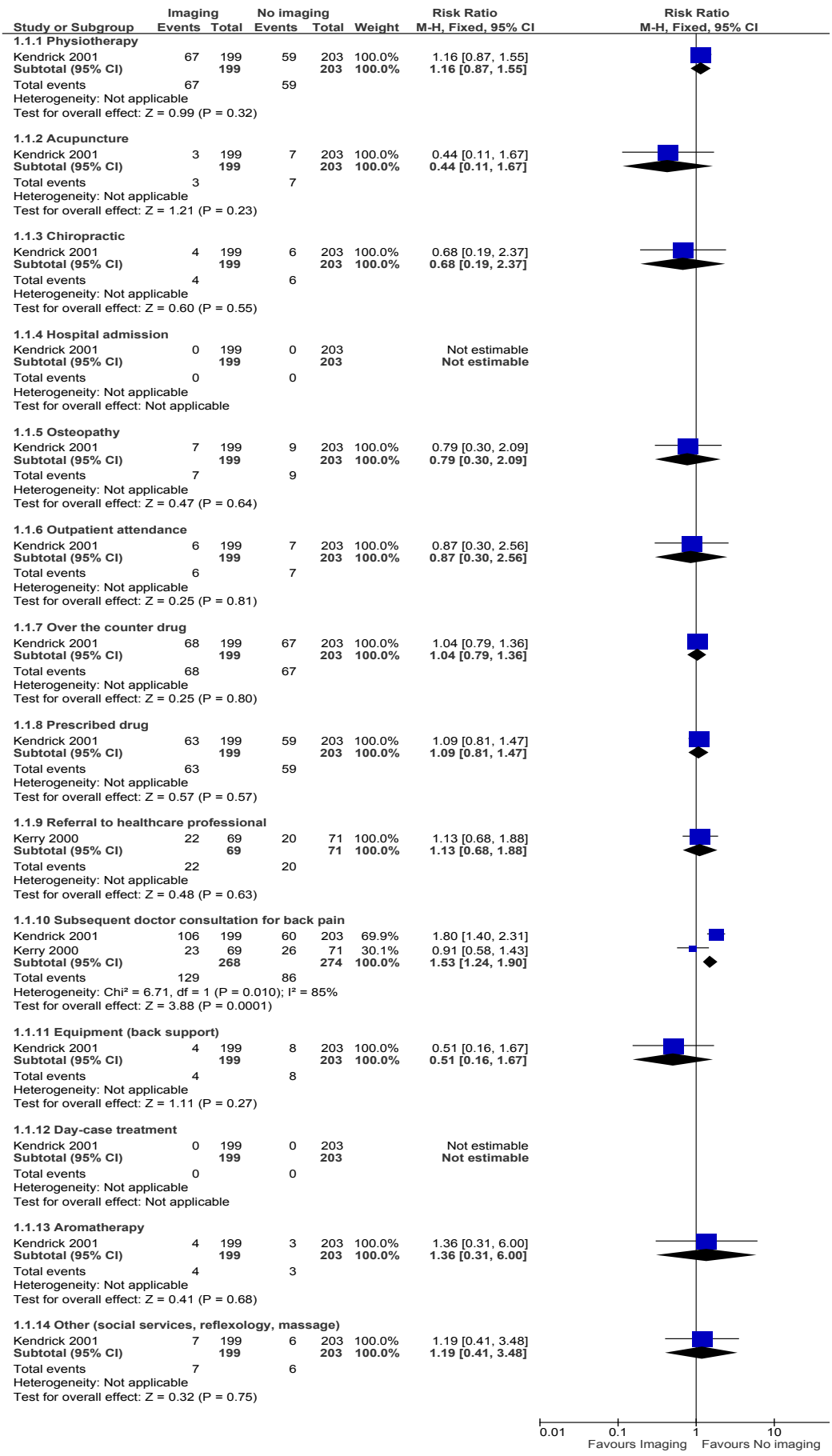


Figure 101: Healthcare utilisation ≤ 4 months (cohort study)

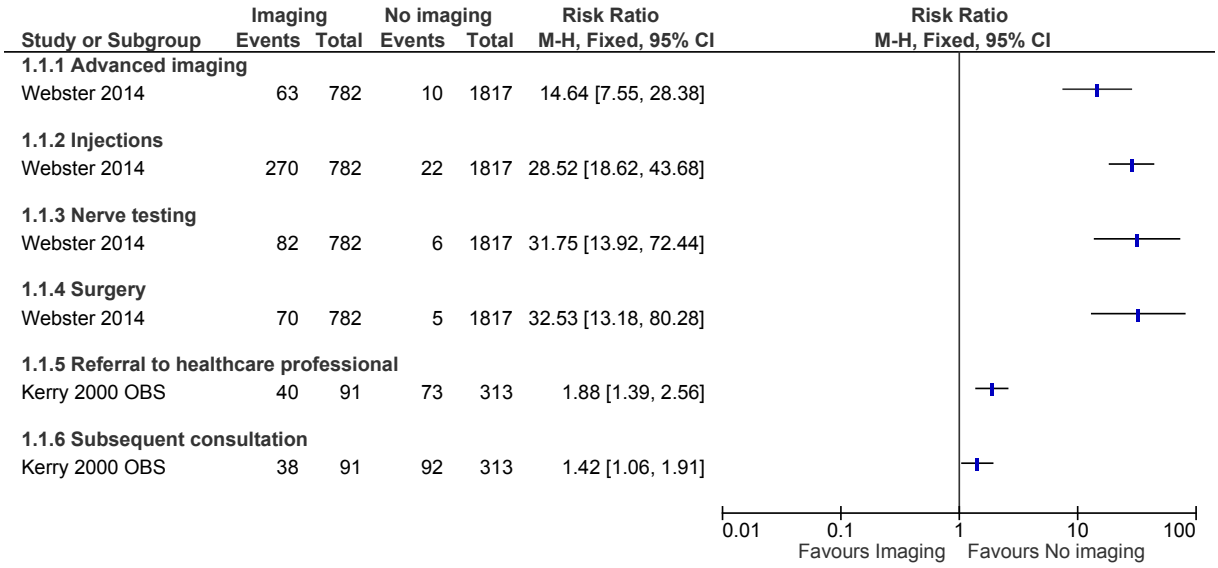


Figure 102: Healthcare utilisation >4 months - 1 year (RCT)

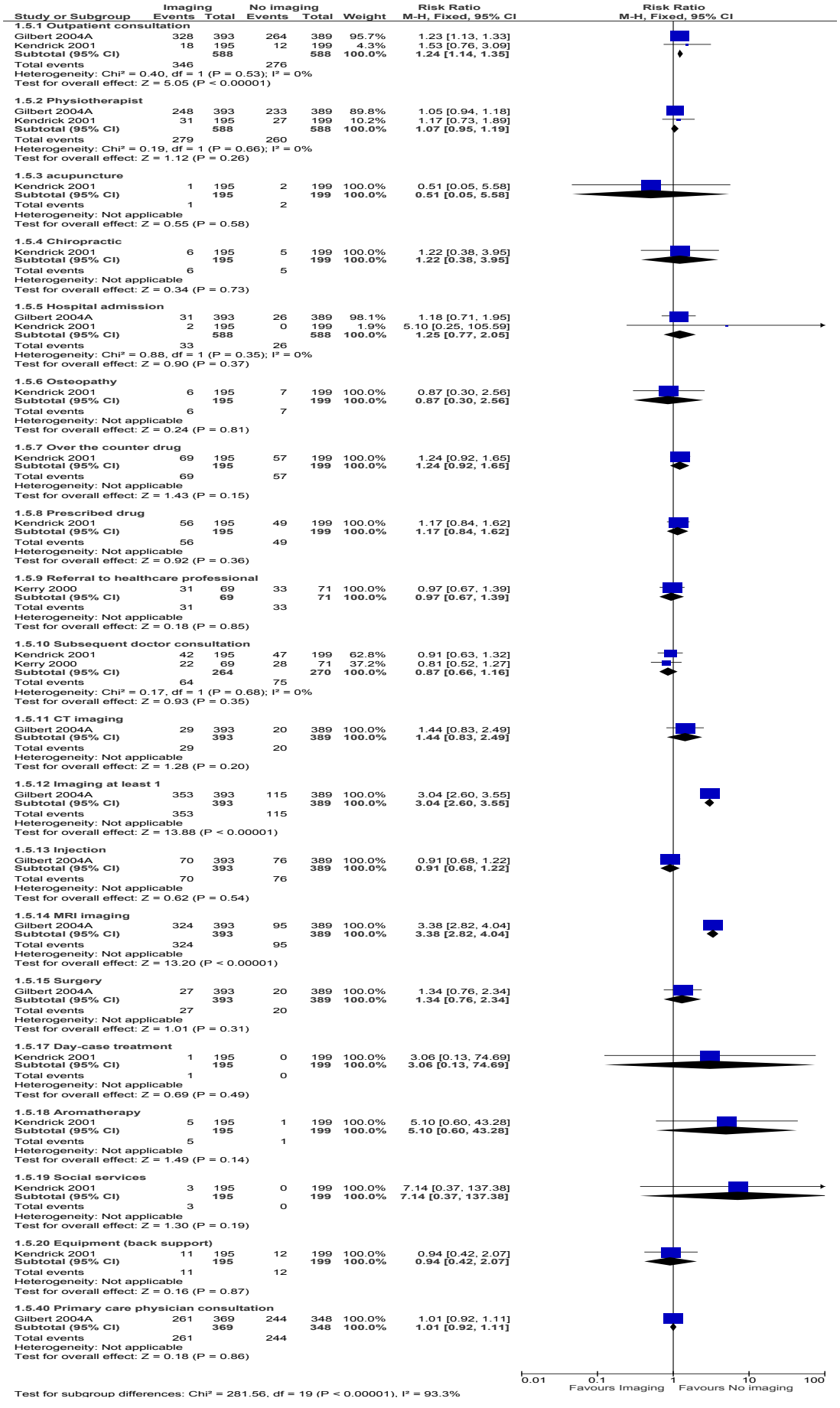
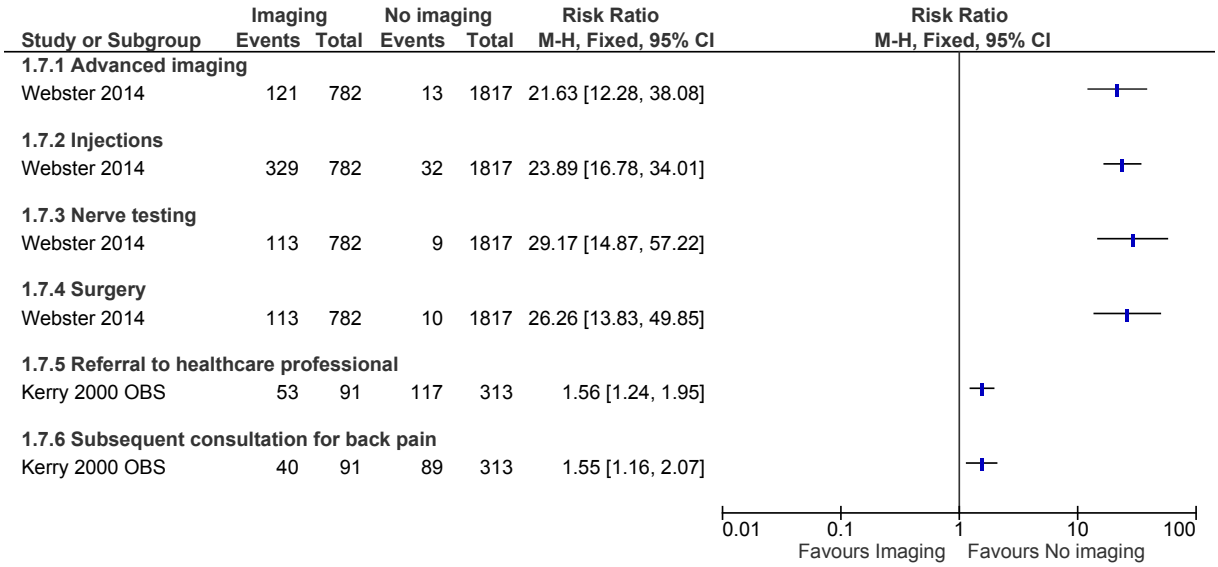


Figure 103: Healthcare utilisation >4 months - 1 year (cohort study)



K.3.2 Imaging versus No imaging or Deferred imaging for Low back pain with/without sciatica

Figure 104: Health-related quality of life (EuroQuol 5D Index, 0-1) ≤ 4 months (cohort studies)

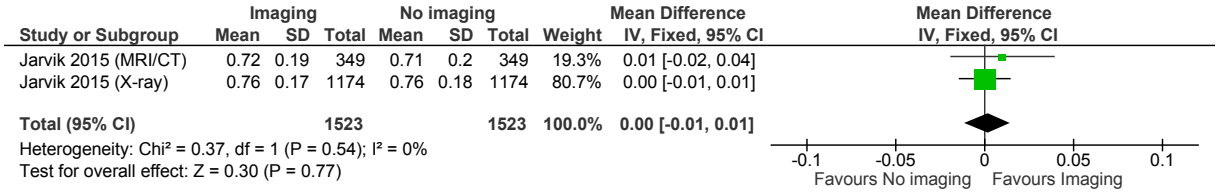


Figure 105: Health-related quality of life (EuroQuol 5D VAS, 0-100) ≤ 4 months (cohort studies)

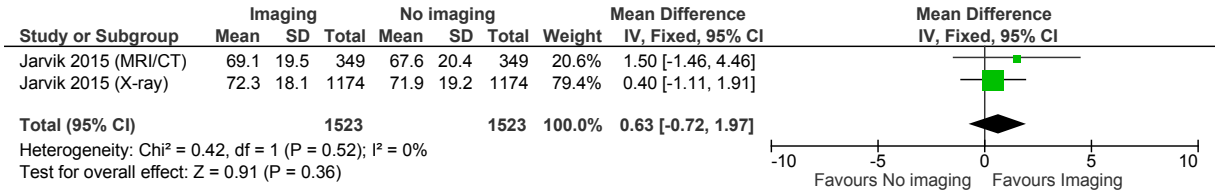


Figure 106: Health-related quality of life (EuroQuol 5D Index, 0-1) >4 months - 1 year (cohort studies)

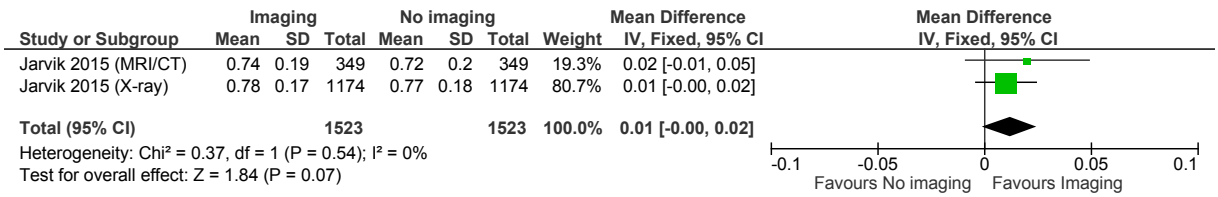


Figure 107: Health-related quality of life (EuroQuol 5D VAS, 0-100) >4 months - 1 year (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	71.6	19.3	349	67.3	19.4	349	21.7%	4.30 [1.43, 7.17]
Jarvik 2015 (X-ray)	73.2	18.6	1174	72.7	18.8	1174	78.3%	0.50 [-1.01, 2.01]
Total (95% CI)			**1523**			**1523**	**100.0%**	**1.33 [-0.01, 2.66]**

Heterogeneity: Chi² = 5.27, df = 1 (P = 0.02); I² = 81%
Test for overall effect: Z = 1.94 (P = 0.05)

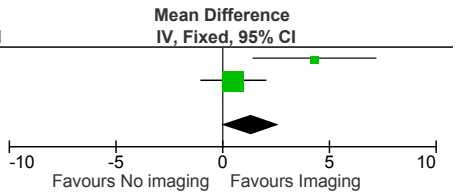


Figure 108: Pain severity (Back Pain NRS, 0-10) ≤ 4 months (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	4.24	2.78	349	4.52	2.84	349	21.1%	-0.28 [-0.70, 0.14]
Jarvik 2015 (X-ray)	3.83	2.6	1174	3.87	2.73	1174	78.9%	-0.04 [-0.26, 0.18]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.09 [-0.28, 0.10]**

Heterogeneity: Chi² = 1.00, df = 1 (P = 0.32); I² = 0%
Test for overall effect: Z = 0.93 (P = 0.35)

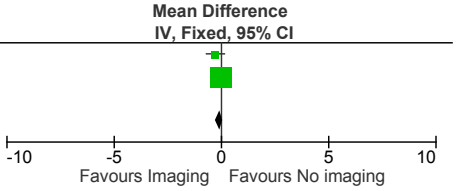


Figure 109: Pain severity (Leg Pain NRS, 0-10) ≤ 4 months (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	3.77	2.96	349	4.12	3.07	349	21.7%	-0.35 [-0.80, 0.10]
Jarvik 2015 (X-ray)	2.96	2.88	1174	3.23	2.95	1174	78.3%	-0.27 [-0.51, -0.03]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.29 [-0.50, -0.08]**

Heterogeneity: Chi² = 0.10, df = 1 (P = 0.76); I² = 0%
Test for overall effect: Z = 2.70 (P = 0.007)

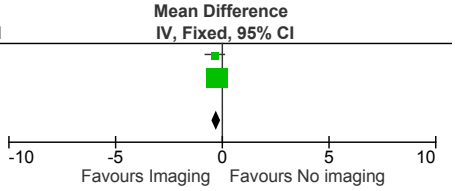


Figure 110: Pain severity (Brief Pain Inventory Interference, 0-10) ≤ 4 months (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	3.68	2.58	349	3.7	2.57	349	21.0%	-0.02 [-0.40, 0.36]
Jarvik 2015 (X-ray)	2.99	2.37	1174	2.99	2.5	1174	79.0%	0.00 [-0.20, 0.20]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.00 [-0.18, 0.17]**

Heterogeneity: Chi² = 0.01, df = 1 (P = 0.93); I² = 0%
Test for overall effect: Z = 0.05 (P = 0.96)

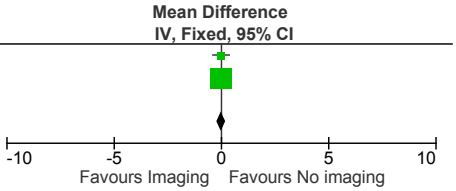


Figure 111: Pain severity (Back Pain NRS, 0-10) >4 months - 1 year (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	4.01	2.76	349	4.22	2.83	349	21.4%	-0.21 [-0.62, 0.20]
Jarvik 2015 (X-ray)	3.55	2.62	1174	3.71	2.73	1174	78.6%	-0.16 [-0.38, 0.06]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.17 [-0.36, 0.02]**

Heterogeneity: Chi² = 0.04, df = 1 (P = 0.83); I² = 0%
Test for overall effect: Z = 1.74 (P = 0.08)

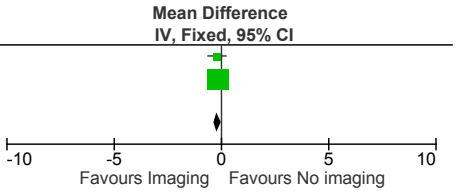


Figure 112: Pain severity (Leg Pain NRS, 0-10) >4 months - 1 year (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	3.77	3.06	349	4	3.04	349	20.6%	-0.23 [-0.68, 0.22]
Jarvik 2015 (X-ray)	2.83	2.77	1174	3.06	2.93	1174	79.4%	-0.23 [-0.46, 0.00]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.23 [-0.44, -0.02]**

Heterogeneity: Chi² = 0.00, df = 1 (P = 1.00); I² = 0%
Test for overall effect: Z = 2.19 (P = 0.03)

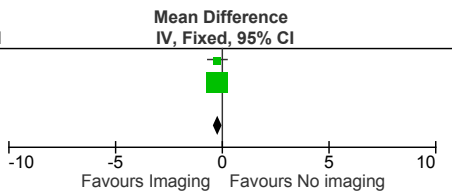


Figure 113: Pain severity (Brief Pain Inventory, 0-10) >4 months - 1 year (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	3.36	2.66	349	3.46	2.66	349	20.5%	-0.10 [-0.49, 0.29]
Jarvik 2015 (X-ray)	2.72	2.42	1174	2.83	2.53	1174	79.5%	-0.11 [-0.31, 0.09]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.11 [-0.29, 0.07]**

Heterogeneity: Chi² = 0.00, df = 1 (P = 0.96); I² = 0%
Test for overall effect: Z = 1.18 (P = 0.24)

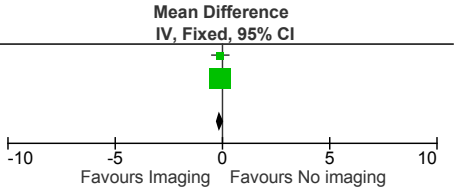


Figure 114: Function (Roland Morris Disability Questionnaire (RMDQ), 0-24) ≤ 4 months (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	11.6	6.51	349	11.5	6.82	349	22.2%	0.10 [-0.89, 1.09]
Jarvik 2015 (X-ray)	9.54	6.41	1174	9.54	6.64	1174	77.8%	0.00 [-0.53, 0.53]
Total (95% CI)			**1523**			**1523**	**100.0%**	**0.02 [-0.44, 0.49]**

Heterogeneity: Chi² = 0.03, df = 1 (P = 0.86); I² = 0%
Test for overall effect: Z = 0.09 (P = 0.93)

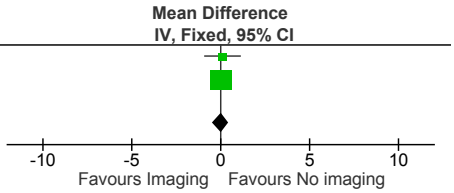


Figure 115: Function (Roland Morris Disability Questionnaire (RMDQ), 0-24) >4 months - 1 year (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Jarvik 2015 (MRI/CT)	9.81	6.99	349	10.5	7.2	349	21.2%	-0.69 [-1.74, 0.36]
Jarvik 2015 (X-ray)	8.54	6.56	1174	8.74	6.95	1174	78.8%	-0.20 [-0.75, 0.35]
Total (95% CI)			**1523**			**1523**	**100.0%**	**-0.30 [-0.79, 0.18]**

Heterogeneity: Chi² = 0.66, df = 1 (P = 0.42); I² = 0%
Test for overall effect: Z = 1.23 (P = 0.22)

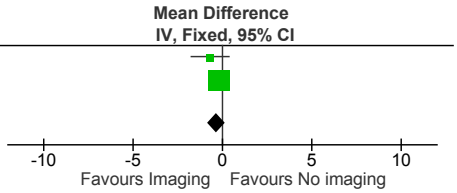


Figure 116: Healthcare utilisation >4 months - 1 year (cohort study)

Study or Subgroup	Imaging Events	Total	No imaging Events	Total	Risk Ratio M-H, Fixed, 95% CI
2.6.1 Injections					
Graves 2012	137	336	99	1434	5.91 [4.69, 7.43]
2.6.2 Surgery					
Graves 2012	67	336	36	1434	7.94 [5.39, 11.70]
2.6.3 CT					
Graves 2012	18	336	44	1434	1.75 [1.02, 2.98]
2.6.4 MRI					
Graves 2012	336	336	255	1434	5.61 [5.02, 6.27]
2.6.5 X-ray					
Graves 2012	102	336	260	1434	1.67 [1.38, 2.04]

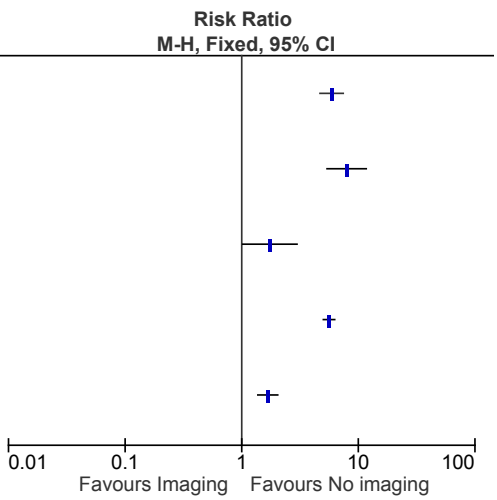
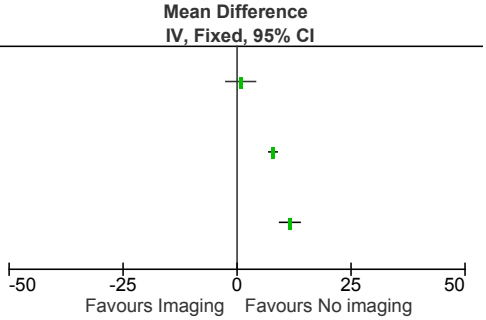


Figure 117: Healthcare utilisation >4 months - 1 year (cohort studies)

Study or Subgroup	Imaging Mean	SD	Total	No imaging Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
2.17.1 Chiropractic							
Graves 2012	14.7	28.1	336	13.9	24.2	1434	0.80 [-2.46, 4.06]
2.17.2 Outpatient services							
Graves 2012	12.2	8	336	4.3	6.1	1434	7.90 [6.99, 8.81]
2.17.3 Physical therapy/occupational therapy							
Graves 2012	18.4	19.9	336	6.8	13.8	1434	11.60 [9.36, 13.84]



K.3.3 Imaging versus No imaging or Deferred imaging for Low back pain without sciatica

Figure 118: Health-related quality of life (SF-36v2, 0-100) >4 months - 1 year (cohort study)

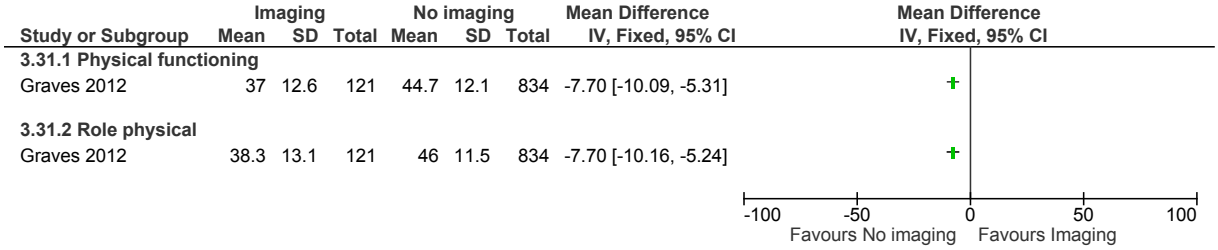


Figure 119: Pain severity (Graded Chronic Pain Scale, 0-10) >4 months - 1 year (cohort study)

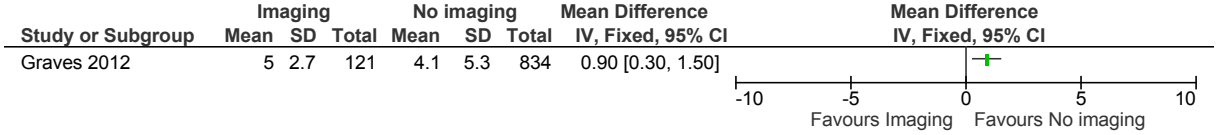
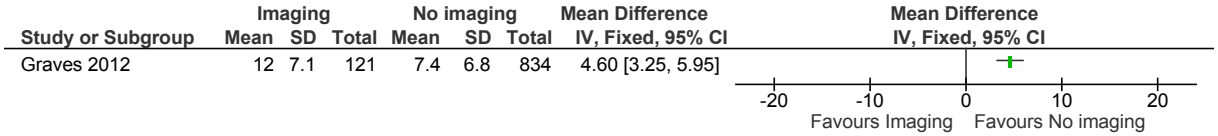


Figure 120: Function (Roland Morris Disability Questionnaire (RMDQ), 0-24) >4 months - 1 year (cohort studies)



K.3.4 Imaging versus Deferred imaging for Low back pain with/without sciatica

Figure 121: Healthcare utilisation ≤ 4 months (cohort study)

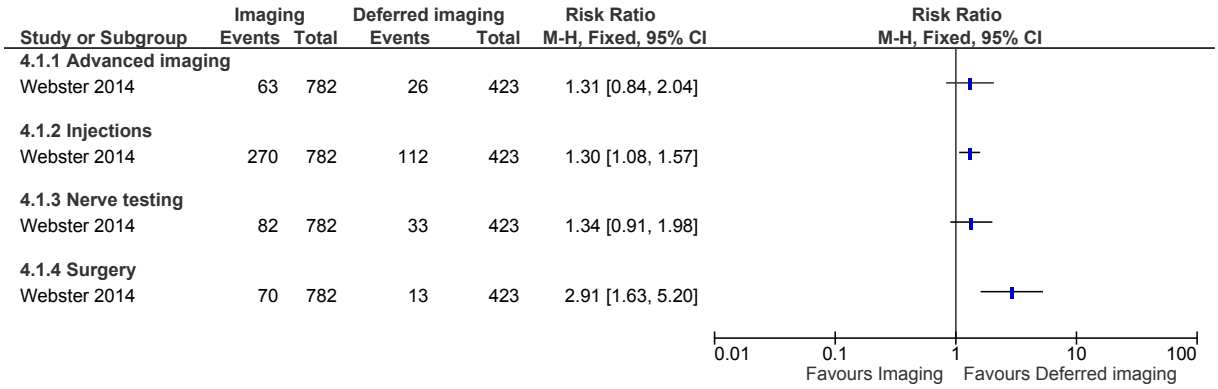
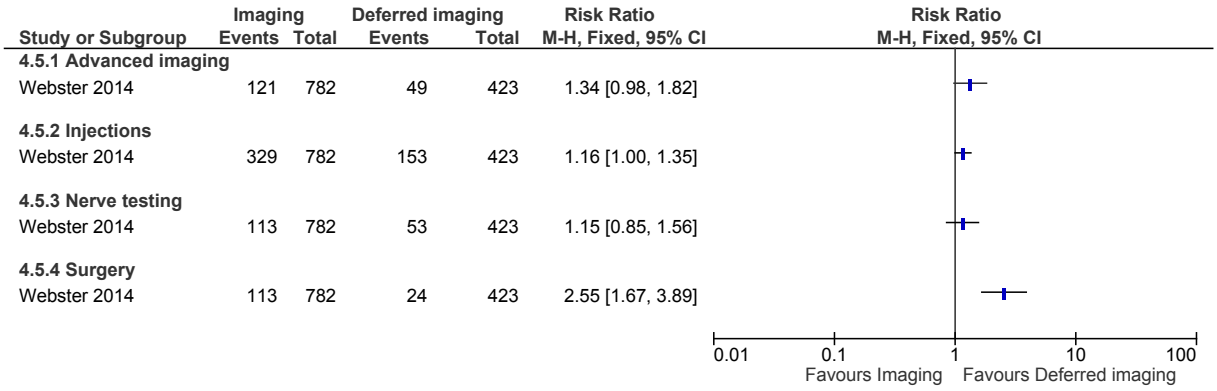


Figure 122: Healthcare utilisation >4 months - 1 year (cohort study)



K.3.5 Imaging versus No imaging or Deferred imaging for sciatica

Figure 123: Health-related quality of life (SF-36v2, 0-100) >4 months - 1 year (cohort study)

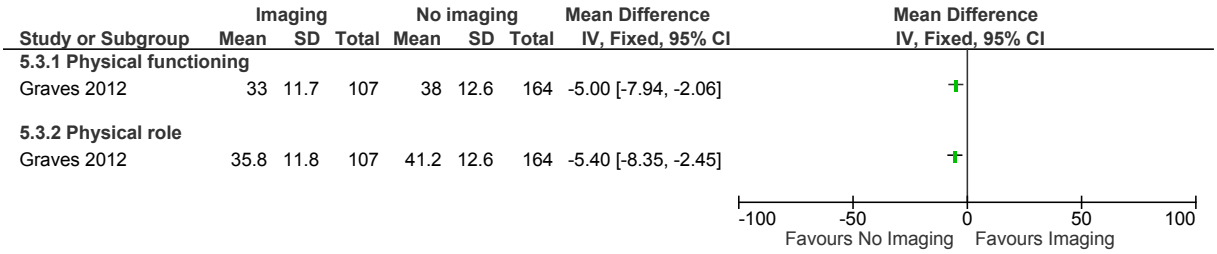


Figure 124: Function (RMDQ, 0-24) >4 months - 1 year (cohort study)

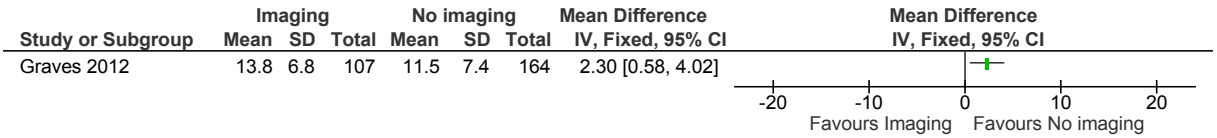
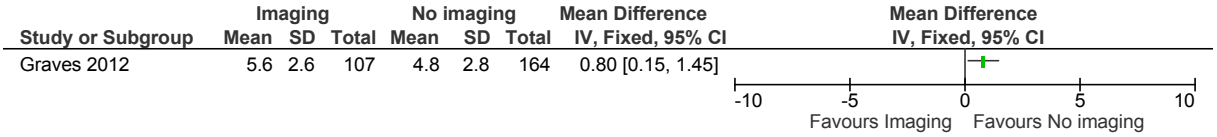


Figure 125: Pain severity (Graded Chronic Pain scale, 0-10) >4 months - 1 year (cohort study)



K.4 Self-management

K.4.1 Self-management programmes (including patient education and reassurance, such as the Back Book)

K.4.1.1 Self-management programmes versus usual care

K.4.1.1.1 Population – low back pain with or without sciatica

Figure 126: Quality of life (SF-36, 0-100) ≤4 months.

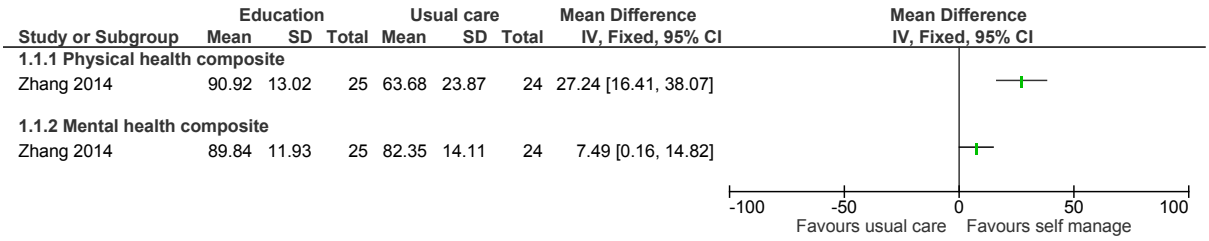
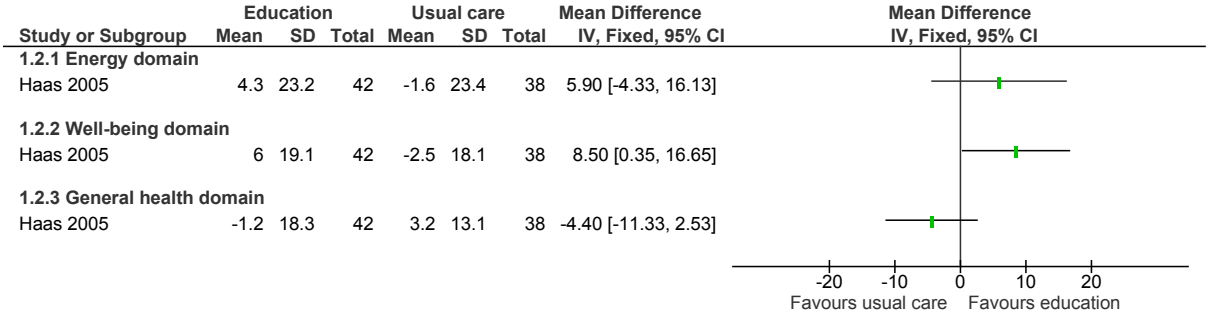
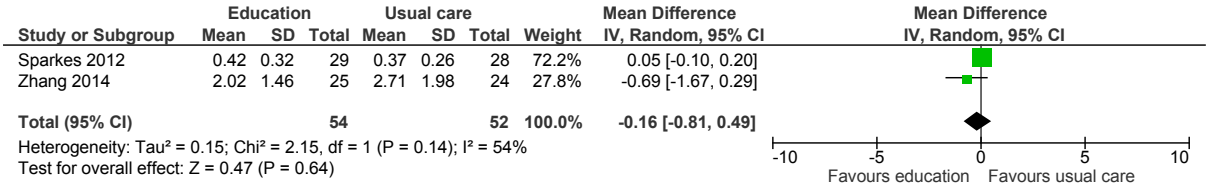


Figure 127: Quality of life (SF-36, 0-100) >4 months



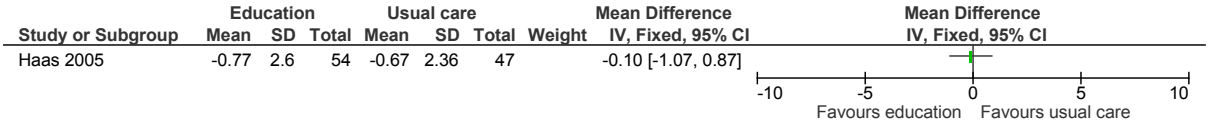
Haas study: Usual care = waiting list control

Figure 128: Pain severity (low back, VAS 0-10) ≤4 months



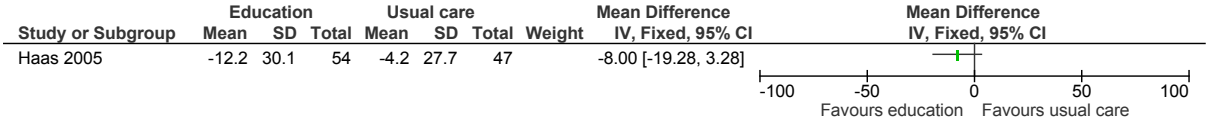
Heterogeneity not explained by subgroup analysis (subgroups do not apply). Sparkes study: Usual care = waiting list control

Figure 129: Pain severity (low back, modified von Korff pain scale 0-10) >4 months



Haas study: Usual care = waiting list control

Figure 130: Function (modified von Korff, 0-100)



Haas study: Usual care = waiting list control

Figure 131: Function (number of people not working) > 4 months

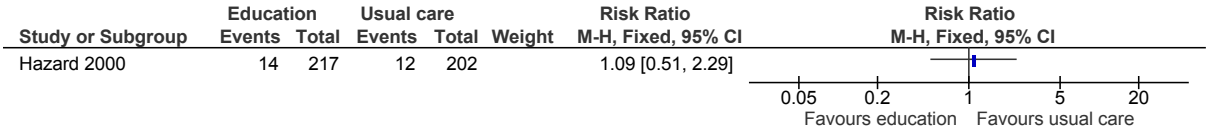
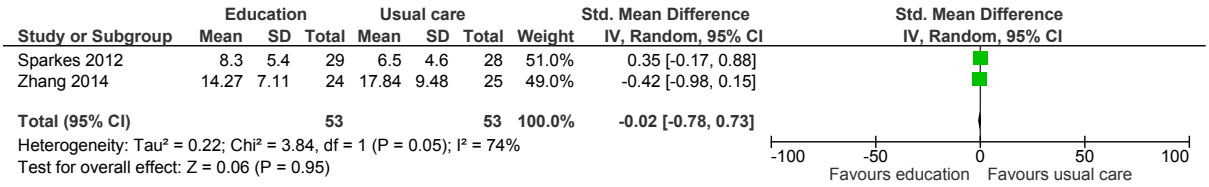


Figure 132: Function (RMDQ/ODI) ≤4 months



Heterogeneity not explained by subgroup analysis (subgroups do not apply). Sparkes study: Usual care = waiting list control.

Figure 133: Function (RMDQ, 0-24) >4 months

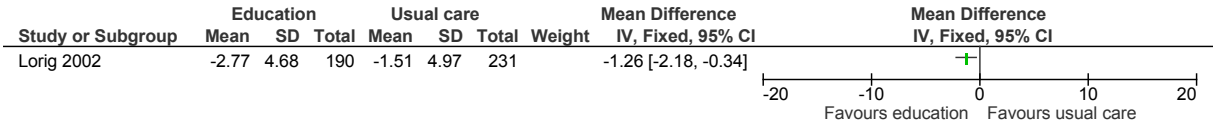


Figure 134: Responder criteria (No pain).

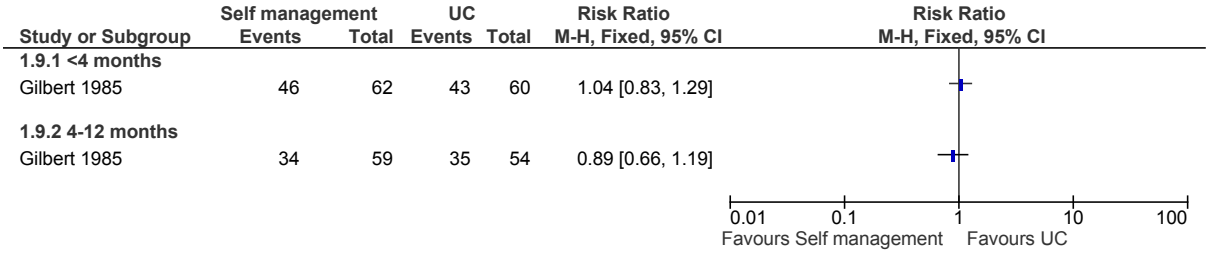
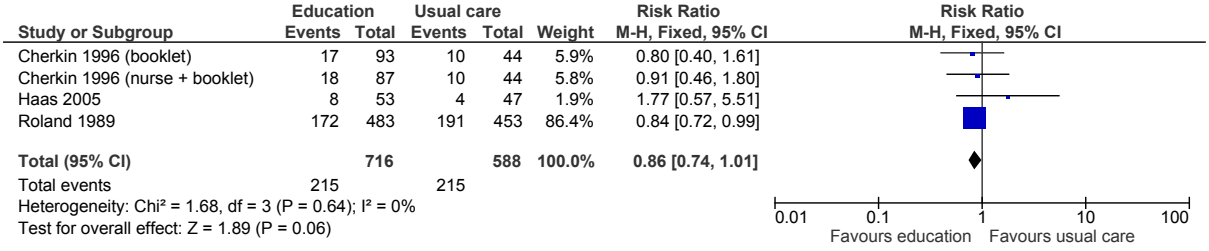


Figure 135: Healthcare utilisation (consultation for back pain) > 4 months



Haas study: Usual care = waiting list control

Figure 136: Healthcare utilisation (hospitalisation) > 4 months

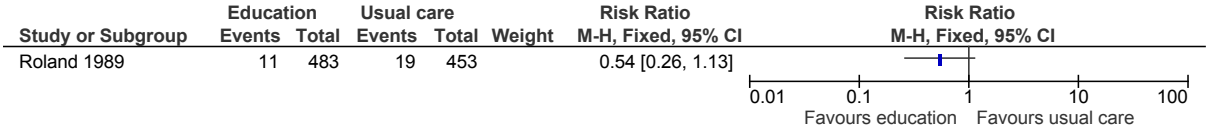


Figure 137: Healthcare utilisation (physician visits for back) > 4 months

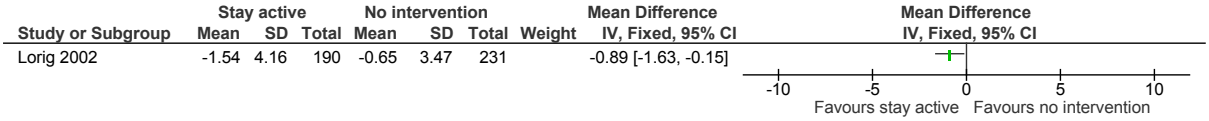


Figure 138: Healthcare utilisation (chiropractor visits for back) > 4 months

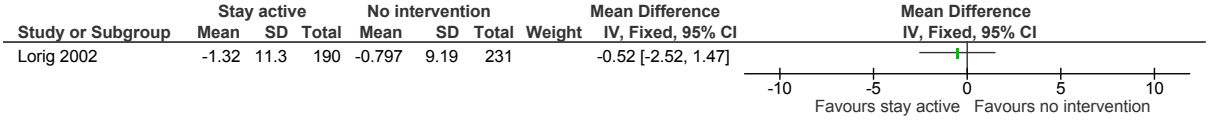


Figure 139: Healthcare utilisation (physical therapist visits for back) > 4 months

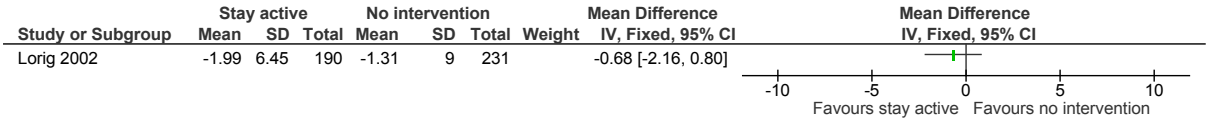
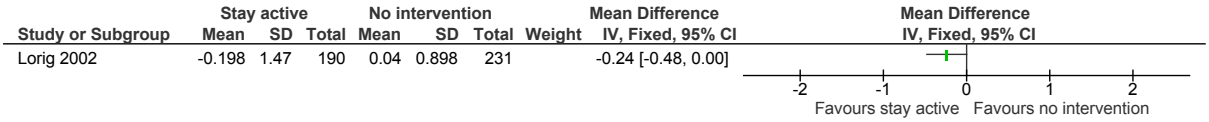


Figure 140: Healthcare utilisation (hospital days) > 4 months



K.4.1.2 Self-management programmes versus sham

K.4.1.2.1 Population – low back pain (with or without sciatica)

Figure 141: Pain severity (VAS, 0-10) ≤4 months.

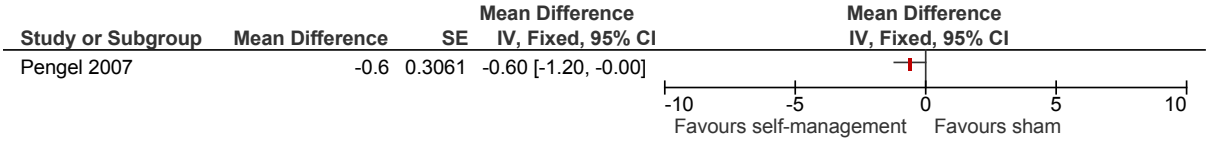


Figure 142: Pain severity (VAS, 0-10) > 4 months

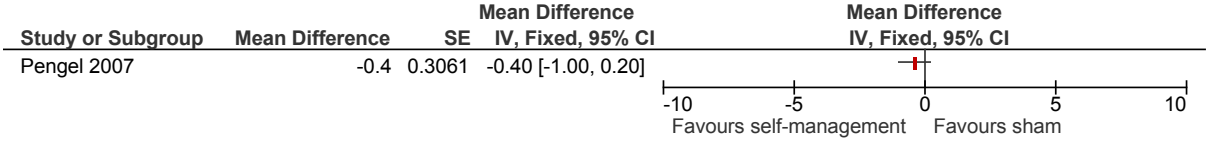


Figure 143: Function (RMDQ, 0-24) ≤4 months.

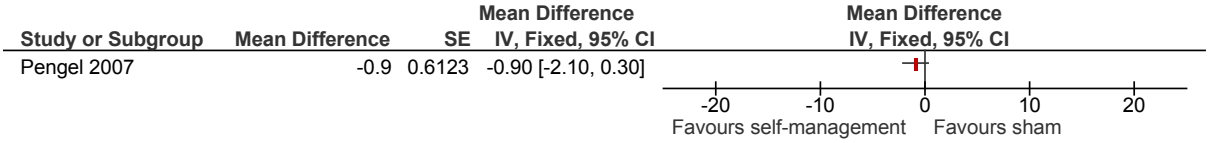
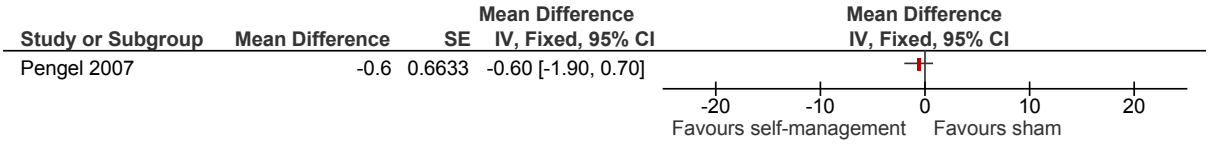


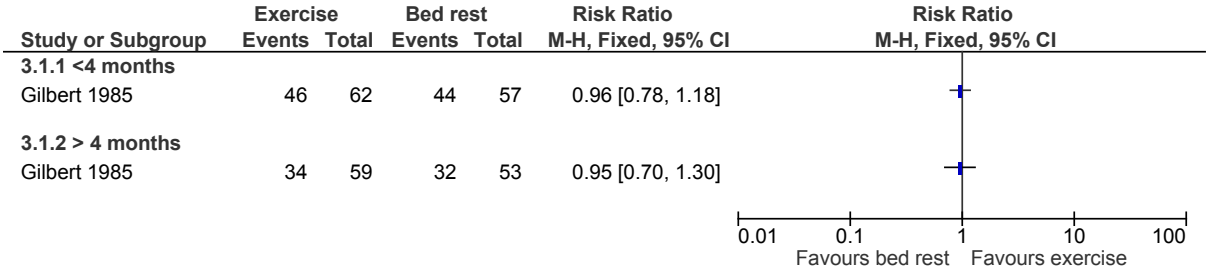
Figure 144: Function (RMDQ, 0-24) > 4 months



K.4.1.3 Self-management programmes versus bed rest

K.4.1.3.1 Population – low back pain with or without sciatica

Figure 145: Responder criteria (No pain)



K.4.1.4 Self-management programmes versus exercise

K.4.1.4.1 Population – low back pain with sciatica

Figure 146: Pain severity (VAS, 0-10)

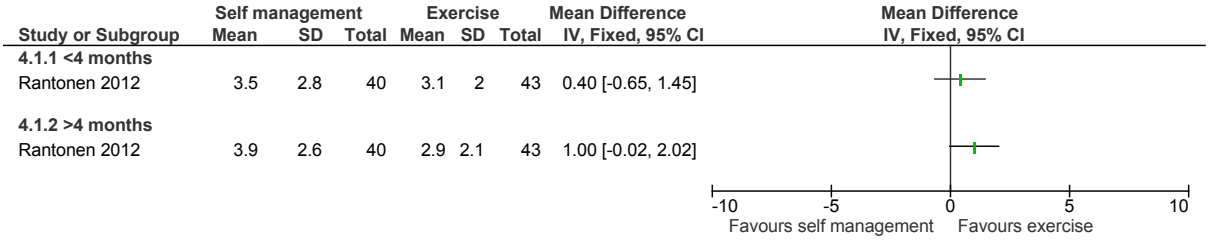


Figure 147: Function (ODI, 0-100)

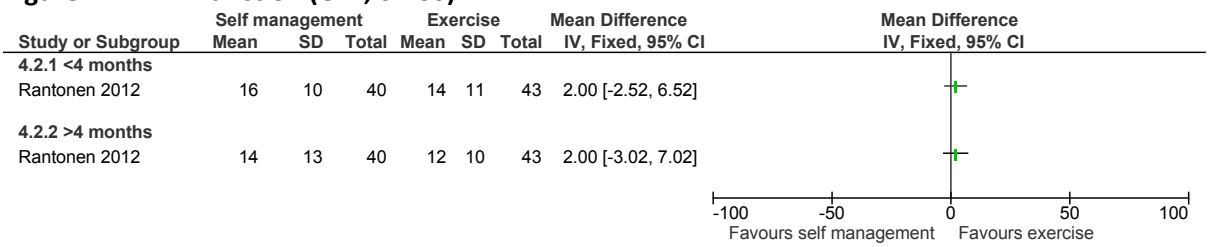
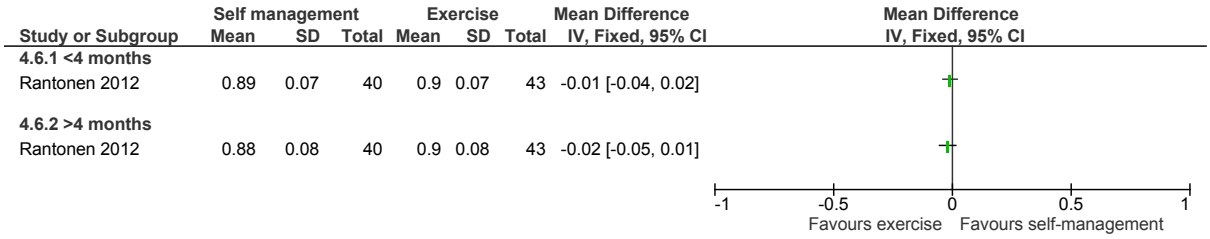


Figure 148: Quality of life (15-D, 0-1)



K.4.1.4.2 Population – low back pain without sciatica

Figure 149: Function (RMDQ, 0-24)

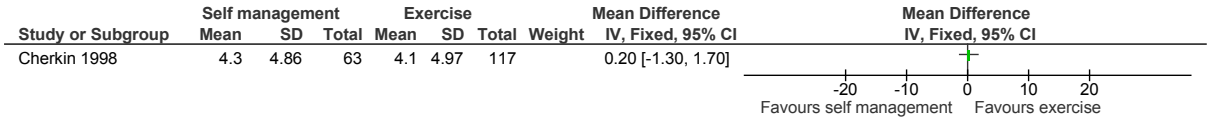


Figure 150: Responder criteria (>50% improvement in RMDQ) ≤ 4 months

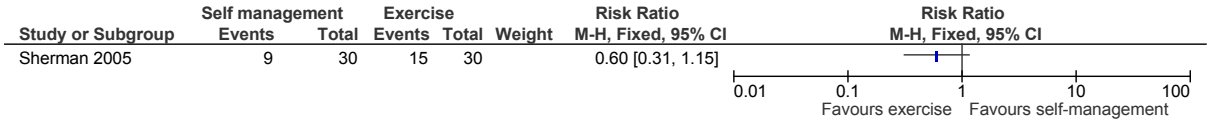
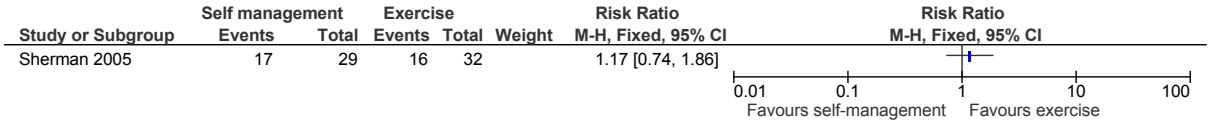


Figure 151: Healthcare utilisation (medication use) > 4 months



K.4.1.5 Self-management versus massage

K.4.1.5.1 Population – low back pain without sciatica

Figure 152: Function (RMDQ, 0-24)

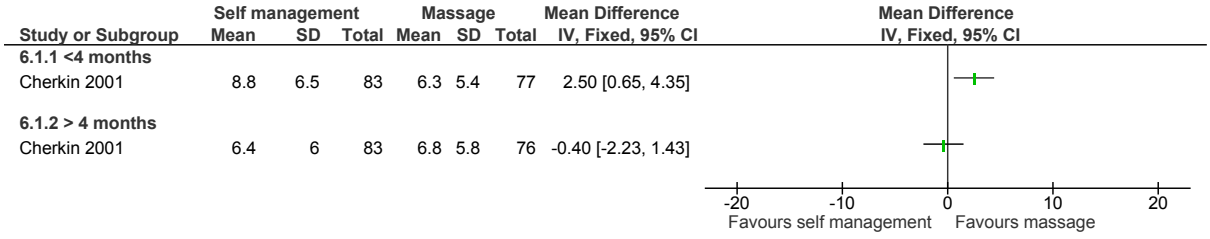


Figure 153: Healthcare utilisation (provider visits) > 4 months

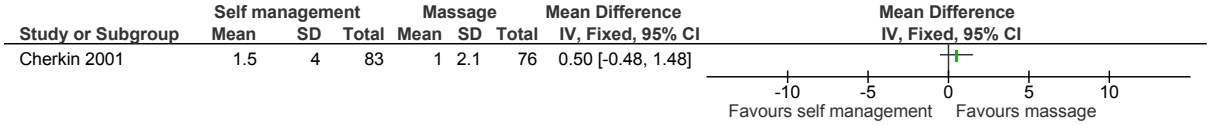
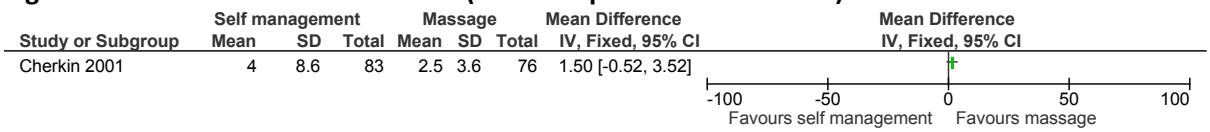


Figure 154: Healthcare utilisation (low back pain medication fills) > 4 months



K.4.1.6 Self-management programmes versus yoga

K.4.1.6.1 Population – low back pain without sciatica

Figure 155: Responder criteria (>50% improvement in RMDQ) ≤ 4 months

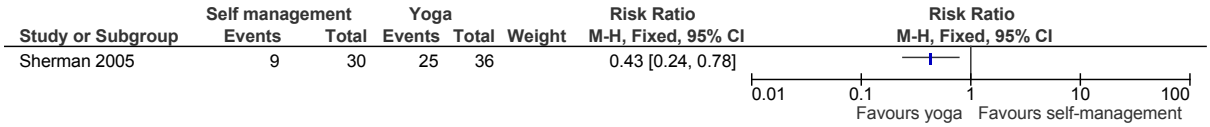
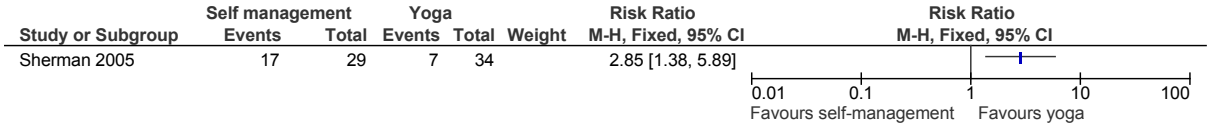


Figure 156: Healthcare utilisation (medication use) > 4 months



K.4.1.7 Self-management programmes versus acupuncture

K.4.1.7.1 Population – low back pain without sciatica

Figure 157: 1 Function (RMDQ, 0-24)

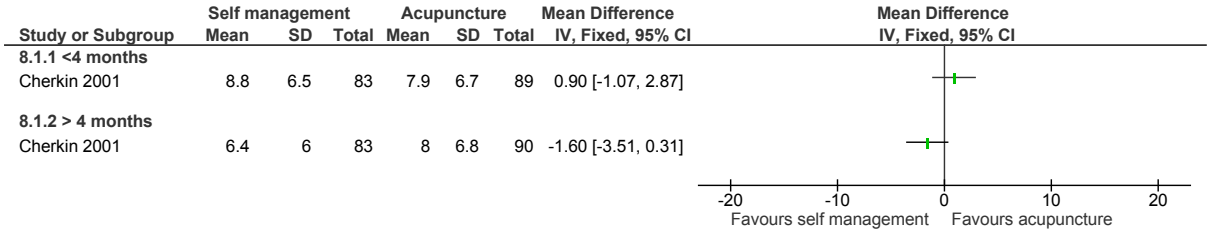


Figure 158: Healthcare utilisation (Provider visits) > 4 months

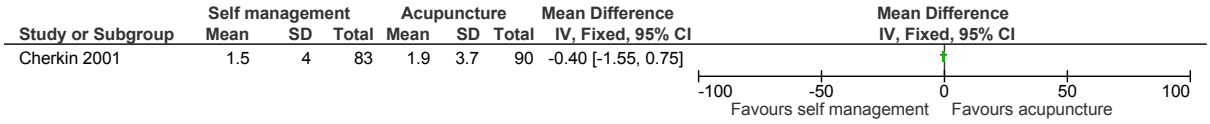
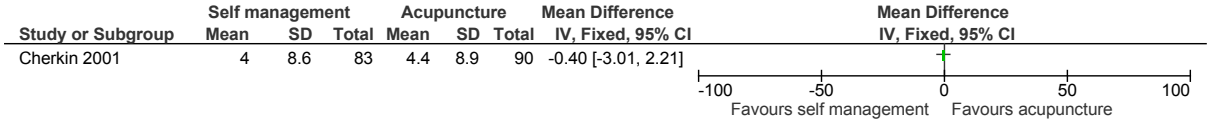


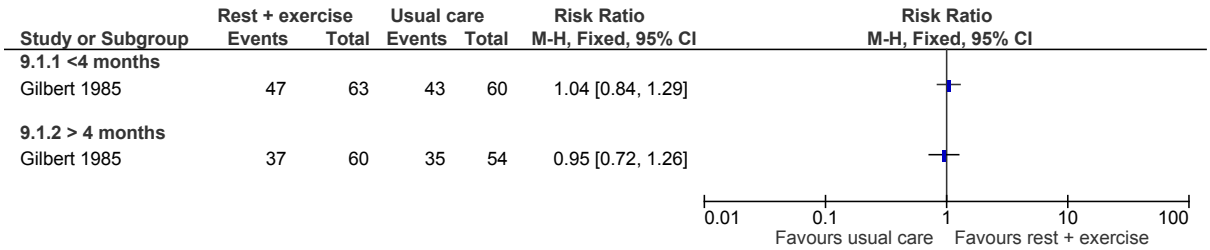
Figure 159: Healthcare utilisation (low back pain medication fills) > 4 months



K.4.1.8 Self-management programmes (bed rest plus exercise) versus usual care

K.4.1.8.1 Population – mixed population of low back pain with or without sciatica

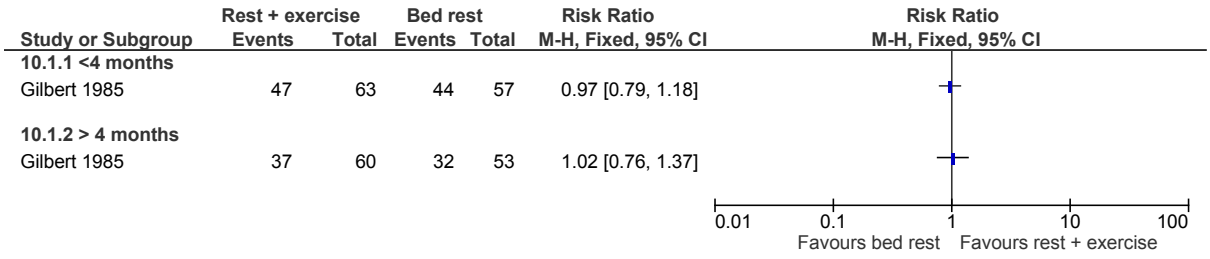
Figure 160: Responder criteria (no pain)



K.4.1.9 Self-management programmes (bed rest plus exercise) versus bed rest

K.4.1.9.1 Population – mixed population of low back pain with or without sciatica

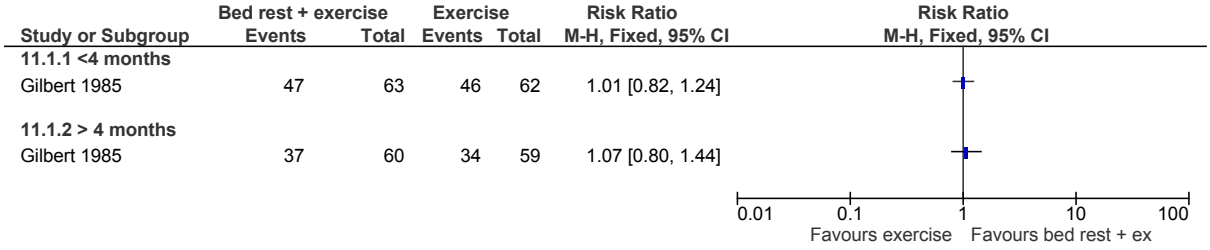
Figure 161: Responder criteria (No pain)



K.4.1.10 Self-management programmes (bed rest plus exercise) versus self-management (exercise)

K.4.1.10.1 Population – mixed population of low back pain with or without sciatica

Figure 162: Responder criteria (no pain)



K.4.1.11 Self-management programme (exercise plus stretching plus booklet) versus mobilisation plus electrotherapy

K.4.1.11.1 Population – low back pain without sciatica

Figure 163: Function (improvement of ODI)

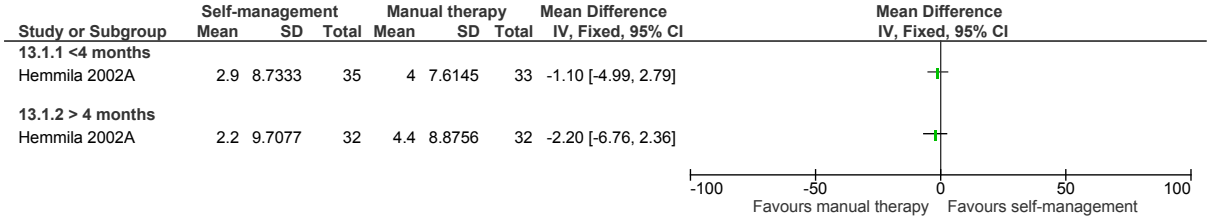
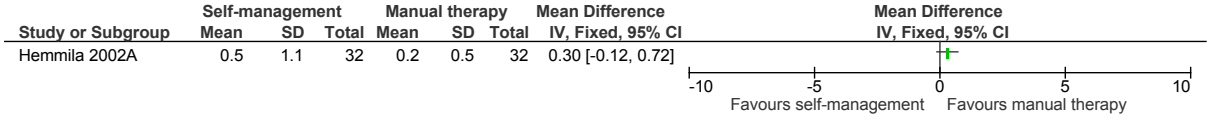


Figure 164: Healthcare utilisation (visits to healthcare centres) > 4 months



K.4.1.12 Self-management programme (exercise plus stretching plus booklet) versus manual therapy (mobilisation)

K.4.1.12.1 Population – low back pain without sciatica

Figure 165: Function (improvement of ODI)

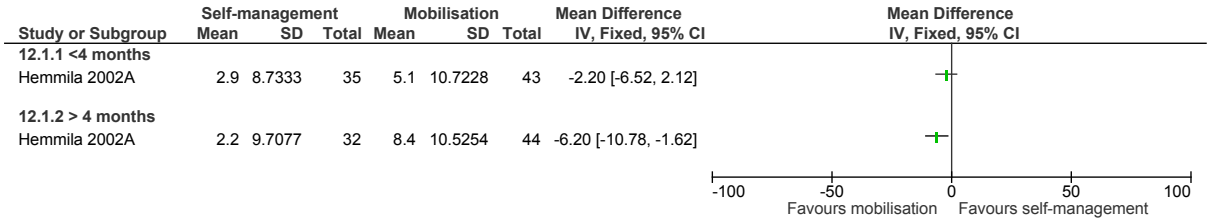
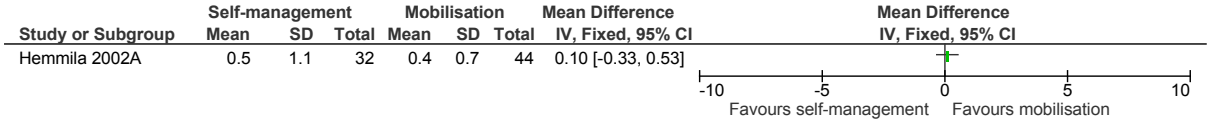


Figure 166: Healthcare utilisation (visits to healthcare centres) >4 months

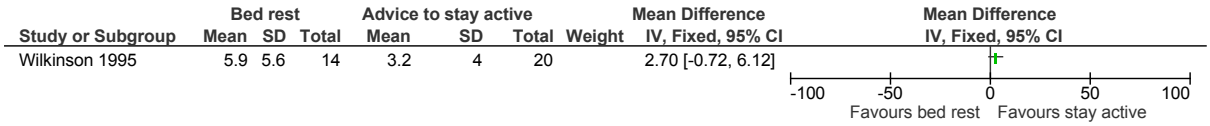


K.4.2 Advice to stay active

K.4.2.1 Advice to stay active versus bed rest

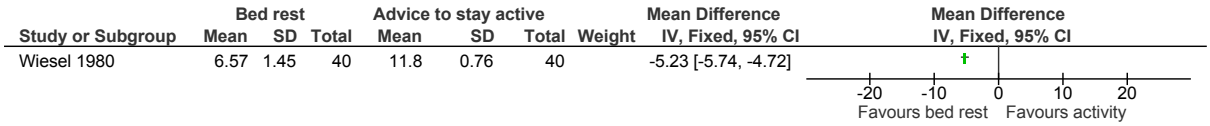
K.4.2.1.1 Population – mixed population of low back pain with or without sciatica

Figure 167: Function (RMDQ, 0-24) ≤ 4 months



K.4.2.1.2 Population – low back pain without sciatica

Figure 168: Days to full activity ≤ 4 months



K.4.3 Bed rest

K.4.3.1 Bed rest versus usual care

K.4.3.1.1 Population – mixed population of low back pain with or without sciatica

Figure 169: Responder criteria (no pain)

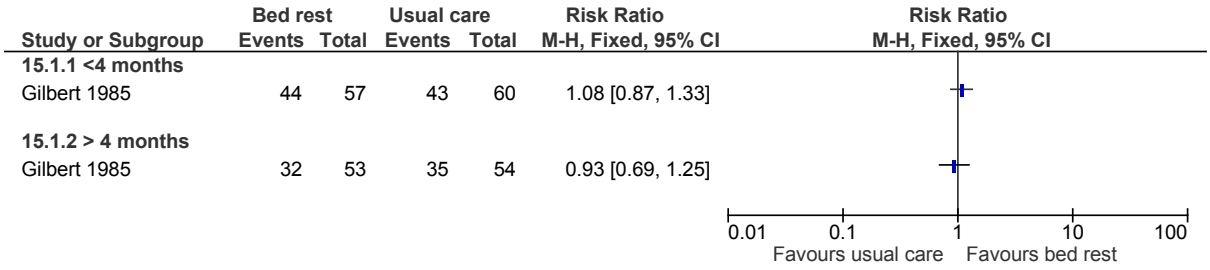
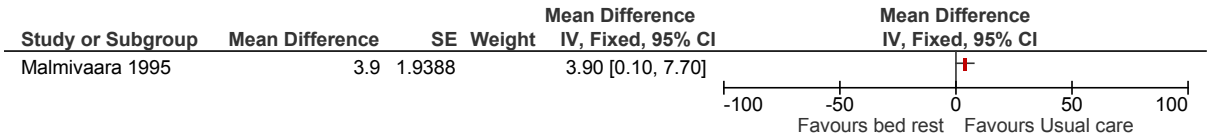


Figure 170: Function (ODI, 0-100) ≤ 4 months



K.4.3.1.2 Population – low back pain with sciatica

Figure 171: Pain severity (Back pain, VAS 0-10) ≤ 4 months.

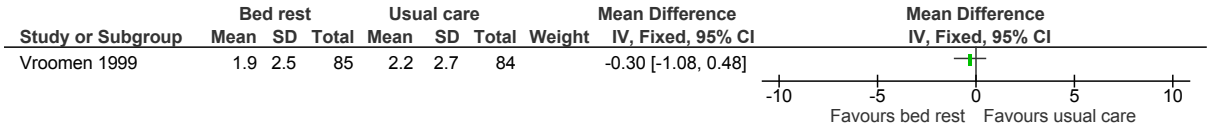


Figure 172: Pain severity (Leg pain, VAS 0-10) ≤ 4 months

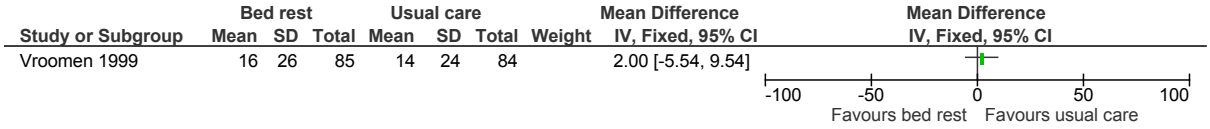
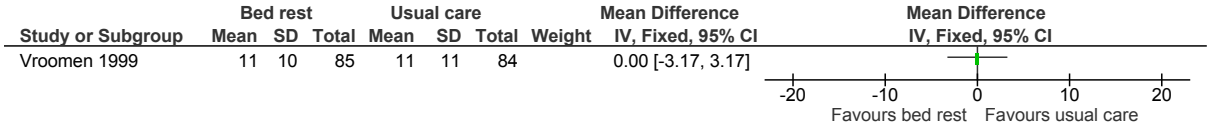


Figure 173: Function (ODI, 0-100) ≤ 4 months



K.4.4 Unsupervised exercise

K.4.4.1 Unsupervised exercise versus usual care

K.4.4.1.1 Population – Low back pain without sciatica

Figure 174: Quality of life (SF-36 Physical, 0-100) > 4 months

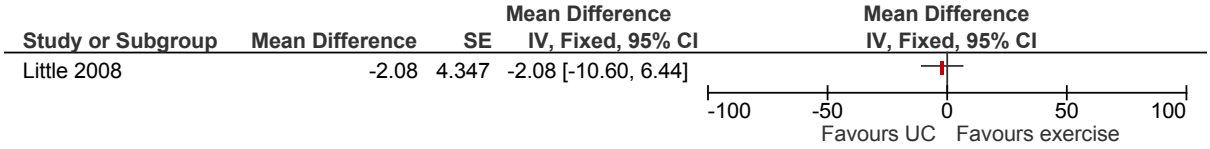


Figure 175: Quality of life (SF-36 Mental, 0-100) > 4 months

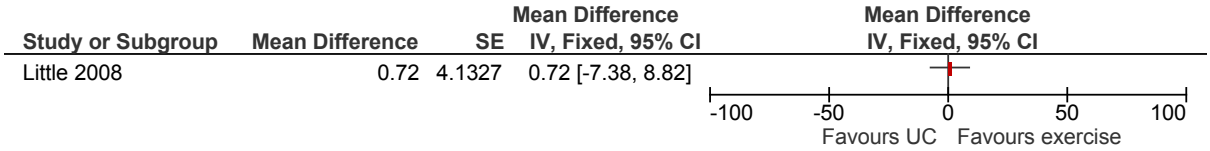
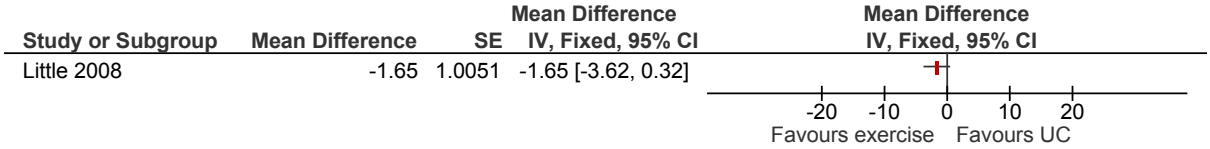
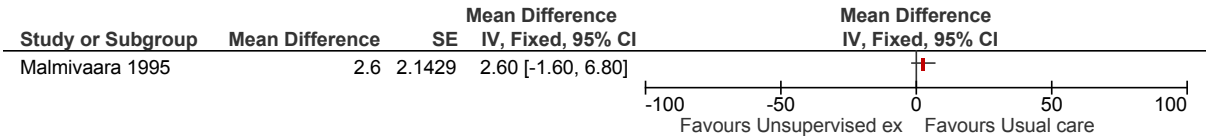


Figure 176: Function (RMDQ, 0-24) > 4 months



K.4.4.1.2 Population – mixed population of low back pain with or without sciatica

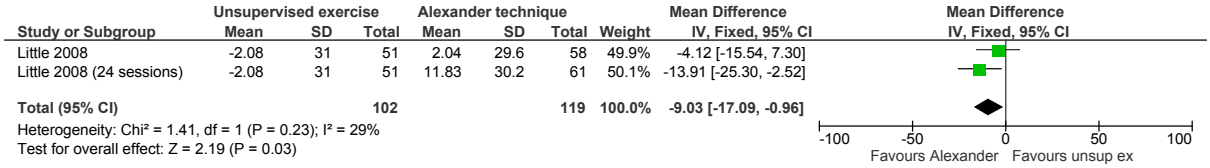
Figure 177: Function (ODI, 0-100) ≤ 4 months



K.4.4.2 Unsupervised exercise versus postural therapy (Alexander technique)

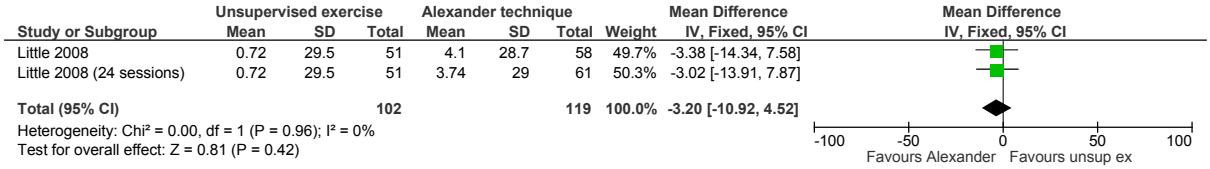
K.4.4.2.1 Population – low back pain without sciatica

Figure 178: Quality of life (SF-36 Physical, 0-100) > 4 months



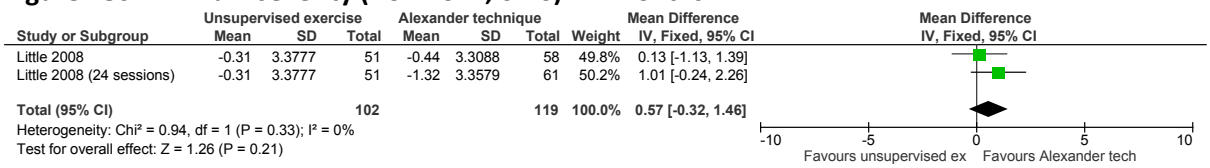
Little 2008: unsupervised exercise vs Alexander technique (6 sessions); Little 2008 (24 sessions): unsupervised exercise vs Alexander technique (24 sessions)

Figure 179: Quality of life (SF-36 Mental, 0-100) > 4 months



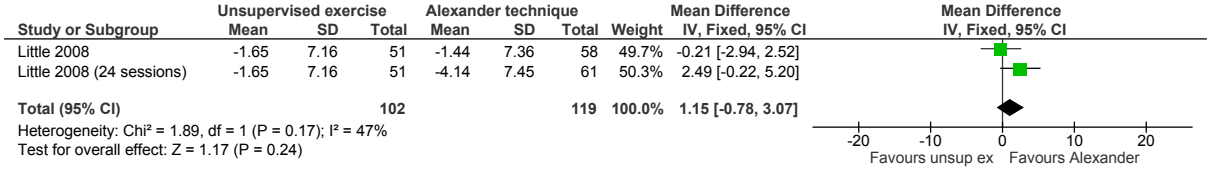
Little 2008: unsupervised exercise vs Alexander technique (6 sessions); Little 2008 (24 sessions): unsupervised exercise vs Alexander technique (24 sessions)

Figure 180: Pain severity (Von Korff, 0-10) > 4 months



Little 2008: unsupervised exercise vs Alexander technique (6 sessions); Little 2008 (24 sessions): unsupervised exercise vs Alexander technique (24 sessions)

Figure 181: Function (RMDQ, 0-24) > 4 months



Little 2008: unsupervised exercise vs Alexander technique (6 sessions); Little 2008 (24 sessions): unsupervised exercise vs Alexander technique (24 sessions)

K.4.4.3 Unsupervised exercise versus exercise

K.4.4.3.1 Population – low back pain with or without sciatica

Figure 182: Pain severity (Back pain, VAS 0-10)

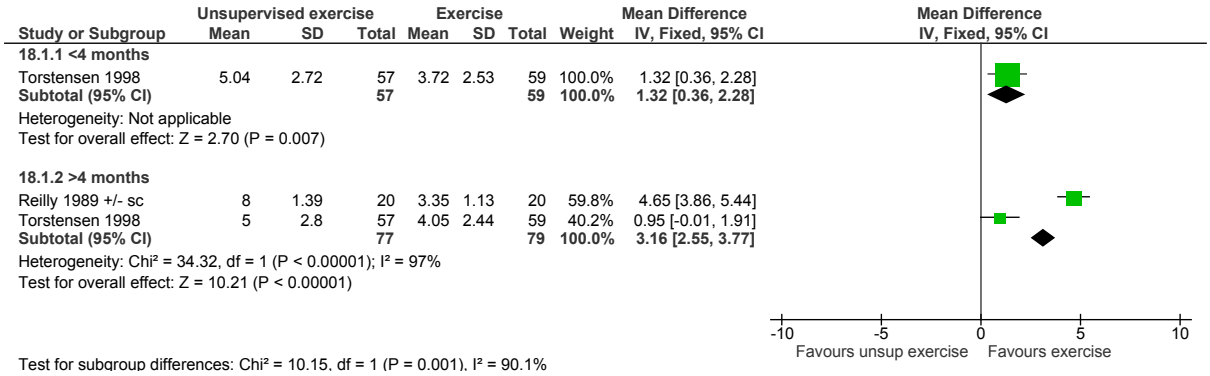


Figure 183: Pain severity (leg pain, VAS 0-10)

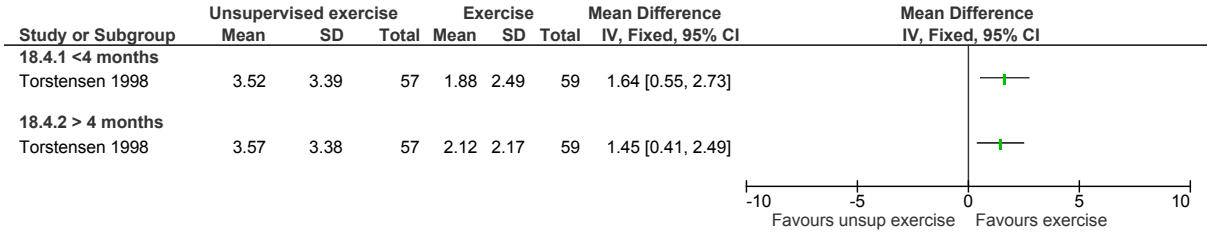


Figure 184: Function (ODI, 0-100)

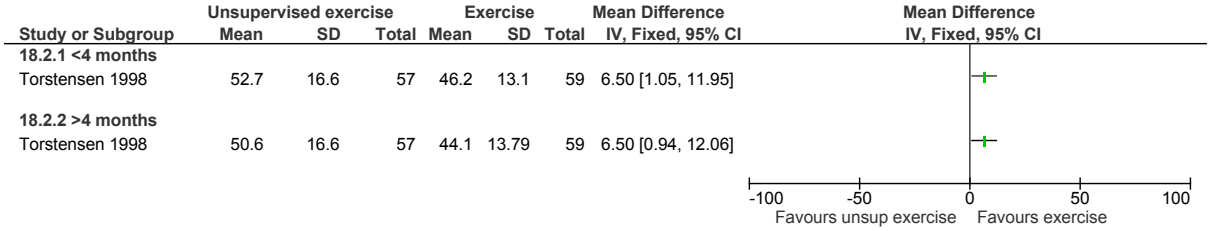


Figure 185: Number of pain relapses > 4 months

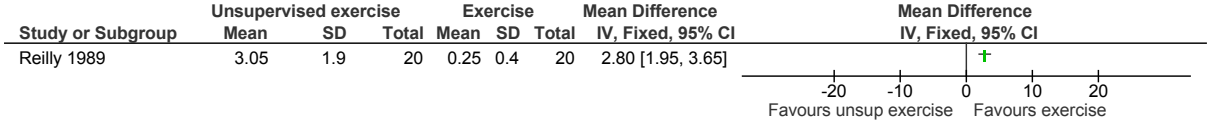
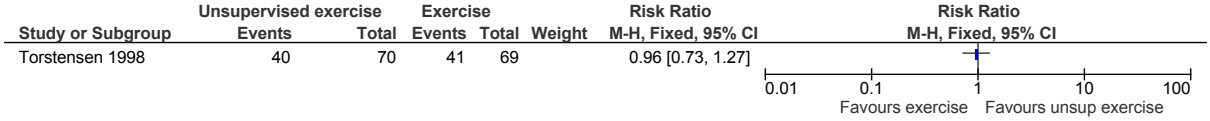


Figure 4186: Return to work > 4 months



K.4.4.4 Unsupervised exercise versus massage

K.4.4.4.1 Population – low back pain without sciatica

Figure 187: Quality of life (SF-36 Physical, 0-100) > 4 months

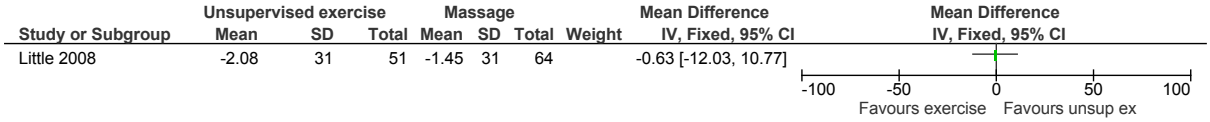


Figure 188: Quality of life (SF-36 Mental, 0-100) > 4 months

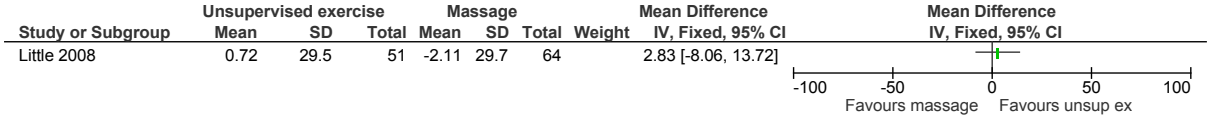


Figure 189: Pain severity (McGill, 0-78) ≤ 4 months

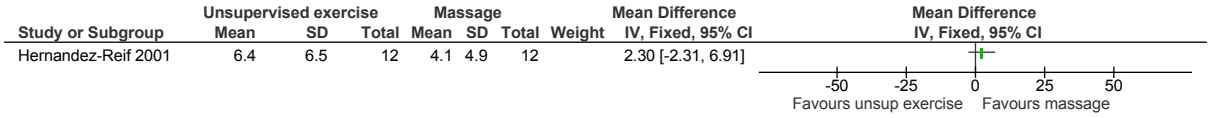


Figure 190: Pain severity (Von Korff, 0-10) > 4 months

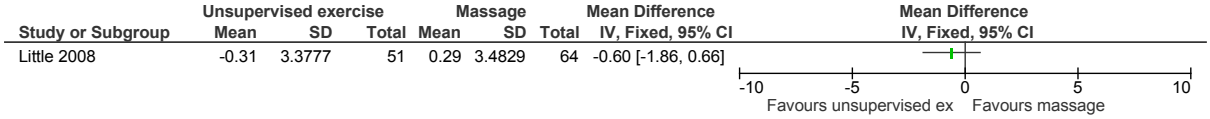
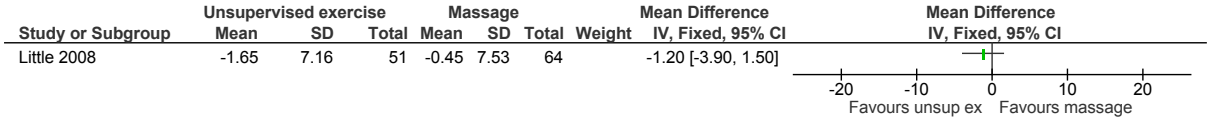


Figure 191: Function (RMDQ, 0-24) > 4 months



K.4.5 Combination of interventions – self-management adjunct

K.4.5.1 Low back pain without sciatica

K.4.5.1.1 Self-management (exercise prescription) + Postural therapy (Alexander technique - 6 lessons) versus postural therapy (Alexander technique - 6 lessons)

Figure 192: Quality of life (SF-36, 0-100) > 4 months (1 year)

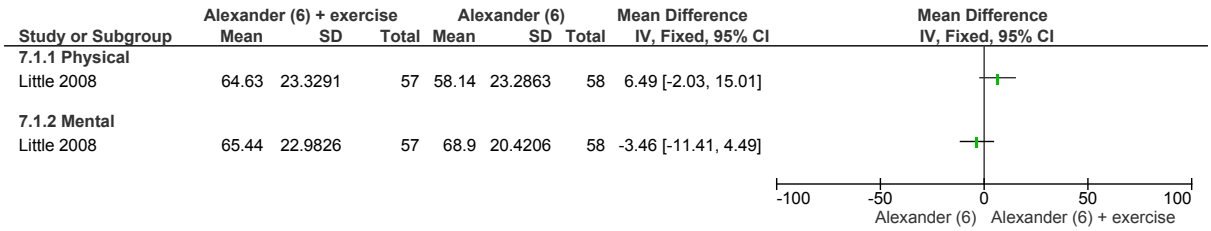


Figure 193: Pain severity (Von Korff pain scale, 0-10) > 4 months (1 year)

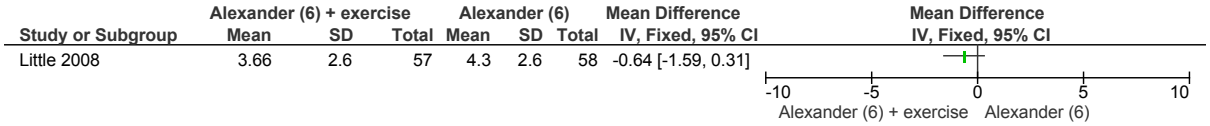


Figure 194: Function (RMDQ, 0-24) > 4 months (1 year)

Study or Subgroup	Alexander (6) + exercise Mean	SD	Total	Alexander (6) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	6.25	5.1846	57	7.79	5.2299	58	-1.54 [-3.44, 0.36]

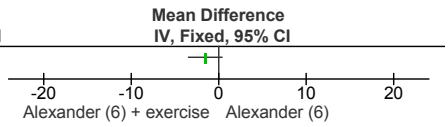
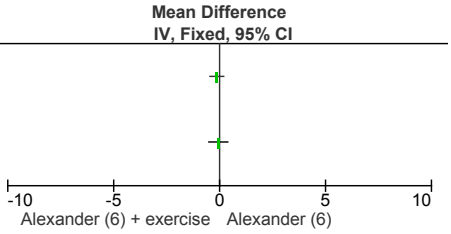


Figure 195: Healthcare utilisation > 4 months (1 year)

Study or Subgroup	Alexander (6) + exercise Mean	SD	Total	Alexander (6) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
7.5.1 Primary care contacts							
Little 2008	0.35	0.83	57	0.48	0.94	58	-0.13 [-0.45, 0.19]
7.5.2 Prescriptions							
Little 2008	0.58	1.26	57	0.64	1.17	58	-0.06 [-0.50, 0.38]



K.4.5.1.2 Self-management (exercise prescription) + postural therapy (Alexander technique - 24 lessons) versus postural therapy (Alexander technique - 6 lessons)

Figure 196: Quality of life - SF-36 (0-100) > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (6) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
9.1.1 Physical							
Little 2008	65.53	22.54	56	58.14	23.2863	58	7.39 [-1.02, 15.80]
9.1.2 Mental							
Little 2008	69.79	22.1589	56	68.9	20.4206	58	0.89 [-6.94, 8.72]

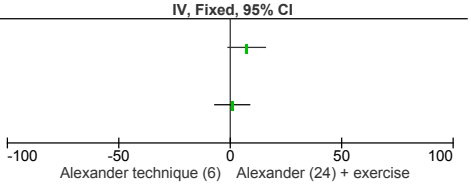


Figure 197: Pain severity – Von Korff pain scale (0-10) > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (6) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	3.11	2.5	56	4.3	2.6	58	-1.19 [-2.13, -0.25]

Figure 198: Function – Roland Morris Disability Questionnaire (0-24) > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (6) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	5.01	5.1927	56	7.79	5.2299	58	-2.78 [-4.69, -0.87]

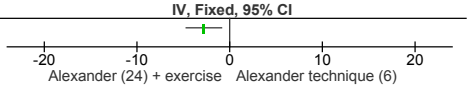
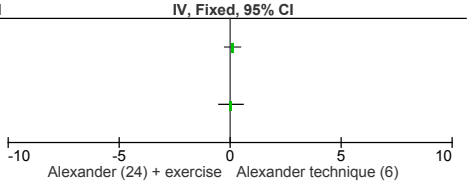


Figure 199: Healthcare utilisation > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (6) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
9.5.1 Primary care contacts							
Little 2008	0.59	1.02	56	0.48	0.94	58	0.11 [-0.25, 0.47]
9.5.2 Prescriptions							
Little 2008	0.68	1.75	56	0.64	1.17	58	0.04 [-0.51, 0.59]



K.4.5.1.3 Self-management (exercise prescription) + postural therapy (Alexander technique - 6 lessons) versus postural therapy (Alexander technique -24 lessons)

Figure 200: Quality of life (SF-36, 0-100) > 4 months (1 year)

Study or Subgroup	Alexander (6) + exercise Mean	SD	Total	Alexander technique (24) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
11.1.1 Physical							
Little 2008	64.63	23.3291	57	67.93	22.8075	61	-3.30 [-11.63, 5.03]
11.1.2 Mental							
Little 2008	65.44	22.9826	57	68.54	23.127	61	-3.10 [-11.42, 5.22]

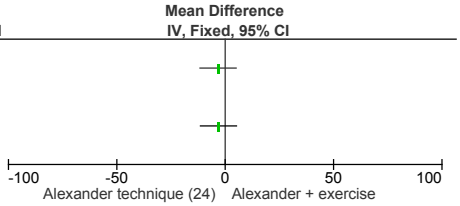


Figure 201: Pain severity (Von Korff pain scale, 0-10) > 4 months (1 year)

Study or Subgroup	Alexander (6) + exercise Mean	SD	Total	Alexander technique (24) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	3.66	2.6	57	3.4	2.6	61	0.26 [-0.68, 1.20]

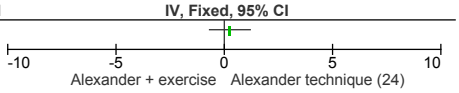
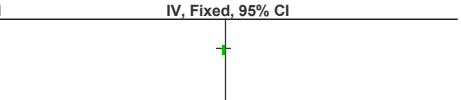


Figure 202: Function (RMDQ, 0-24) > 4 months (1 year)

Study or Subgroup	Alexander (6) + exercise Mean	SD	Total	Alexander technique (24) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	6.25	5.1846	57	5.09	5.1933	61	1.16 [-0.71, 3.03]

Figure 203: Healthcare utilisation > 4 months (1 year)

Study or Subgroup	Alexander (6) + exercise Mean	SD	Total	Alexander technique (24) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
11.5.1 Primary care contacts							
Little 2008	0.35	0.83	57	0.44	0.91	61	-0.09 [-0.40, 0.22]
11.5.2 Prescriptions							
Little 2008	0.58	1.26	57	1.07	2.24	61	-0.49 [-1.14, 0.16]



K.4.5.1.4 Self-management (exercise prescription) + postural therapy (Alexander technique - 24 lessons) versus postural therapy (Alexander technique - 24 lessons)

Figure 204: Quality of life (SF-36, 0-100) > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (24 lessons) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
13.1.1 Physical							
Little 2008	65.53	22.54	56	67.93	22.8075	61	-2.40 [-10.62, 5.82]
13.1.2 Mental							
Little 2008	69.79	22.1589	56	68.54	23.127	61	1.25 [-6.96, 9.46]

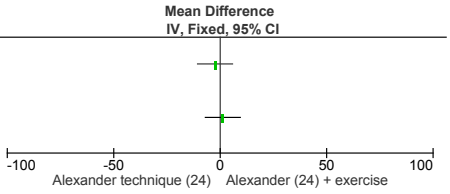


Figure 205: Pain severity (Von Korff pain scale, 0-10) > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (24 lessons) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	3.11	2.5	56	3.4	2.6	61	-0.29 [-1.21, 0.63]

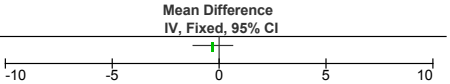


Figure 206: Function (RMDQ, 0-24) > 4 months (1 year)

Study or Subgroup	Alexander (24) + exercise Mean	SD	Total	Alexander technique (24 lessons) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Little 2008	5.01	5.1927	56	5.09	5.1933	61	-0.08 [-1.96, 1.80]

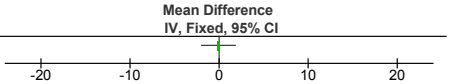
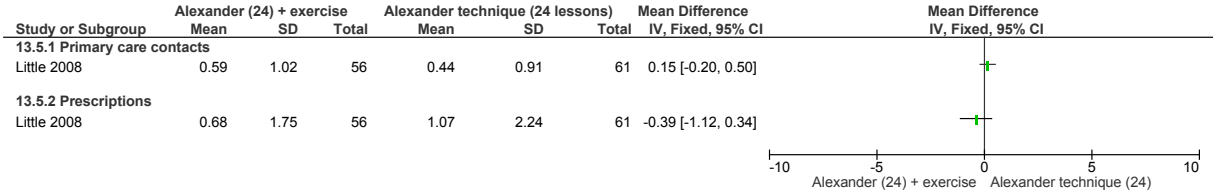


Figure 207: Healthcare utilisation > 4 months (1 year)



K.4.5.1.5 Self-management (exercise prescription) + postural therapy (Alexander technique - 24 lessons) versus postural therapy (Alexander technique - 6 lessons) + self-management (exercise prescription)

Figure 208: Quality of life (SF-36, 0-100) > 4 months (1 year)

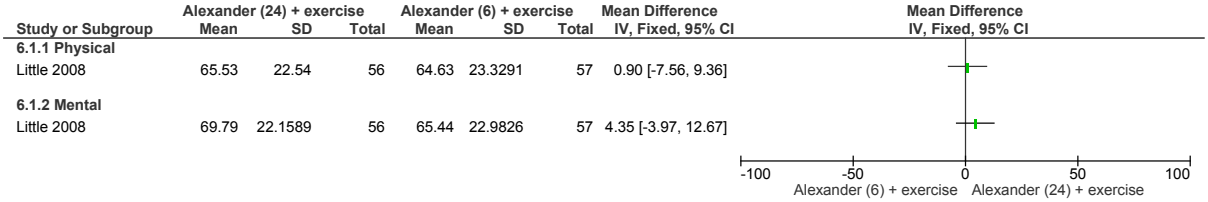


Figure 209: Pain severity (Von Korff pain scale, 0-10) > 4 months (1 year)

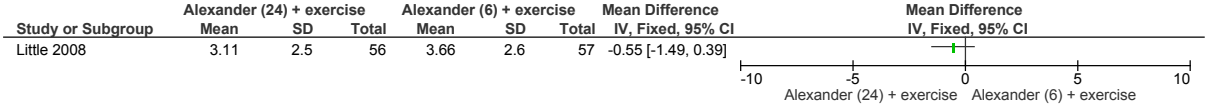


Figure 210: Function (RMDQ, 0-24) > 4 months (1 year)

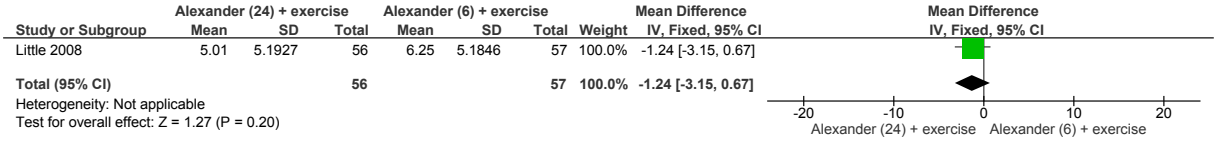
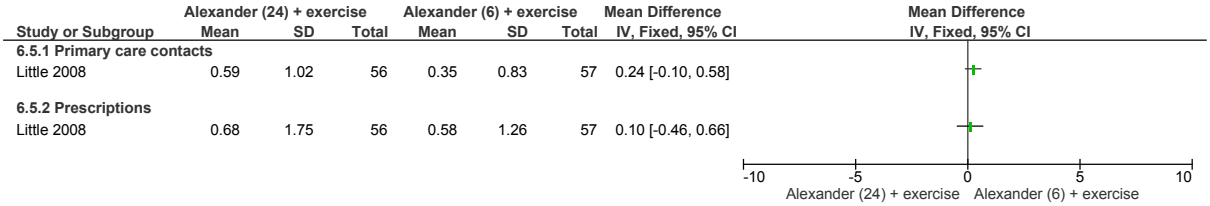


Figure 211: Healthcare utilisation > 4 months



K.4.5.2 Low back pain with or without sciatica

K.4.5.2.1 Self-management (home exercise) + electrotherapy (laser) compared to electrotherapy (laser)

Figure 212: Pain severity (VAS, 0-10) ≤ 4 months

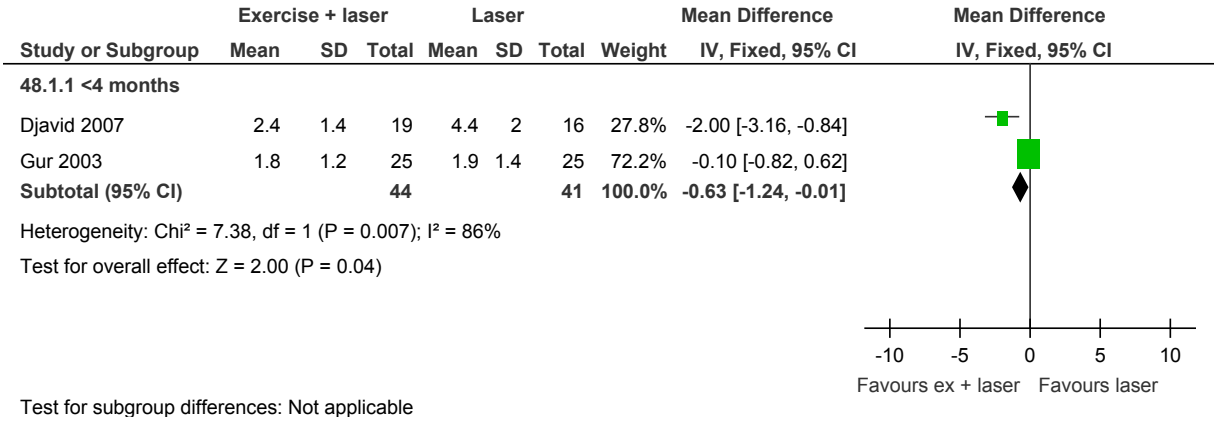
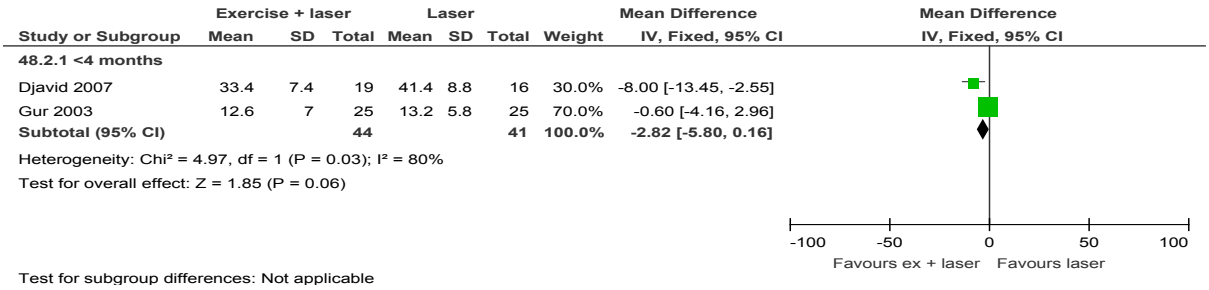


Figure 213: Function (ODI, 0-100) ≤ 4 months



K.4.5.2.2 Self-management (unsupervised exercise) + electrotherapy (HILT laser) vs electrotherapy (HILT laser)

Figure 214: Pain severity (VAS, 0-10) ≤ 4 months

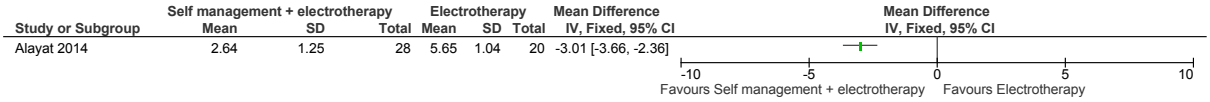


Figure 215: Function (RMDQ, 0-24) ≤ 4 months

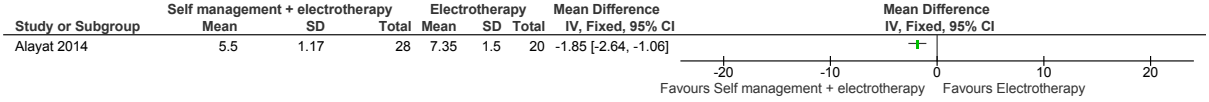
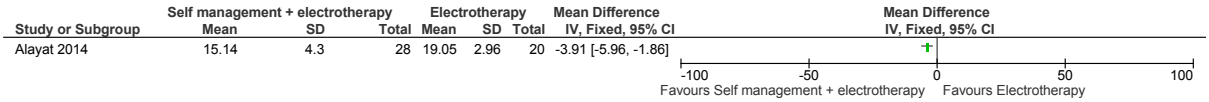


Figure 216: Function (MODI, 0-100) ≤ 4 months



K.4.5.2.3 Self-management (education) +biomechanical exercise vs biomechanical exercise (motor control)

Figure 217: Pain severity (VAS, 0-10) ≤ 4 months

Study or Subgroup	self manag + ex Mean	SD	Total	ex Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ferreira 2010	4	2.37	10	4.7	1.77	11	-0.70 [-2.50, 1.10]

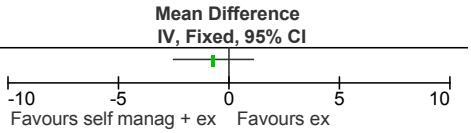
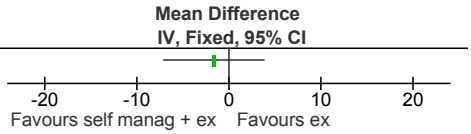


Figure 218: Function (RMDQ, 0-24) ≤ 4 months

Study or Subgroup	self manag + ex Mean	SD	Total	ex Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ferreira 2010	7.36	6.59	10	9	6.04	11	-1.64 [-7.06, 3.78]



K.5 Exercise therapies

K.5.1 Individual biomechanical exercise versus usual care

K.5.1.1 Overall (with or without sciatica)

Figure 219: Quality of life RAND/SF-36 (0-100) individual scores ≤4 months

Study or Subgroup	biomechanical exercise Mean	SD	Total	usual care Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
2.2.1 general health								
Park 2013	64.37	11.78	8	50	17.32	8	34.8%	14.37 [-0.14, 28.88]
Shaughnessy 2004	64	20	20	50	14	21	65.2%	14.00 [3.38, 24.62]
Subtotal (95% CI)			**28**			**29**	**100.0%**	**14.13 [5.56, 22.70]**
Heterogeneity: Chi² = 0.00, df = 1 (P = 0.97); I² = 0%								
Test for overall effect: Z = 3.23 (P = 0.001)								
2.2.2 vitality								
Park 2013	70.5	10.92	8	62	16.85	8	41.2%	8.50 [-5.41, 22.41]
Shaughnessy 2004	52	19	20	37	19	21	58.8%	15.00 [3.36, 26.64]
Subtotal (95% CI)			**28**			**29**	**100.0%**	**12.33 [3.40, 21.25]**
Heterogeneity: Chi² = 0.49, df = 1 (P = 0.48); I² = 0%								
Test for overall effect: Z = 2.71 (P = 0.007)								
2.2.4 bodily pain								
Park 2013	57.5	12.81	8	36.25	10.6	8	32.4%	21.25 [9.73, 32.77]
Shaughnessy 2004	46	12	20	28	14	21	67.6%	18.00 [10.03, 25.97]
Subtotal (95% CI)			**28**			**29**	**100.0%**	**19.05 [12.50, 25.61]**
Heterogeneity: Chi² = 0.21, df = 1 (P = 0.65); I² = 0%								
Test for overall effect: Z = 5.70 (P < 0.00001)								
2.2.5 physical role limitation								
Park 2013	81.5	13.56	8	68.12	21.66	8	40.9%	13.38 [-4.33, 31.09]
Shaughnessy 2004	50	28	20	23	19	21	59.1%	27.00 [12.28, 41.72]
Subtotal (95% CI)			**28**			**29**	**100.0%**	**21.44 [10.12, 32.75]**
Heterogeneity: Chi² = 1.34, df = 1 (P = 0.25); I² = 26%								
Test for overall effect: Z = 3.71 (P = 0.0002)								
2.2.6 emotional role limitation								
Park 2013	80.25	10.83	8	73	15.36	8	70.2%	7.25 [-5.77, 20.27]
Shaughnessy 2004	78	29	20	54	36	21	29.8%	24.00 [4.03, 43.97]
Subtotal (95% CI)			**28**			**29**	**100.0%**	**12.25 [1.34, 23.16]**
Heterogeneity: Chi² = 1.90, df = 1 (P = 0.17); I² = 47%								
Test for overall effect: Z = 2.20 (P = 0.03)								
2.2.7 social functioning								
Park 2013	72	3.93	8	59.62	18.74	8	46.0%	12.38 [-0.89, 25.65]
Shaughnessy 2004	68	20	20	41	20	21	54.0%	27.00 [14.75, 39.25]
Subtotal (95% CI)			**28**			**29**	**100.0%**	**20.27 [11.27, 29.27]**
Heterogeneity: Chi² = 2.52, df = 1 (P = 0.11); I² = 60%								
Test for overall effect: Z = 4.42 (P < 0.0001)								

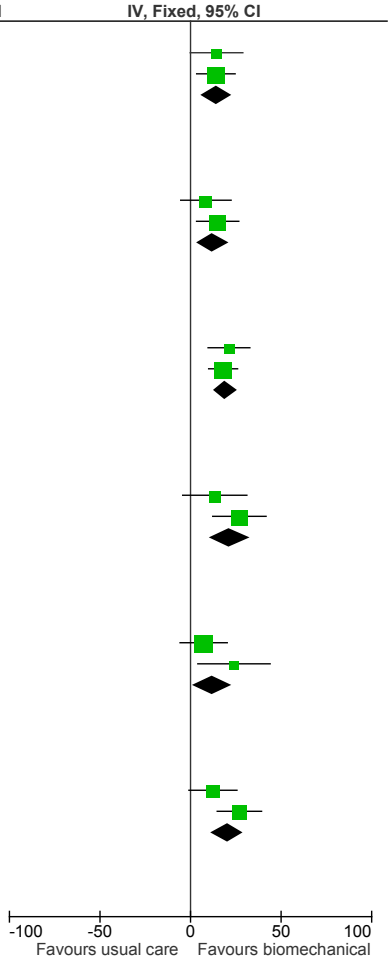
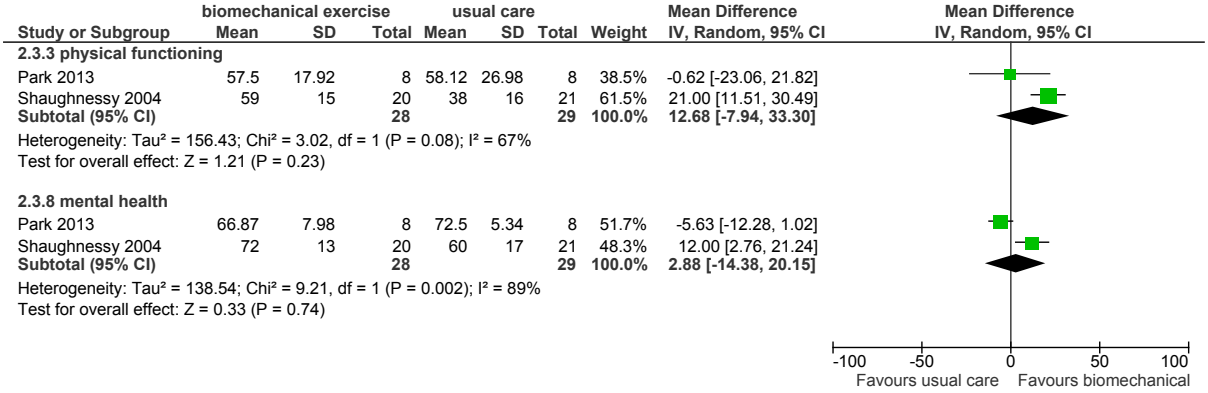


Figure 220: Quality of life RAND/SF-36 (0-100) individual scores ≤4 months



Unexplained heterogeneity

Figure 221: Pain (VAS 0-10) ≤4 months

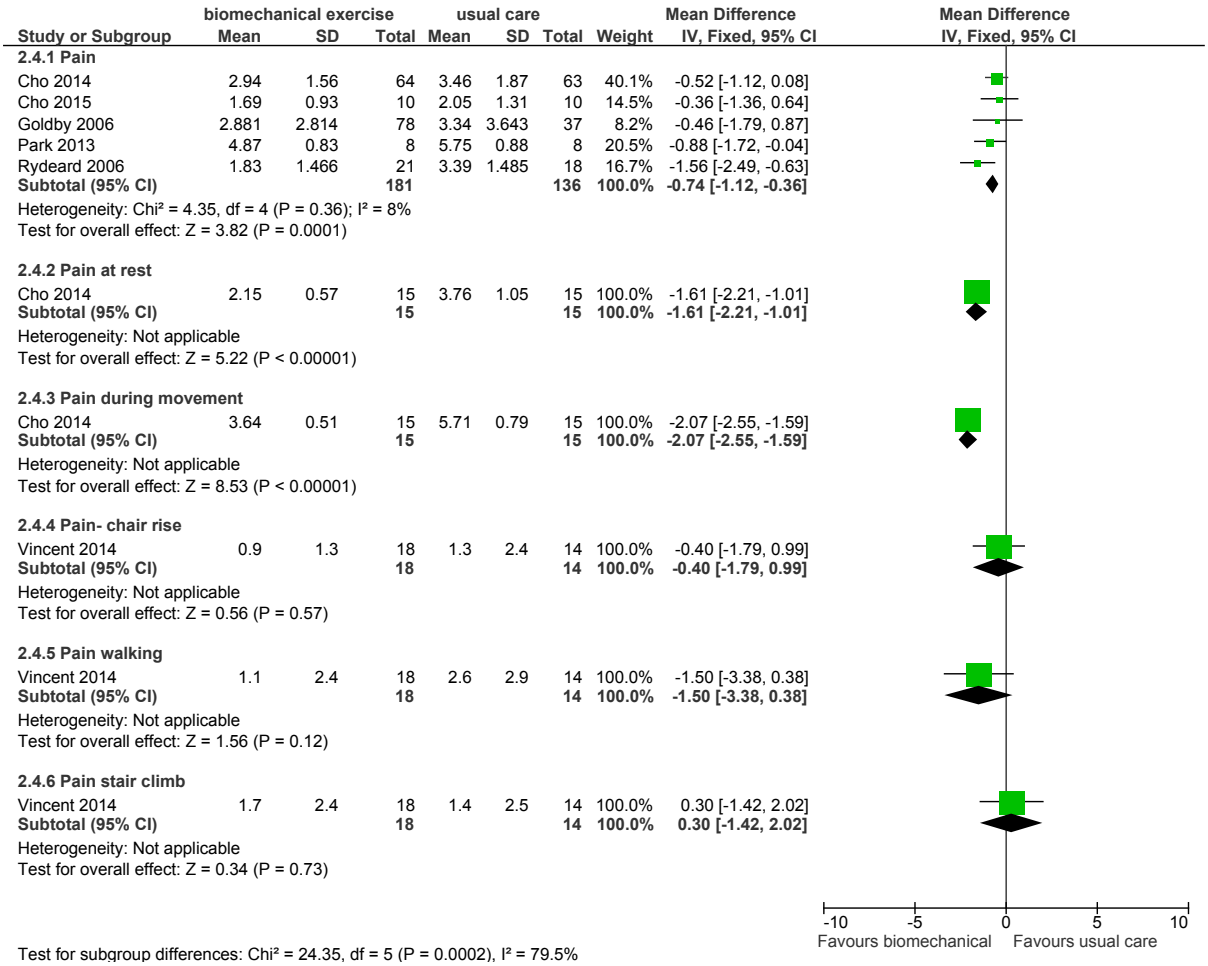


Figure 222: Pain (VAS 0-10) > 4 months

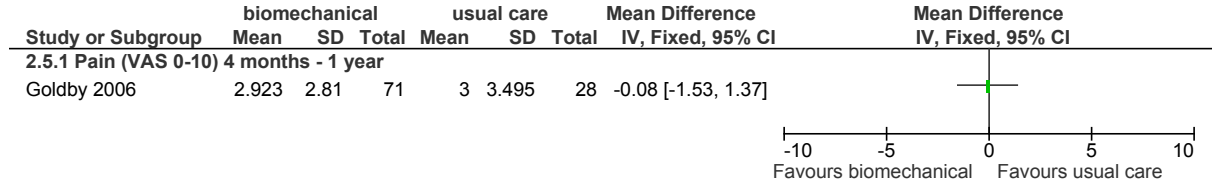
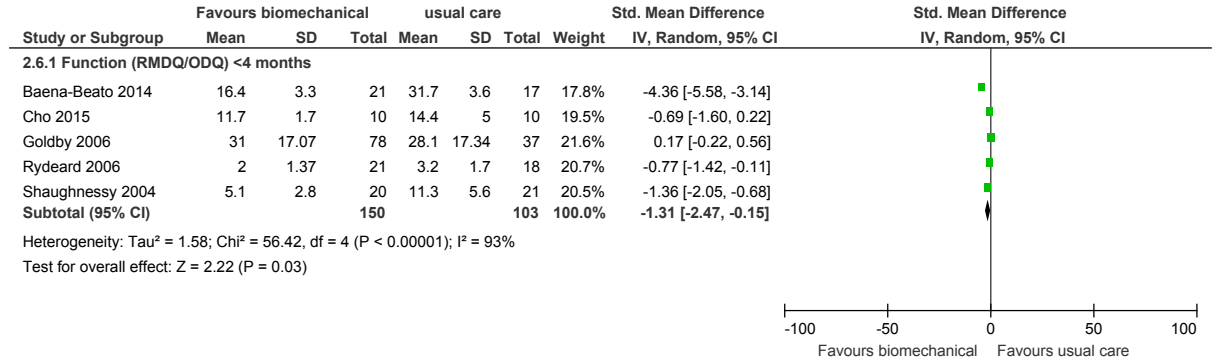


Figure 223: Function (RMDQ 0-24/ODI 0-100) ≤4 months



Unexplained heterogeneity

Figure 224: Function (RMDQ 0-24/ODI 0-100) > 4 months

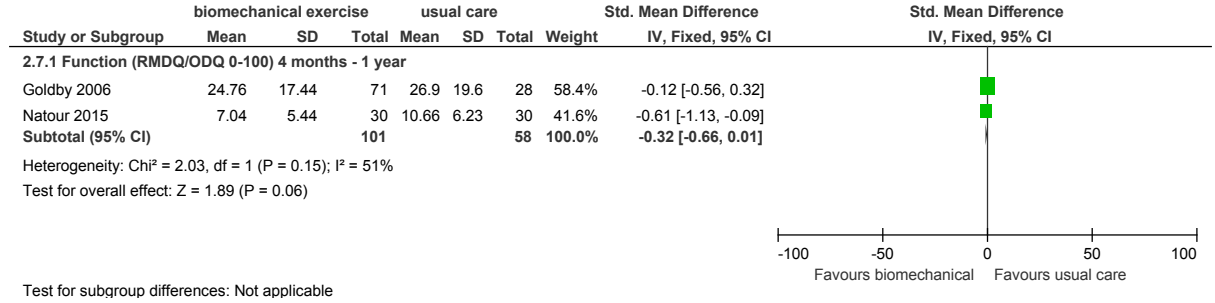
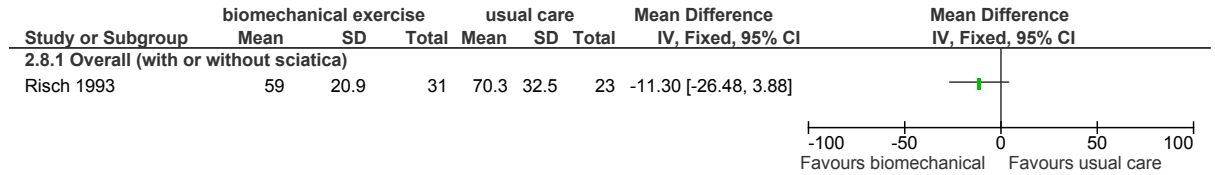
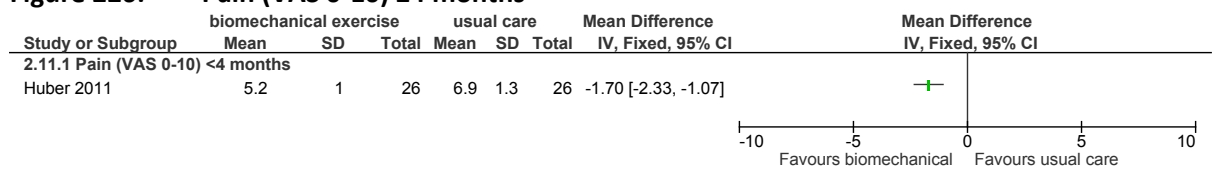


Figure 225: Psychological distress (mental health inventory 24-142); ≤4 months



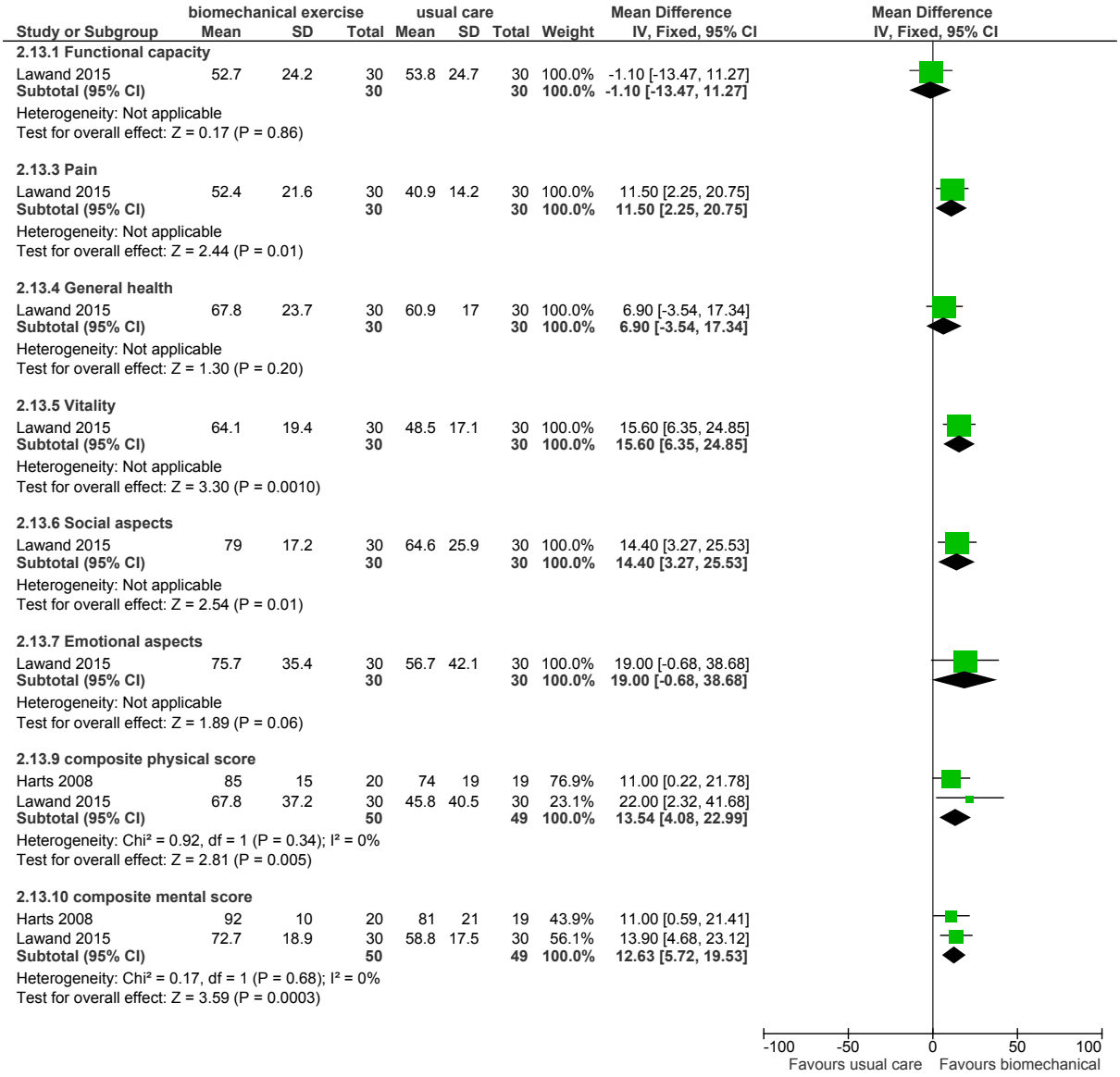
K.5.1.2 With sciatica

Figure 226: Pain (VAS 0-10) ≤4 months



K.5.1.3 Without sciatica

Figure 227: Quality of life (SF-36) ≤4 months



Harts study = waiting list control

Figure 228: Quality of life (SF-36) > 4 months

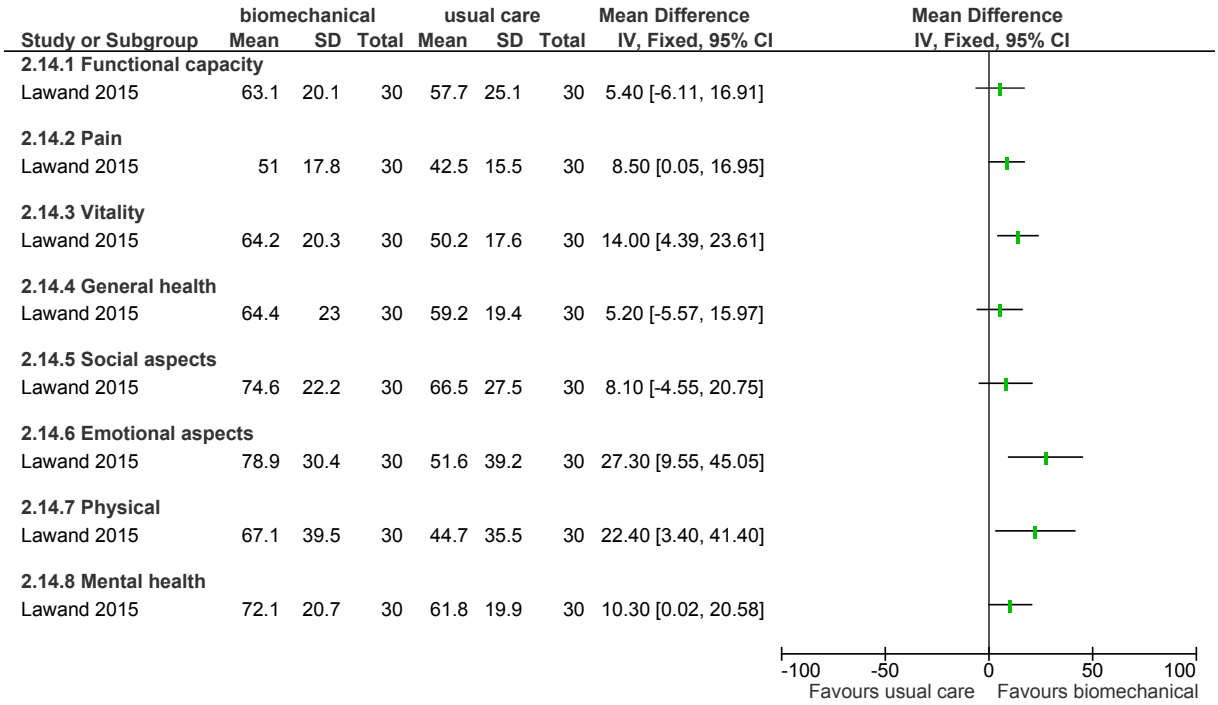


Figure 229: Pain (VAS 0-10) ≤4 months

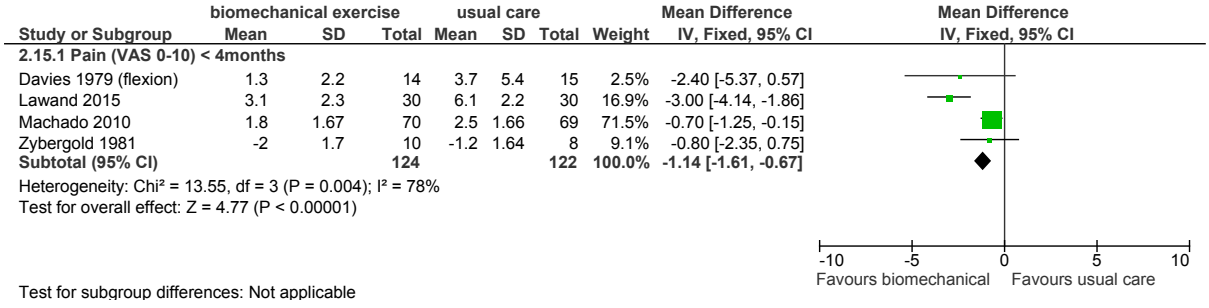


Figure 230: Pain (VAS 0-10) > 4 months

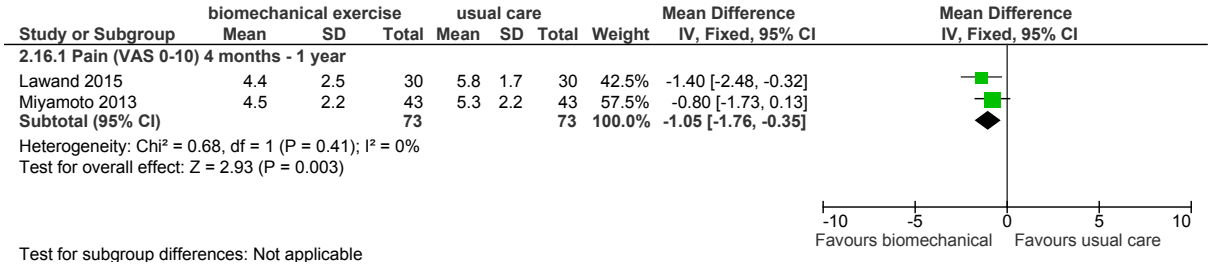


Figure 231: Pain (VAS 0-85, change score) ≤4 months

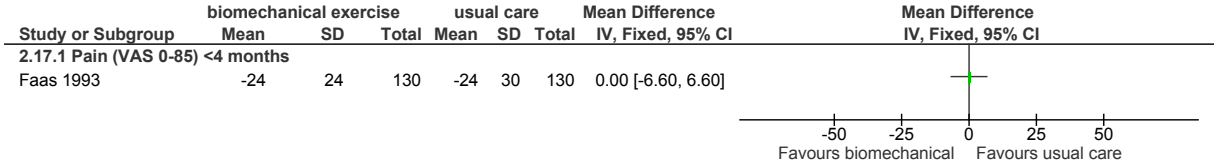


Figure 232: Pain (VAS 0-85, change score) > 4 months

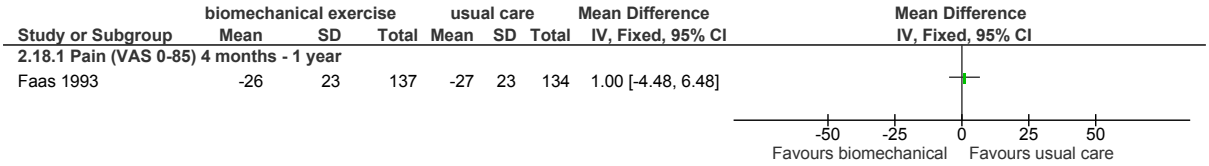


Figure 233: Pain (VAS 0-10, change score) <4 months

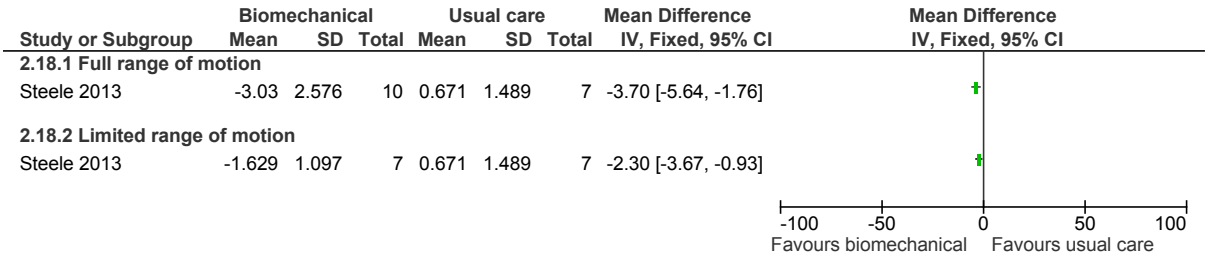
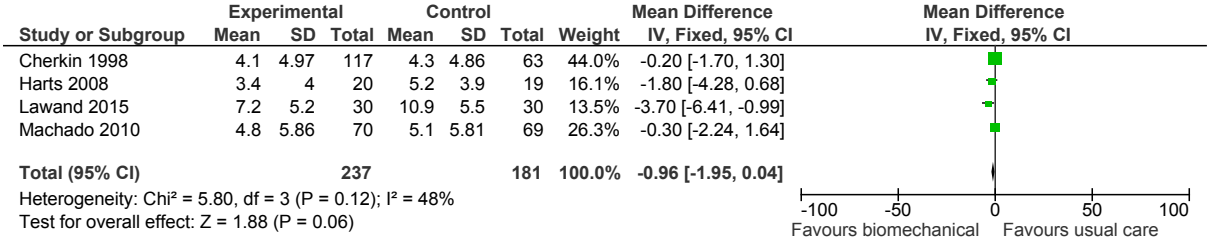


Figure 234: Function (RMDQ 0-24) ≤4 months



Harts study = waiting list control

Figure 235: Function (RMDQ 0-24) ≤4 months

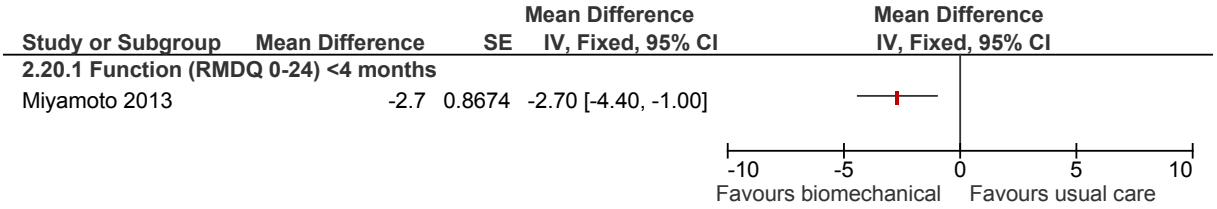


Figure 236: Function (RMDQ 0-23) ≤4 months

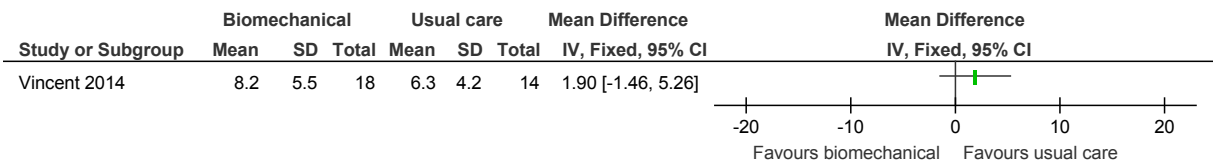


Figure 237: Function (RMDQ 0-24) 4 months

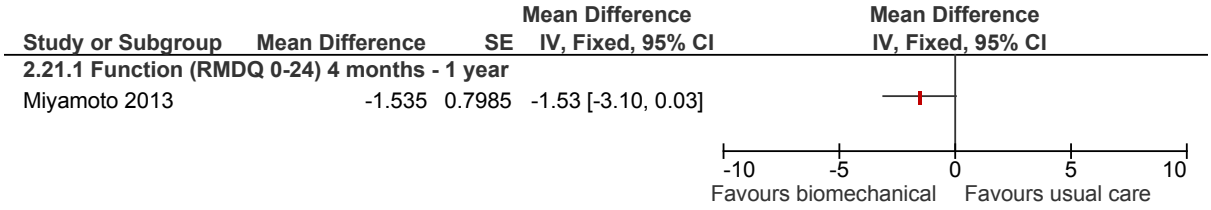


Figure 238: Function (RMDQ 0-24) 4 months

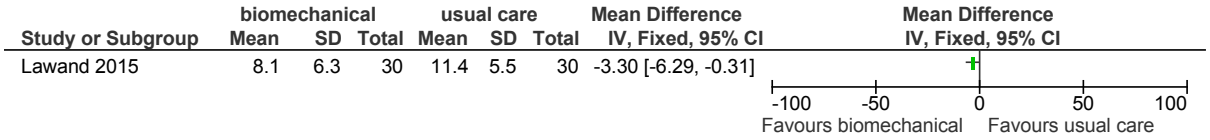


Figure 239: Function (ODI 0-100, change scores) <4 months

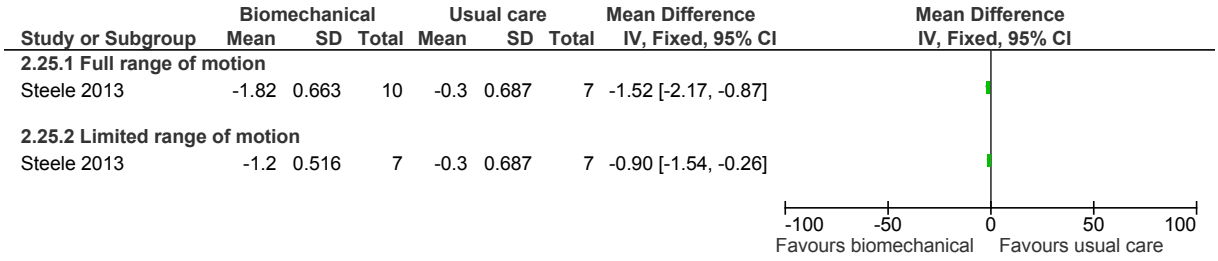
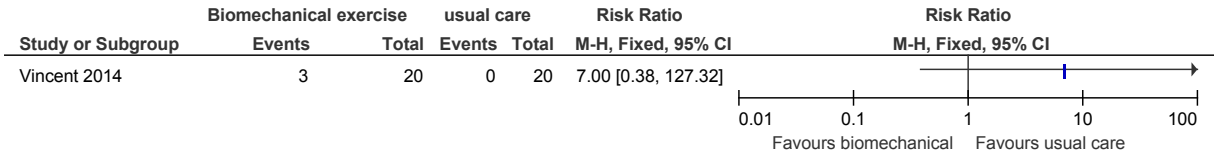


Figure 240: Adverse events (morbidity) ≤4 months



K.5.2 Individual biomechanical exercise versus self-management

K.5.2.1 Overall (with or without sciatica)

Figure 241: Pain (VAS 0-10) ≤4 months

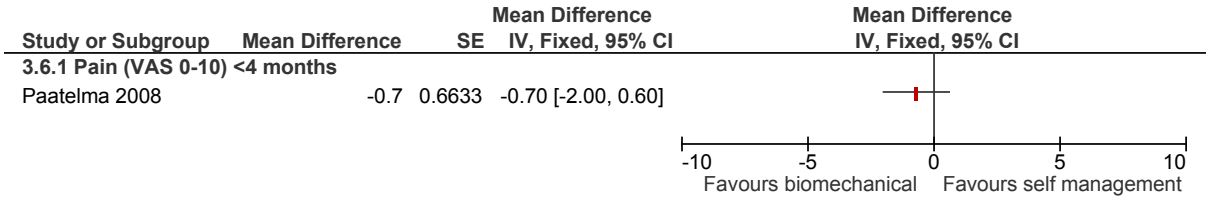


Figure 242: Pain (VAS 0-10) > 4 months

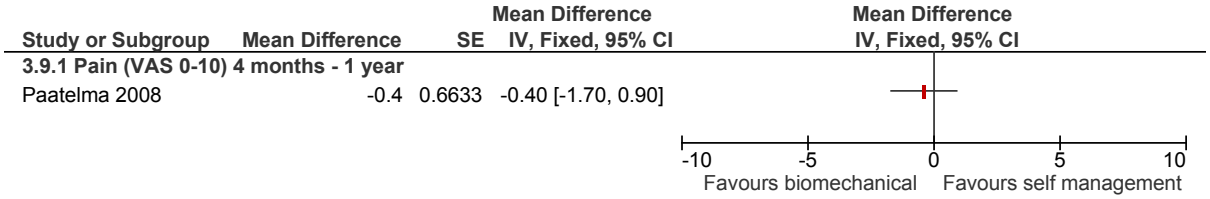


Figure 243: Leg pain (VAS 0-10) ≤4 months

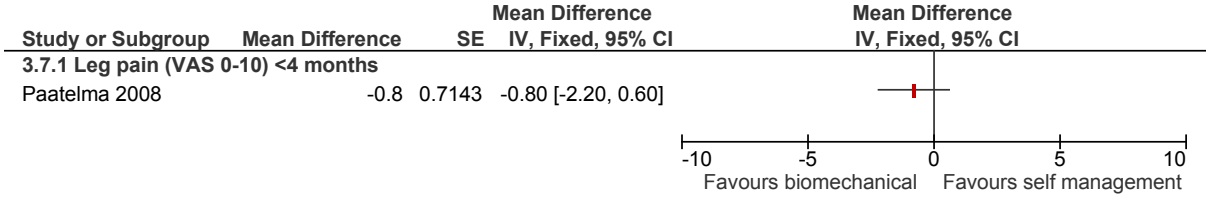


Figure 244: Leg pain (VAS 0-10) > 4 months

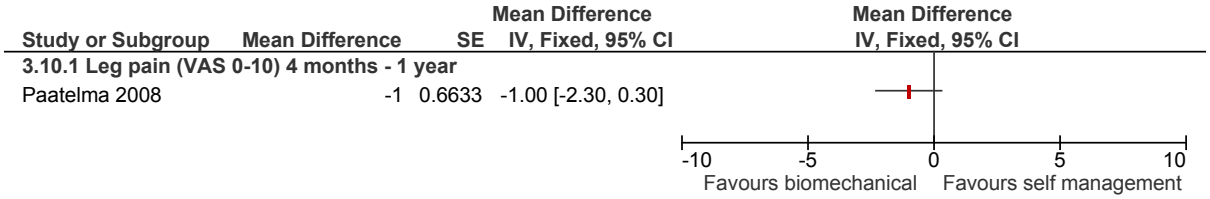


Figure 245: Function (RMDQ 0-24) ≤ 4 months

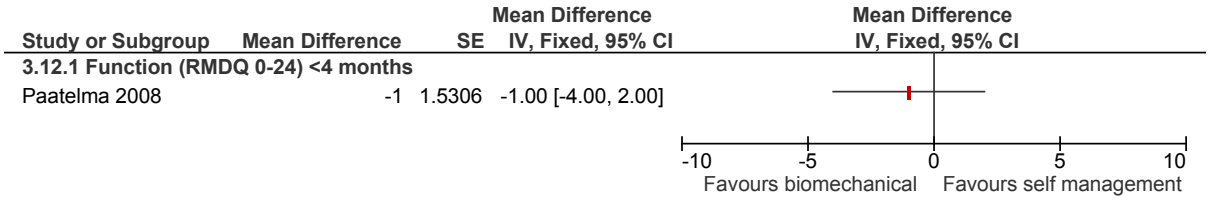
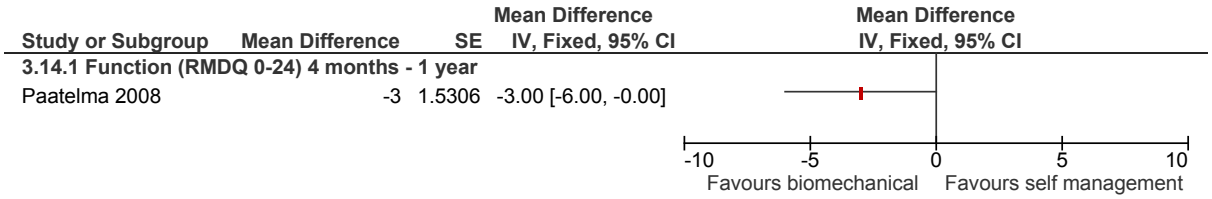


Figure 246: Function (RMDQ 0-24) 4 months



K.5.3 Individual biomechanical exercise versus spinal manipulation (low-amplitude high-velocity)

K.5.3.1 With sciatica

Figure 247: Quality of life (SF-36 0-100) ≤4 months

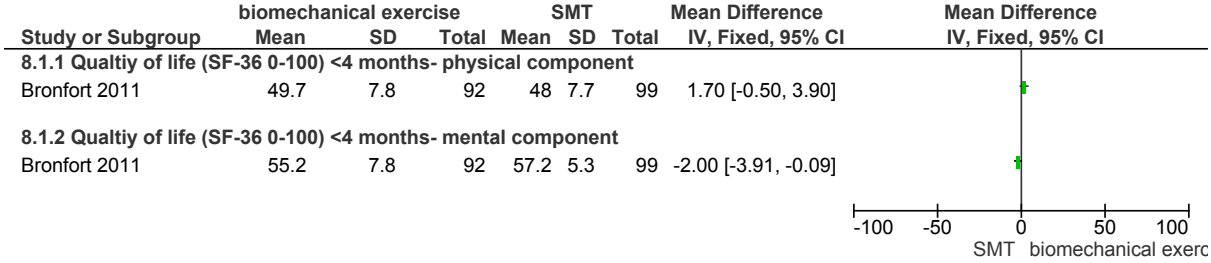


Figure 248: Quality of life (SF-36 0-100) > 4 months

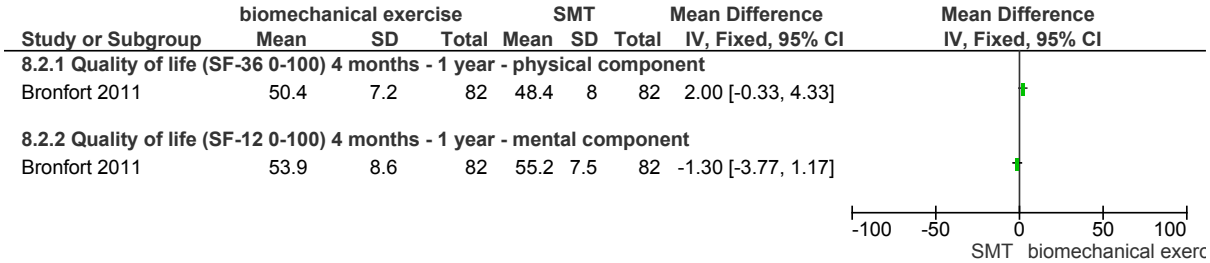


Figure 249: Pain (VAS 0-10) ≤4 months

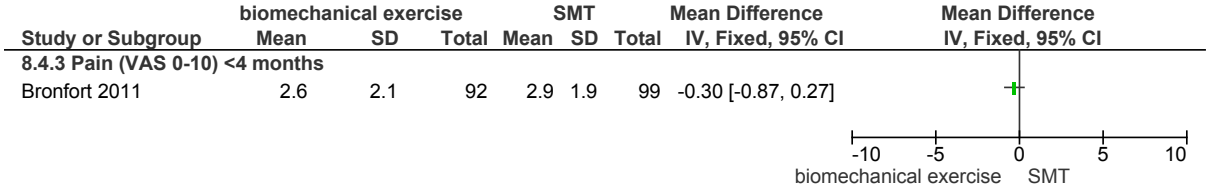


Figure 250: Pain (VAS 0-10) > 4 months

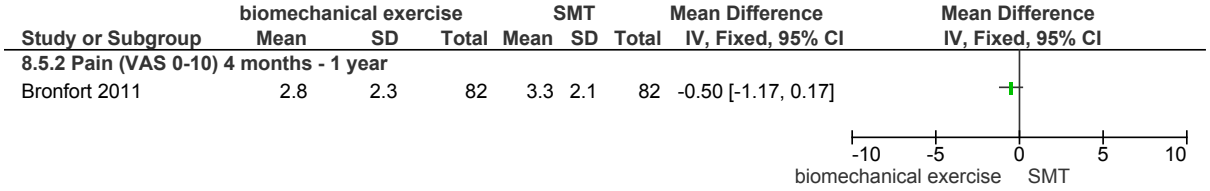


Figure 251: Function (RMDQ 0-24) ≤4 months

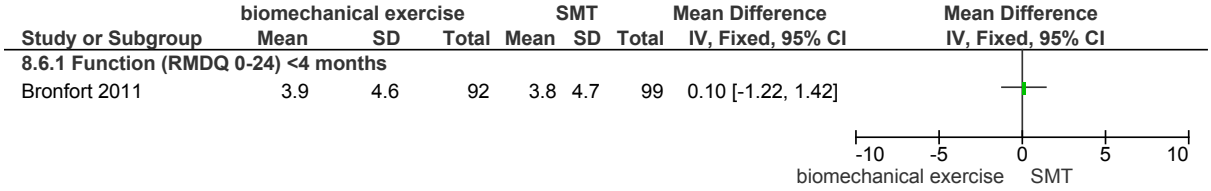
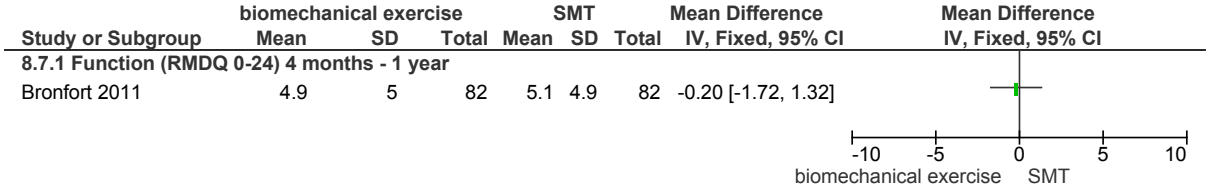


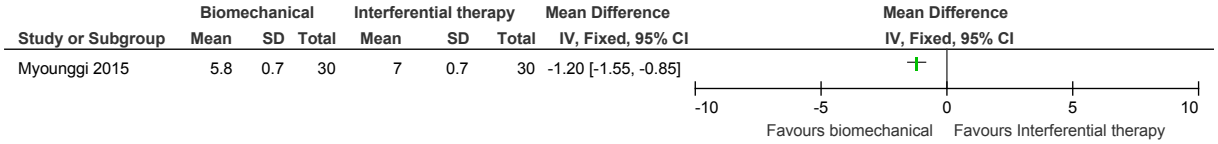
Figure 252: Function (RMDQ 0-24) > 4 months



K.5.4 Individual biomechanical exercise versus interferential therapy

K.5.4.1 Overall (with or without sciatica)

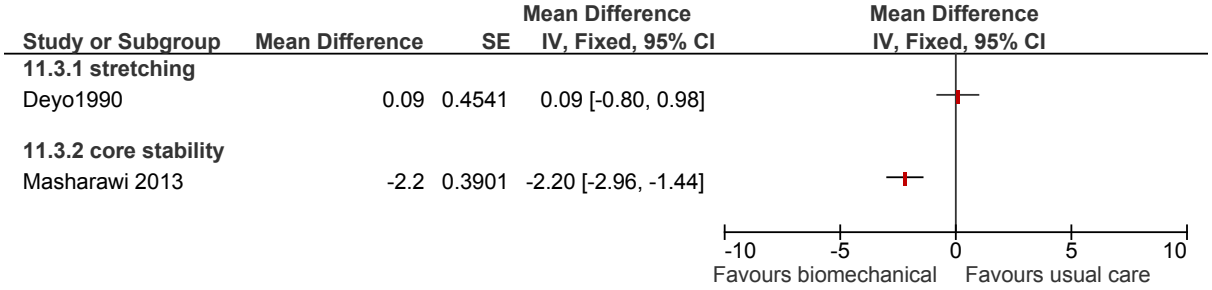
Figure 253: Pain (VAS 0-10) ≤4 months



K.5.5 Group biomechanical exercise versus usual care

K.5.5.1 Overall (with or without sciatica)

Figure 254: Pain (VAS 0-10) ≤4 months



Masharawi study = waiting list control

Figure 255: Pain (VAS 0-10) ≤4 months

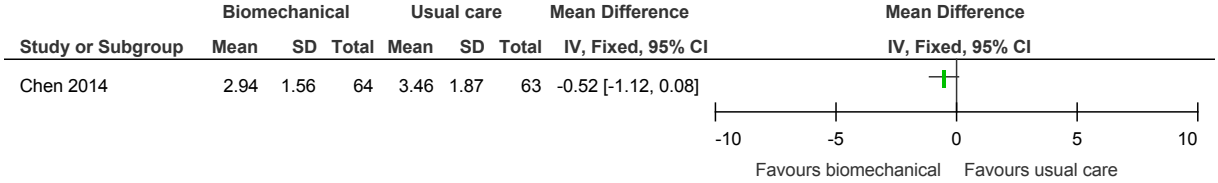


Figure 256: Pain (VAS) > 4 months

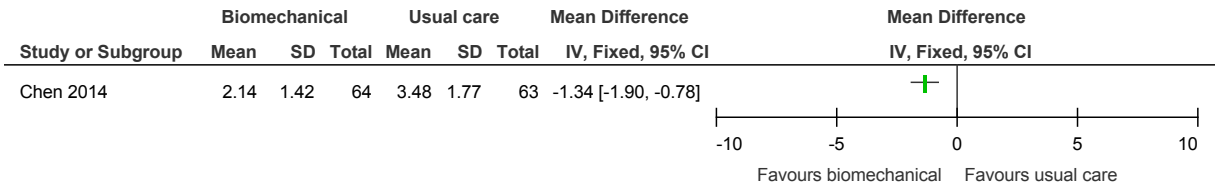
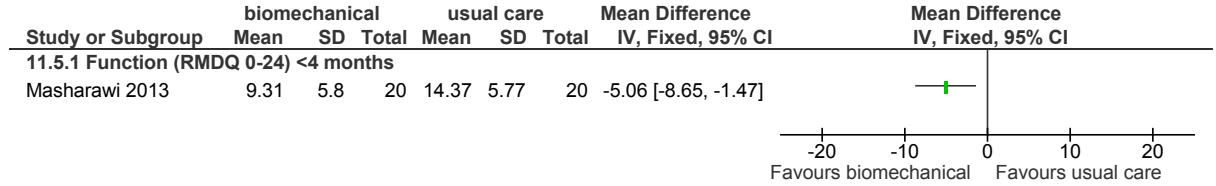
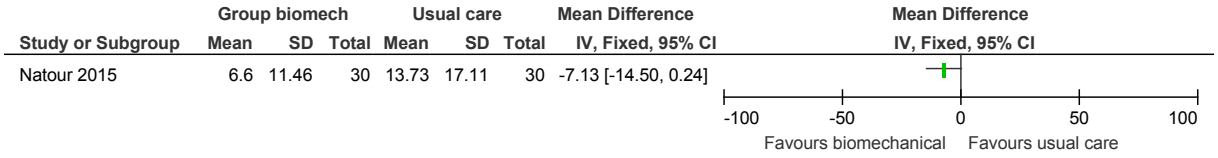


Figure 257: Function (RMDQ 0-24) ≤4 months



Masharawi study = waiting list control

Figure 258: Healthcare utilisation (NSAID use) > 4 months



K.5.5.2 Without sciatica

Figure 259: Quality of life individual scores SF-12 (0-100) ≤4 months

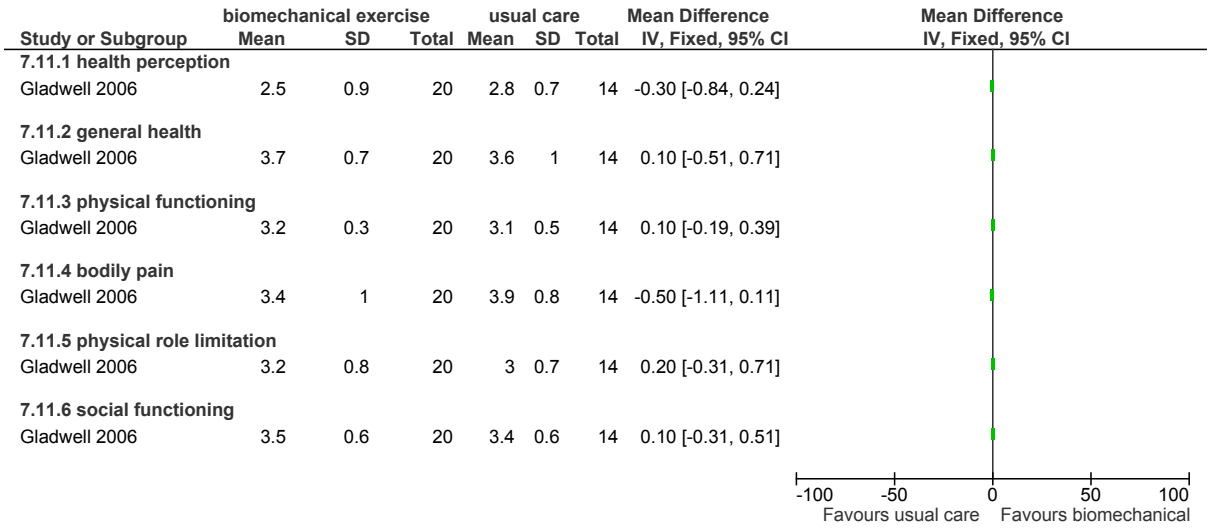


Figure 260: Quality of life composite scores (SF36 0-100) <4months

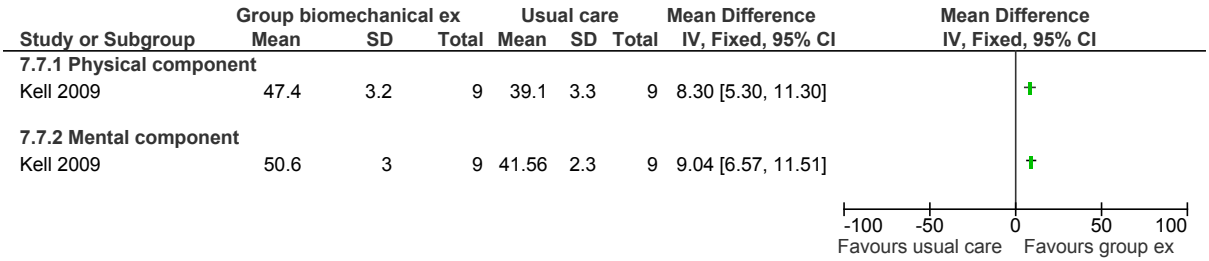


Figure 261: Pain (VAS 0-10) ≤4 months

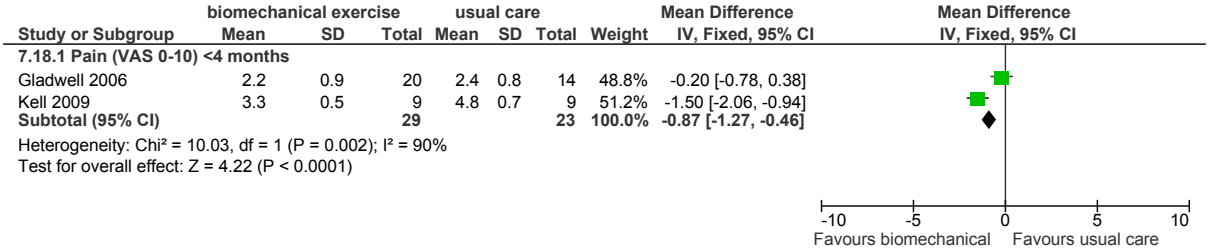
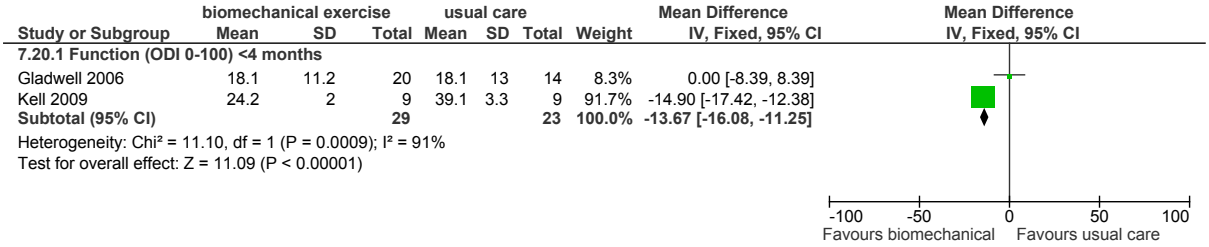


Figure 262: Function (ODI 0-100) ≤4 months



K.5.6 Group biomechanical exercise versus unsupervised exercise

K.5.6.1 Overall (with or without sciatica)

Figure 263: Pain (VAS 0-10) ≤4 months

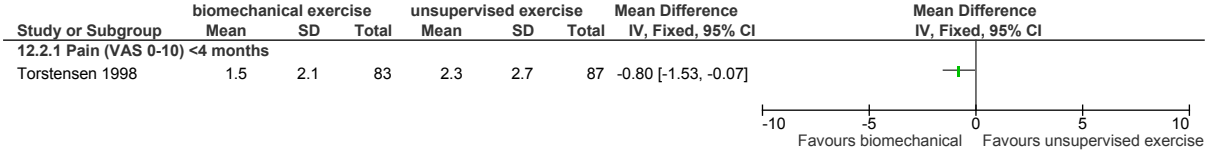
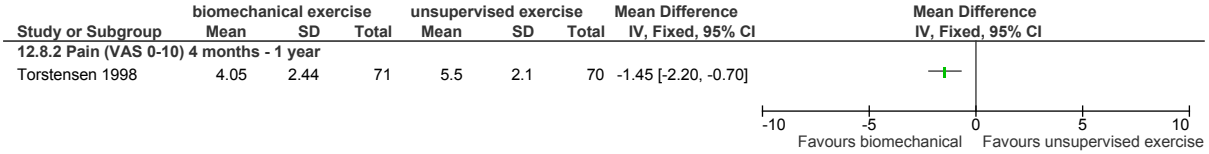


Figure 264: Pain (VAS 0-10) > 4 months



K.5.7 Individual aerobic exercise versus usual care

K.5.7.1 Overall (with or without sciatica)

Figure 265: Pain (VAS 0-10) ≤4 months

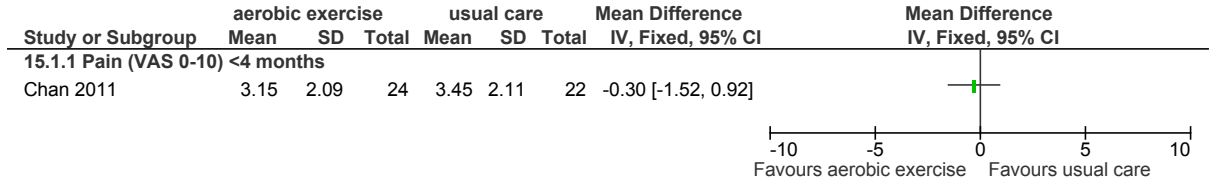


Figure 266: Function(ALBPS 0-100) ≤4 months

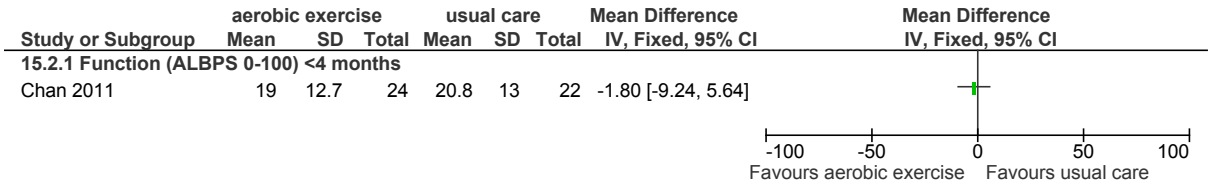
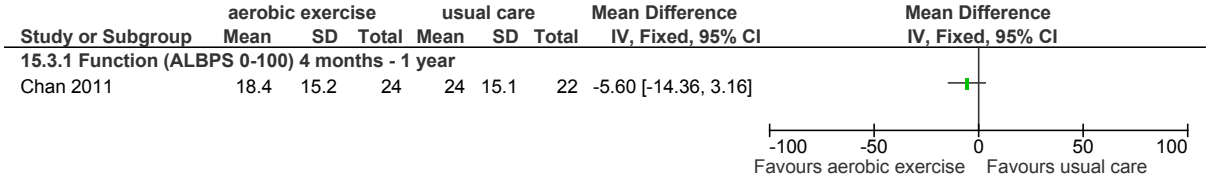


Figure 267: Function (ALBPS 0-100) > 4 months



K.5.7.2 Without sciatica

Figure 268: Quality of life (EuroQol weighted health index 0-1) > 4 months

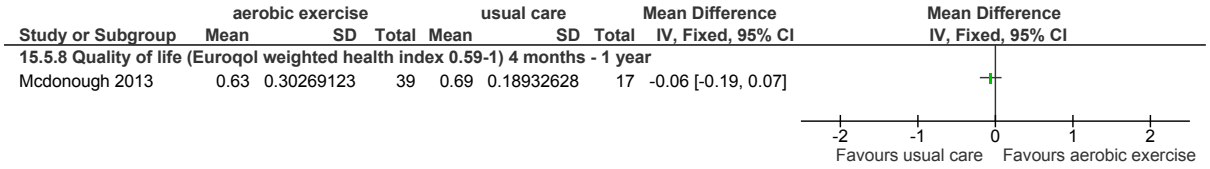


Figure 269: Quality of life (EuroQol VAS 0-100) > 4 months

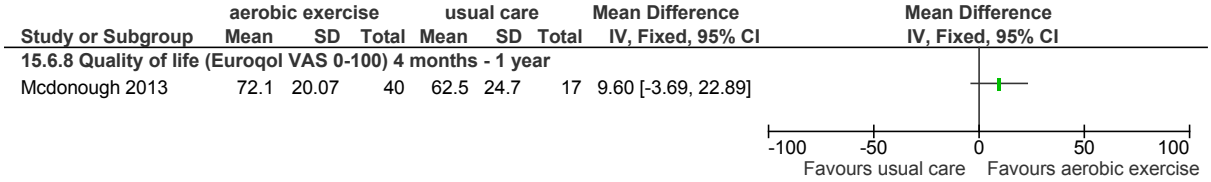


Figure 270: Pain (VAS 0-10) ≤4 months

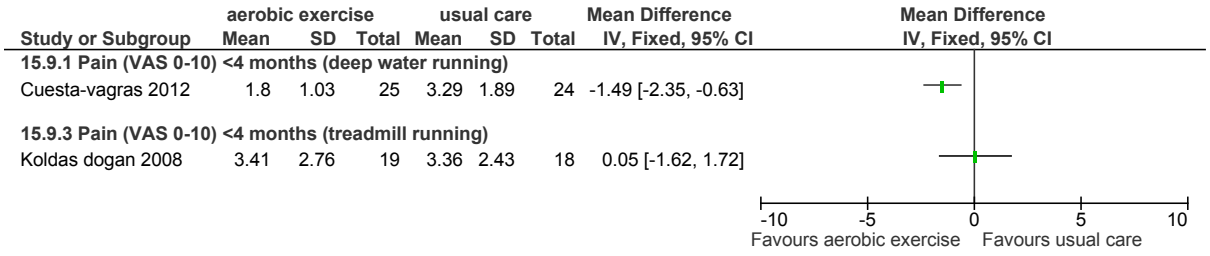


Figure 271: Pain (VAS 0-10) > 4 months

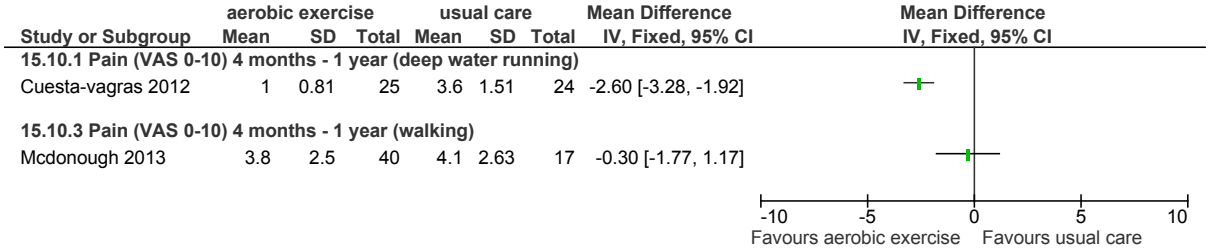


Figure 272: Function (RMQD 0-24) ≤4 months

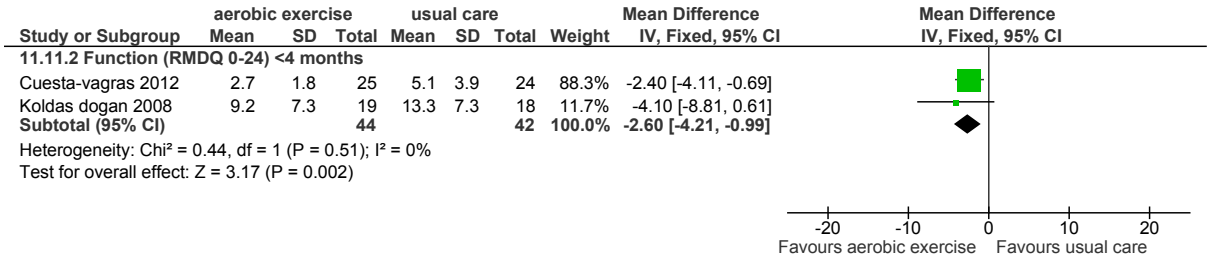
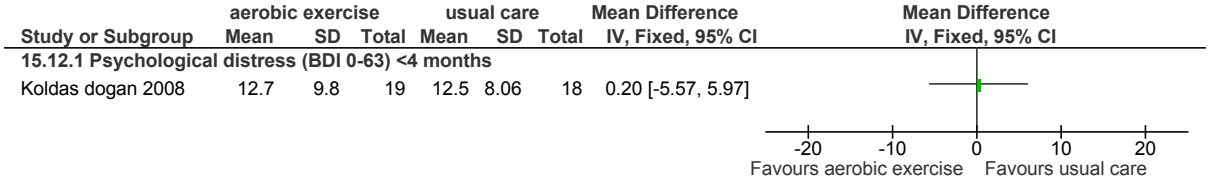


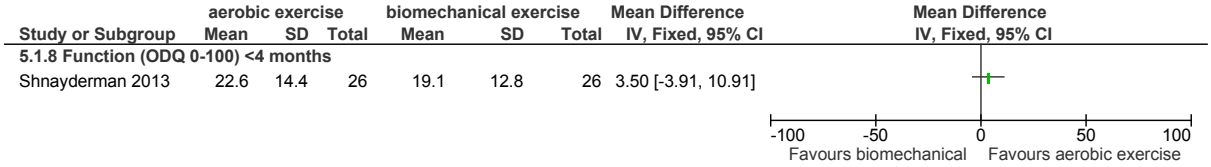
Figure 273: Psychological distress (BDI 0-63) ≤4 months



K.5.8 Individual aerobic exercise versus individual biomechanical exercise

K.5.8.1 Overall (with or without sciatica)

Figure 274: Function (ODI 0-100) ≤4 months



K.5.9 Individual aerobic exercise versus group biomechanical exercise

K.5.9.1 Without sciatica

Figure 275: Quality of life (SF-36, Physical, 0-100) ≤4 months

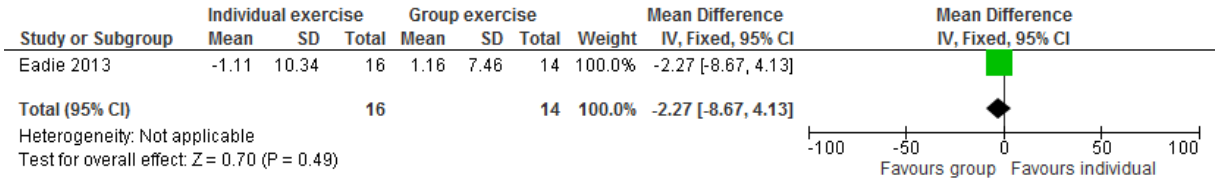


Figure 276: Quality of life (SF-36, Mental, 0-100) ≤4 months

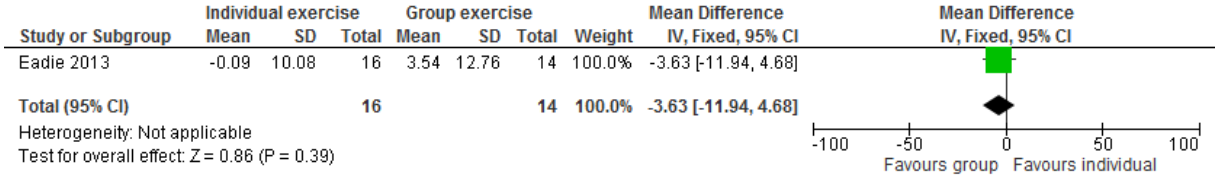


Figure 277: Psychological distress (HADS, Anxiety, 0-21)

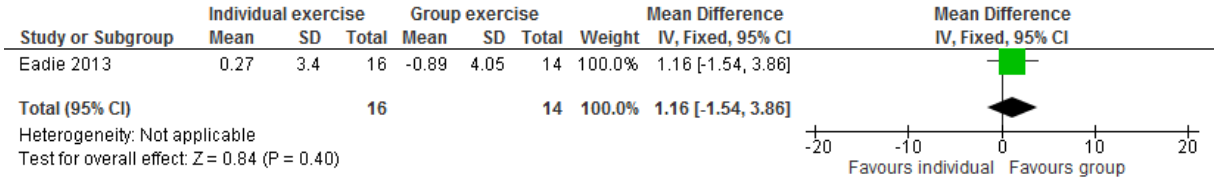


Figure 278: Psychological distress (HADS, Depression, 0-21)

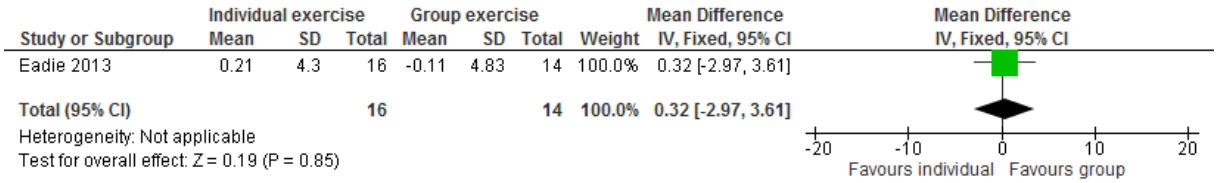


Figure 279: Pain severity (NRS, average back pain, <4months)

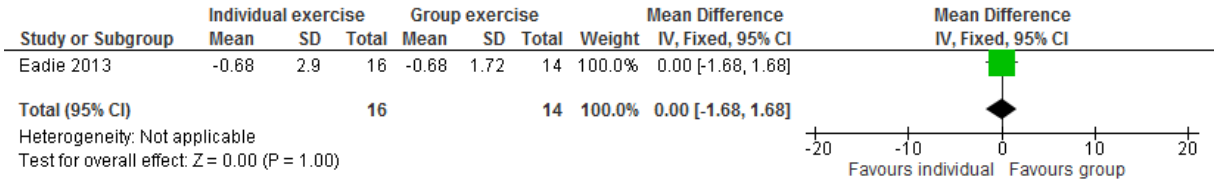


Figure 280: Pain severity (NRS, average back pain, >4months)

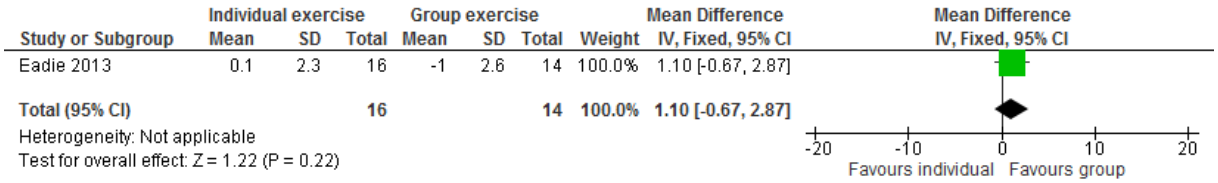


Figure 281: Pain severity (NRS, average leg pain, <4months)

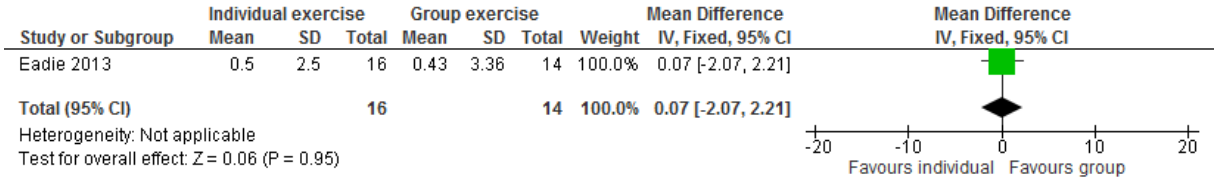
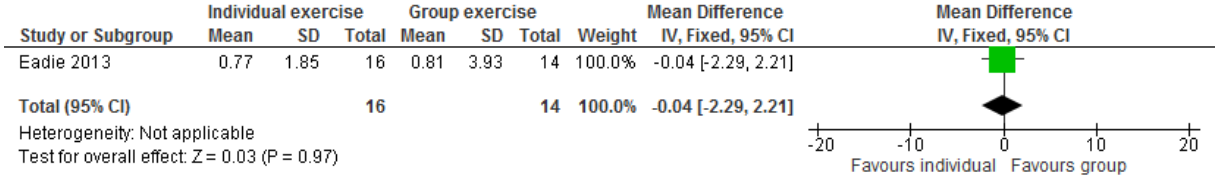


Figure 282: Pain severity (NRS, average leg pain, <4months)



K.5.10 Group aerobic exercise versus usual care

K.5.10.1 Without sciatica

Figure 283: Quality of life (SF-36 0-100) ≤4 months

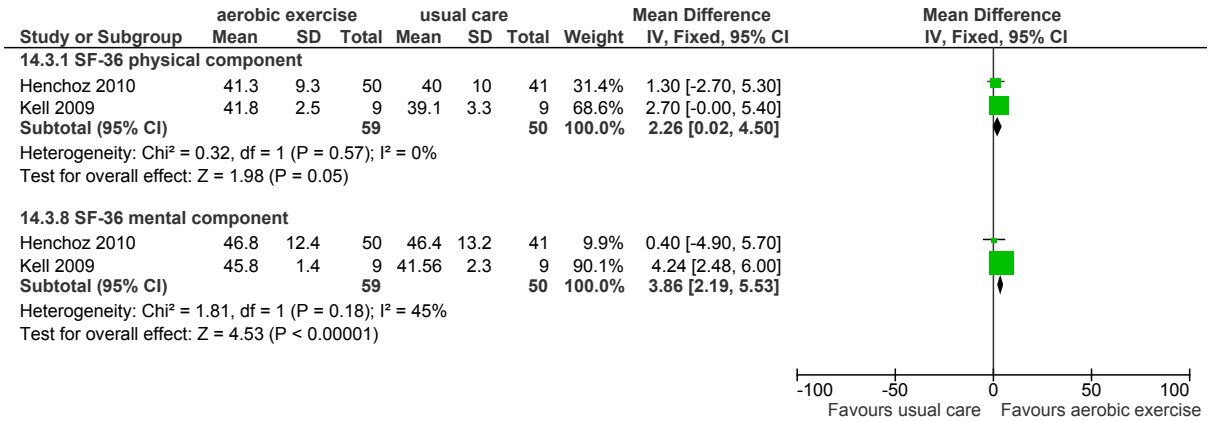


Figure 284: Quality of life (SF-36 0-100) <4 months

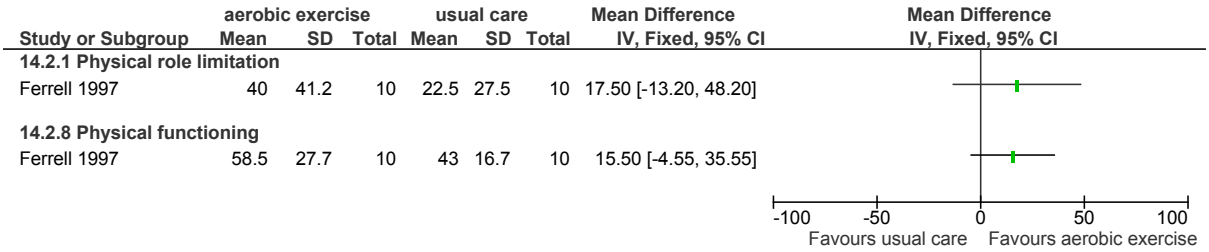


Figure 285: Pain (McGill Questionnaire 0-78) ≤4 months

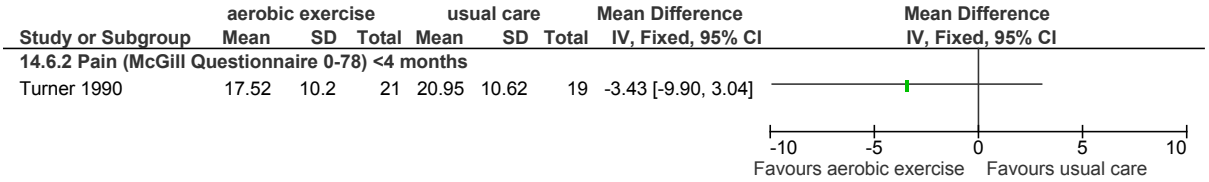


Figure 286: Pain (VAS 0-10) ≤4 months

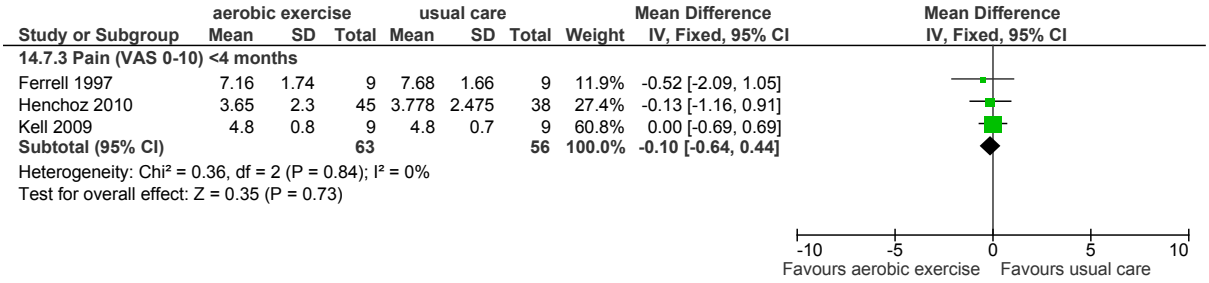


Figure 287: Pain (VAS 0-10) > 4 months

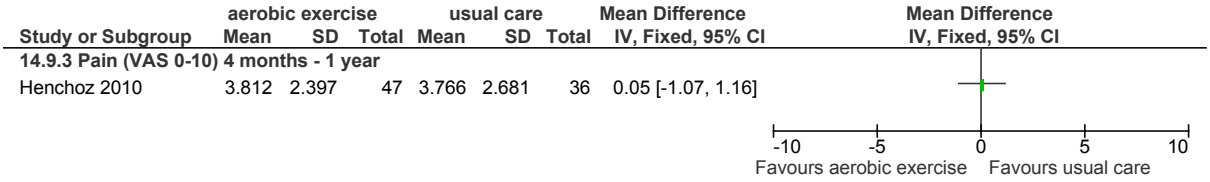


Figure 288: Function (ODI 0-100) ≤4 months

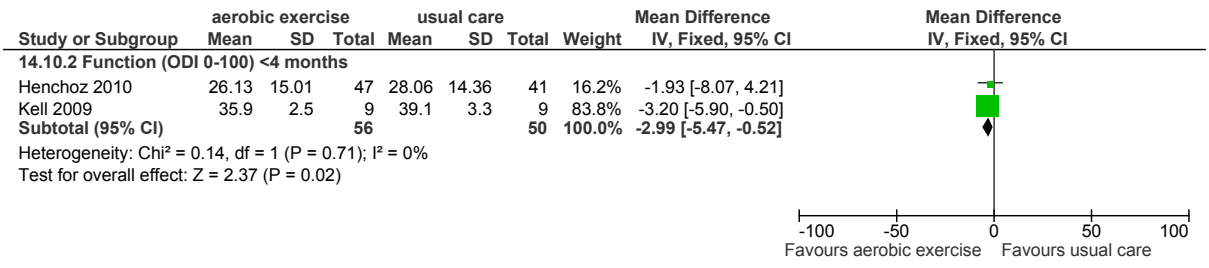


Figure 289: Function (ODI 0-100) > 4 months

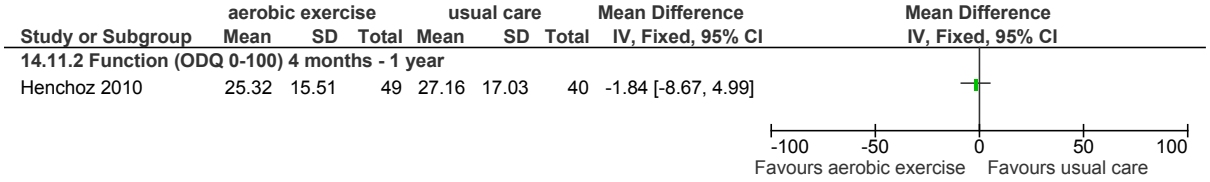
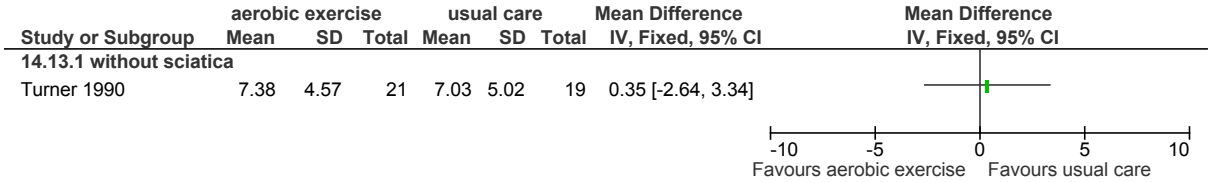


Figure 290: Psychological distress (CESDS 0-60) ≤4 months



K.5.11 Group aerobic exercise versus self-management

K.5.11.1 Overall (with or without sciatica)

Figure 291: Pain (0-10) ≤4 months

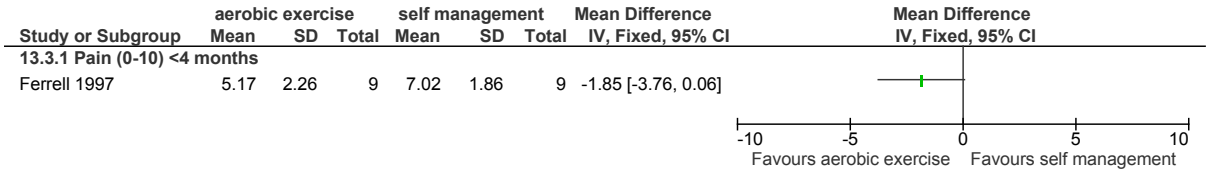
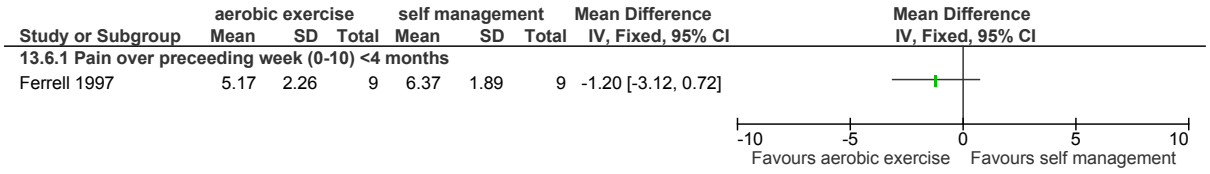


Figure 292: Pain over preceding week (0-10) ≤4 months



K.5.12 Group aerobic exercise versus group biomechanical exercise

K.5.12.1 Without sciatica

Figure 293: Pain (VAS 0-10) ≤4 months

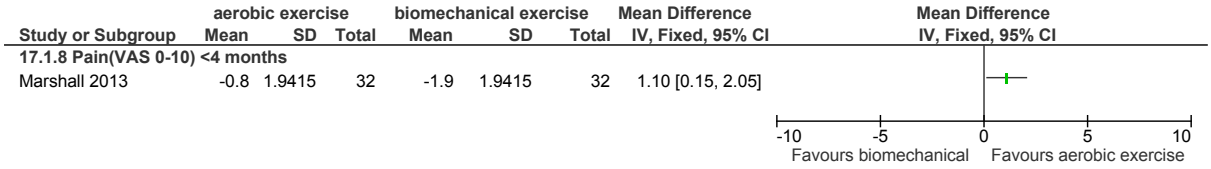


Figure 294: Pain (VAS 0-10) > 4 months

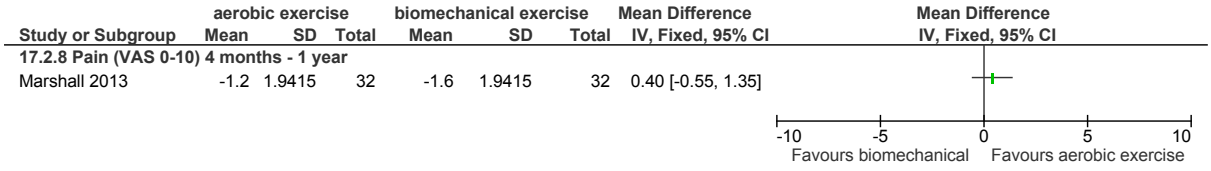


Figure 295: Function (ODI 0-100) ≤4 months

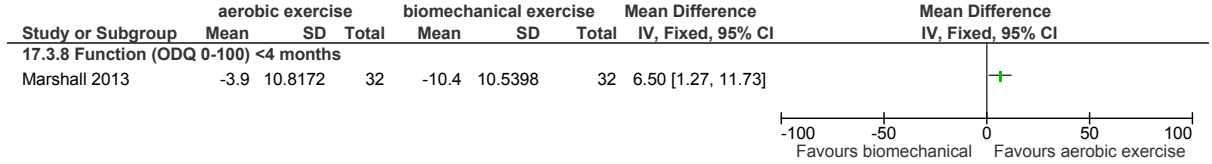
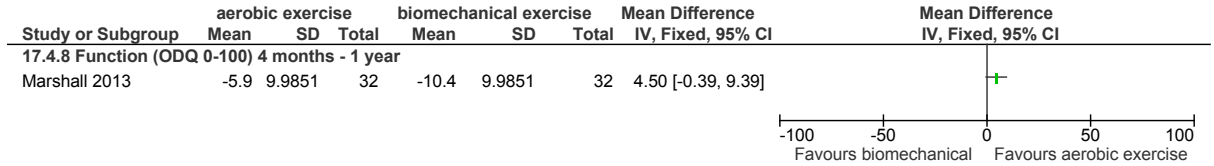


Figure 296: Function (ODI 0-100) > 4 months



K.5.12.2 Overall (with or without sciatica)

Figure 297: Pain (VAS 0-10) ≤4 months

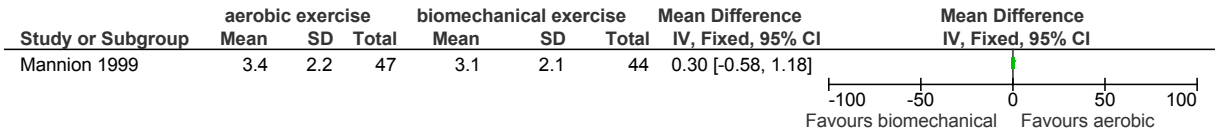


Figure 298: Pain (VAS 0-10) 4 months – 1 year

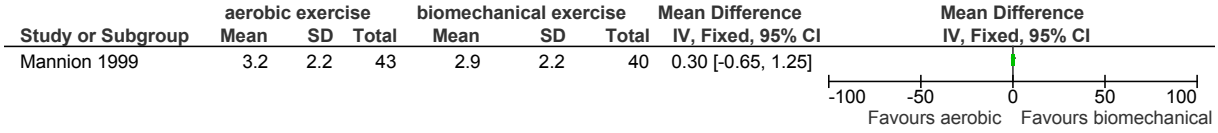


Figure 299: Function (RMDQ 0-24) ≤4 months

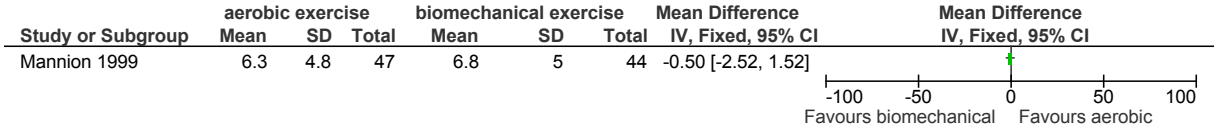
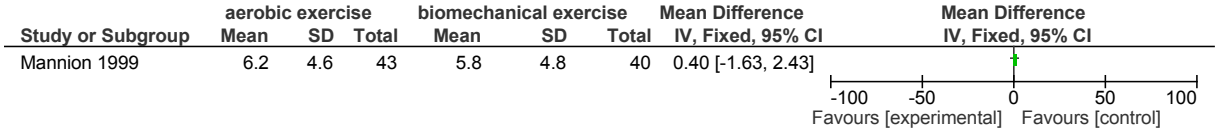


Figure 300: Function (RMDQ 0-24) 4 months – 1 year



K.5.13 Individual mind-body exercise versus individual biomechanical

K.5.13.1 Overall (with or without sciatica)

Figure 301: Function (RMDQ 0-23) ≤4 months

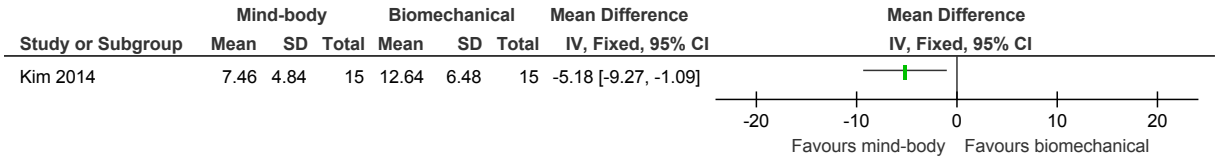
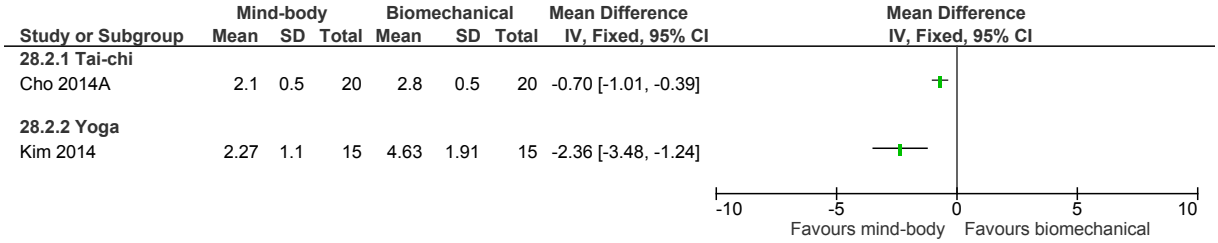


Figure 302: Pain (VAS 0-10) ≤4 months



Data not pooled due to heterogeneity (I^2=86%, p=0.001)

K.5.14 Group mind-body exercise versus usual care

K.5.14.1 Overall (with or without sciatica)

Figure 303: Quality of life (EQ-5D 0-1) ≤4 months

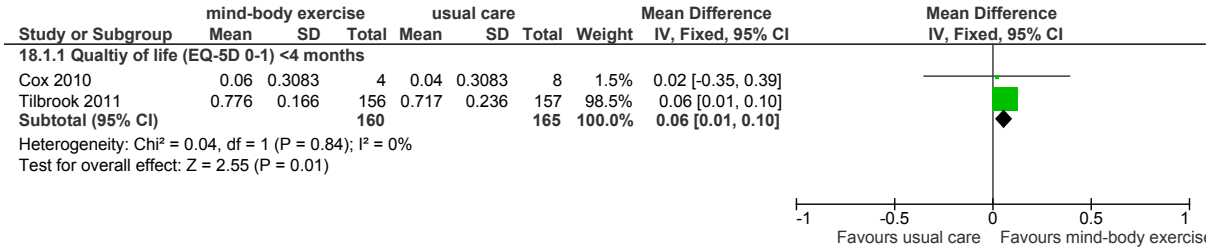
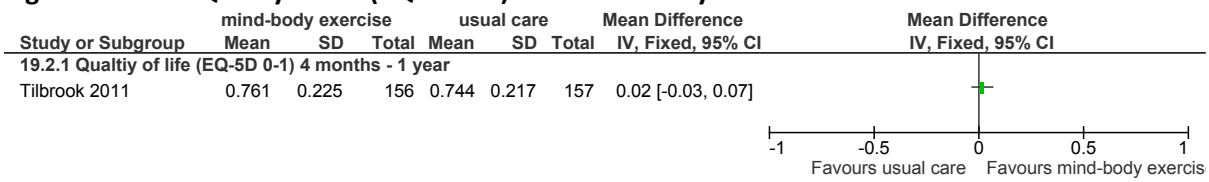
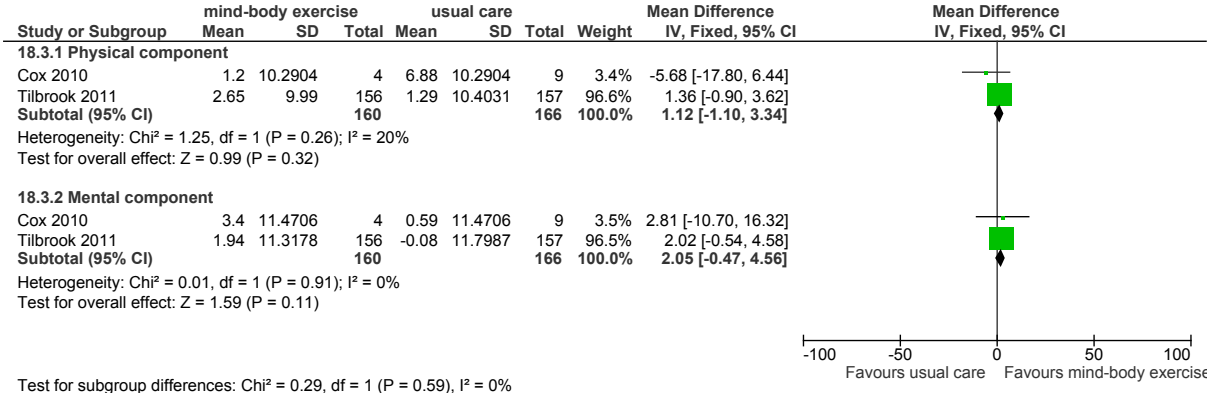


Figure 304: Quality of life (EQ-5D 0-1) > 4 months - 1 year



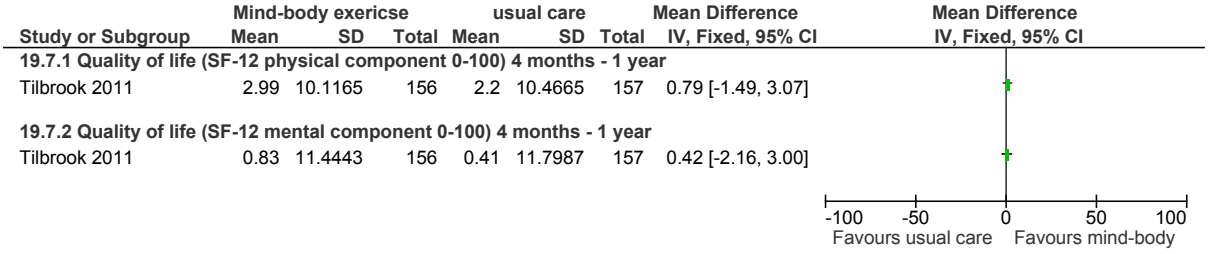
Tilbrook = waiting list control

Figure 305: Quality of life (SF-12 0-100) ≤4 months



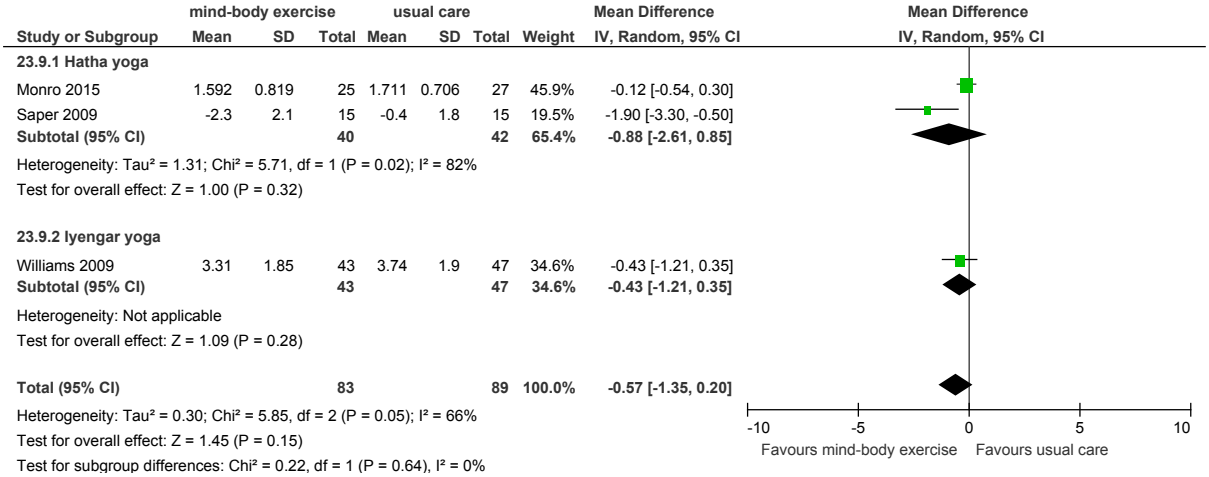
Tilbrook = waiting list control

Figure 306: Quality of life (SF-12 0-100) 4 months – 1 year



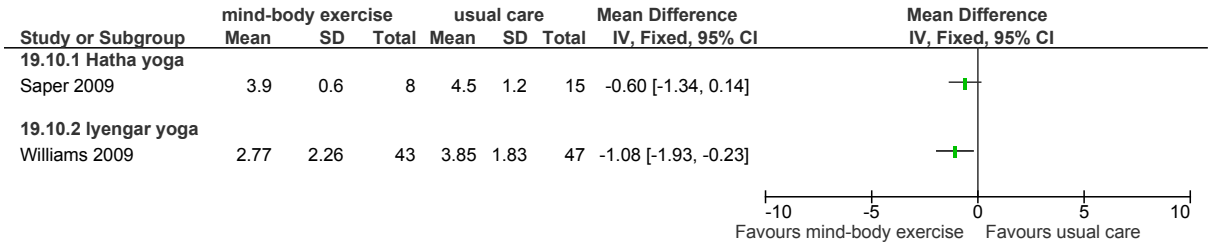
Tilbrook = waiting list control

Figure 307: Pain (VAS 0-10) ≤4 months



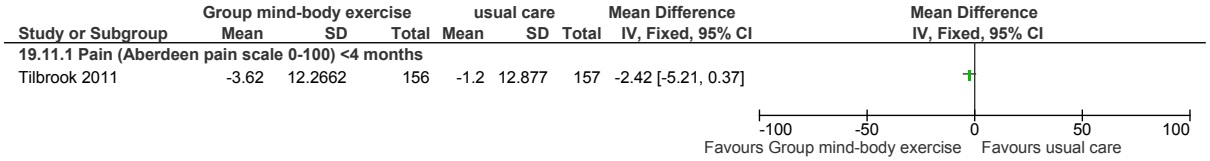
Unexplained heterogeneity. Saper 2009 study = waiting list control; Monro 2015 = specific overall population with presence of at least 1 disc extrusion or bulge

Figure 308: Pain (VAS 0-10) > 4 months - 1 year



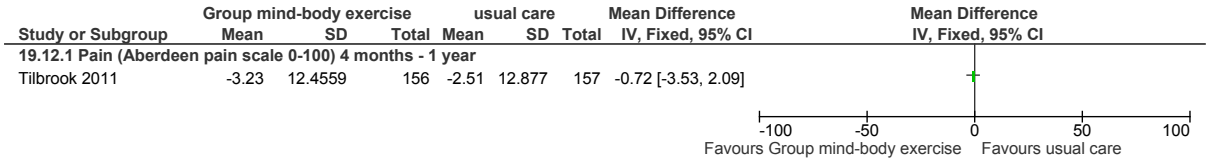
Saper 2009 = waiting list control

Figure 309: Pain (Aberdeen pain scale 0-100) ≤4 months



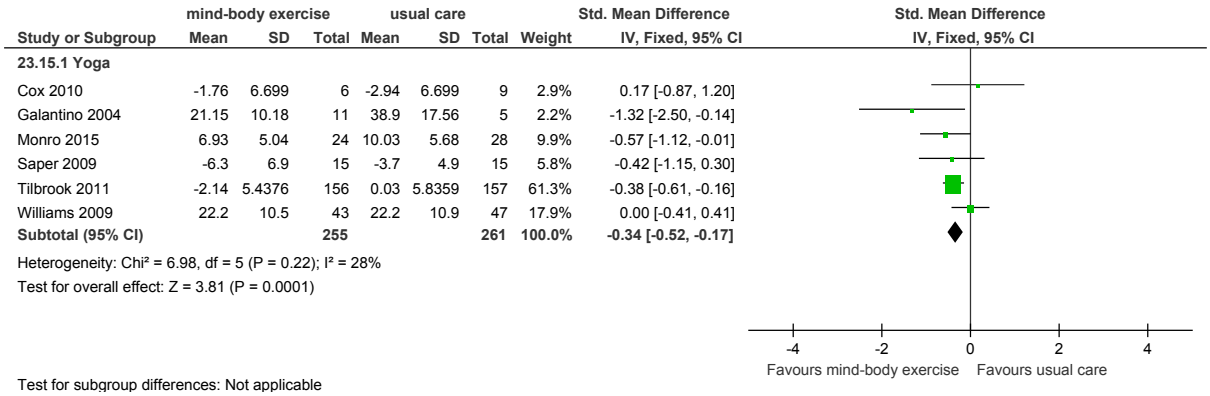
Tilbrook = waiting list control

Figure 310: Pain (Aberdeen pain scale 0-100) 4 months – 1 year



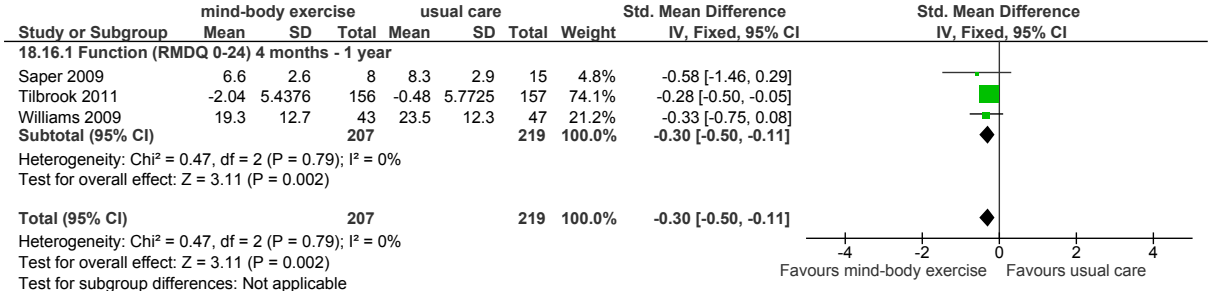
Tilbrook = waiting list control

Figure 311: Function (RMDQ/ODI) ≤4 months



Tilbrook and Saper = waiting list control; Monro 2015 = specific overall population with presence of at least 1 disc extrusion or bulge

Figure 312: Function (RMDQ/ODI) 4 months - 1 year



Tilbrook and Saper = waiting list control

Figure 313: Psychological distress (BDI 0-63) ≤4 months

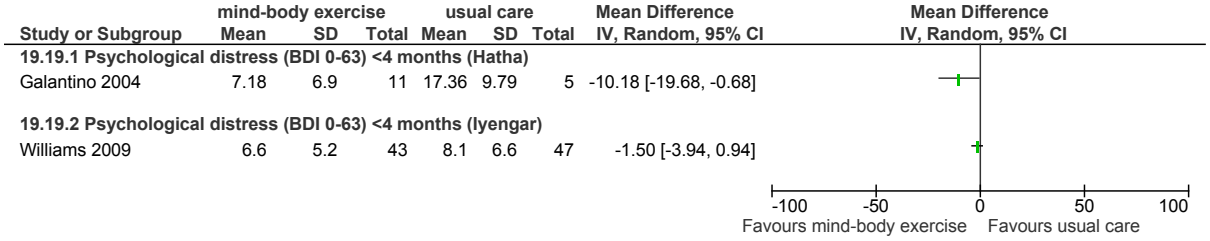


Figure 314: Psychological distress (BDI 0-63) > 4 months - 1 year

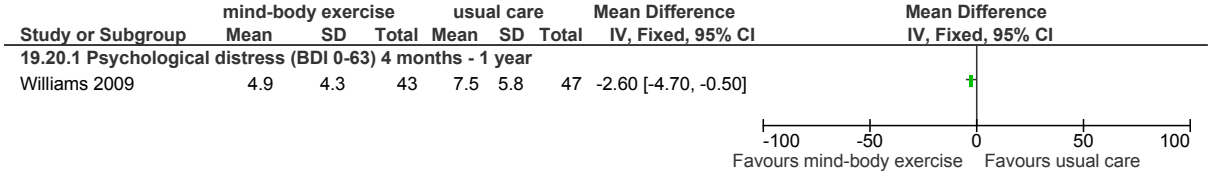
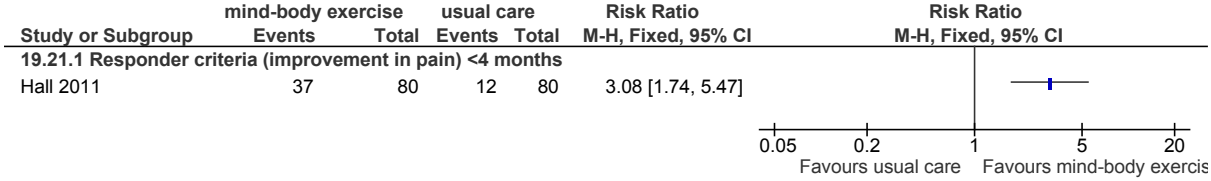
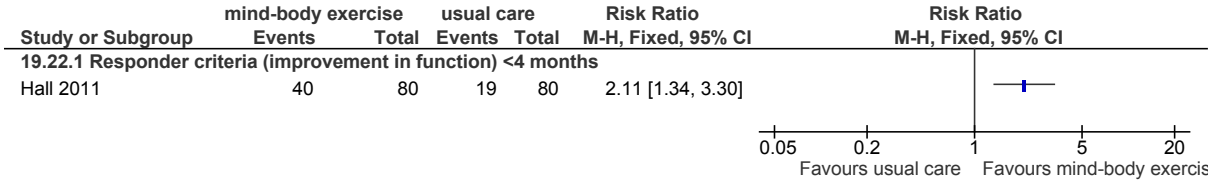


Figure 315: Responder criteria (improvement in pain) ≤4 months



Hall = waiting list control

Figure 316: Responder criteria (improvement in function) ≤4 months



Hall = waiting list control

Figure 317: Healthcare utilisation - GP visits ≤4 months

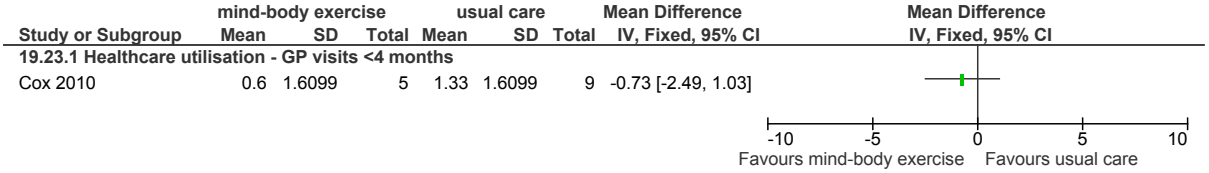


Figure 318: Healthcare utilisation - Practice nurse visits ≤4 months

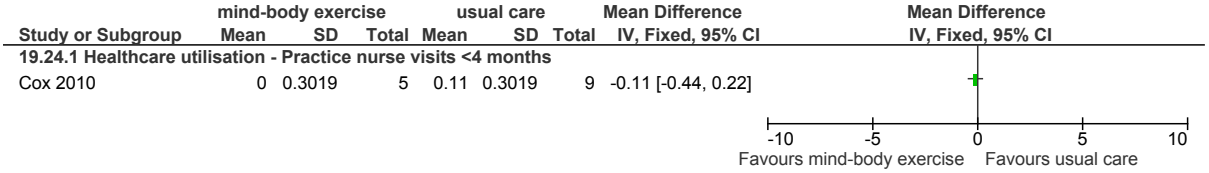


Figure 319: Healthcare utilisation - Physiotherapist visits ≤4 months

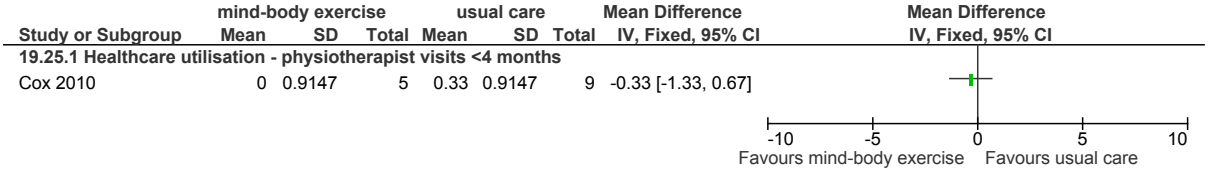
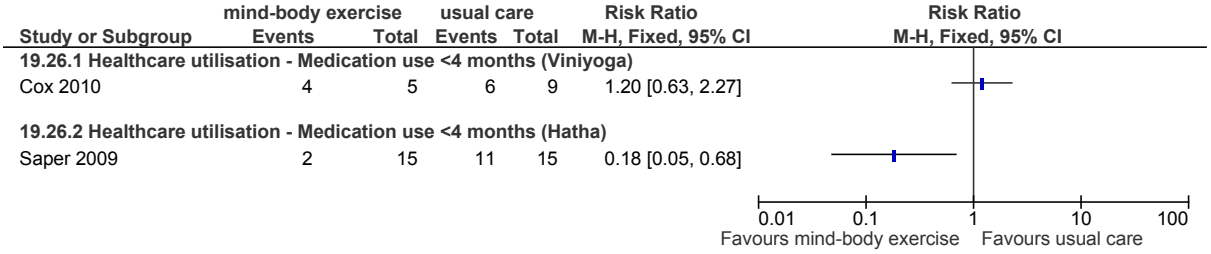


Figure 320: Healthcare utilisation - Medication use ≤4 months



Saper = waiting list control

Figure 321: Healthcare utilisation - Reduced or stopped medication ≤4 months

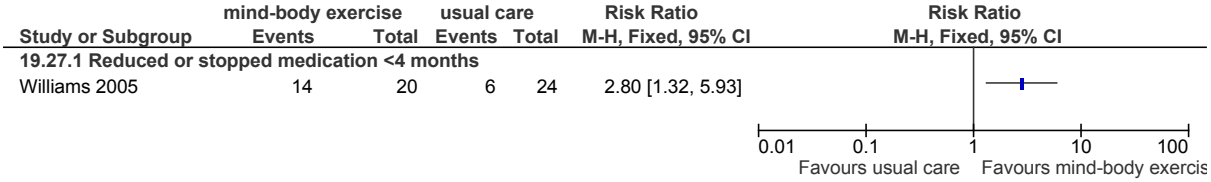
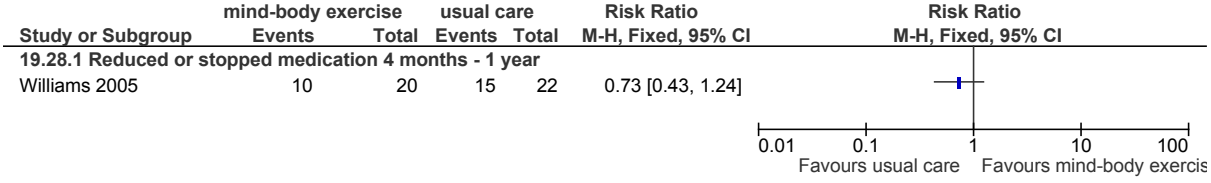


Figure 322: Healthcare utilisation - Reduced or stopped medication > 4 months - 1 year



K.5.14.2 Without sciatica

Figure 323: Pain (VAS 0-10) ≤4 months

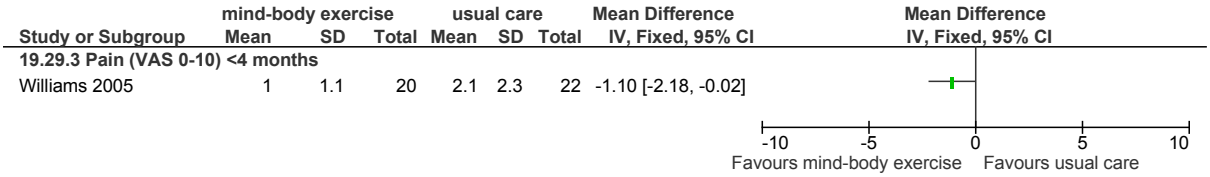
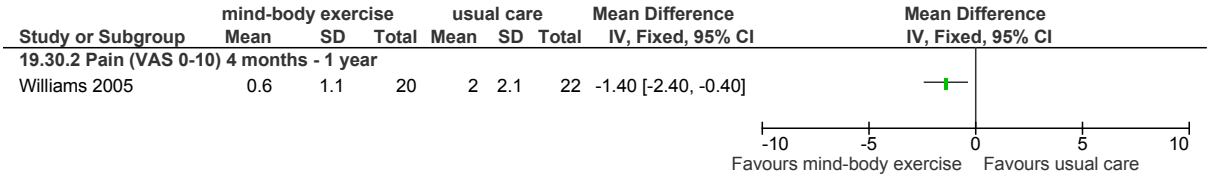


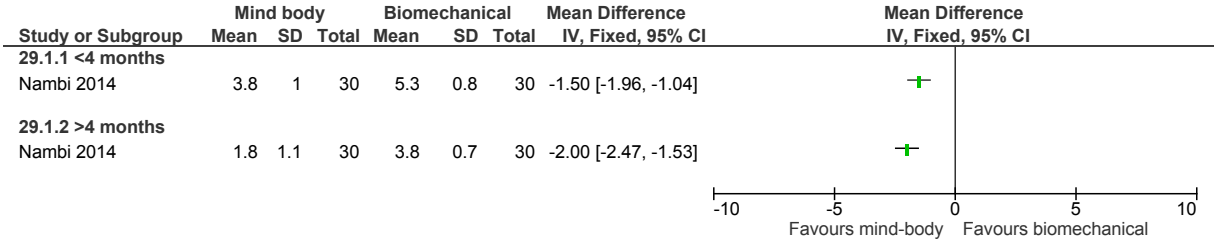
Figure 324: Pain (VAS 0-10) > 4 months - 1 year



K.5.15 Group mind-body exercise versus individual biomechanical exercise

K.5.15.1 Overall (with or without sciatica)

Figure 325: Pain (VAS 0-10)



K.5.16 Group mind-body exercise versus self-management

K.5.16.1 Without sciatica

Figure 326: Function (RMDQ 0-24) ≤4 months

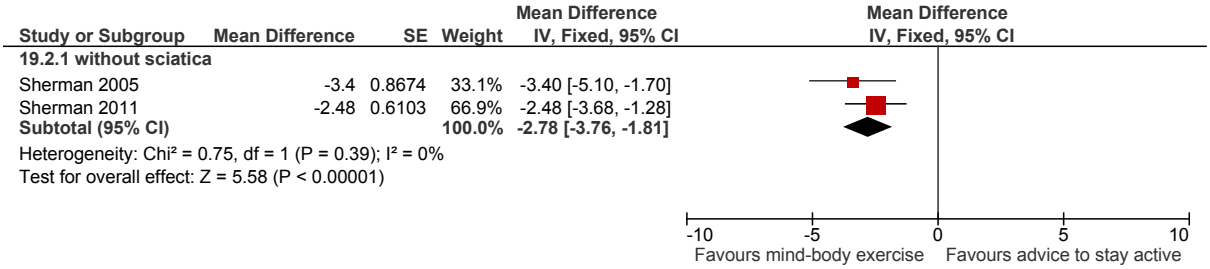


Figure 327: Function (RMDQ 0-24) > 4 months - 1 year

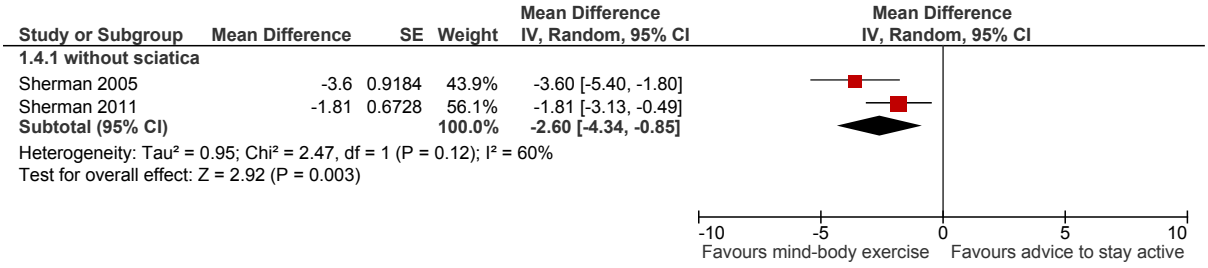


Figure 328: Responder criteria (improvement in function) ≤4 months

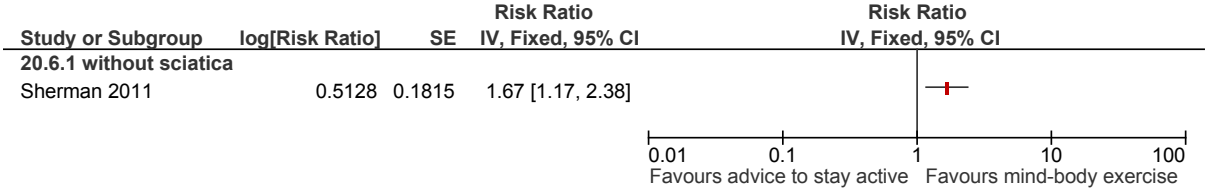
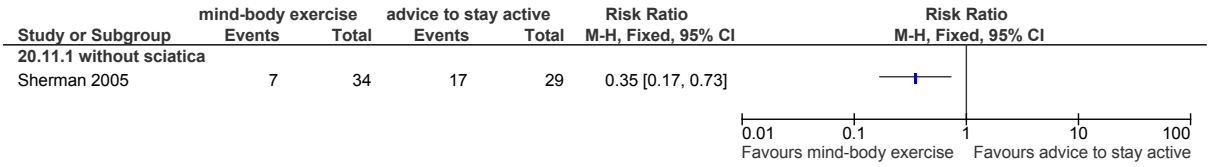


Figure 329: Healthcare utilisation - medication use > 4 months - 1 year



K.5.17 Group mind-body exercise versus group mixed exercise

K.5.17.1 Without sciatica

Figure 330: Function (RMDQ 0-24) ≤4 months

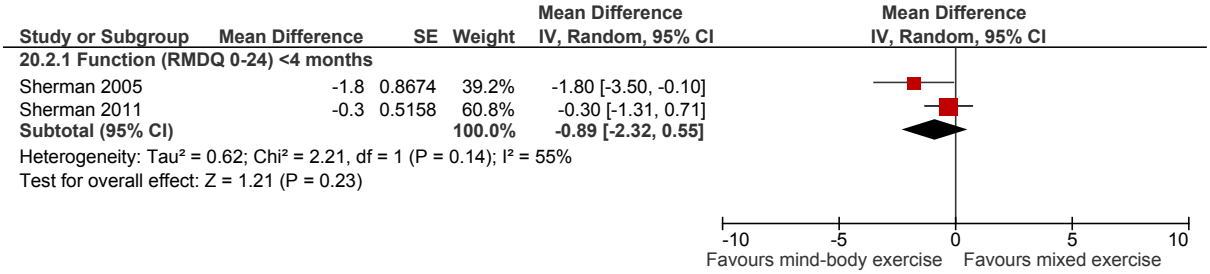


Figure 331: Function (RMDQ 0-24) > 4 months - 1 year

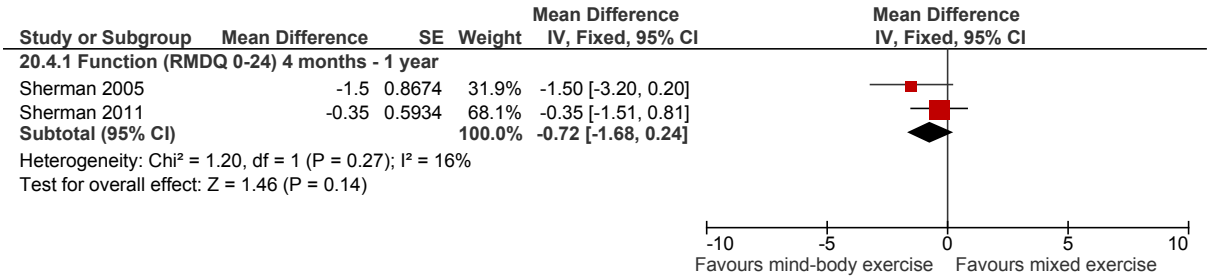


Figure 332: Responder criteria (improvement in function) ≤4 months

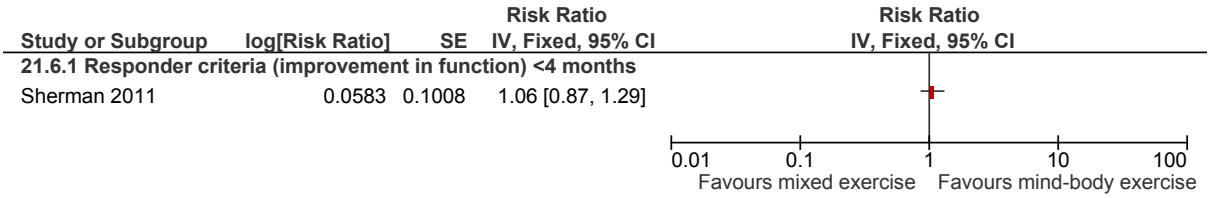
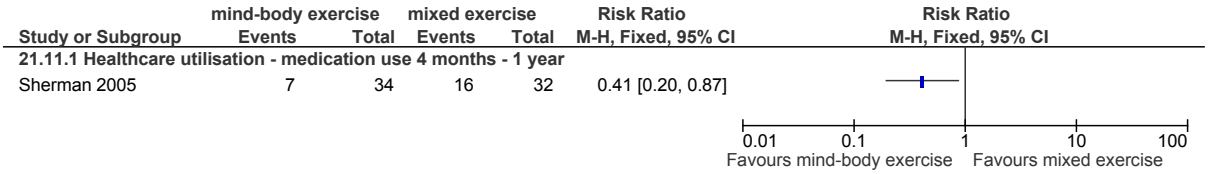


Figure 333: Healthcare utilisation - medication use > 4 months - 1 year



K.5.18 Individual mixed exercise versus waiting list

K.5.18.1 With sciatica

Figure 334: Pain (VAS, 0-10) ≤ 4 months

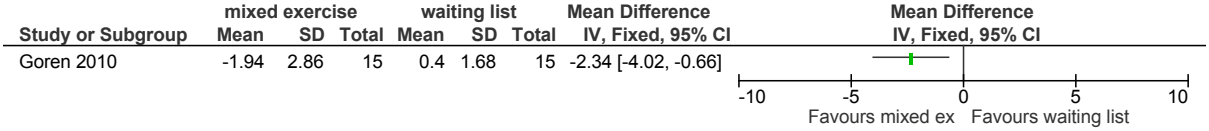
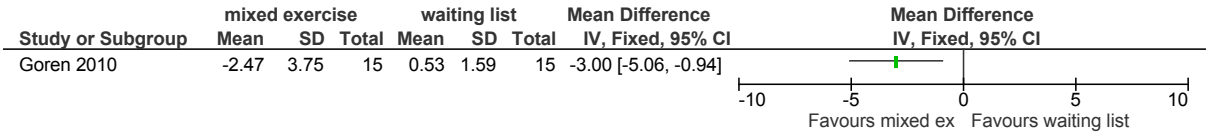


Figure 335: Leg pain (VAS, 0-10) ≤ 4 months



K.5.19 Individual mixed exercise versus biomechanical exercise

K.5.19.1 Overall (with or without sciatica)

Figure 336: Function (ODI 0-100) ≤4 months

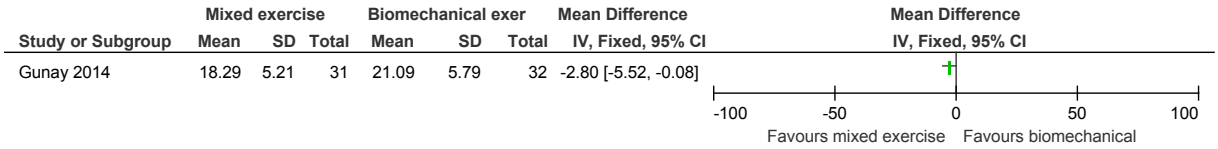
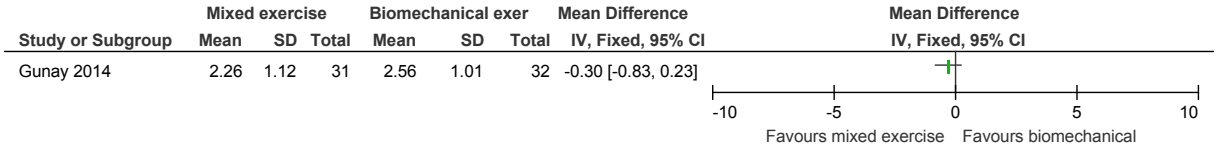


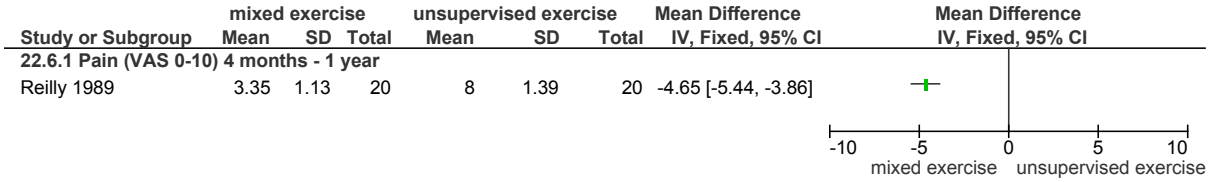
Figure 337: Pain (VAS 0-10) ≤4 months



K.5.20 Individual mixed exercise versus unsupervised exercise

K.5.20.1 Overall (with or without sciatica)

Figure 338: Pain (VAS 0-10) > 4 months - 1 year



K.5.21 Group mixed exercise versus usual care

K.5.21.1 Overall (with or without sciatica)

Figure 339: SF-36 (0-100) ≤4 months

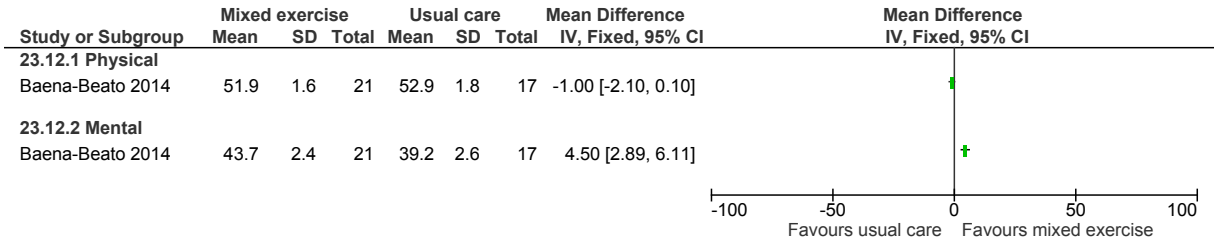


Figure 340: Pain (VAS 0-10) ≤4 months

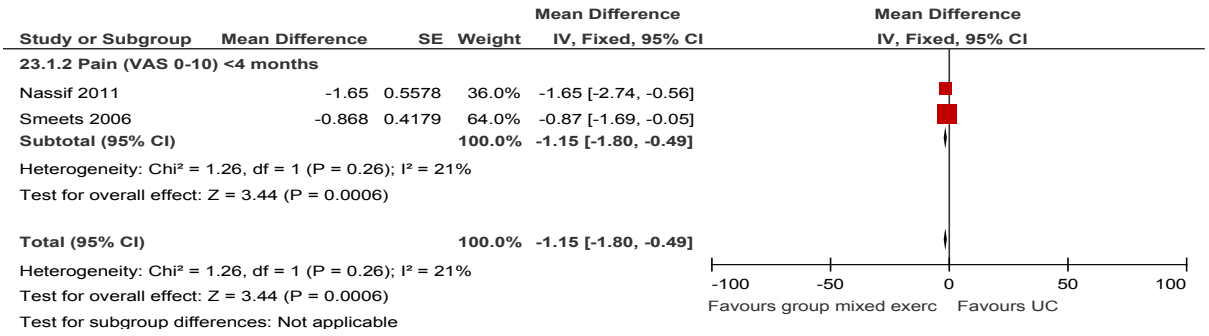
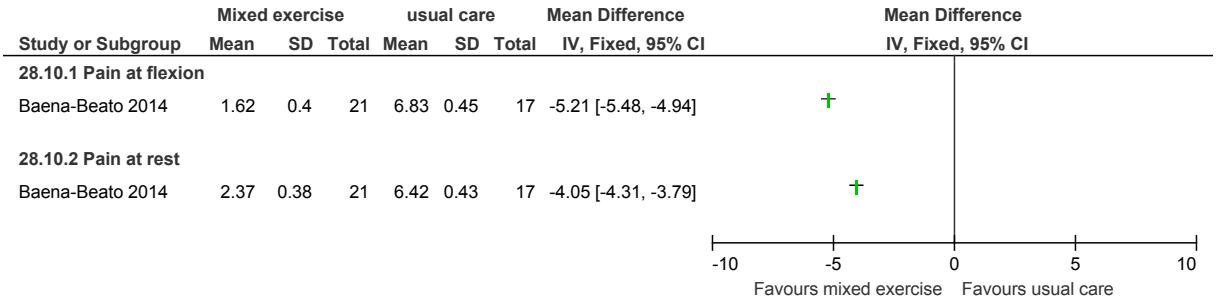


Figure 341: Pain (VAS 0-10) ≤4 months



Baena-Beato 2014: aquatic therapy (resistance exercises, aerobic exercises, stretching exercises)vs waiting list control

Figure 342: Pain (VAS 0-10) > 4 months

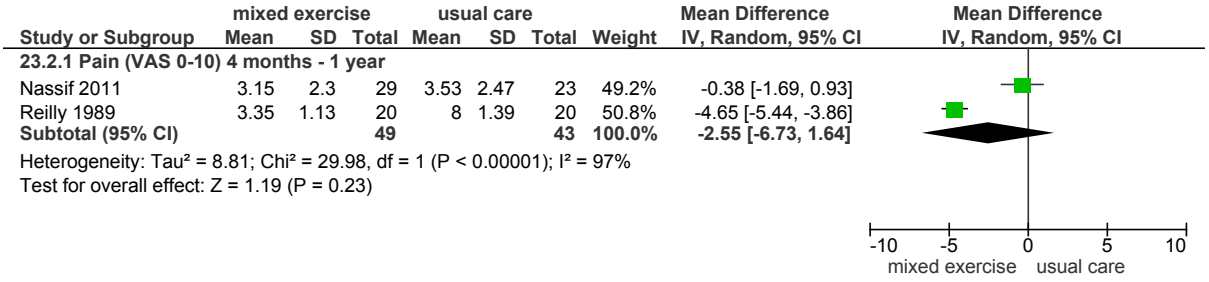


Figure 343: Pain (von Korff 0-100) <4 months [mean difference from control]

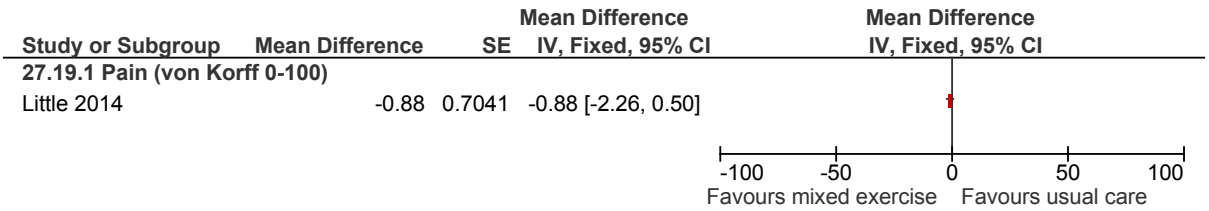


Figure 344: Pain (von Korff 0-100) > 4 months [mean difference from control]

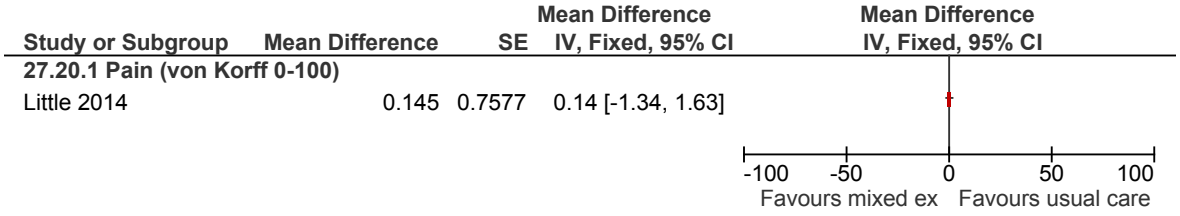


Figure 345: Function (RMDQ 0-24) ≤4 months

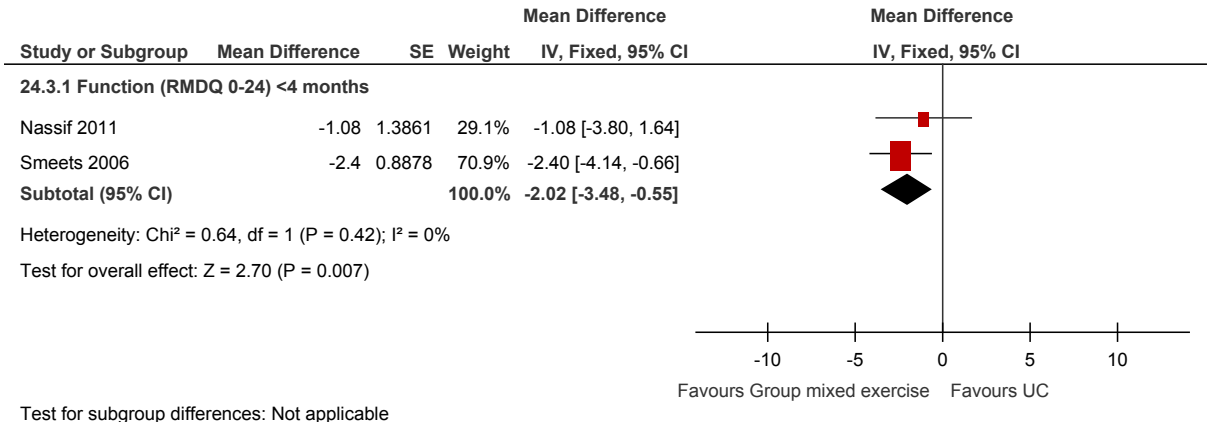


Figure 346: Function (RMDQ 0-24) > 4 months

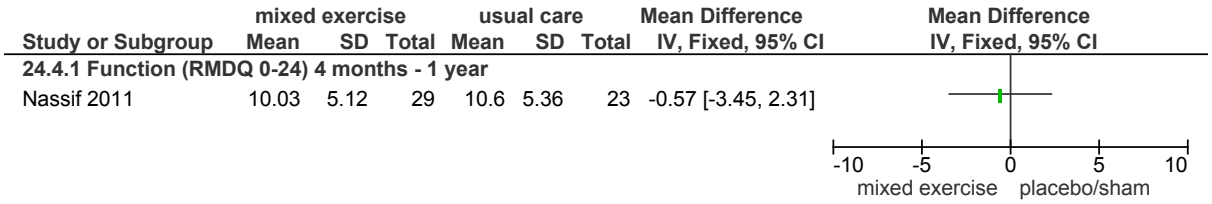


Figure 347: Function (RMDQ 0-24) <4 months [mean difference from control]

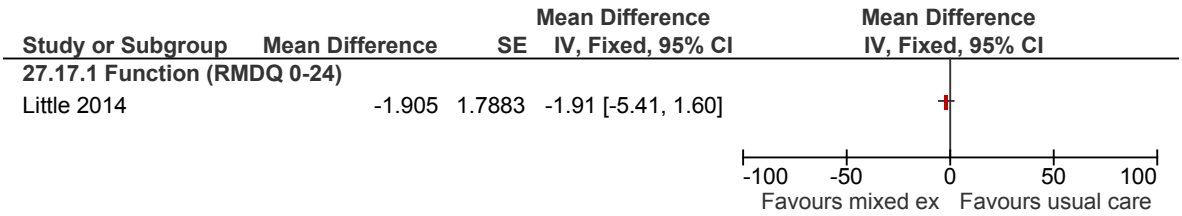


Figure 348: Function (RMDQ 0-24) > 4 months [mean difference from control]

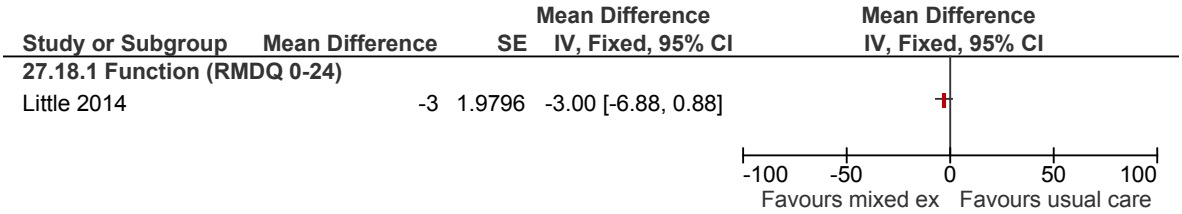
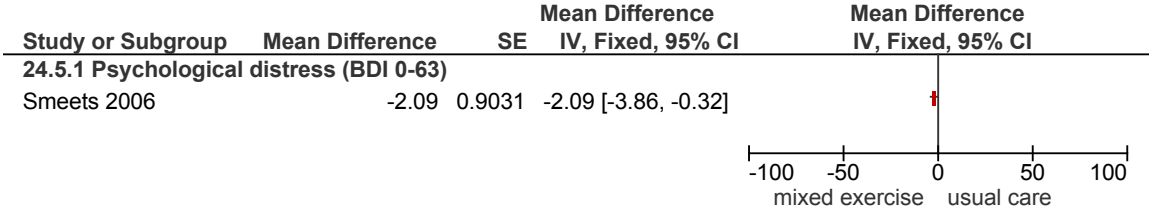


Figure 349: Psychological distress (BDI 0-63) ≤4 months



Smeets = waiting list

K.5.21.2 With sciatica

Figure 350: Pain (NRS 0-10) ≤4 months

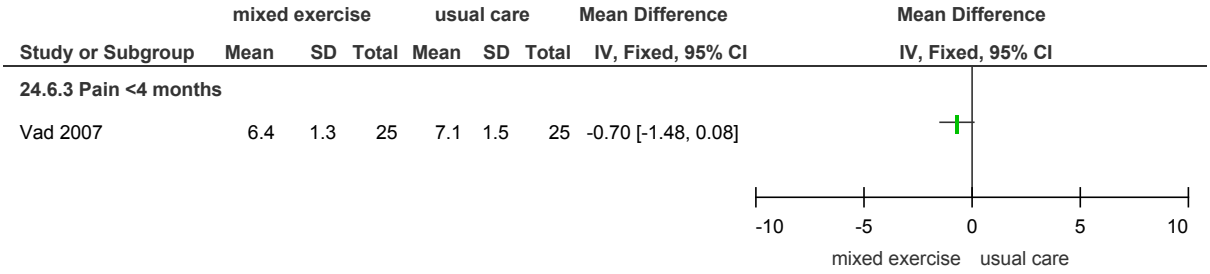


Figure 351: Pain (NRS 0-10) >4 months

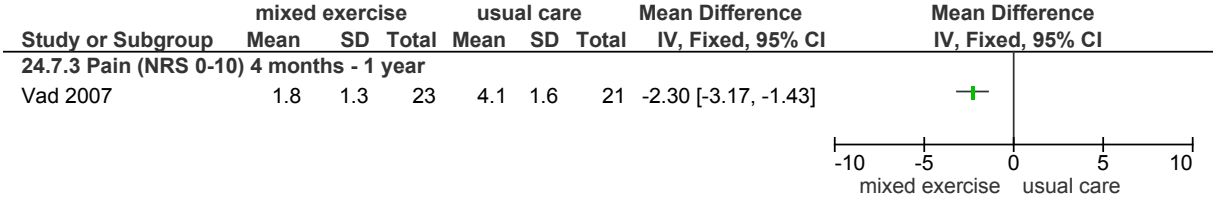


Figure 352: Function (RMDQ 0-24) ≤4 months

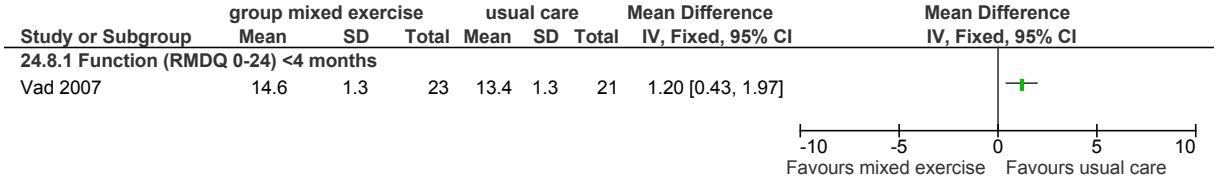
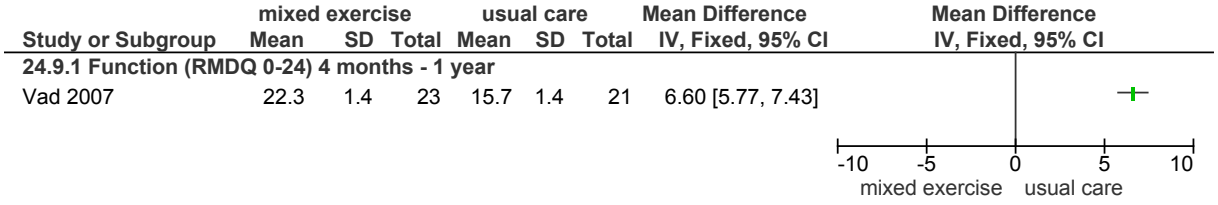
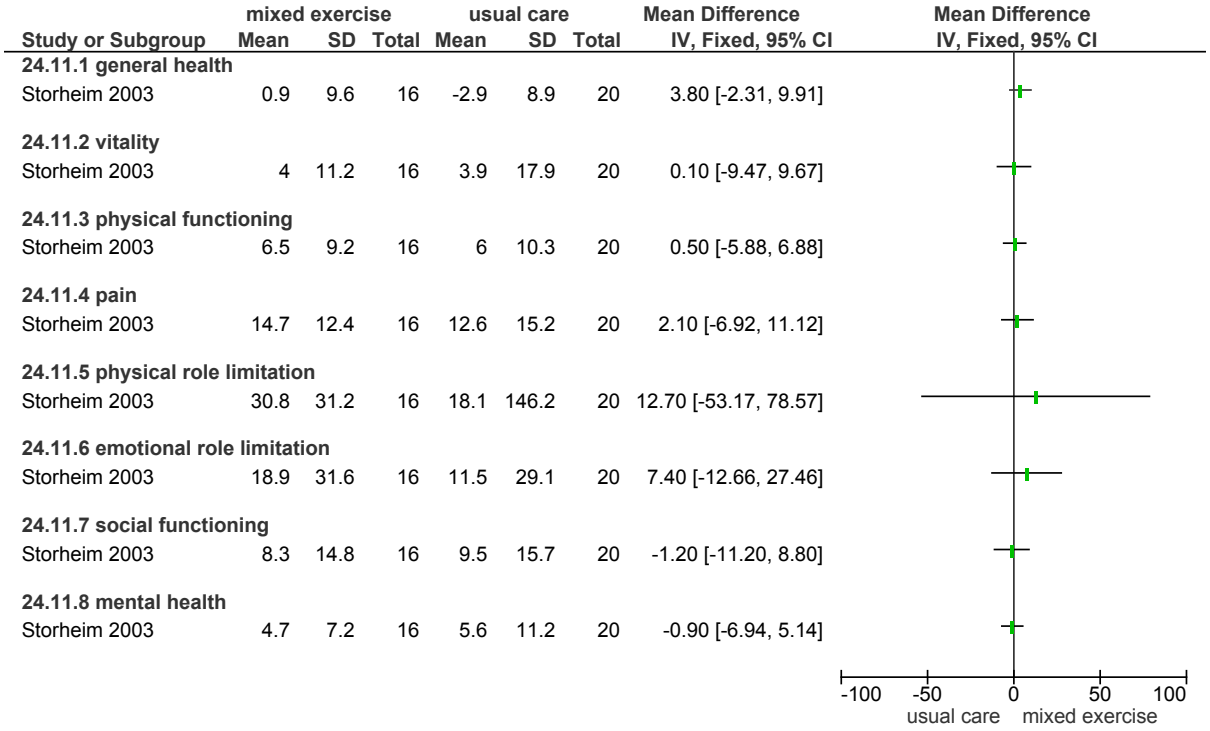


Figure 353: Function (RMDQ 0-24) >4 months



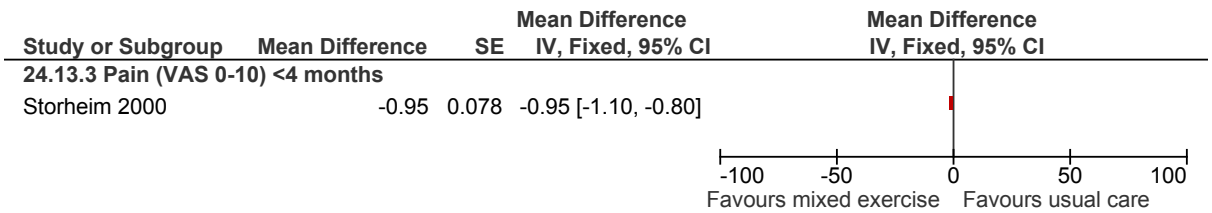
K.5.21.3 Without sciatica

Figure 354: Quality of life (SF-36 0-100) ≤4 months



Storheim study = waiting list control

Figure 355: Pain (VAS 0-10) ≤4 months



Storheim = waiting list control

Figure 356: Pain (VAS 0-10, change score) ≤4 months

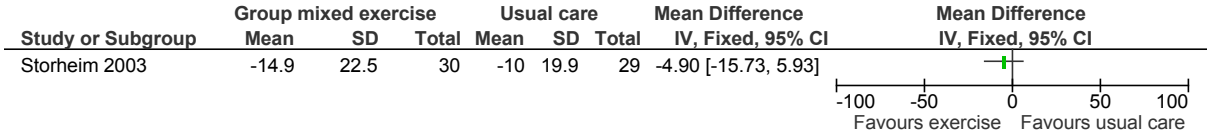
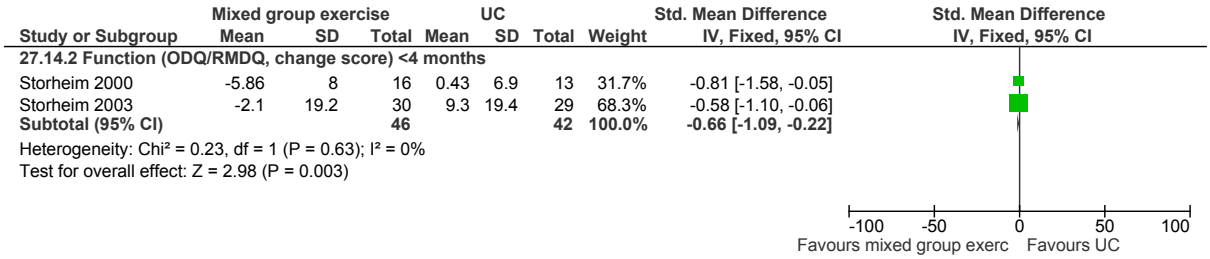
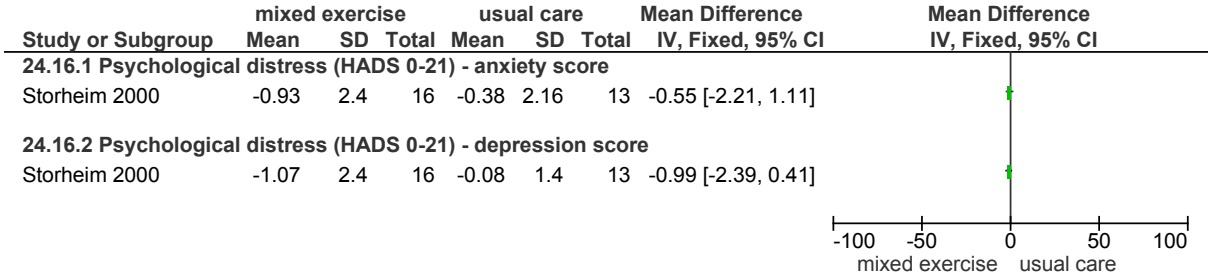


Figure 357: Function (ODI/RMDQ, change score) ≤4 months



Storheim = waiting list control

Figure 358: Psychological distress (HADS 0-21)



Storheim study = waiting list control

K.5.22 Group mixed exercise versus self-management

K.5.22.1 Without sciatica

Figure 359: Responder criteria (improvement in function) ≤4 months

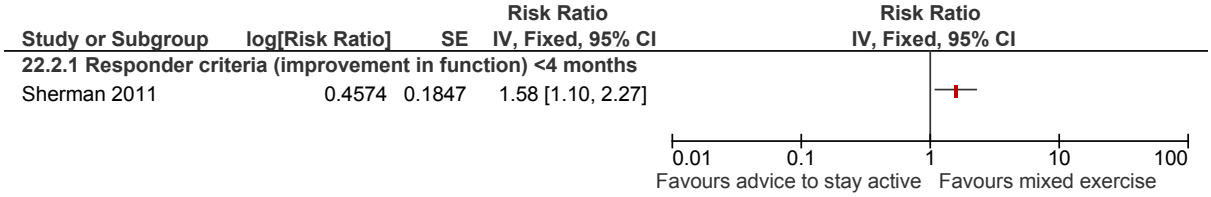


Figure 360: Function (RMDQ 0-24) ≤4 months

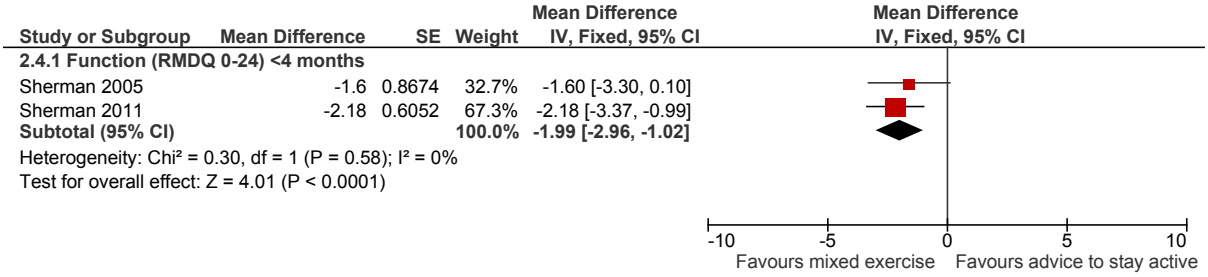


Figure 361: Function (RMDQ 0-24) >4 months

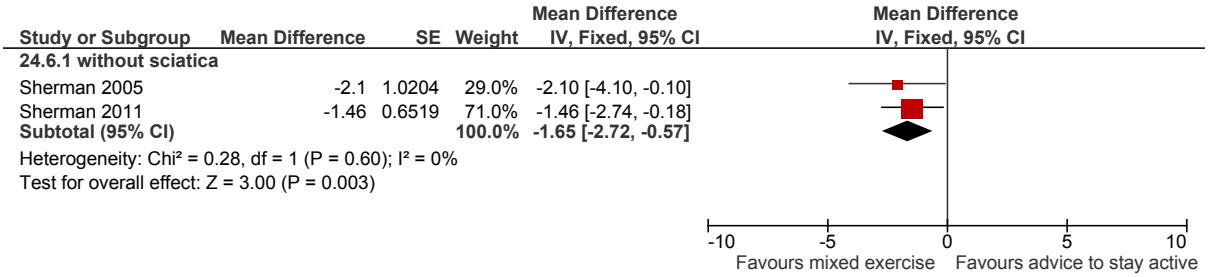
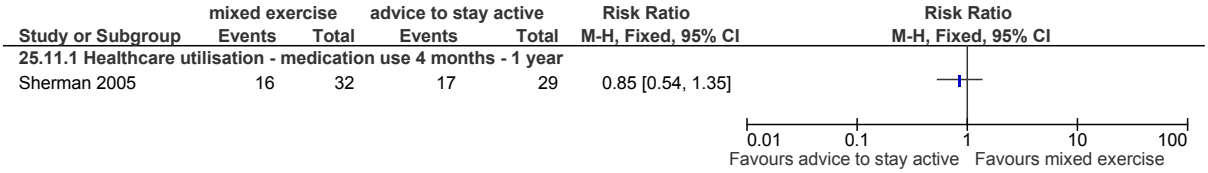


Figure 362: Healthcare utilisation – medication use > 4 months



K.5.22.2 Group mixed exercise versus cognitive therapy

K.5.22.3 Without sciatica

Figure 363: Pain (VAS 0-10) ≤4 months

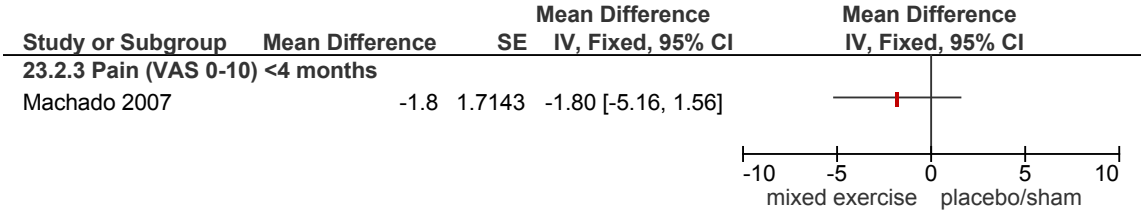


Figure 364: Pain (VAS 0-10) > 4 months - 1 year

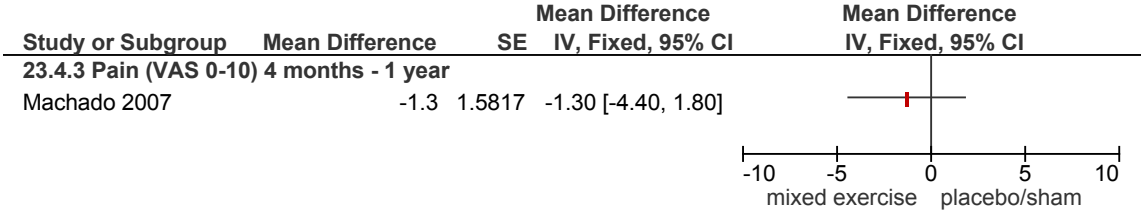


Figure 365: Function (RMDQ 0-24) ≤4 months

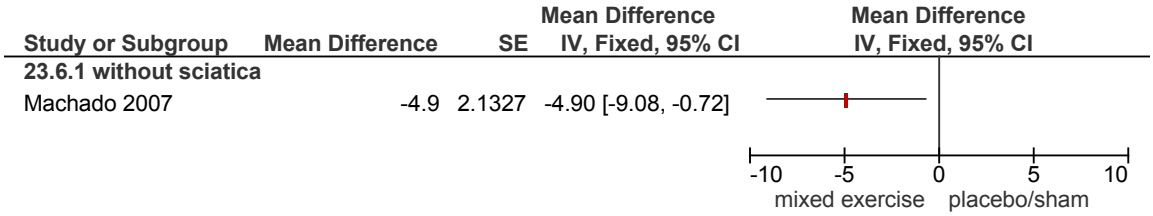
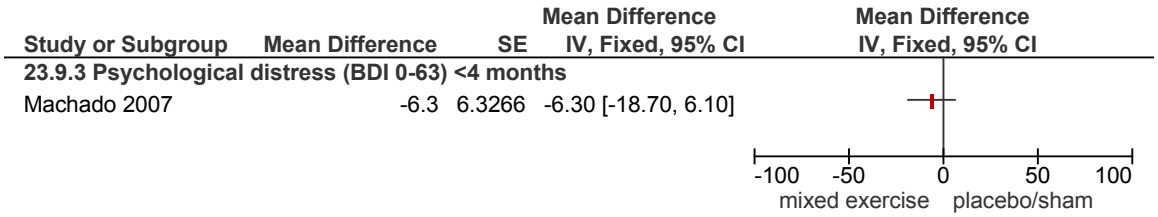


Figure 366: Psychological distress (BDI 0-63) ≤4 months



K.5.23 Group mixed exercise versus CBT

K.5.23.1 With/without sciatica

Figure 367: Pain (VAS 0-10) ≤4 months

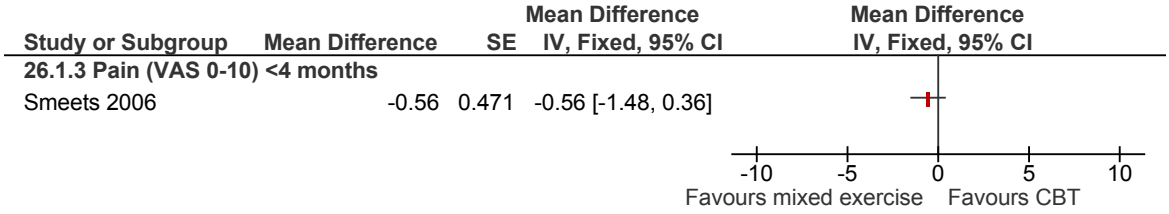


Figure 368: Pain (VAS 0-10) > 4 months

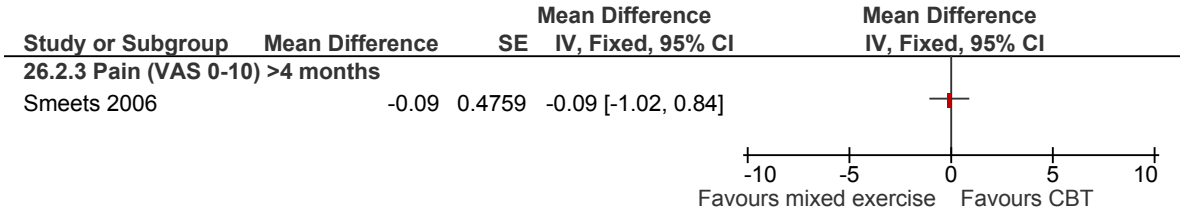


Figure 369: Function (RMDQ, 0-24) ≤4 months

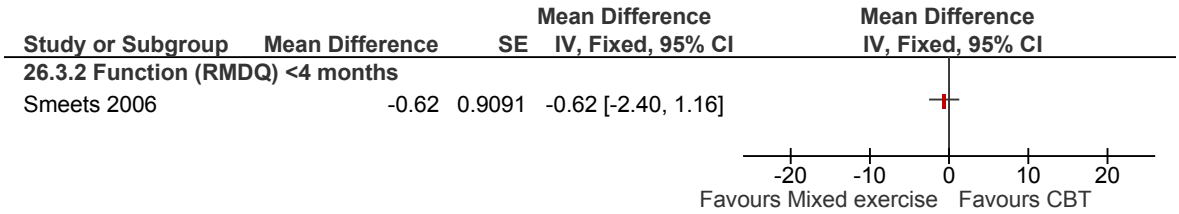


Figure 370: Function (RMDQ, 0-24) > 4 months

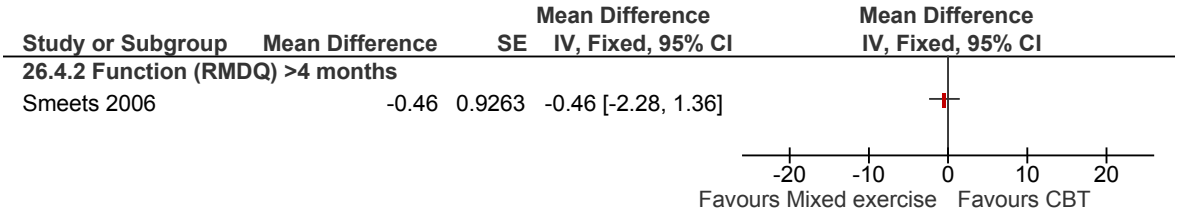


Figure 371: Psychological distress (BDI 0-63) ≤4 months

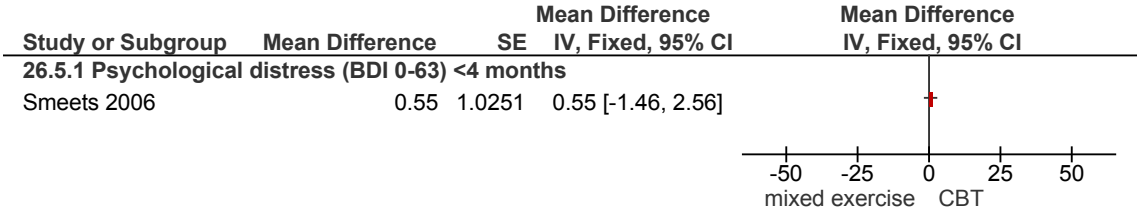


Figure 372: Psychological distress (BDI 0-63) > 4 months

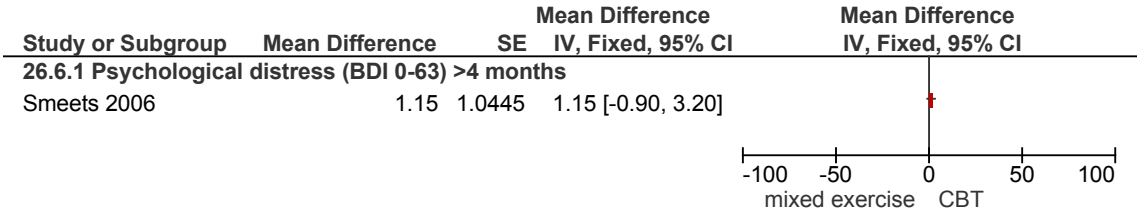


Figure 373: Healthcare utilisation (general practice - visits) > 4 months

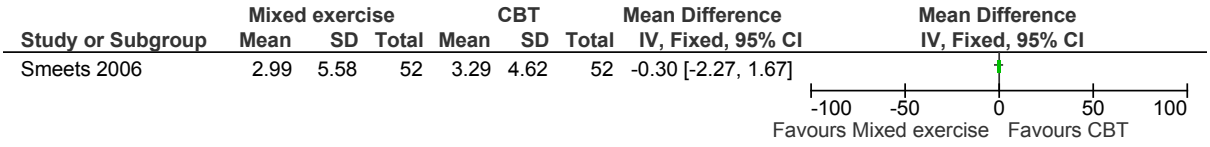


Figure 374: Healthcare utilisation (specialist care -visits) > 4 months

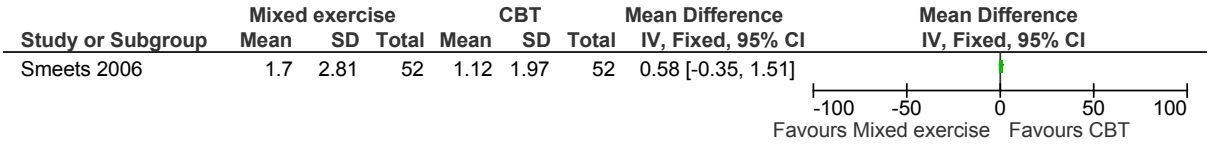


Figure 375: Healthcare utilisation (radiography – visits) > 4 months

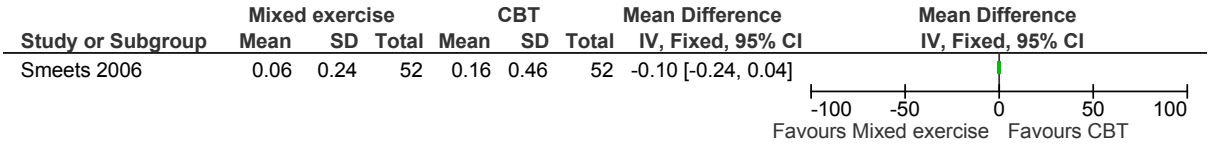


Figure 376: Healthcare utilisation (occupational physician -visits) > 4 months

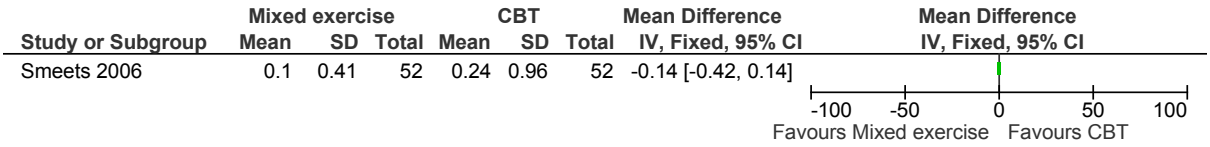


Figure 377: Healthcare utilisation (psychologist -visits) > 4 months

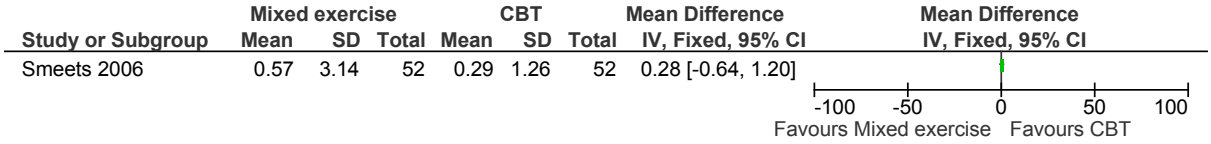
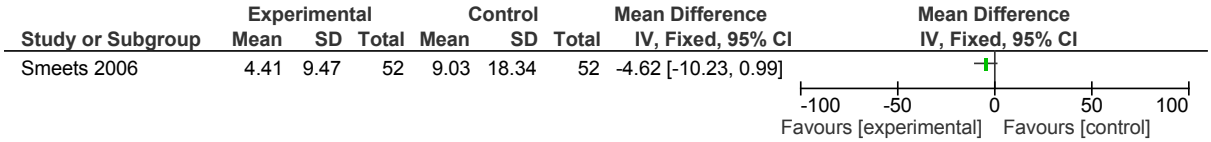


Figure 378: Healthcare utilisation (therapist -sessions) > 4 months



K.5.24 Combinations – exercise therapy adjunct

K.5.24.1 Low back pain without sciatica population

K.5.24.2 Exercise (biomechanical) + TENS compared to TENS

Figure 379: Pain severity(Borg verbal pain rating scale 0-10).

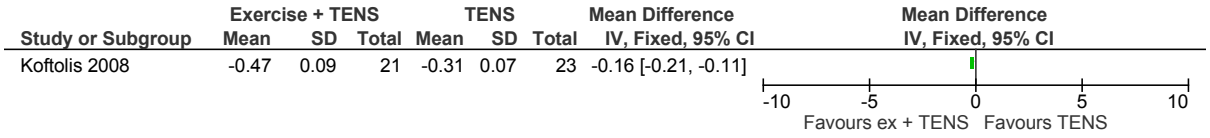
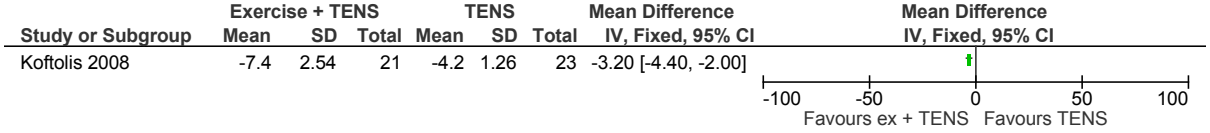


Figure 380: Function (Oswestry index 0-50).



K.5.24.3 Exercise (biomechanical + aerobic) + electrotherapy (PENS) compared to sham electrotherapy (PENS)

Figure 381: Quality of life (SF-36, 0-100)

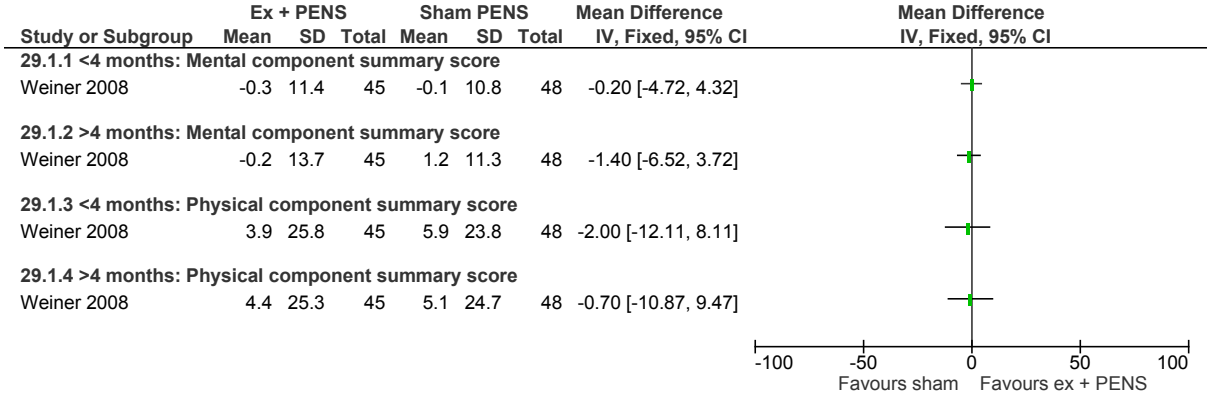


Figure 382: Pain severity (McGill, 0-78)

Study or Subgroup	Ex + PENS Mean	SD	Total	Sham PENS Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
29.2.1 <4 months							
Weiner 2008	-4.1	8.2	45	-2.3	6.3	48	-1.80 [-4.79, 1.19]
29.2.2 >4 months							
Weiner 2008	-3.8	8.9	45	-3.3	7.4	48	-0.50 [-3.84, 2.84]

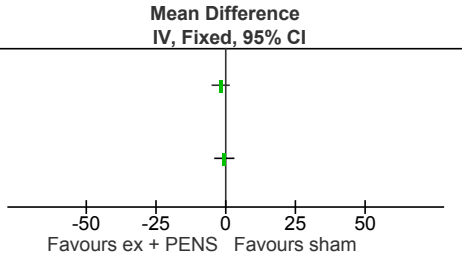
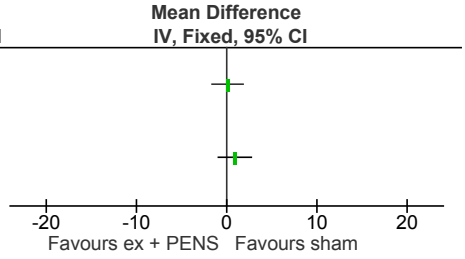


Figure 383: Function (RMDQ, 0-24)

Study or Subgroup	Ex + PENS Mean	SD	Total	Sham PENS Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
29.3.1 <4 months							
Weiner 2008	-2.6	4.6	45	-2.7	3.8	48	0.10 [-1.62, 1.82]
29.3.2 >4 months							
Weiner 2008	-2.1	4.3	45	-3	4.7	48	0.90 [-0.93, 2.73]



K.5.24.4 Exercise (biomech + aerobic) + electrotherapy (PENS) compared to electrotherapy (PENS)

Figure 384: Quality of life (SF-36, 0-100)

Study or Subgroup	Ex + PENS Mean	SD	Total	PENS Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
28.1.1 <4 months: Mental component summary score							
Weiner 2008	-0.3	11.4	45	1.5	12	47	-1.80 [-6.58, 2.98]
28.1.2 >4 months: Mental component summary score							
Weiner 2008	-0.2	13.7	45	-1.8	15.5	47	1.60 [-4.37, 7.57]
28.1.3 <4 months: Physical component summary score							
Weiner 2008	3.9	25.8	45	-1.1	20.7	47	5.00 [-4.58, 14.58]
28.1.4 >4 months: Physical component summary score							
Weiner 2008	4.4	25.3	45	-5.9	21	47	10.30 [0.78, 19.82]

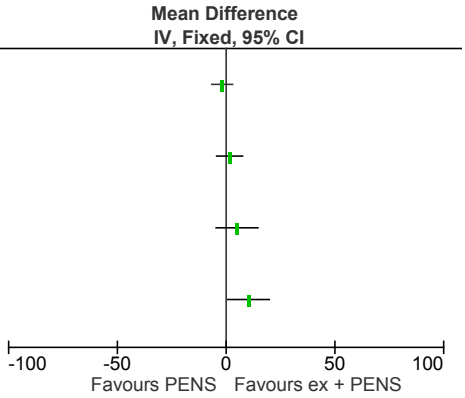


Figure 385: Pain severity (McGill, 0-78)

Study or Subgroup	Ex + PENS Mean	SD	Total	PENS Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
28.2.1 <4 months							
Weiner 2008	-4.1	8.2	45	-2.9	9.2	47	-1.20 [-4.76, 2.36]
28.2.2 >4 months							
Weiner 2008	-3.8	8.9	45	-3.4	7.4	47	-0.40 [-3.75, 2.95]

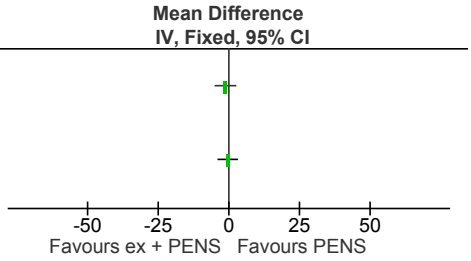
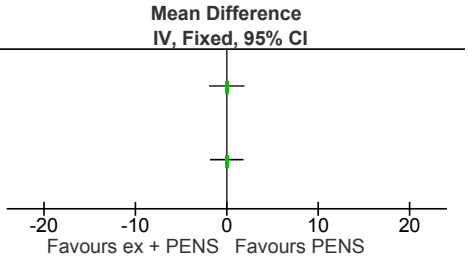


Figure 386: Function (RMDQ, 0-24)

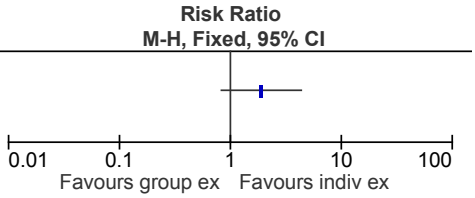
Study or Subgroup	Ex + PENS Mean	SD	Total	PENS Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
28.3.1 <4 months							
Weiner 2008	-2.6	4.6	45	-2.6	4.5	47	0.00 [-1.86, 1.86]
28.3.2 >4 months							
Weiner 2008	-2.1	4.3	45	-2.1	4.2	47	0.00 [-1.74, 1.74]



K.5.24.5 Group exercise (mixed: biomechanical + aerobic) + self-management (education) + manual therapy (manipulation) compared to individual exercise (biomechanical) + self-management (education) + manual therapy (manipulation)

Figure 387: Healthcare utilisation (analgesic use) ≤ 4 months

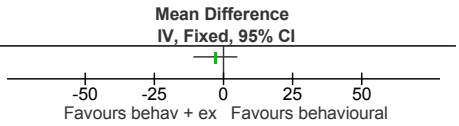
Study or Subgroup	Group ex Events	Total	Indiv ex Events	Total	Risk Ratio M-H, Fixed, 95% CI
13.1.1 <4 months					
Lewis 2005	13	33	6	29	1.90 [0.83, 4.36]



K.5.24.6 Exercise (aerobic) + psychological intervention (behavioural therapy) compared to psychological intervention (behavioural therapy)

Figure 388: Pain severity (McGill, 0-78) ≤ 4 months

Study or Subgroup	Behav + exercise Mean	SD	Total	Behavioural therapy Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Turner 1990	14.78	11.44	18	17.71	12.08	18	-2.93 [-10.62, 4.76]



K.5.24.7 Exercise (aerobic) + psychological intervention (CBT) + self-management (education) compared to psychological intervention (CBT) + self-management (education)

Figure 389: Pain severity (0-100 NRS converted to 0-10) ≤ 4 months

Study or Subgroup	CBT + educ + ex Mean	SD	Total	CBT + educ Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ryan 2010	1.91	1.89	15	2.26	3.08	12	-0.35 [-2.34, 1.64]

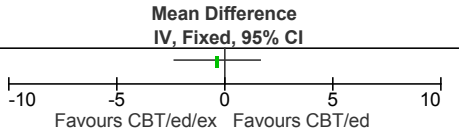
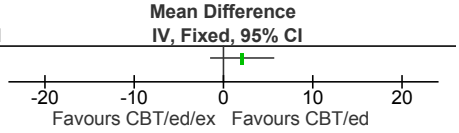


Figure 390: Function (RMDQ, 0-24) ≤ 4 months

Study or Subgroup	CBT + educ + ex Mean	SD	Total	CBT + educ Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ryan 2010	6.4	5.1	15	4.3	4.2	12	2.10 [-1.41, 5.61]



K.5.24.8 Exercise (biomechanical - pilates) + self-management (education) + compared to self-management (education)

Figure 391: Pain severity (NRS, 0-10)

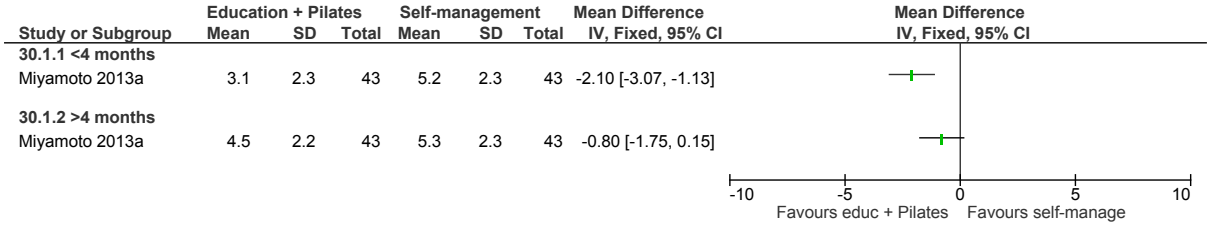
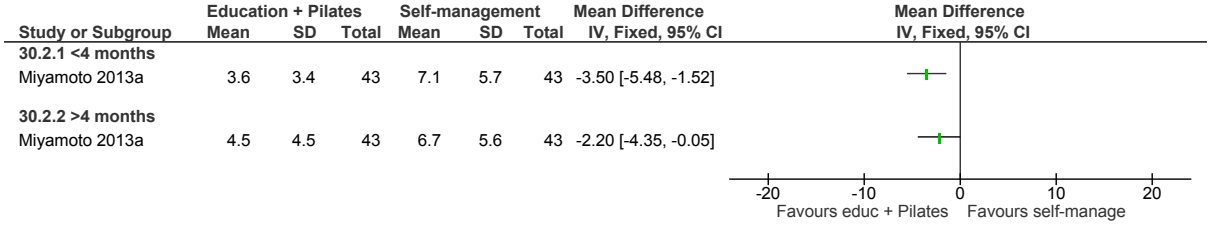


Figure 392: Function (RMDQ, 0-24)



K.5.25 Low back pain with sciatica population

K.5.25.1 Exercise (biomechanical) + self-management (unsupervised exercise) compared to TENS + laser + massage + self-management (unsupervised exercise)

Figure 393: Pain (VAS 0-10) <4 months

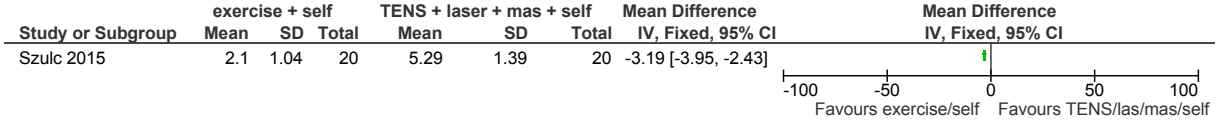
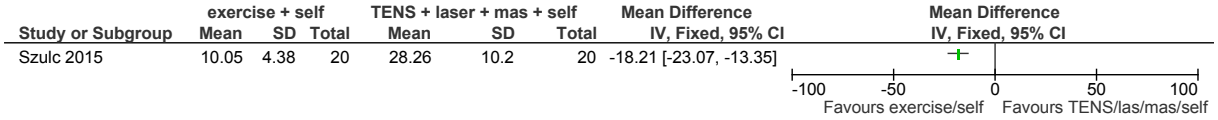


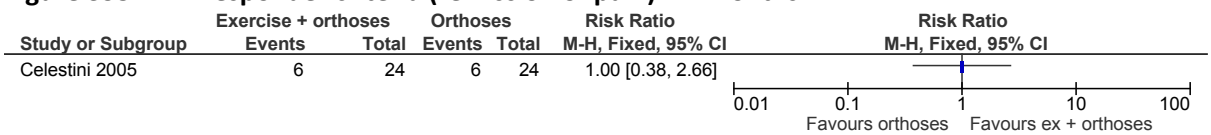
Figure 394: Function (revised ODI 0-100) <4 months



K.5.26 Low back pain with/without sciatica population

K.5.26.1 Exercise + orthoses compared to orthoses

Figure 395: Responder criteria (remission of pain) > 4 months



K.5.26.2 Exercise + self-management (education) compared to self-management

Figure 396: Number improving on Disability index > 4 months

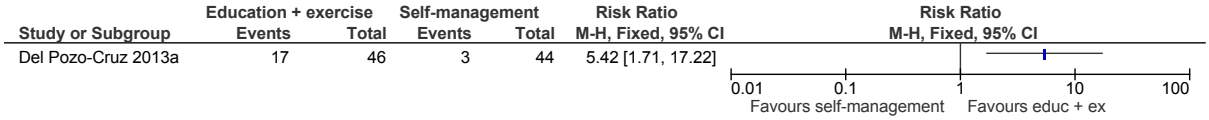
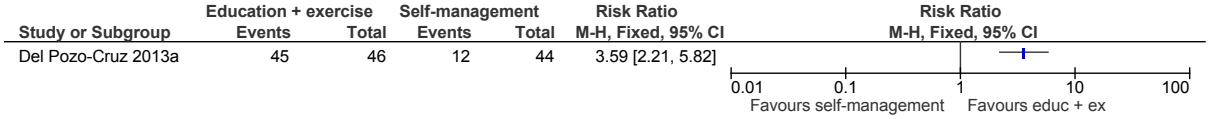
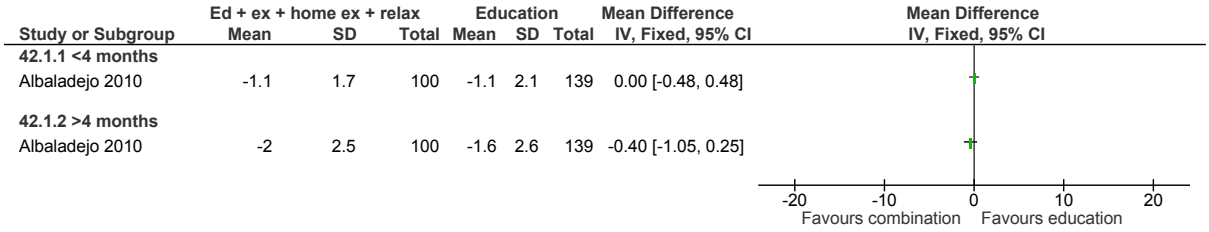


Figure 397: Number improving on Quality of life index > 4 months



K.5.26.3 Exercise + self-management (mixed modality - home exercise + education) compared to self-management (education)

Figure 398: Function (RMDQ, 0-24)



K.5.26.4 Exercise (biomechanical) + self-management (home exercise) compared to self-management (self-care advice based on the Back Book)

Figure 399: Quality of life (15D, 0-1)

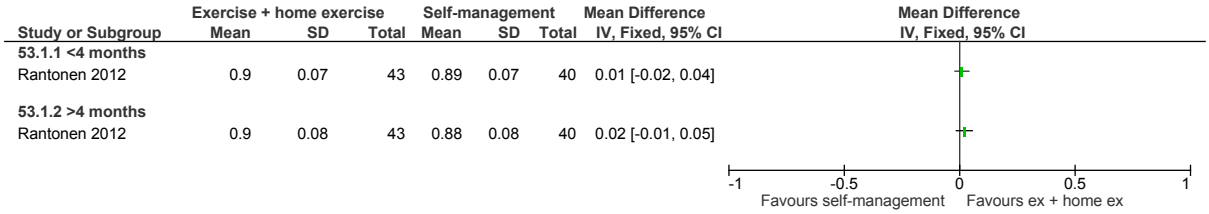


Figure 400: Pain (0-100 VAS converted to 0-10)

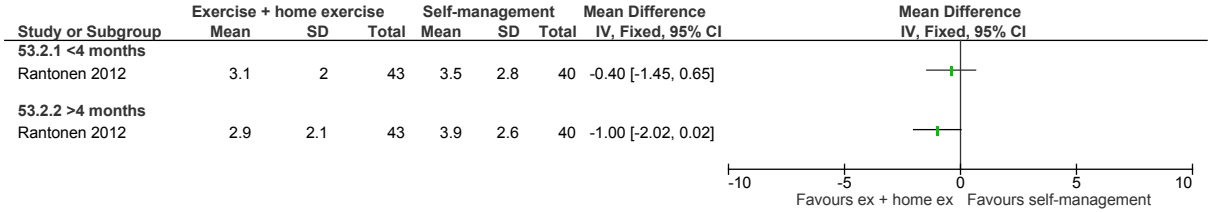
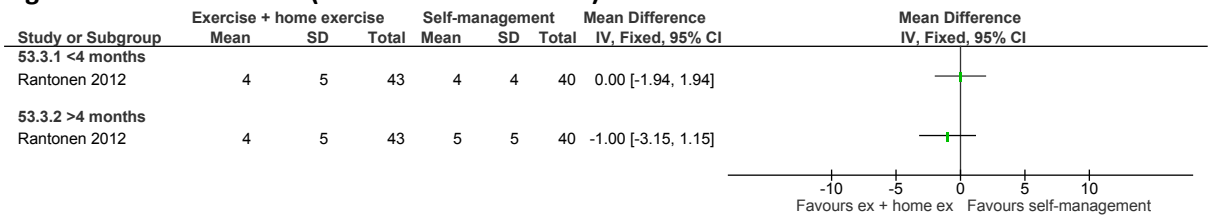


Figure 401: Function (Roland Morris 18 item)



K.5.26.5 Exercise (biomechanical - core stability) + manual therapy (massage) compared to manual therapy (massage)

Figure 402: Pain severity (VAS, 0-10) ≤ 4 months

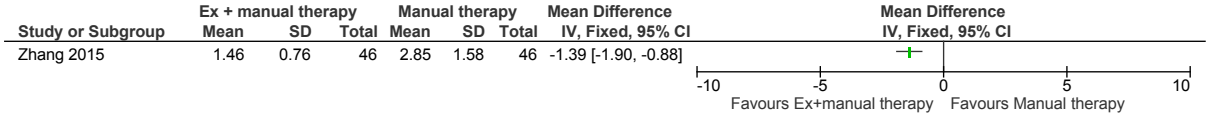


Figure 403: Function (ODI, 0-100) ≤ 4 months

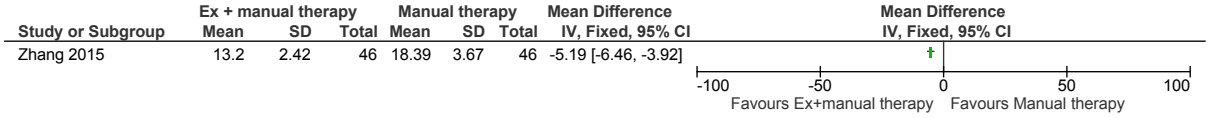
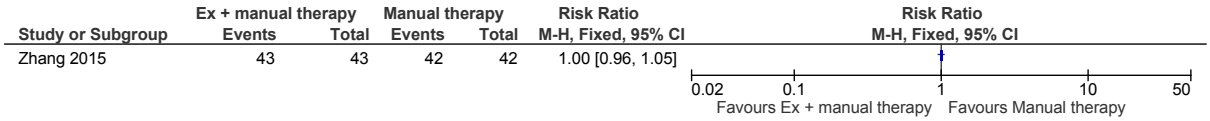


Figure 404: Responder criteria (pain free interval of at least 30 days) > 4 months



K.5.26.6 Exercise (core stability) + manual therapy (manipulation) compared to self-management (advice to stay active) +manual therapy (manipulation)

Figure 405: Quality of life (SF-12 0-100) ≤4 months

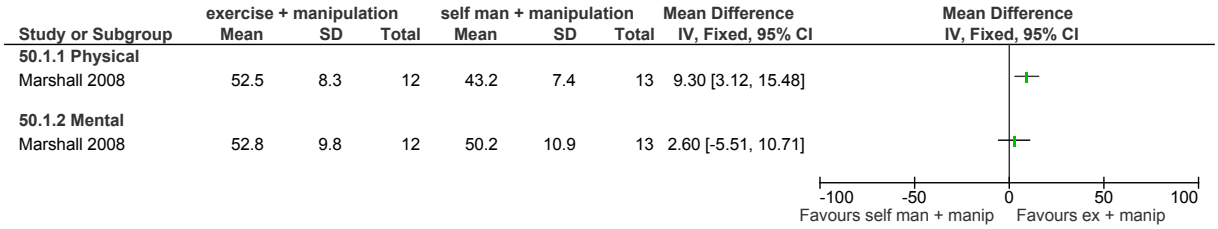


Figure 406: Quality of life (SF-12 0-100) > 4 months

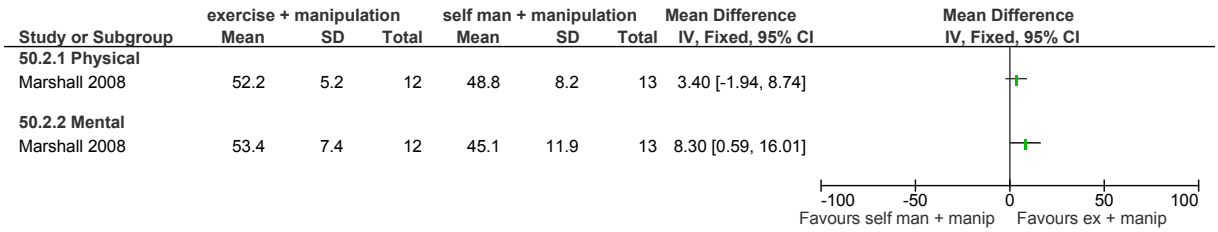


Figure 407: Pain (McGill Pain Questionnaire – sensory 0-33) ≤4 months

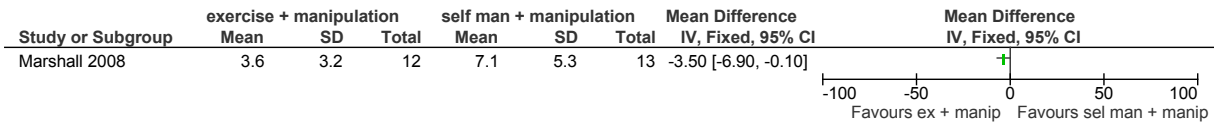


Figure 408: Pain (McGill Pain Questionnaire – sensory 0-33) > 4 months

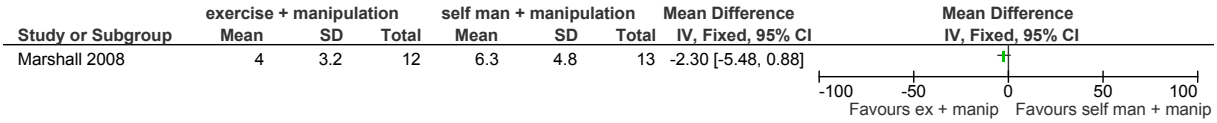


Figure 409: Pain (McGill Pain Questionnaire – affective 0-12) ≤4 months

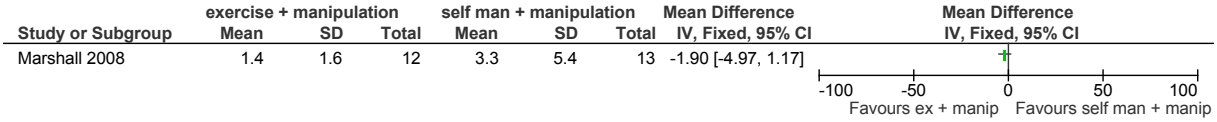
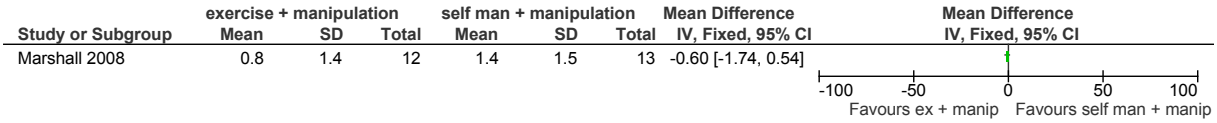
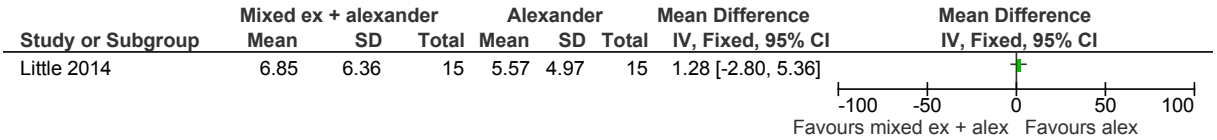


Figure 410: Pain (McGill Pain Questionnaire – affective 0-12) > 4 months



K.5.26.7 Mixed exercise (biomechanical + aerobic) + Alexander technique compared to Alexander technique

Figure 411: Function (RMDQ 0-24) <4 months



K.5.26.8 Exercise (individual biomechanical) + self management compared to self management

Figure 412: Pain severity (Modified Von Korff scale 0-100 converted to 0-10)

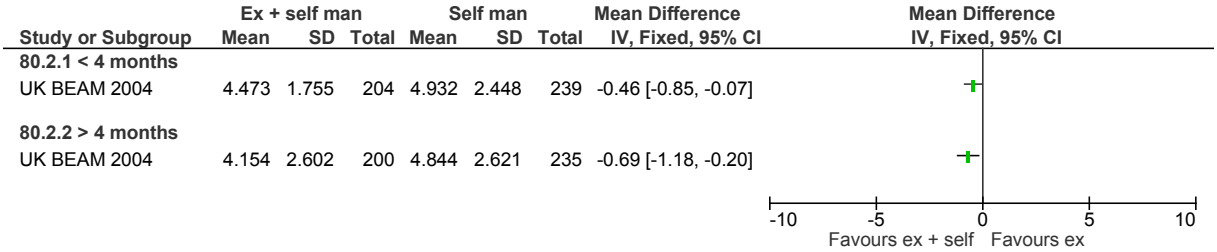


Figure 413: Function (RMDQ 0-24)

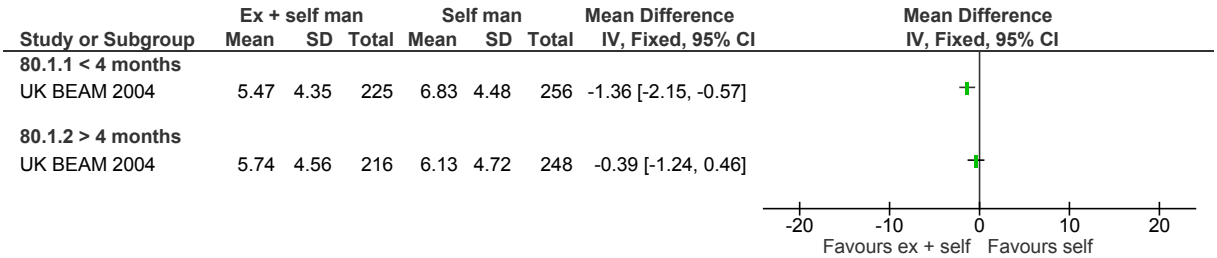


Figure 414: Quality of life (SF36 0-100)

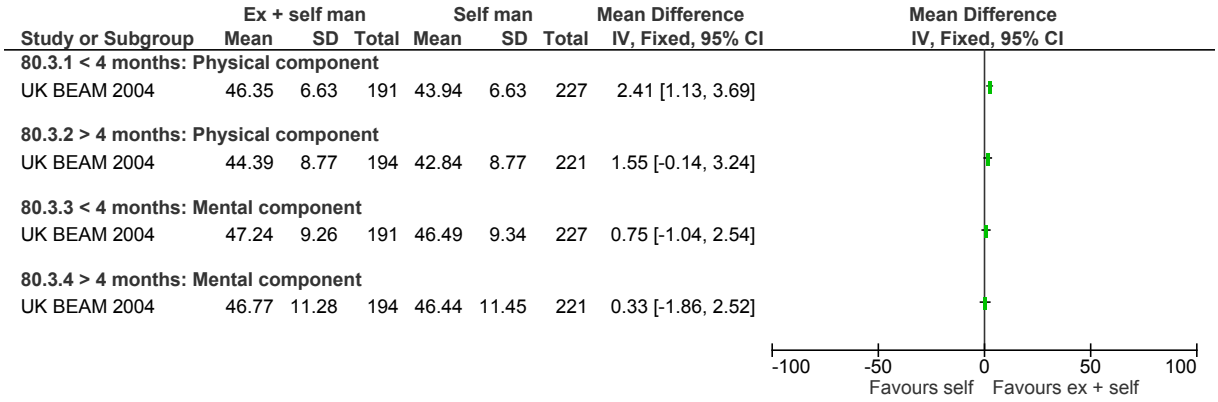
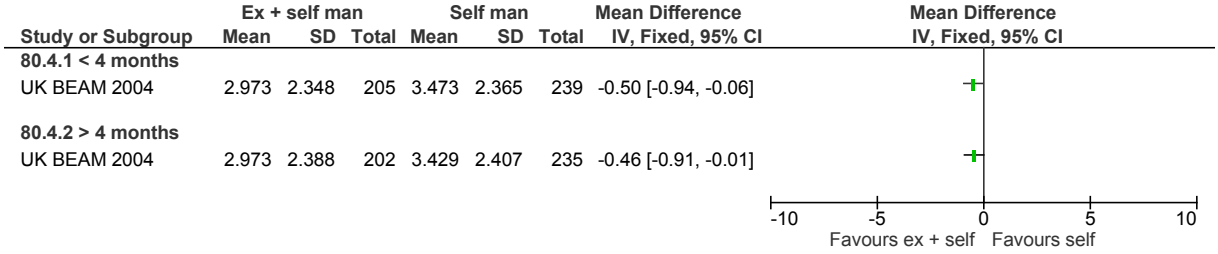


Figure 415: Function (Modified Von Korff scale 0-100 converted to 0-10)



K.6 Postural therapies

K.6.1 Alexander technique (6 lessons) versus usual care (without sciatica population)

Figure 416: Quality of life: SF-36 Physical (1 year)

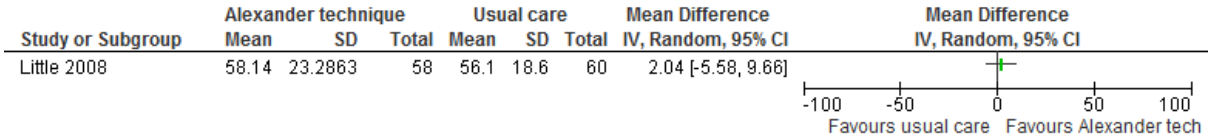


Figure 417: Quality of life: SF-36 Mental (1 year)

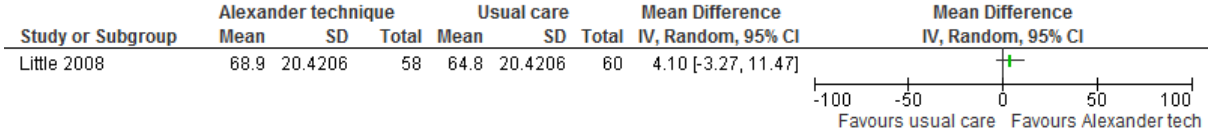


Figure 418: Von Korff Pain Scale 0-10 (1 year)

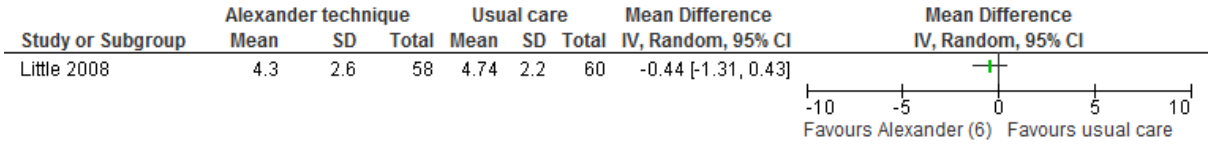


Figure 419: Roland Morris Disability Scale (1 year)

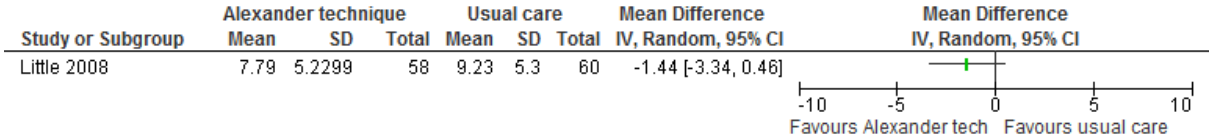


Figure 420: Primary care contacts (1 year)

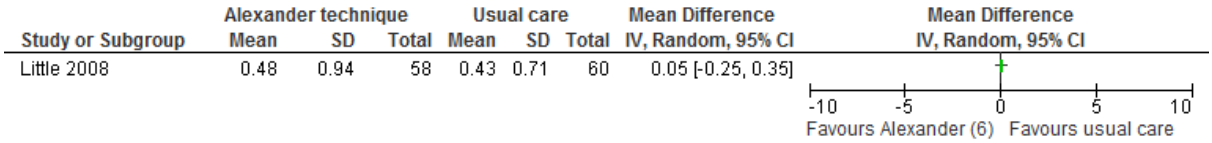
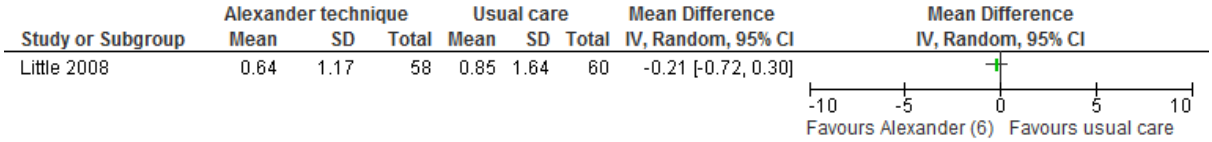


Figure 421: Prescriptions (1 year)



K.6.2 Alexander technique (10 sessions) versus usual care (overall population)

Figure 422: Function (RMDQ 0-24) <4 months [mean difference from control]

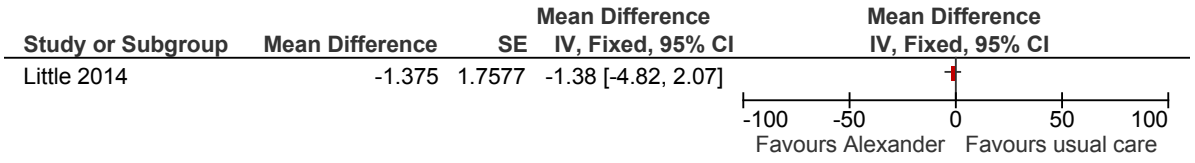


Figure 423: Pain (von Korff 0-100) <4 months [mean difference from control]

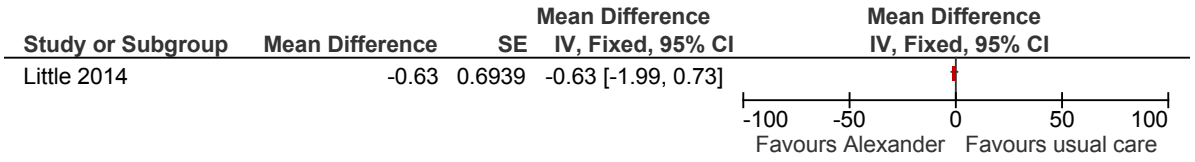


Figure 424: Function (RMDQ 0-24) <4 months [mean difference from control]

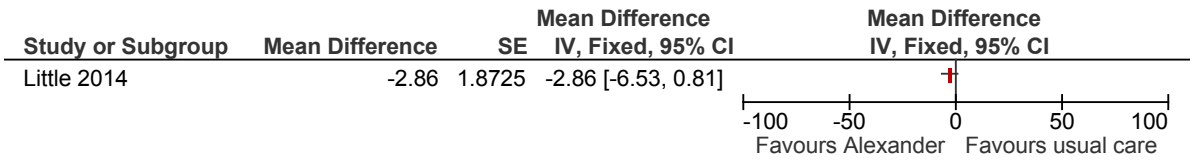
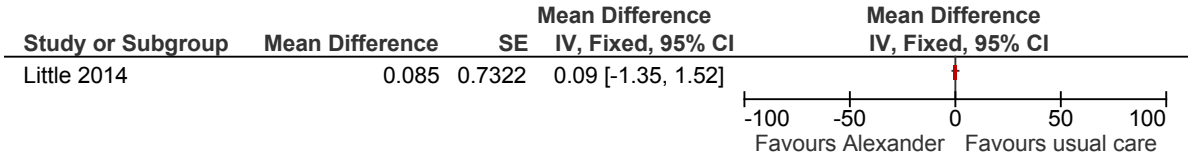


Figure 425: Pain (von Korff 0-100) <4 months [mean difference from control]



K.6.3 Alexander technique (24 lessons) versus usual care (without sciatica population)

Figure 426: Quality of life: SF-36 Physical (1 year)

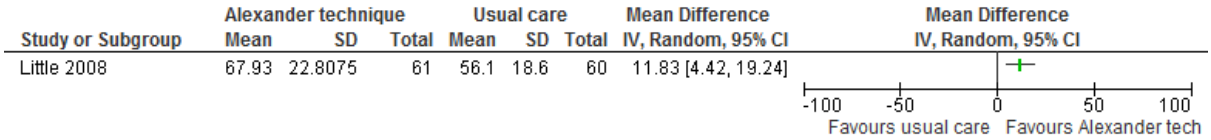


Figure 427: Quality of life: SF-36 Mental (1 year)

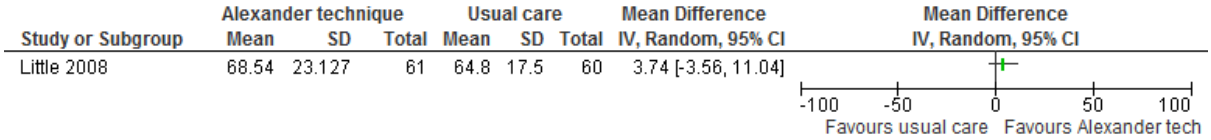


Figure 428: Von Korff Pain Scale 0-10 (1 year)

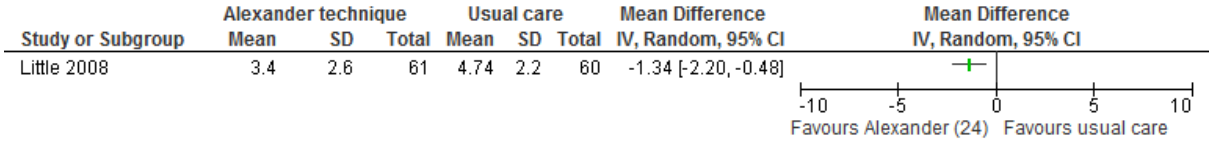


Figure 429: Roland Morris Disability Scale (1 year)

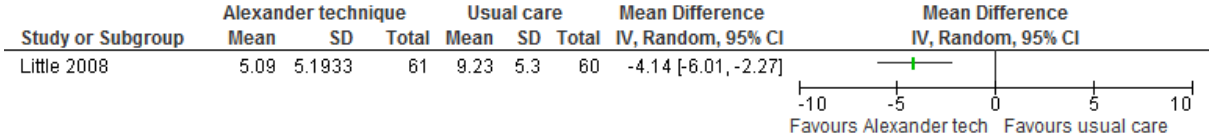


Figure 430: Primary care contacts (1 year)

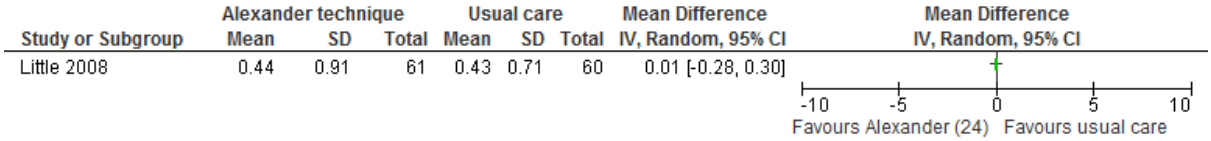
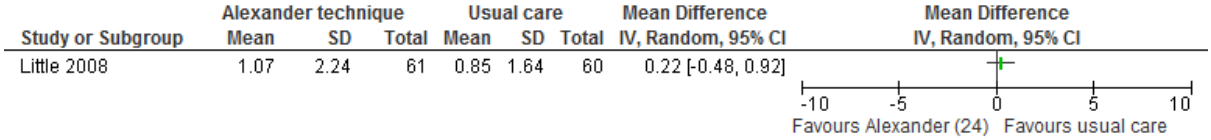


Figure 431: Prescriptions (1 year)



K.6.4 Alexander technique (6 lessons) versus self-management (exercise prescription) (without sciatica population)

Figure 432: Quality of life: SF-36 Physical (1 year)

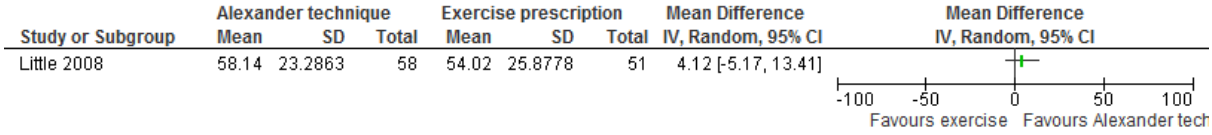


Figure 433: Quality of life: SF-36 Mental (1 year)

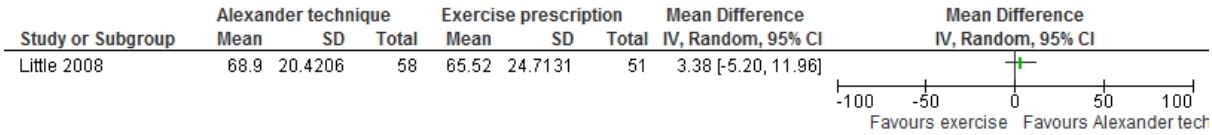


Figure 434: Von Korff Pain Scale 0-10 (1 year)

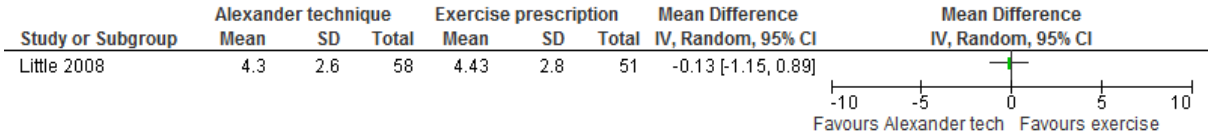


Figure 435: Roland Morris Disability Scale (1 year)

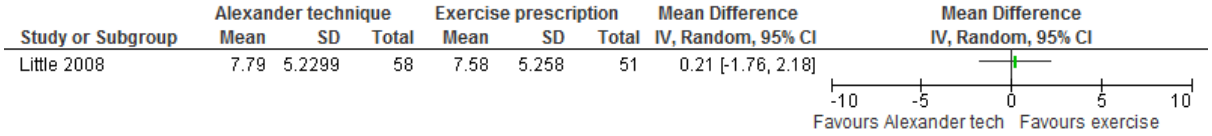


Figure 436: Primary care contacts (1 year)

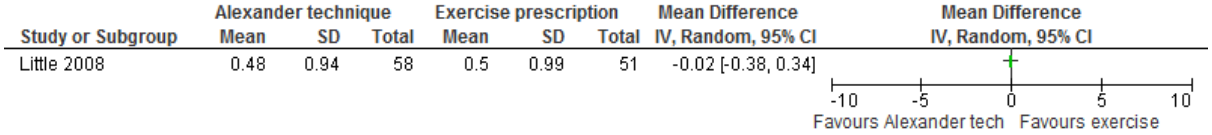
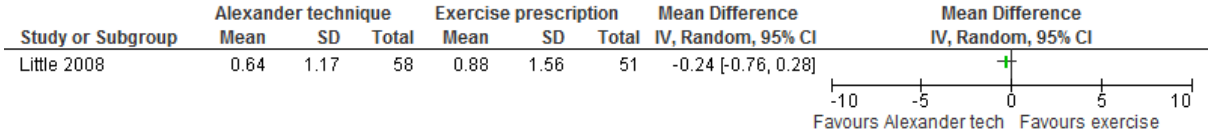


Figure 437: Prescriptions (1 year)



K.6.5 Alexander technique (24 lessons) versus self-management (exercise prescription) (without sciatica population)

Figure 438: Quality of life: SF-36 Physical (1 year)

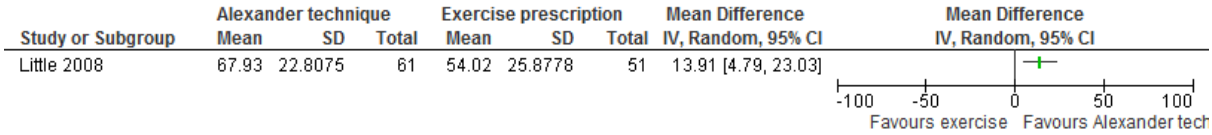


Figure 439: Quality of life: SF-36 Mental (1 year)

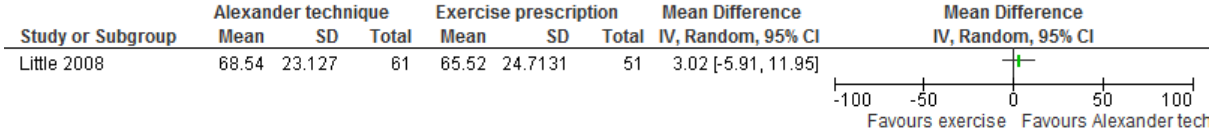


Figure 440: Von Korff Pain Scale 0-10 (1 year)

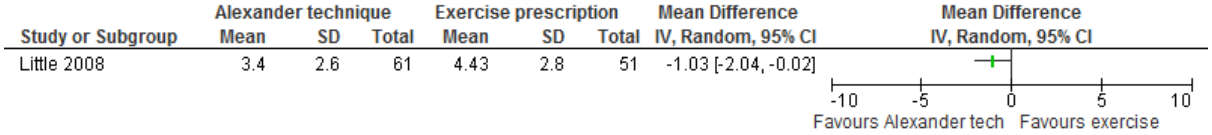


Figure 441: Roland Morris Disability Scale (1 year)

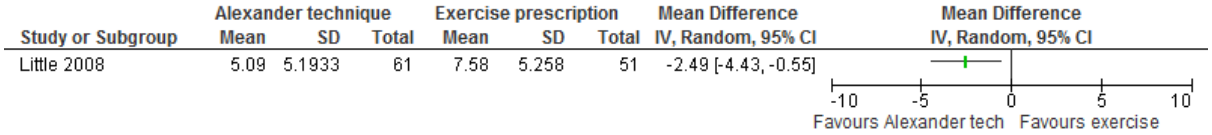


Figure 442: Primary care contacts (1 year)

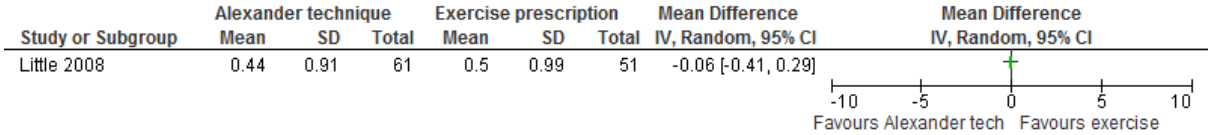
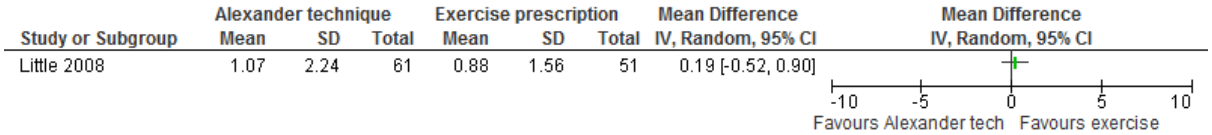


Figure 443: Prescriptions (1 year)



K.6.6 Alexander technique (24 lessons) versus Alexander technique (6 lessons) (without sciatica population)

Figure 444: Quality of life: SF-36 Physical (1 year)

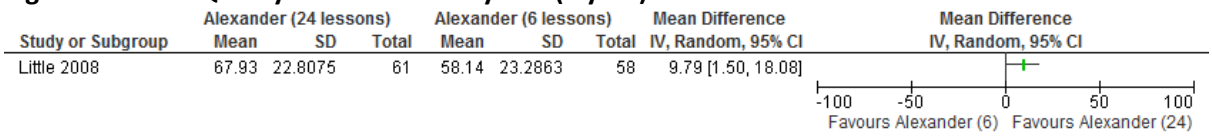


Figure 445: Quality of life: SF-36 Mental (1 year)

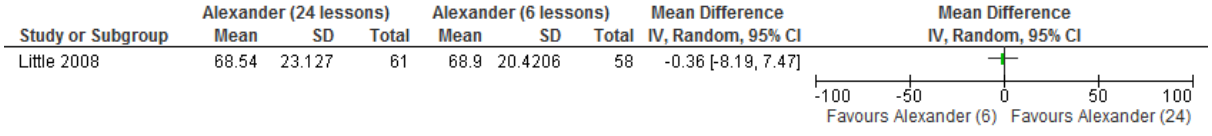


Figure 446: Von Korff Pain Scale 0-10 (1 year)

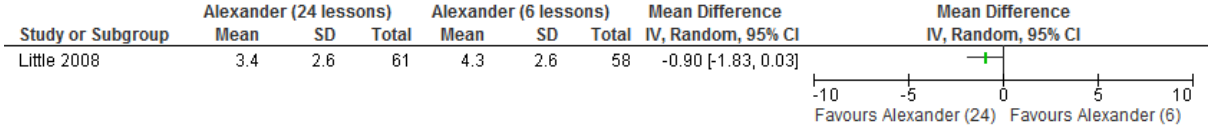


Figure 447: Roland Morris Disability Scale (1 year)

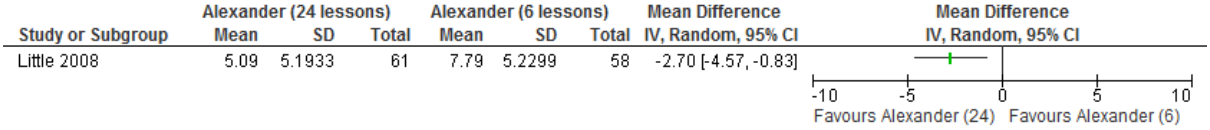


Figure 448: Primary care contacts (1 year)

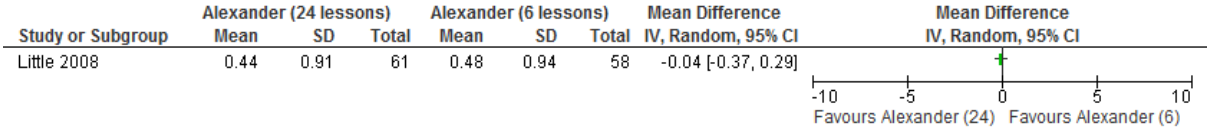
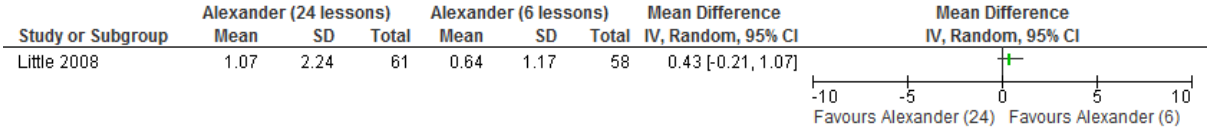


Figure 449: Prescriptions (1 year)



K.6.7 Alexander technique (6 lessons) versus massage (without sciatica population)

Figure 450: Quality of life: SF-36 Physical (1 year)

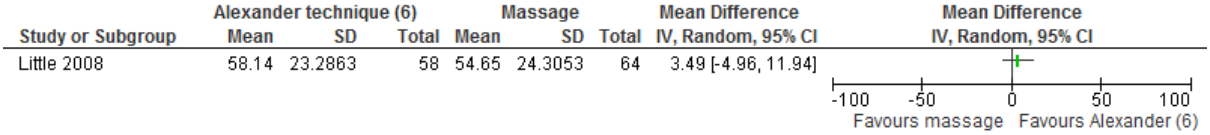


Figure 451: Quality of life: SF-36 Mental (1 year)

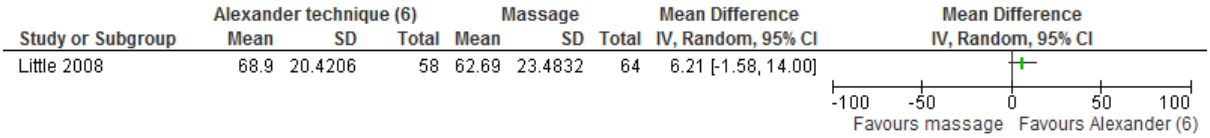


Figure 452: Von Korff Pain Scale 0-10 (1 year)

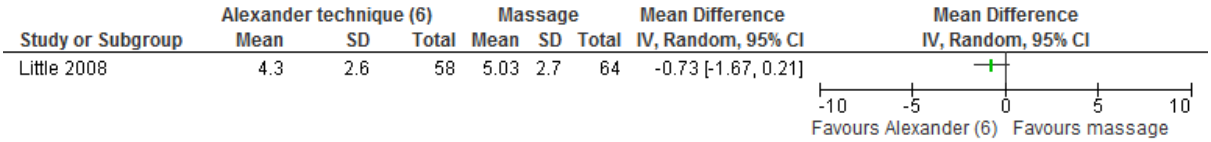


Figure 453: Roland Morris Disability Scale (1 year)

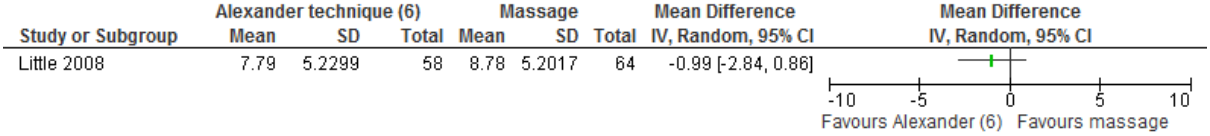


Figure 454: Primary care contacts (1 year)

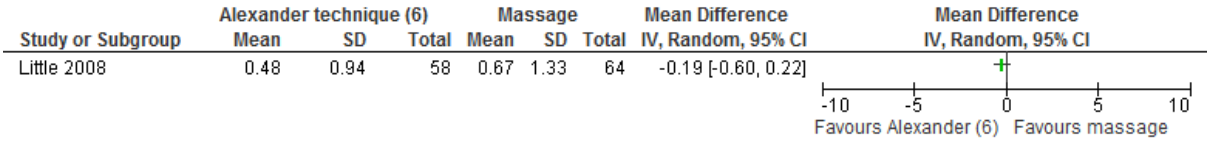
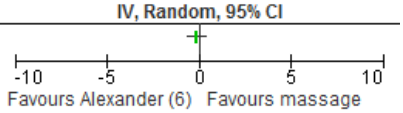


Figure 455: Prescriptions (1 year)

Study or Subgroup	Alexander technique (6) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	0.64	1.17	58	0.77	1.65	64	-0.13 [-0.63, 0.37]



K.6.8 Alexander technique (24 lessons) versus massage (without sciatica population)

Figure 456: Quality of life: SF-36 Physical (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	67.93	22.8075	61	54.65	24.3053	64	13.28 [5.02, 21.54]

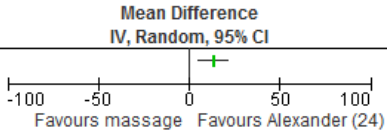


Figure 457: Quality of life: SF-36 Mental (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	68.54	23.127	61	62.69	23.4832	64	5.85 [-2.32, 14.02]

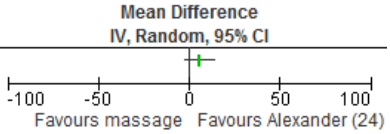


Figure 458: Quality of life: SF-36 Mental (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	68.54	23.127	61	62.69	23.4832	64	5.85 [-2.32, 14.02]

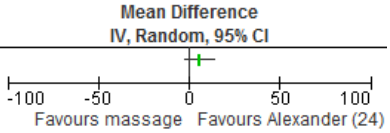


Figure 459: Von Korff Pain Scale 0-10 (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	3.4	2.6	61	5.03	2.7	64	-1.63 [-2.56, -0.70]

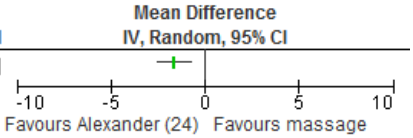


Figure 460: Roland Morris Disability Scale (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	5.09	5.1933	61	8.78	5.2017	64	-3.69 [-5.51, -1.87]

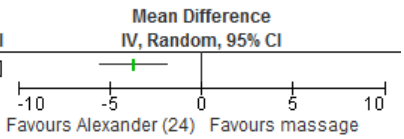


Figure 461: Primary care contacts (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	0.44	0.91	61	0.67	1.33	64	-0.23 [-0.63, 0.17]

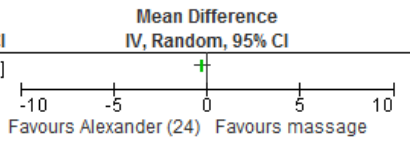
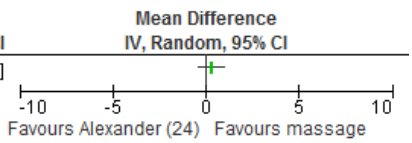


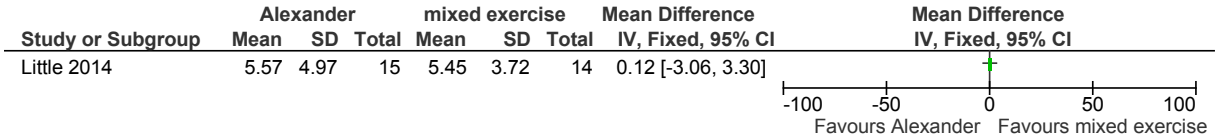
Figure 462: Prescriptions (1 year)

Study or Subgroup	Alexander technique (24) Mean	SD	Total	Massage Mean	SD	Total	Mean Difference IV, Random, 95% CI
Little 2008	1.07	2.24	61	0.77	1.65	64	0.30 [-0.39, 0.99]



K.6.9 Alexander technique (10 sessions) versus mixed exercise (overall population)

Figure 463: Function (RMDQ 0-24) <4 months



K.6.10 Combined interventions – postural therapy adjunct

K.6.10.1 Postural therapy + MBR versus MBR only (with sciatica population)

Figure 464: Back pain severity (NRS, 0-10) < 4 months

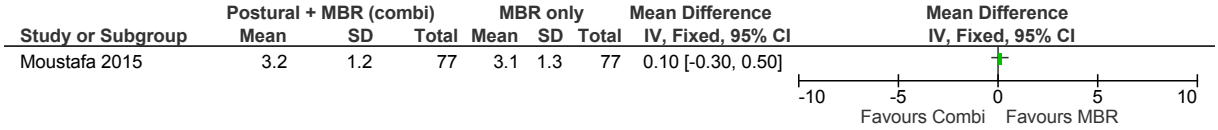


Figure 465: Leg pain severity (NRS, 0-10) < 4 months

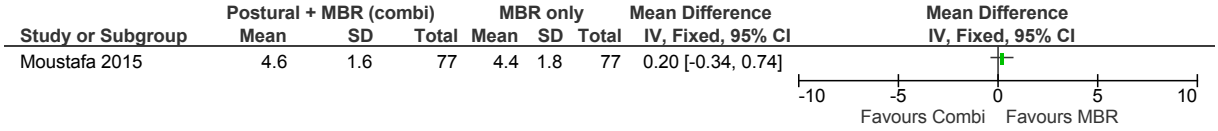
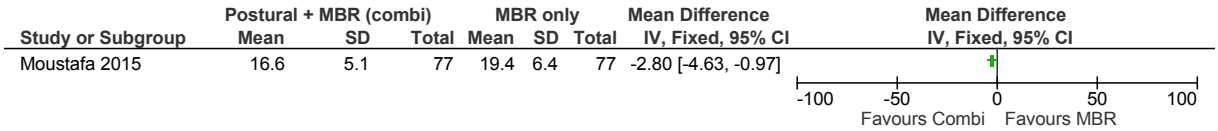


Figure 466: Function (ODI, 0-100) < 4 months



K.6.10.2 Alexander technique (6 lessons) + self-management (exercise prescription) versus usual care

Figure 467: Function (RMDQ 0-24) (1 year) [mean difference from control]

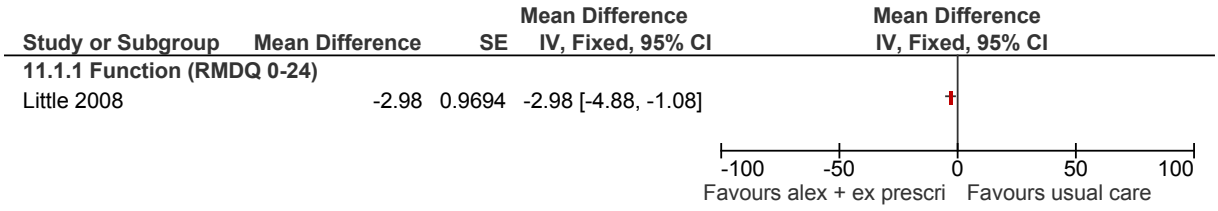


Figure 468: Pain (von Korff 0-10) (1 year) [mean difference from control]

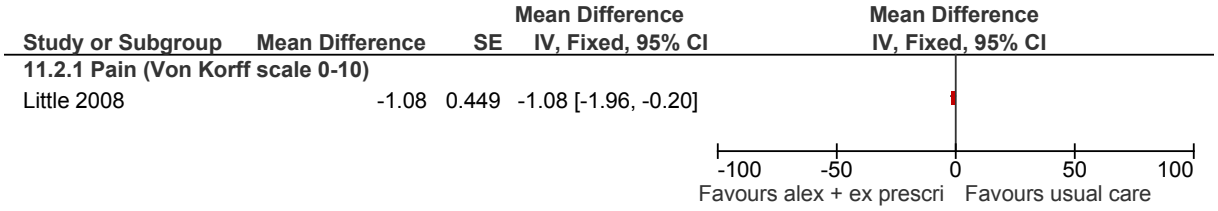


Figure 469: Quality of life (SF-36 mental) (1 year) [mean difference from control]

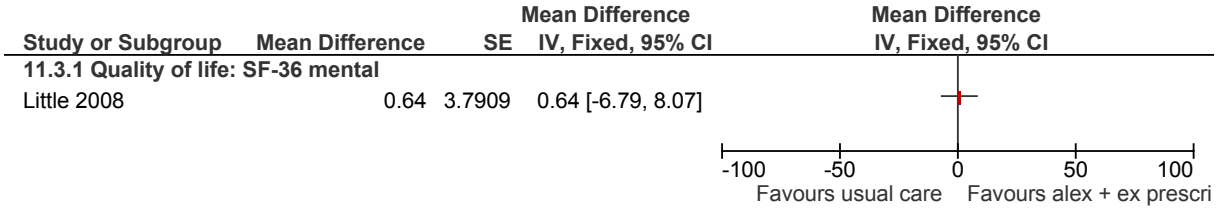
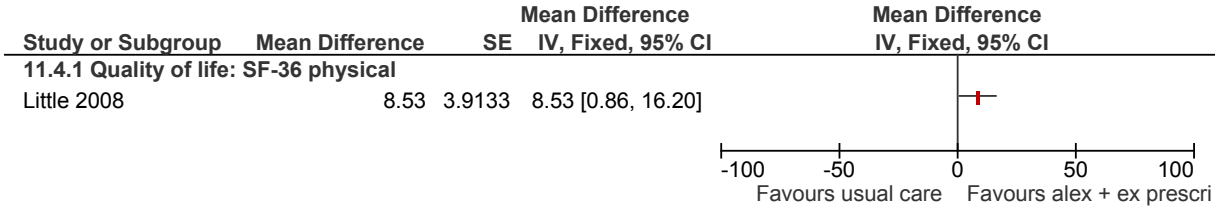


Figure 470: Quality of life (SF-36 physical) (1 year) [mean difference from control]



K.6.10.3 Alexander technique (24 lessons) + self-management (exercise prescription) versus usual care

Figure 471: Function (RMDQ 0-24) (1 year) [mean difference from control]

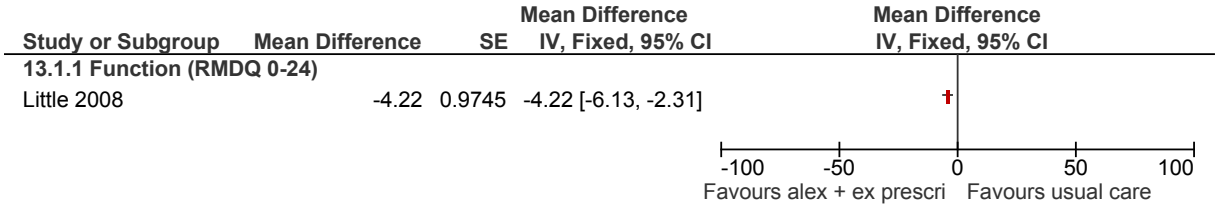


Figure 472: Pain (von Korff 0-10) (1 year) [mean difference from control]

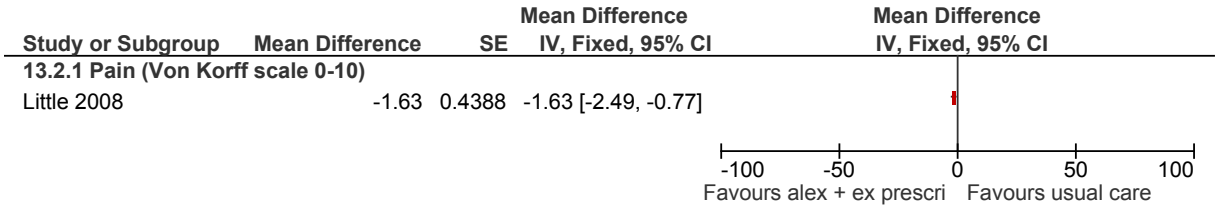


Figure 473: Quality of life (SF-36 mental) (1 year) [mean difference from control]

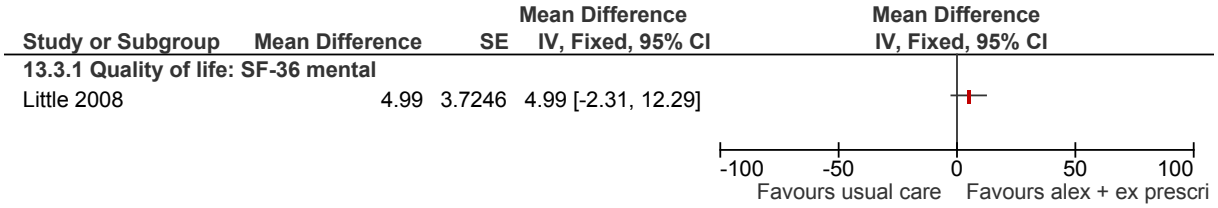
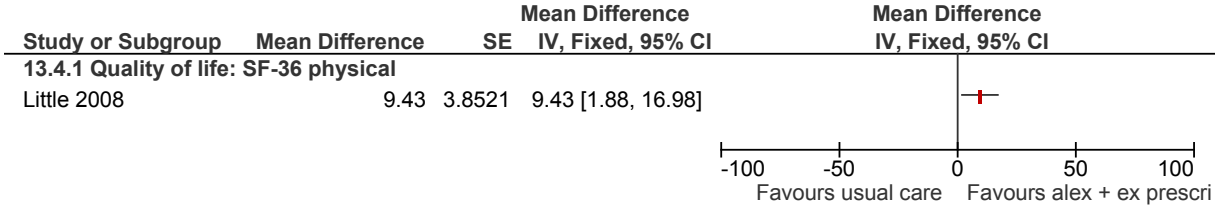


Figure 474: Quality of life (SF-36 physical) (1 year) [mean difference from control]



K.6.10.4 Alexander technique (10 sessions) + mixed exercise versus usual care (overall population)

Figure 475: Function (RMDQ 0-24) <4 months [mean difference from control]

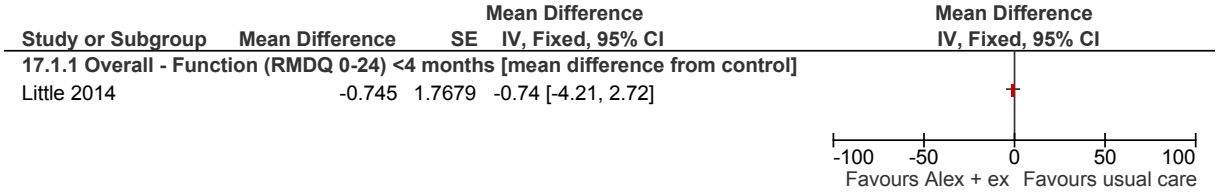


Figure 476: Pain (von Korff 0-100) <4 months [mean difference from control]

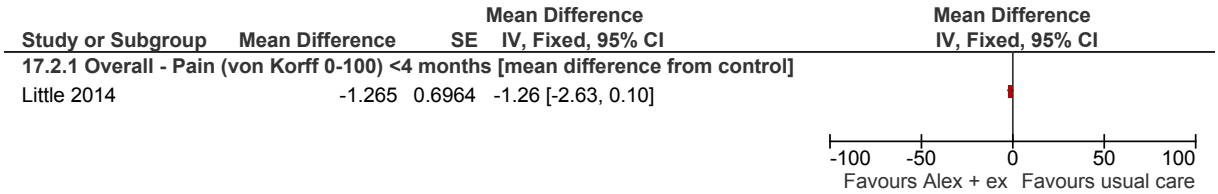


Figure 477: Function (RMDQ 0-24) <4 months [mean difference from control]

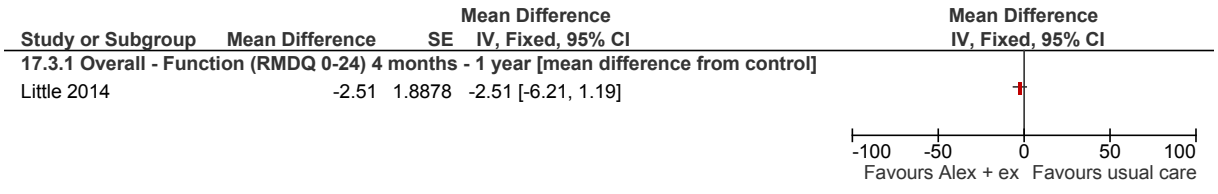
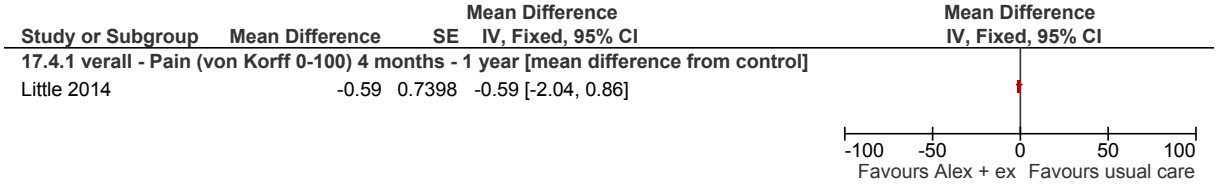
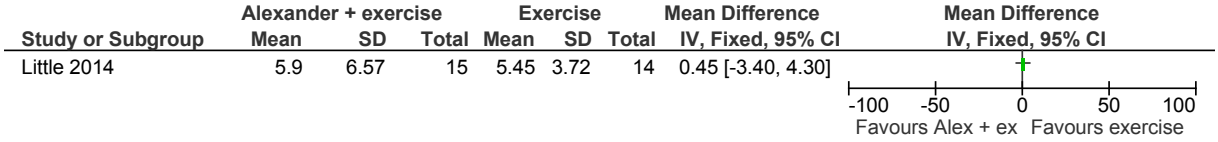


Figure 478: Pain (von Korff 0-100) <4 months [mean difference from control]



K.6.10.5 Alexander technique (10 sessions) + mixed exercise versus mixed exercise (overall population)

Figure 479: Function (RMDQ 0-24) <4 months



K.7 Orthotics

K.7.1 Lumbar belts versus usual care (low back pain without sciatica)

Figure 480: Function: EIFEL (Roland Morris disability questionnaire) (3 months)

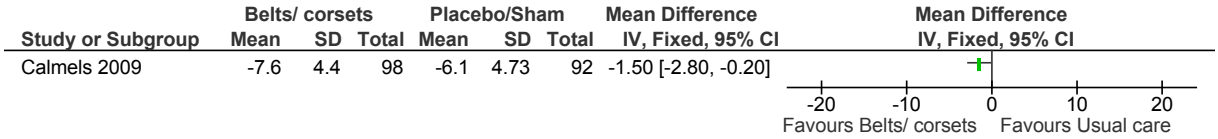


Figure 481: Pain: Visual analogue scale (3 months)

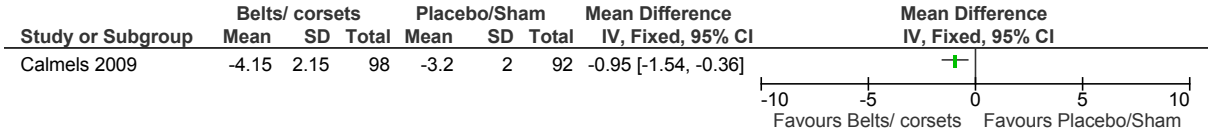
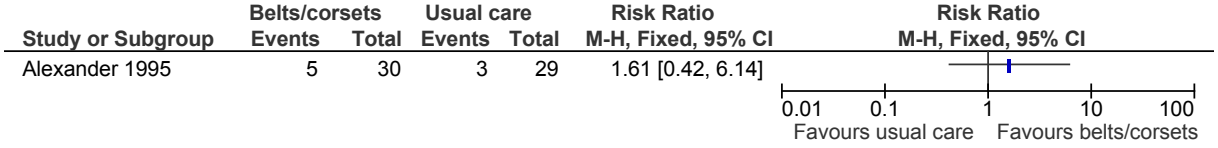


Figure 482: Responder criteria (Pain: completely improved) (3 months)



K.7.2 Corsets versus usual care (low back pain without sciatica)

Figure 483: Function: improvement in Oswestry Disability Index (2 weeks)

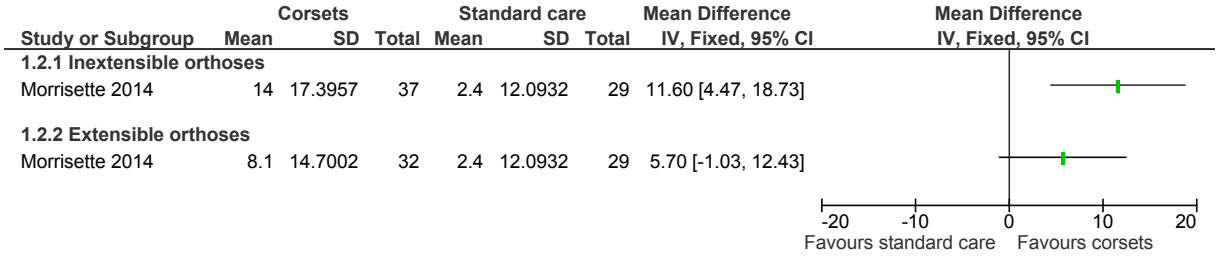
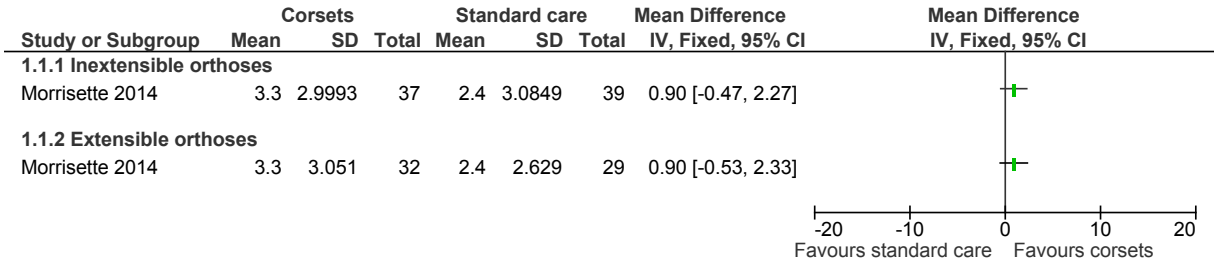


Figure 484: Pain: improvement in Numerical Pain Rating Scale (2 weeks)



K.7.3 Belts/corsets versus manipulation (low back pain without sciatica)

Figure 485: Function: ODI (3 weeks)

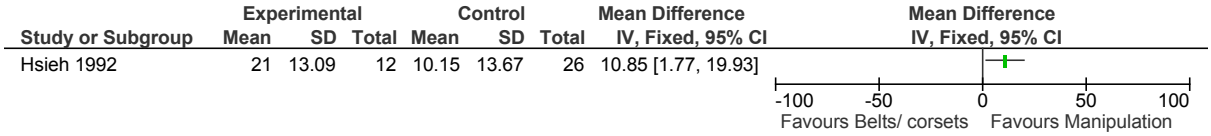


Figure 486: Pain: Visual analogue scale (3 weeks)

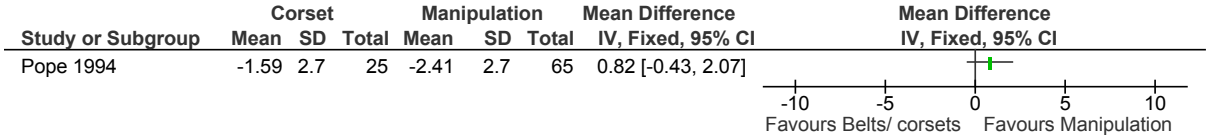
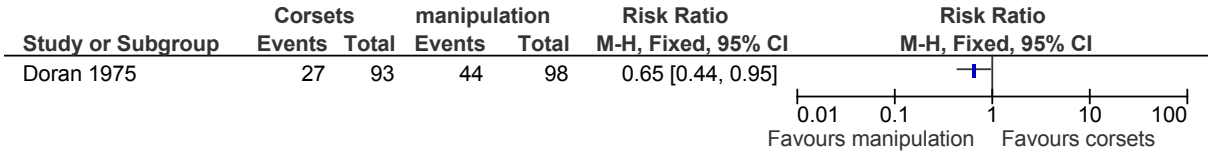


Figure 487: Responder criteria (pain markedly improved and completely improved) (3 months)



K.7.4 Belts/ corsets versus massage (low back pain without sciatica)

Figure 488: Function: ODI (3 weeks)

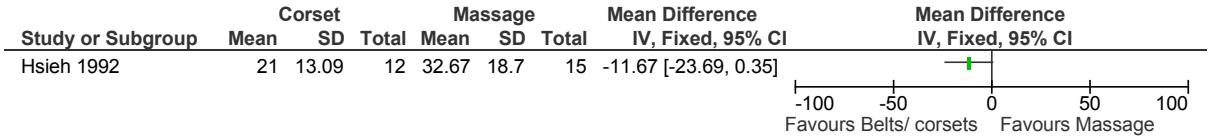
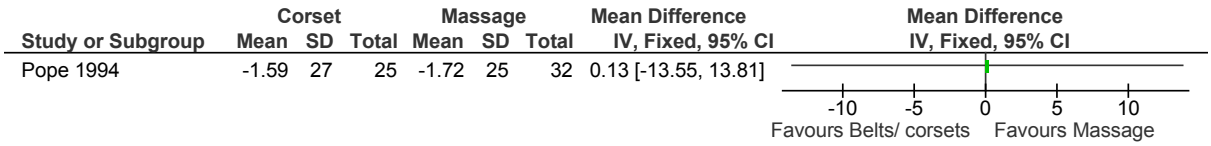
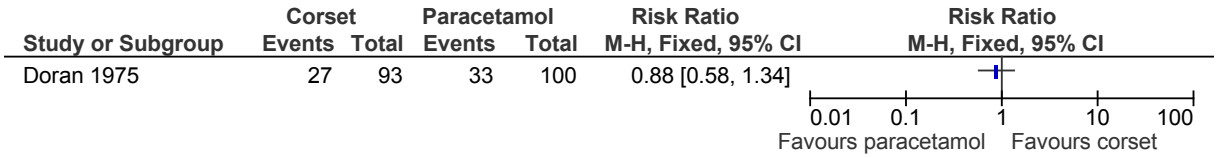


Figure 489: Pain: Visual analogue scale (3 weeks)



K.7.5 Corsets versus non-opioid analgesic (low back pain without sciatica)

Figure 490: Responder criteria (pain markedly improved and completely improved) (3 months)



K.7.6 Foot orthotics versus placebo/sham (low back pain with sciatica)

Figure 491: Function: ODI (4 weeks)

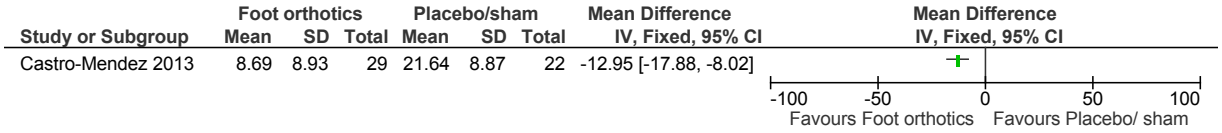
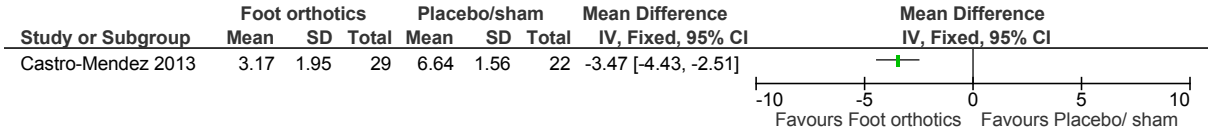


Figure 492: Pain: Visual analogue scale (4 weeks)



Note: Error in the study: reports 0-100 pain scale for pain but should be 0-10

K.7.7 Rocker sole shoes versus placebo/sham (flat sole shoes) (low back pain without sciatica)

Figure 493: Function: Roland Morris disability questionnaire (6 weeks)

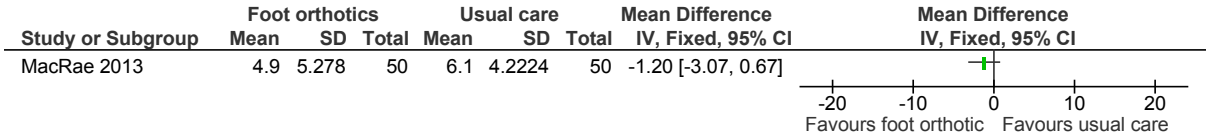


Figure 494: Function: Roland Morris disability questionnaire (12 months)

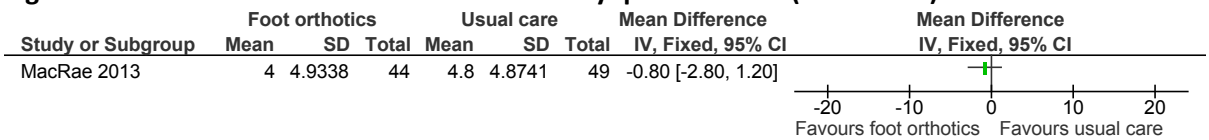


Figure 495: Pain: Numerical rating scale (6 weeks)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Std. Mean Difference IV, Fixed, 95% CI
MacRae 2013	4.6	2.4631	50	4.9	2.1112	50	-0.13 [-0.52, 0.26]

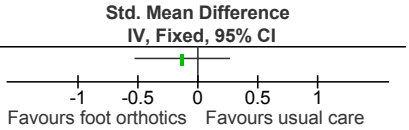


Figure 496: Pain: Numerical rating scale (12 months)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Std. Mean Difference IV, Fixed, 95% CI
MacRae 2013	4.2	3.2892	44	4.2	2.7852	49	0.00 [-0.41, 0.41]

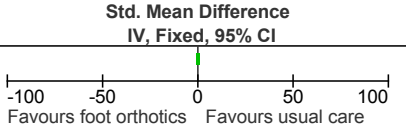


Figure 497: Anxiety: Hospital anxiety and depression (6 weeks)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
MacRae 2013	7.4	5.9818	50	6.1	3.5187	50	1.30 [-0.62, 3.22]

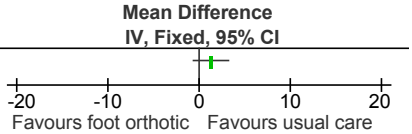


Figure 498: Anxiety: Hospital anxiety and depression (12 months)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Std. Mean Difference IV, Fixed, 95% CI
MacRae 2013	6.3	5.2627	44	6	3.8296	49	0.07 [-0.34, 0.47]

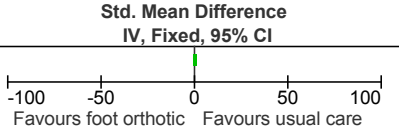


Figure 499: Depression: Hospital anxiety and depression (6 weeks)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
MacRae 2013	4.1	5.278	50	3.2	3.1668	50	0.90 [-0.81, 2.61]

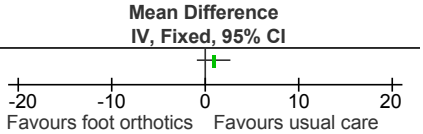


Figure 500: Depression: Hospital anxiety and depression (12 months)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
MacRae 2013	4.3	5.2627	44	3.5	2.7852	49	0.80 [-0.94, 2.54]

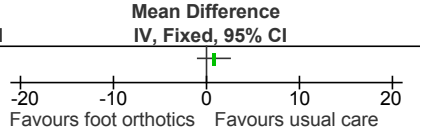


Figure 501: Quality of life: EQ-5D-3L (6 weeks)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
MacRae 2013	0.6	0.3481	49	0.7	0.3519	50	-0.10 [-0.24, 0.04]

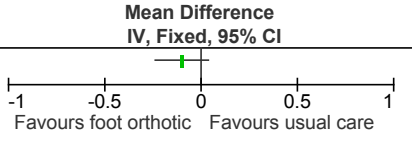
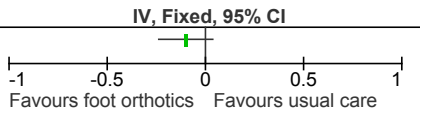


Figure 502: Quality of life: EQ-5D-3L (12 months)

Study or Subgroup	Foot orthotics Mean	SD	Total	Usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
MacRae 2013	0.7	0.3289	44	0.8	0.3481	49	-0.10 [-0.24, 0.04]



K.7.8 Foot orthotics versus usual care (low back pain with sciatica)

Figure 503: Function: ODI (6 weeks)

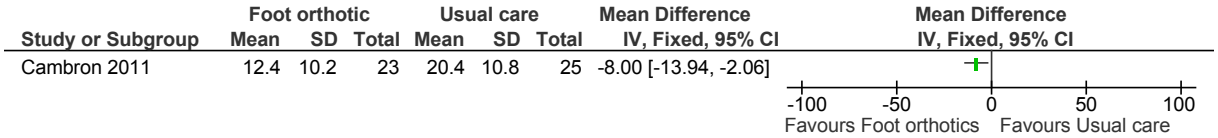
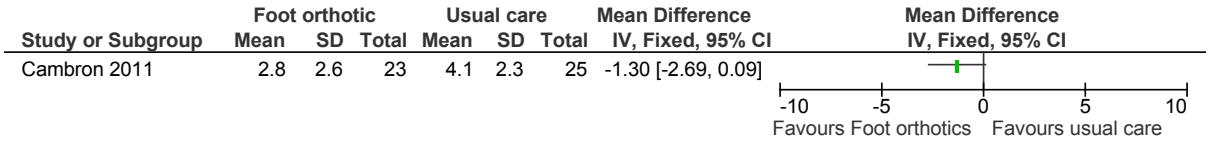
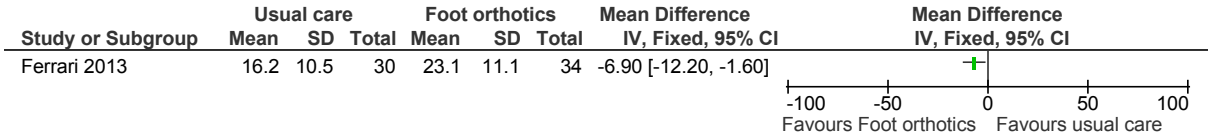


Figure 504: Pain: visual analogue scale (6 weeks)



K.7.9 Foot orthotics versus usual care (non-randomised study) (low back pain with sciatica)

Figure 505: Function: ODI (8 weeks)



K.7.10 Low back pain with or without sciatica

K.7.10.1 Orthotics (corset) + electrotherapy + manual therapy (massage + traction) compared to electrotherapy + manual therapy (massage + traction)

Figure 506: Pain severity (0-100 VAS converted to 0-10 scale) ≤ 4 months

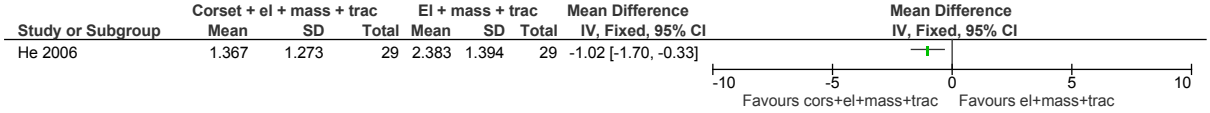
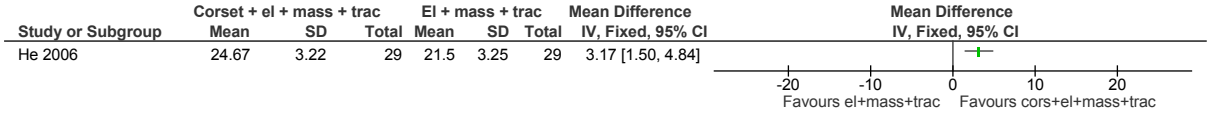


Figure 507: Function (Japanese Orthopaedics Academic Association lumbar disease grade, 0-29) ≤ 4 months



K.8 Manual therapies

K.8.1 Soft tissue techniques

K.8.1.1 Soft tissue techniques (massage) versus sham

K.8.1.1.1 Population – low back pain without sciatica

Figure 508: Pain severity (VAS 0-10) < 4 months

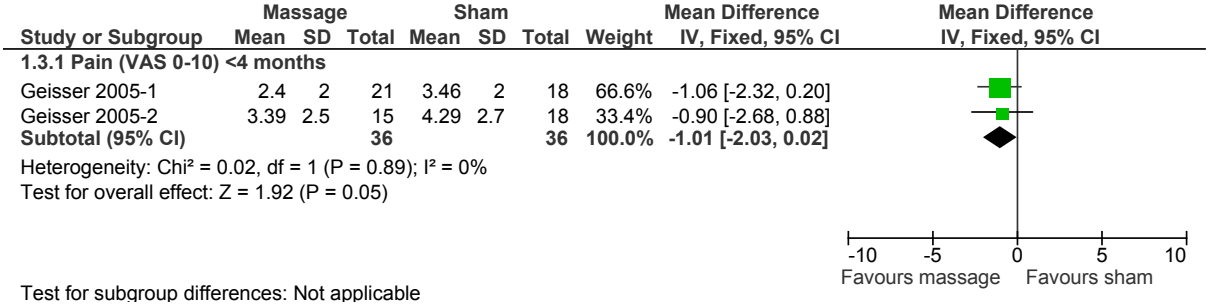


Figure 509: Pain severity (McGill score 0-78) < 4 months

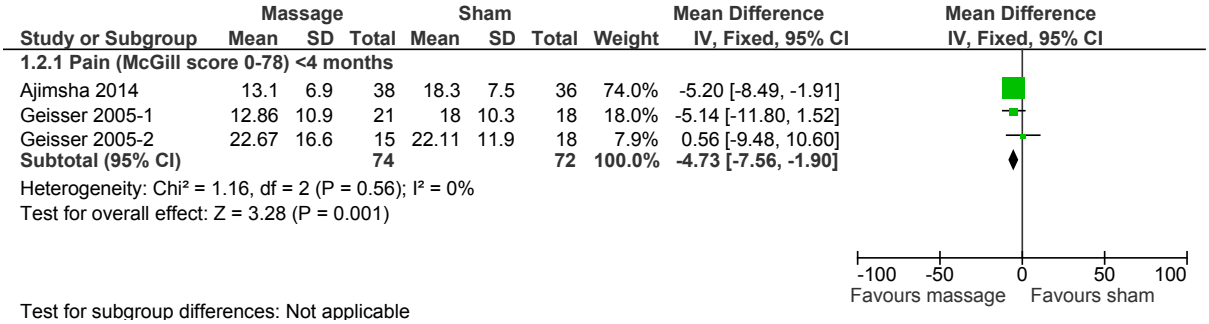
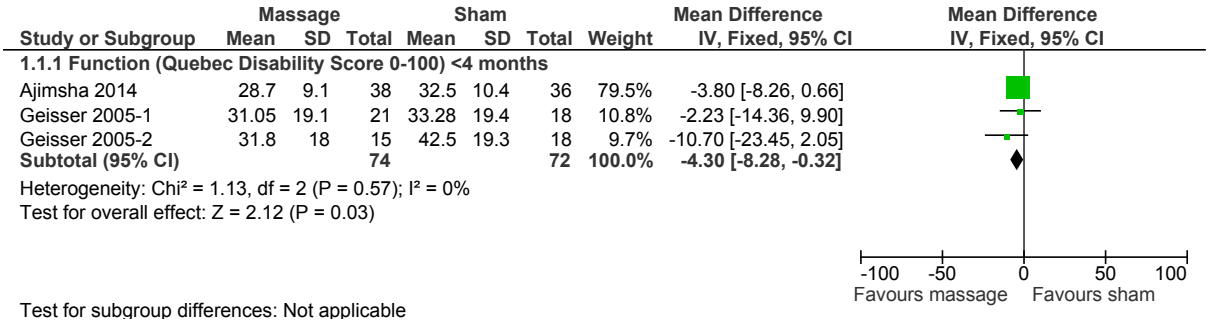


Figure 510: Function (Quebec Disability score 0-100) < 4 months



K.8.1.2 Soft tissue techniques (massage) versus usual care

K.8.1.2.1 Population – low back pain without sciatica

Figure 511: Pain severity (Von Korff scale, 0-10) ≤4 months

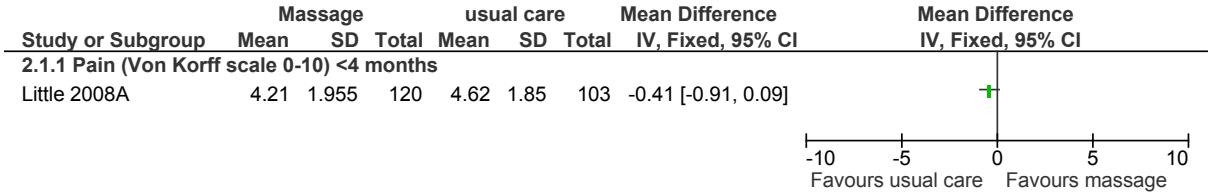


Figure 512: Pain severity (Von Korff scale, 0-10) > 4 months

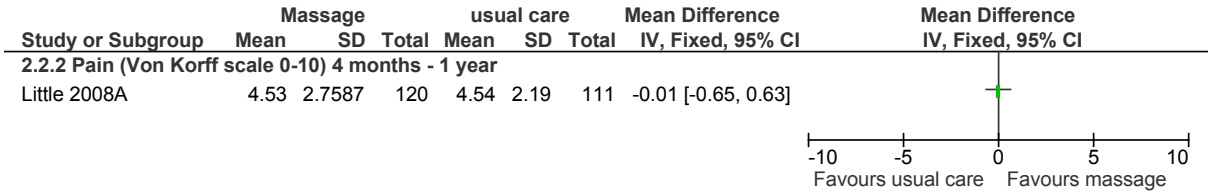


Figure 513: Quality of life (SF-36, 0-100) ≤4 months

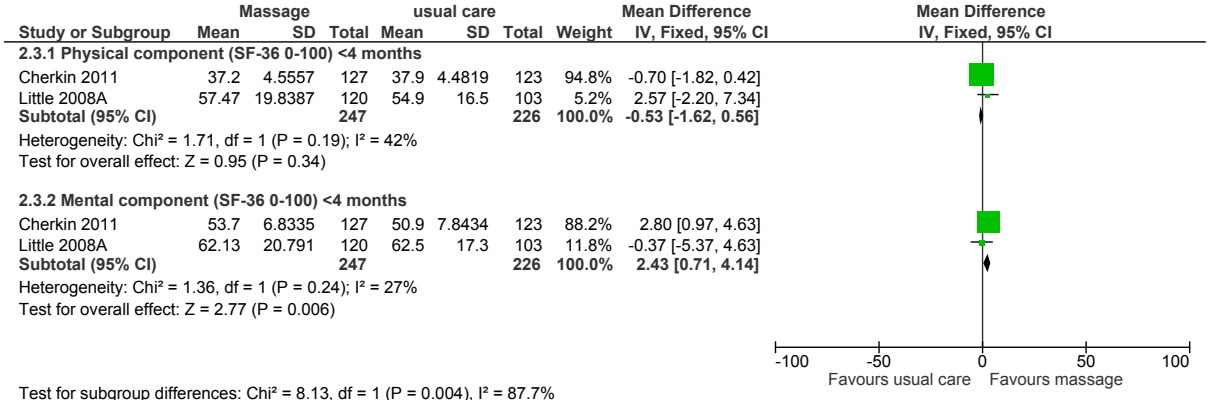


Figure 514: Quality of life (SF-36, 0-100) >4 months

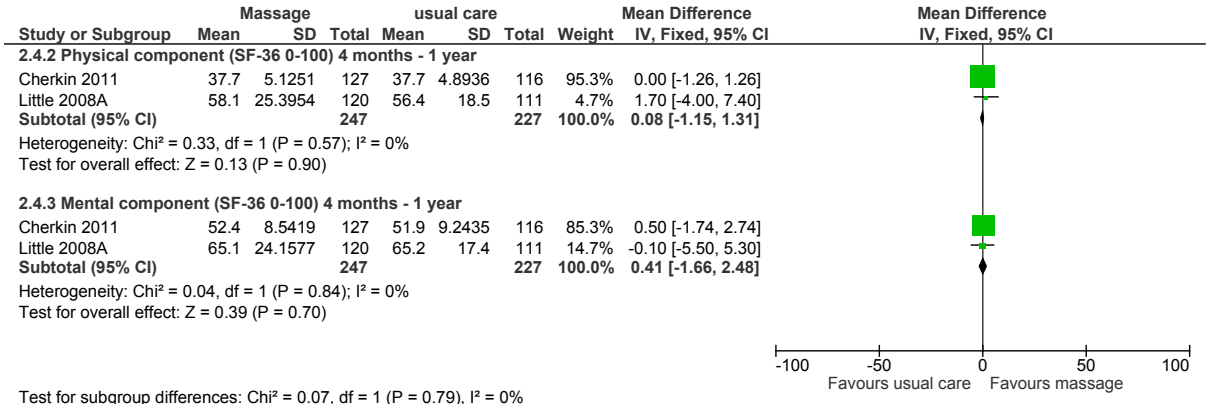


Figure 515: Function (RMDQ, 0-24) ≤4 months

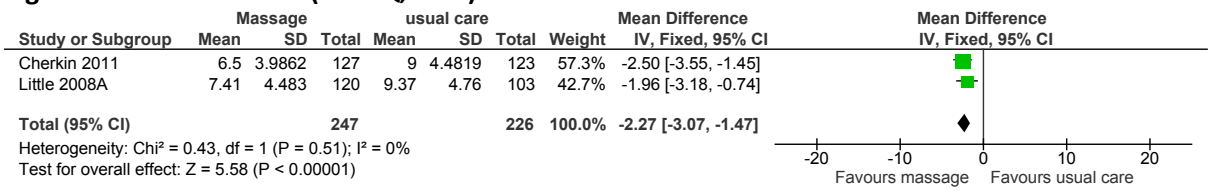
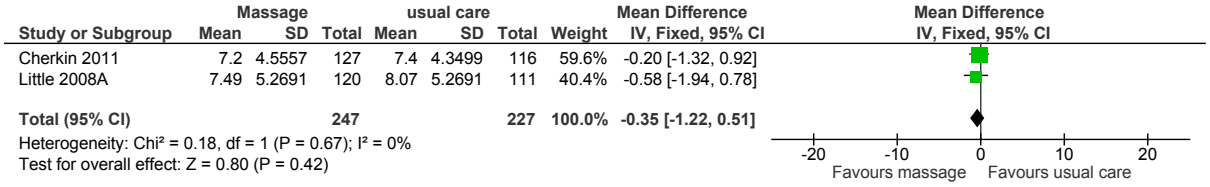


Figure 516: Function (RMDQ, 0-24) >4 months



K.8.1.3 Soft tissue technique (massage) versus acupuncture

K.8.1.3.1 Population – low back pain without sciatica

Figure 517: Function (RMDQ, 0-24) ≤4 months

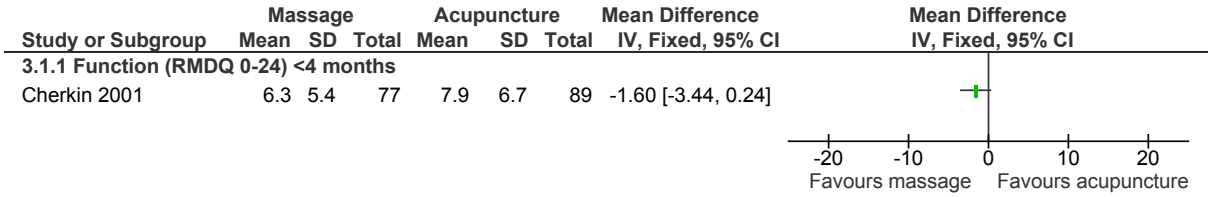
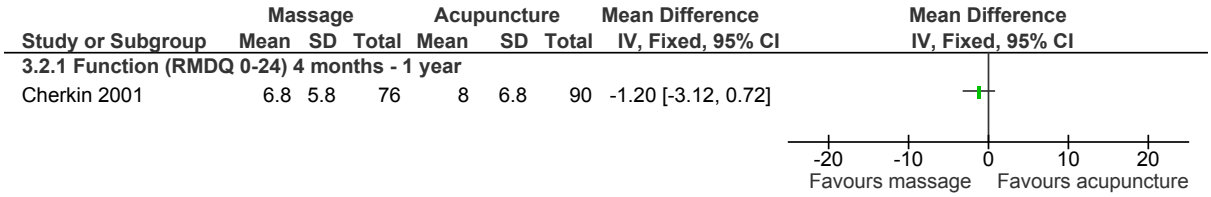


Figure 518: Function (RMDQ, 0-24) >4 months



K.8.1.4 Soft tissue technique (massage) versus self-management

K.8.1.4.1 Population – low back pain without sciatica

Figure 519: Function (RMDQ, 0-24) ≤4 months

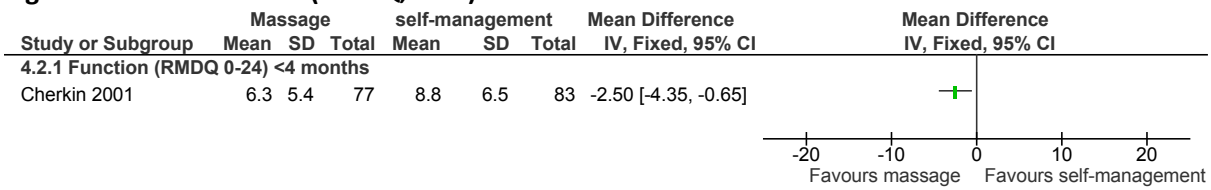
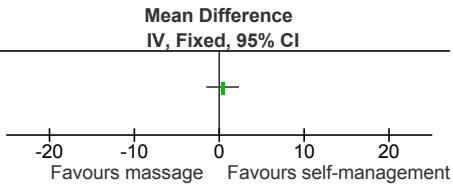


Figure 520: Function (RMDQ, 0-24) >4 months

Study or Subgroup	Massage Mean	SD	Total	self-management Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
4.3.1 Function (RMDQ 0-24) 4 months - 1 year							
Cherkin 2001	6.8	5.8	76	6.4	6	83	0.40 [-1.43, 2.23]



K.8.2 Traction

K.8.2.1 Traction versus sham

K.8.2.1.1 Population – mixed population of low back pain with or without sciatica

Figure 521: Pain severity (VAS, 0-10) ≤4 months

Study or Subgroup	Traction Mean	SD	Total	sham Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
5.1.1 Pain VAS (0-10) <4 months (mechanical traction)							
Beurskens 1997	2.85	3.192	77	2.288	3.192	73	0.56 [-0.46, 1.58]
5.1.2 Pain VAS (0-10) <4 months (inversion traction)							
Kim 2013	2.14	0.66	14	3.73	1.53	15	-1.59 [-2.44, -0.74]

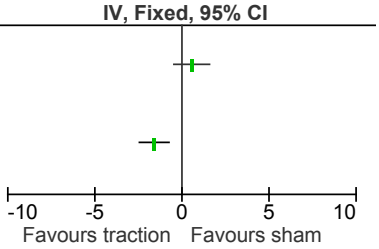


Figure 522: Pain severity (VAS, 0-10) >4 months

Study or Subgroup	Traction Mean	SD	Total	sham Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
5.2.1 Pain VAS (0-10) 4 months - 1 year							
Beurskens 1997	2.38	3.7539	76	2.01	3.7539	72	0.37 [-0.84, 1.58]

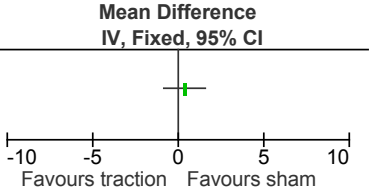


Figure 523: Function (RMDQ, 0-24) ≤4 months

Study or Subgroup	Traction Mean	SD	Total	sham Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
5.3.1 Function (RMDQ 0-24) <4 months							
Beurskens 1997	4.4	5.9343	77	4.3	5.9343	73	0.10 [-1.80, 2.00]

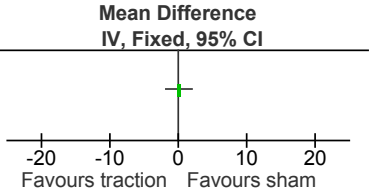


Figure 524: Function (RMDQ, 0-24) >4 months

Study or Subgroup	Traction Mean	SD	Total	sham Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
5.4.1 Function (RMDQ 0-24) 4 months - 1 year							
Beurskens 1997	4.7	5.5843	76	4	5.5843	72	0.70 [-1.10, 2.50]

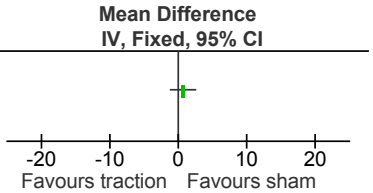


Figure 525: Healthcare utilisation (other medical treatment shought) ≤4 months

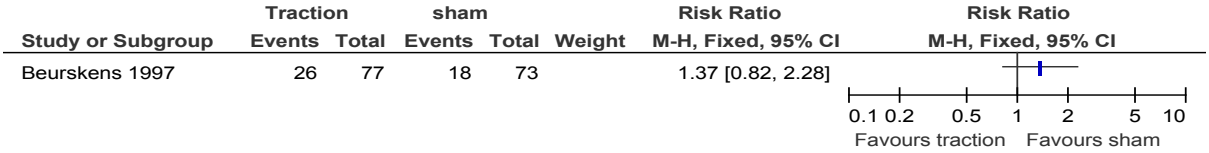
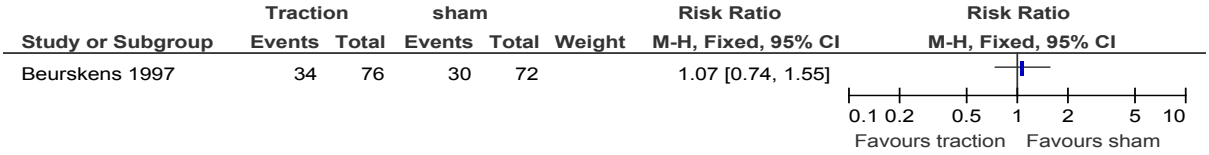
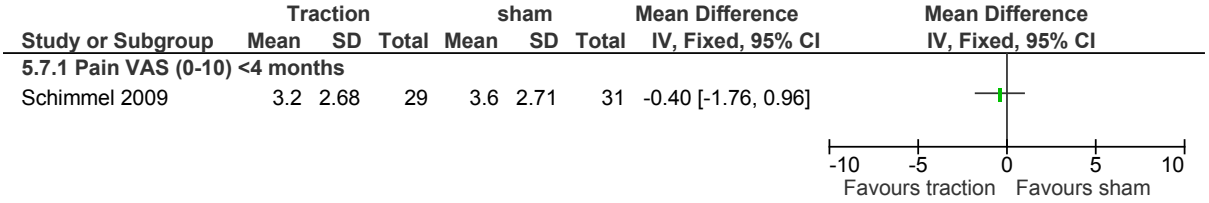


Figure 526: Healthcare utilisation (other medical treatment shought) >4 months



K.8.2.1.2 Population – low back pain without sciatica

Figure 527: Pain severity (VAS, 0-10) ≤4 months



K.8.2.2 Traction versus usual care

K.8.2.2.1 Population – mixed population of low back pain with or without sciatica

Figure 528: Pain severity (VAS, 0-10) ≤4 months

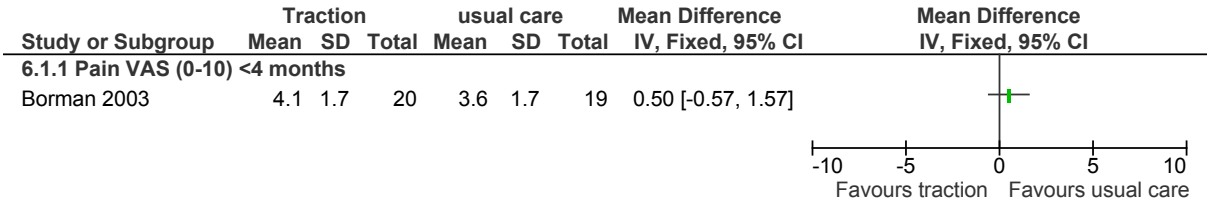
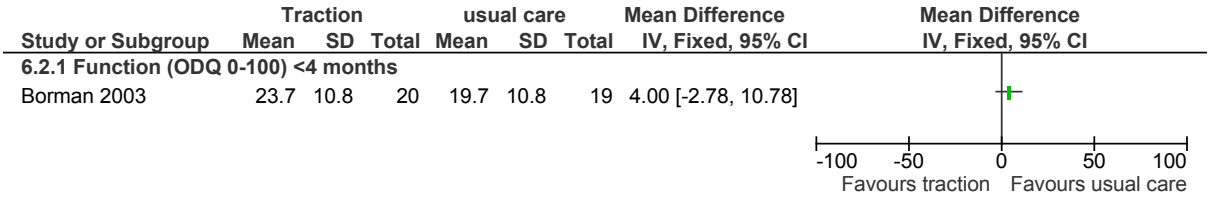


Figure 529: Function (ODI, 0-100) ≤4 months



K.8.2.2.2 Population – low back pain with sciatica

Figure 530: Quality of life (SF-36, 0-100) ≤4 months

Study or Subgroup	Traction Mean	SD	Total	usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
6.3.2 General health							
Olah 2008	57.35	24.76	18	35.44	21.3	18	21.91 [6.82, 37.00]
6.3.3 Physical function							
Olah 2008	68.24	27.27	18	53.33	21.82	18	14.91 [-1.22, 31.04]
6.3.4 Physical role limitation							
Olah 2008	58.82	42.34	18	31.94	35.15	18	26.88 [1.46, 52.30]
6.3.5 Bodily pain							
Olah 2008	64.18	20.5	18	48.11	16.5	18	16.07 [3.91, 28.23]
6.3.6 Vitality							
Olah 2008	62.06	28.56	18	41.39	25.19	18	20.67 [3.08, 38.26]
6.3.7 Social function							
Olah 2008	74.88	24.97	18	56.33	30.25	18	18.55 [0.43, 36.67]
6.3.8 Mental health							
Olah 2008	73.65	26	18	53	30.39	18	20.65 [2.17, 39.13]
6.3.9 Emotional role limitation							
Olah 2008	64.59	43.28	18	27.72	41.61	18	36.87 [9.13, 64.61]

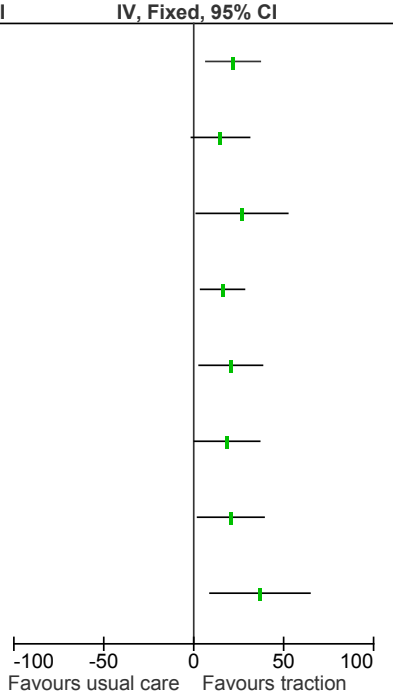


Figure 531: Function (ODI, 0-100) ≤4 months

Study or Subgroup	Traction Mean	SD	Total	usual care Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
6.7.1 Function (ODQ 0-100) <4 months								
Fritz 2008	28.3	19.3	31	25.6	19.9	33	50.0%	2.70 [-6.91, 12.31]
Olah 2008	81.59	15.55	18	72.33	13.83	18	50.0%	9.26 [-0.35, 18.87]
Subtotal (95% CI)			**49**			**51**	**100.0%**	**5.98 [-0.82, 12.77]**

Heterogeneity: Chi² = 0.90, df = 1 (P = 0.34); I² = 0%
Test for overall effect: Z = 1.72 (P = 0.08)

Test for subgroup differences: Not applicable

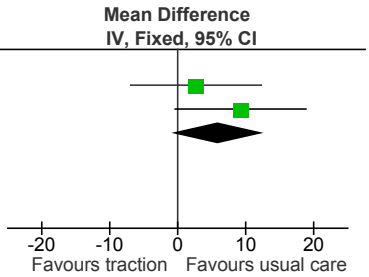
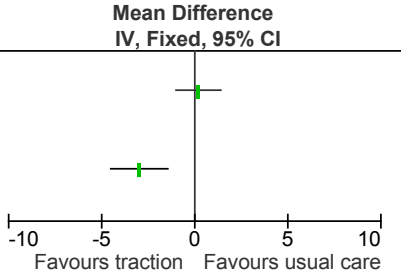


Figure 532: Pain severity (VAS, 0-10) ≤4 months

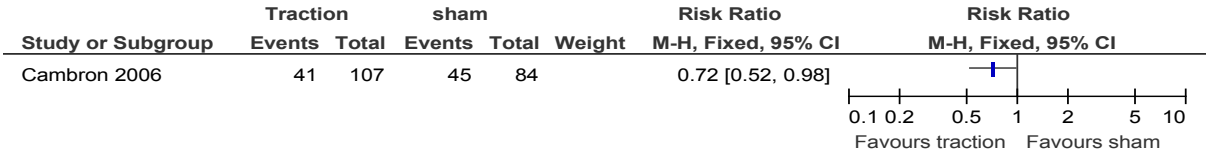
Study or Subgroup	Traction Mean	SD	Total	usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
6.6.1 Pain VAS (0-10) <4 months (mechanical traction)							
Fritz 2008	3.2	2.5	31	3	2.4	33	0.20 [-1.00, 1.40]
6.6.2 Pain VAS (0-10) <4 months (weightbath traction)							
Olah 2008	2.41	2.48	18	5.39	2.2	18	-2.98 [-4.51, -1.45]



K.8.2.3 Traction versus biomechanical exercise

K.8.2.3.1 Population: mixed population of low back pain with or without sciatica

Figure 533: Healthcare utilisation – visit to other healthcare professionals



K.8.3 Manipulation/mobilisation

K.8.3.1 Manipulation/mobilisation versus sham

K.8.3.1.1 Population – low back pain without sciatica

Figure 534: Quality of life (Euroqol Health State 0-100) ≤4 months

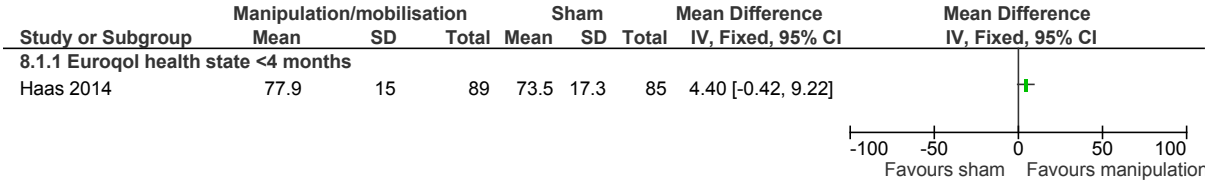


Figure 535: Quality of life (Euroqol Health State 0-100) >4 months

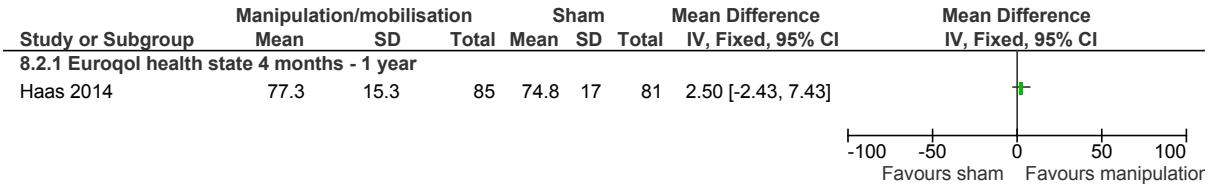


Figure 536: Quality of life (SF-12/SF-36, 0-100) ≤4 months

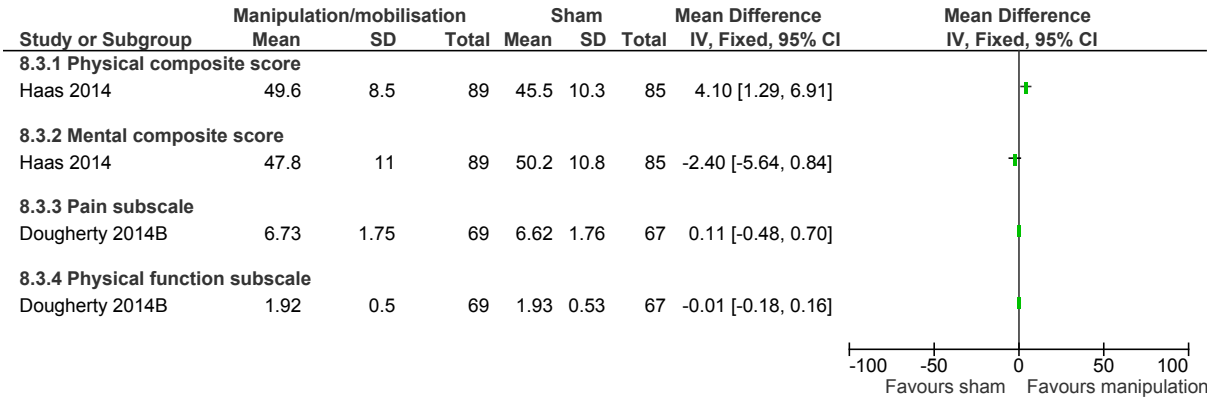


Figure 537: Quality of life (SF-12, 0-100) >4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	Sham Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
8.4.1 Physical composite score							
Haas 2014	52.6	10.3	85	50.7	12	81	1.90 [-1.51, 5.31]
8.4.2 Mental composite score							
Haas 2014	50.6	12.7	85	51.3	12	81	-0.70 [-4.46, 3.06]

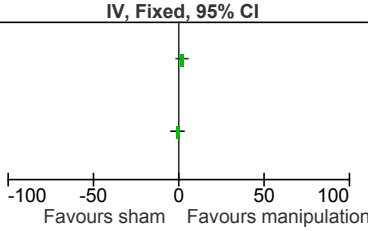


Figure 538: Pain severity (VAS, 0-10) ≤4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
8.5.1 Pain (VAS 0-10) <4 months								
Dougherty 2014B	3.93	2.3	69	4.15	2.3	67	11.2%	-0.22 [-0.99, 0.55]
Haas 2014	2.9	2.08	89	3.79	2.04	85	17.8%	-0.89 [-1.50, -0.28]
Hoiriis 2004	1.71	1.88	34	2.21	2.02	40	8.5%	-0.50 [-1.39, 0.39]
Senna 2011	3.516	0.655	26	3.517	0.762	37	54.1%	-0.00 [-0.35, 0.35]
Triano 1995	1.33	1.59	47	2.17	2.44	39	8.4%	-0.84 [-1.73, 0.05]
Subtotal (95% CI)			**265**			**268**	**100.0%**	**-0.30 [-0.56, -0.04]**

Heterogeneity: Chi² = 7.99, df = 4 (P = 0.09); I² = 50%
Test for overall effect: Z = 2.25 (P = 0.02)

Test for subgroup differences: Not applicable

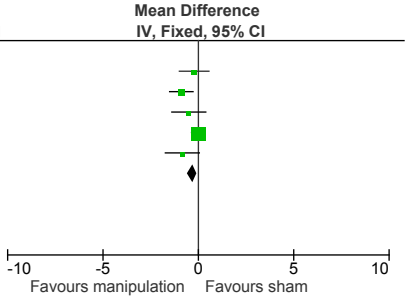


Figure 539: Pain severity (VAS, 0-10) >4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
8.6.1 Pain (VAS 0-10) 4 months - 1 year								
Haas 2014	3.19	2.25	85	3.65	2.18	81	47.0%	-0.46 [-1.13, 0.21]
Senna 2011	3.852	1.249	26	3.829	1.289	37	53.0%	0.02 [-0.61, 0.66]
Subtotal (95% CI)			**111**			**118**	**100.0%**	**-0.20 [-0.67, 0.26]**

Heterogeneity: Chi² = 1.05, df = 1 (P = 0.31); I² = 4%
Test for overall effect: Z = 0.87 (P = 0.39)

Test for subgroup differences: Not applicable

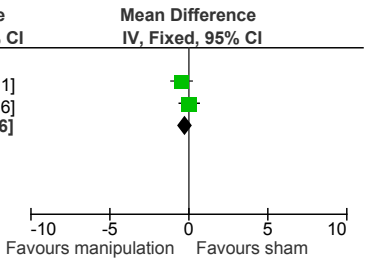


Figure 540: Function (ODI, 0-100) ≤4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
8.7.1 Function (ODQ 0-100) <4 months								
Dougherty 2014B	27.9	14.15	69	32	13.94	67	29.5%	-4.10 [-8.82, 0.62]
Hoiriis 2004	11.94	11.94	46	16.32	12.95	48	26.0%	-4.38 [-9.41, 0.65]
Senna 2011	29.8324	10.7	26	33.4644	12.98	37	19.1%	-3.63 [-9.50, 2.23]
Triano 1995	10.6	11.7	39	14	11.7	42	25.3%	-3.40 [-8.50, 1.70]
Subtotal (95% CI)			**180**			**194**	**100.0%**	**-3.91 [-6.47, -1.34]**

Heterogeneity: Chi² = 0.09, df = 3 (P = 0.99); I² = 0%
Test for overall effect: Z = 2.98 (P = 0.003)

Test for subgroup differences: Not applicable

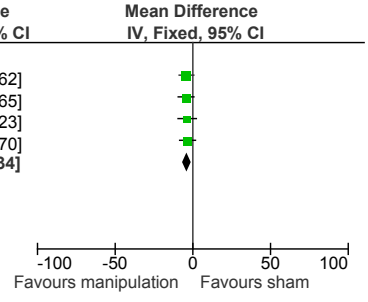


Figure 541: Function (Von Korff disability scale, 0-100) ≤4 months

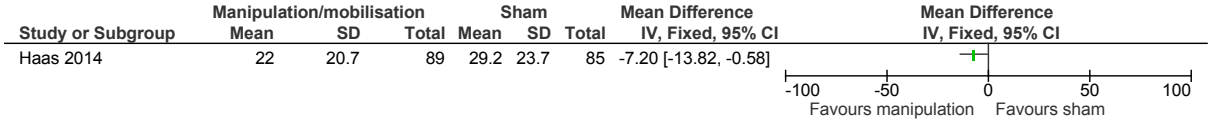


Figure 542: Function (ODI, 0-100) >4 months

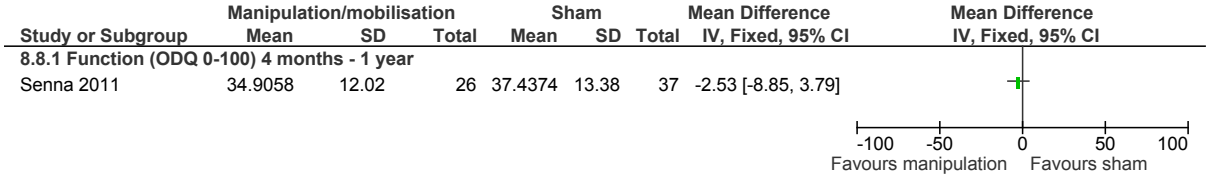
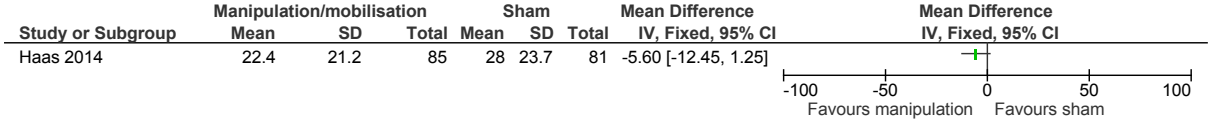


Figure 543: Function (Von Korff disability scale, 0-100) > 4 months



K.8.3.1.3 Population – low back pain with sciatica

Figure 544: Quality of life (SF-36, 0-100) > 4 months

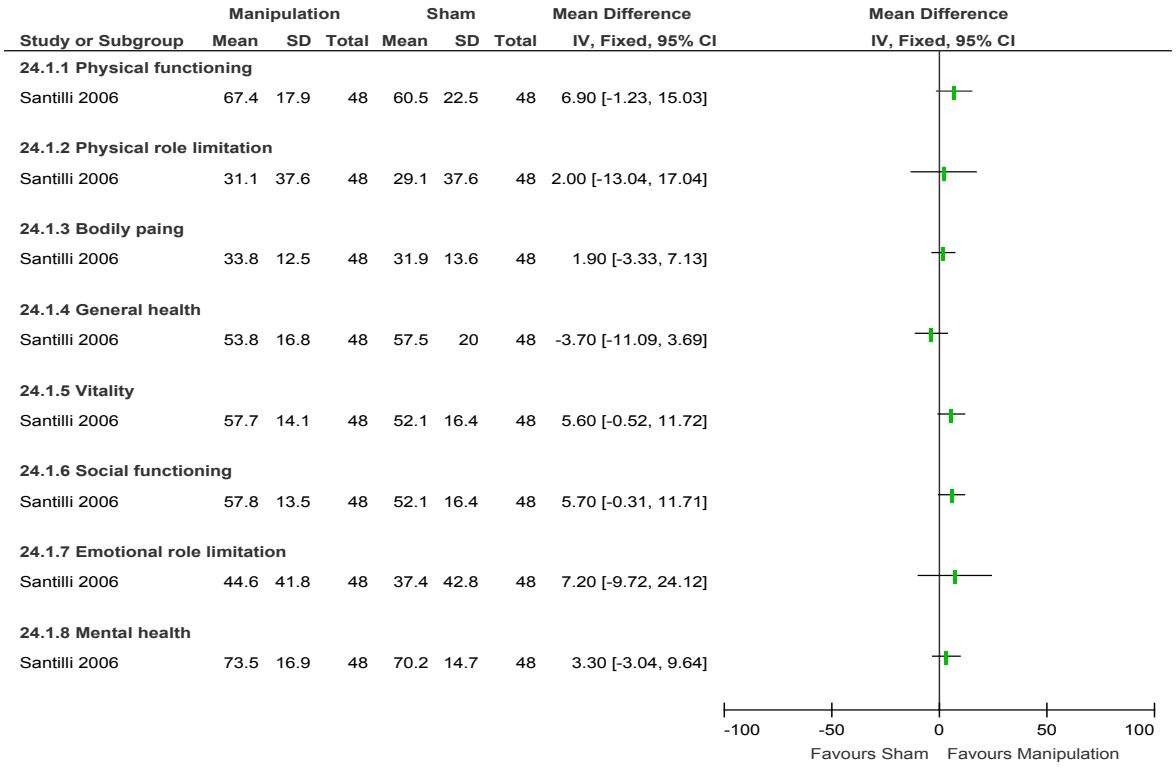
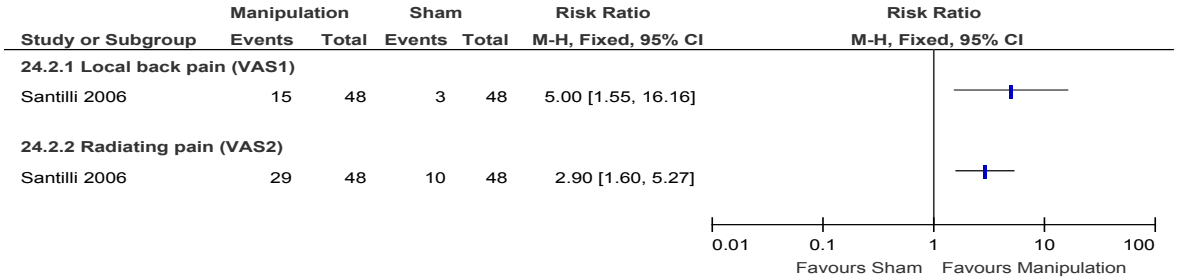


Figure 545: Responder criteria (>30% VAS pain) > 4 months



K.8.3.2 Manipulation/mobilisation versus usual care

K.8.3.2.1 Population – mixed population of low back pain with or without sciatica

Figure 546: Pain severity (VAS, 0-10) ≤4 months

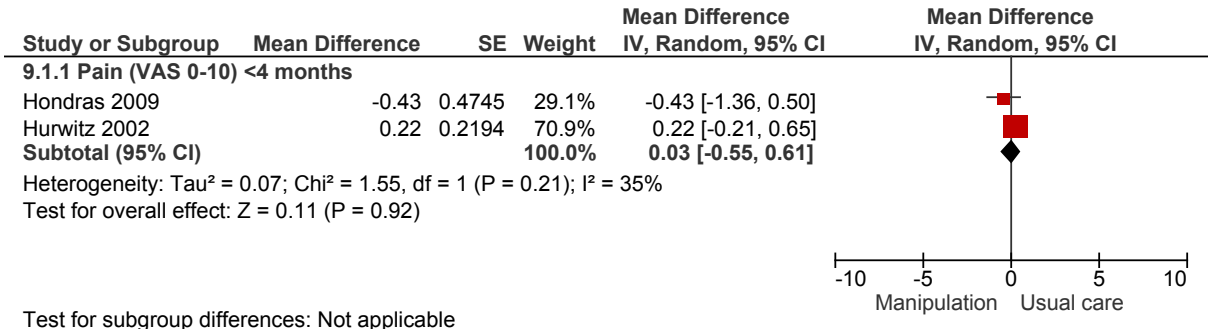


Figure 547: Pain severity (VAS, 0-10) >4 months

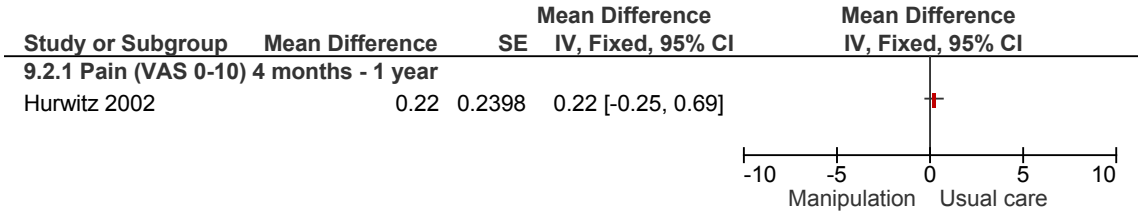


Figure 548: Function (RMDQ, 0-24) ≤4 months

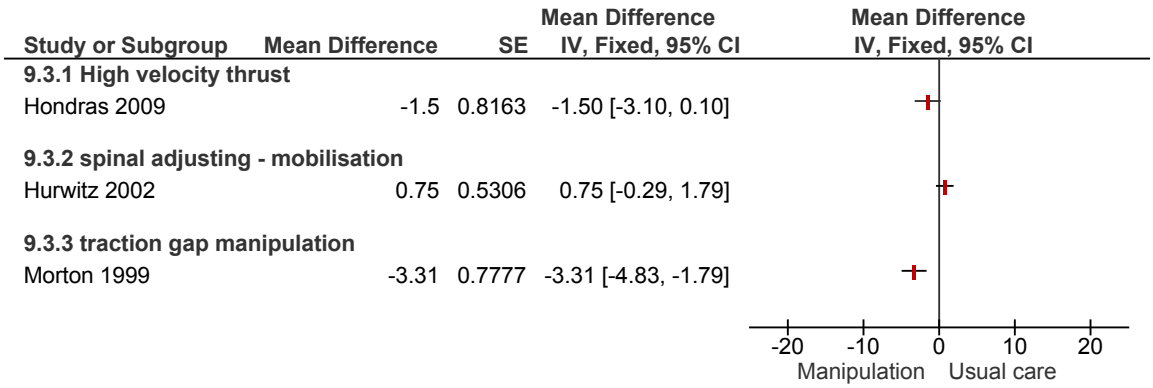


Figure 549: Function (RMDQ, 0-24) >4 months

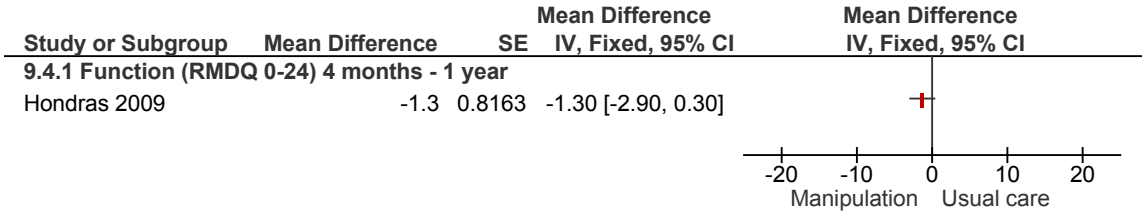


Figure 550: Quality of life (SF-36, 0-100) at ≤4 months

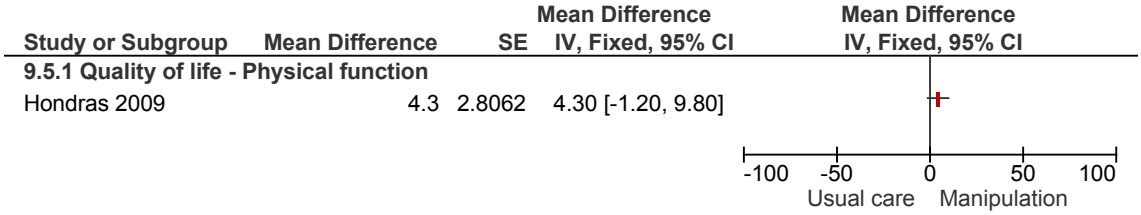


Figure 551: Healthcare utilisation (number of healthcare visits) ≤4 months

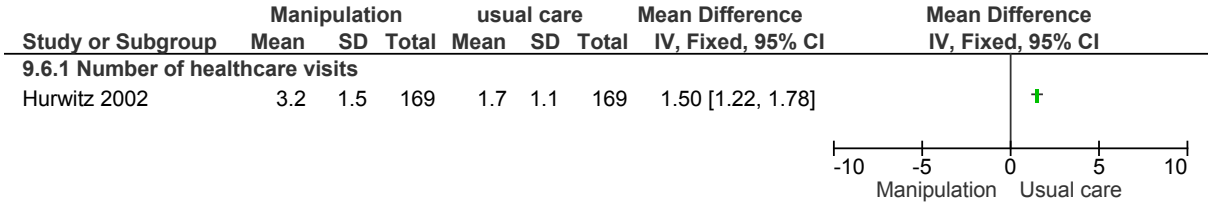


Figure 552: Healthcare utilisation (number of healthcare visits) >4 months

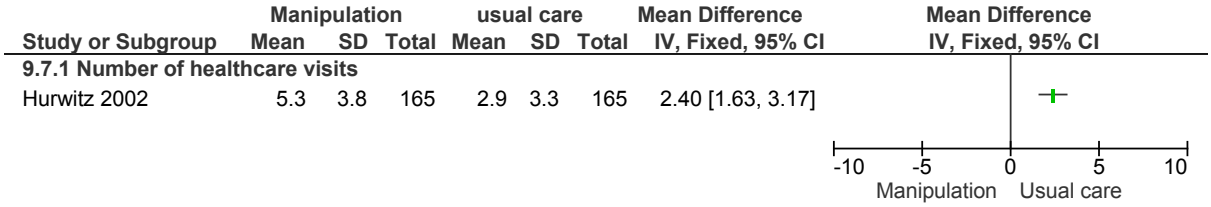
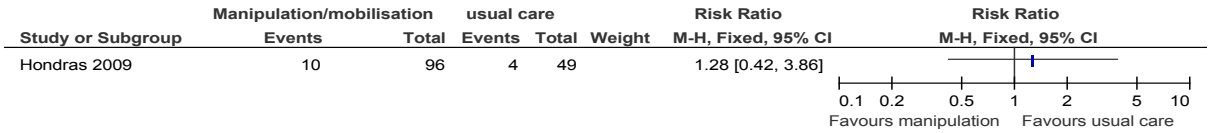


Figure 553: Adverse events ≤4 months



K.8.3.2.2 Population – low back pain with sciatica

Figure 554: Pain severity (VAS 0-10) ≤4 months

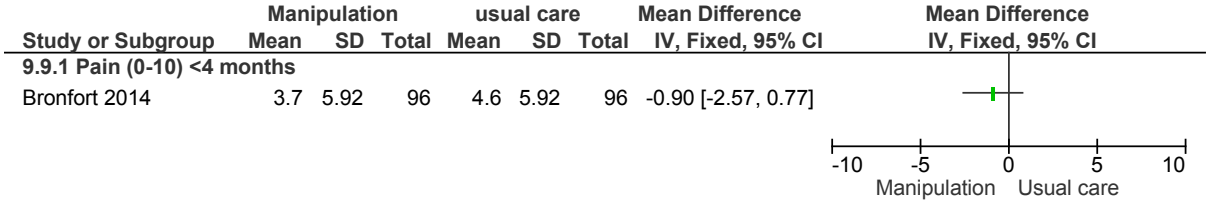


Figure 555: Pain severity (VAS 0-10) >4 months

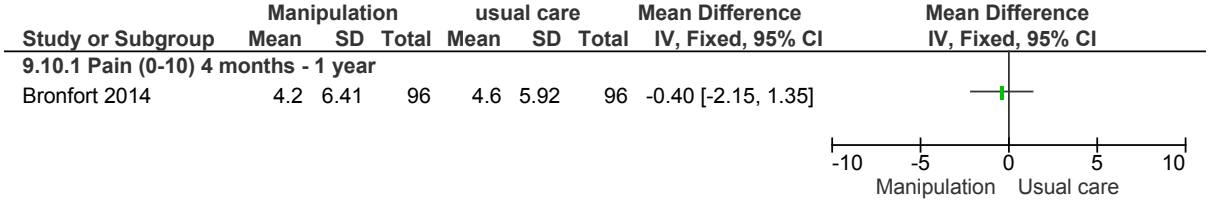


Figure 556: Quality of life (SF-36, 0-100) ≤4 months

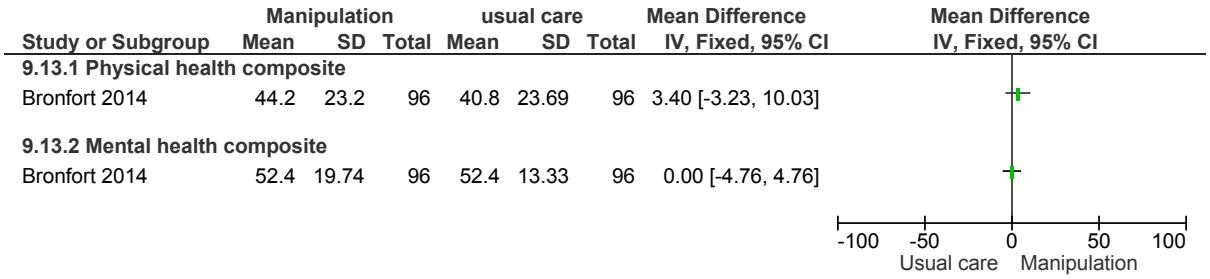


Figure 557: Quality of life (SF-36) >4 months

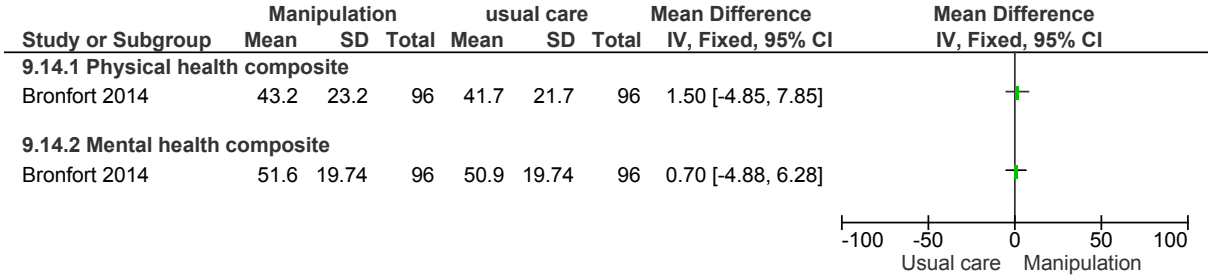


Figure 558: Function (RMDQ 0-24) ≤4 months

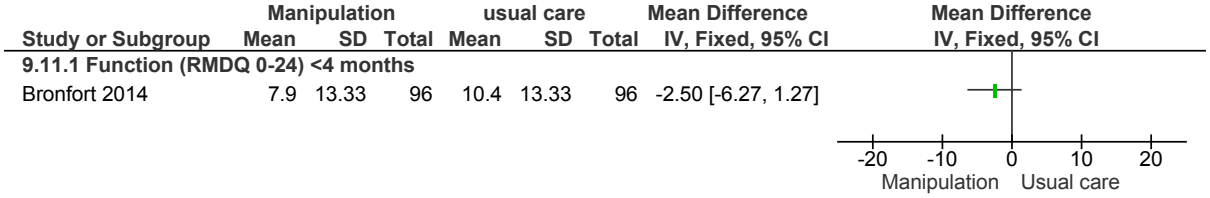


Figure 559: Function (RMDQ 0-24) >4 months

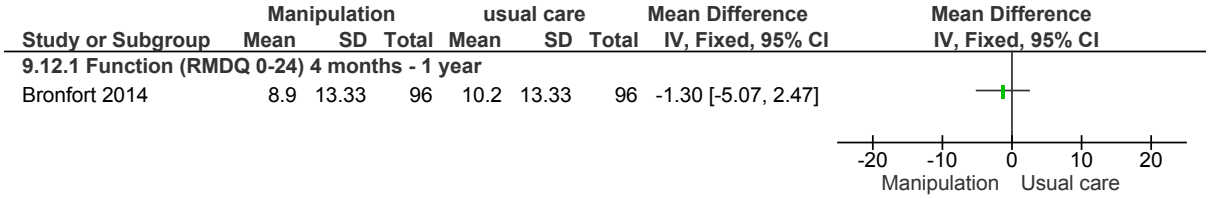
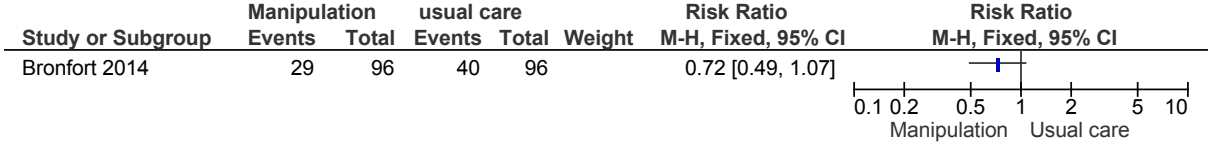


Figure 560: Adverse events (no. of patients with ≥1 adverse event) at 12 weeks



Details of the AEs for this outcome data were not reported

K.8.3.2.3 Population – low back pain without sciatica

Figure 561: Pain severity (NRS 0-10) ≤4 months

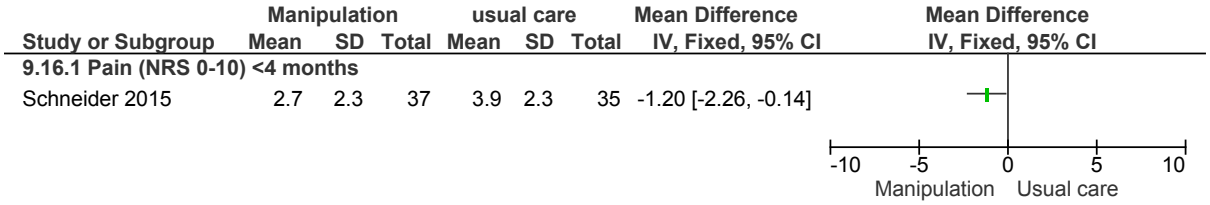


Figure 562: Pain severity (NRS 0-10) > 4 months

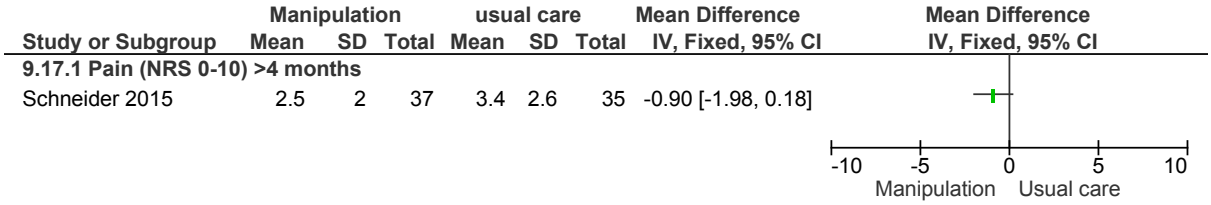


Figure 563: Function (ODI 0-100) ≤4 months

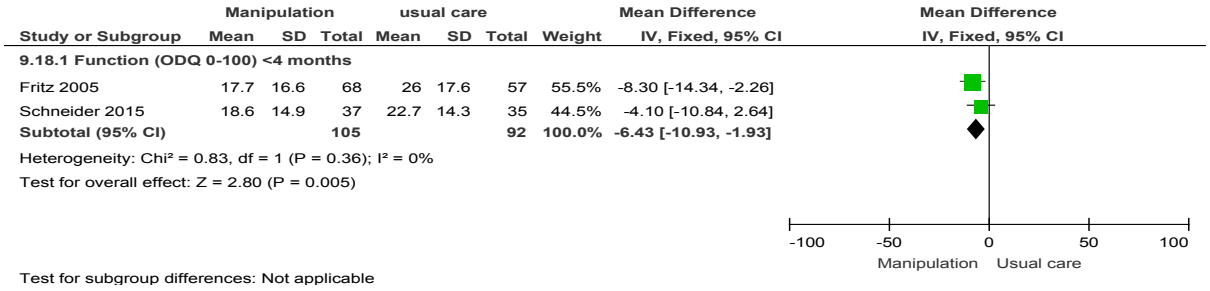


Figure 564: Function (ODI 0-100) > 4 months

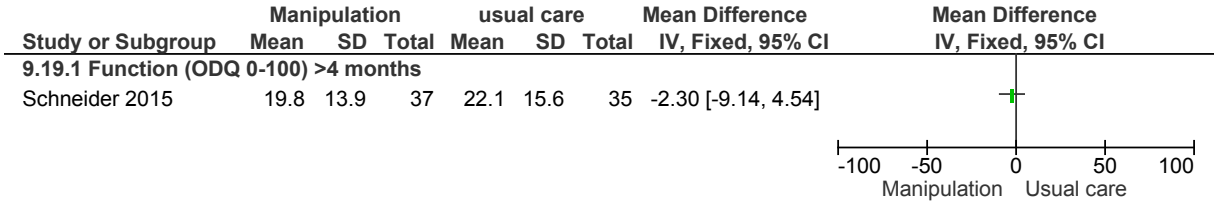


Figure 565: Responder criteria (>30% reduction in pain) ≤4 months

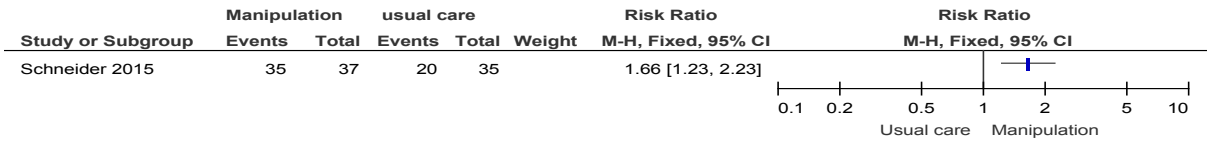


Figure 566: Responder criteria (>50% reduction in pain) ≤4 months

Figure 567: Responder criteria (>30% reduction in ODI) ≤4 months

Figure 568: Responder criteria (>50% reduction in ODI) ≤4 months

K.8.3.3 Manipulation/mobilisation versus soft tissue technique (massage)

K.8.3.3.1 Population – low back pain without sciatica

Figure 569: Pain severity (VAS, 0-10) ≤ 4 months

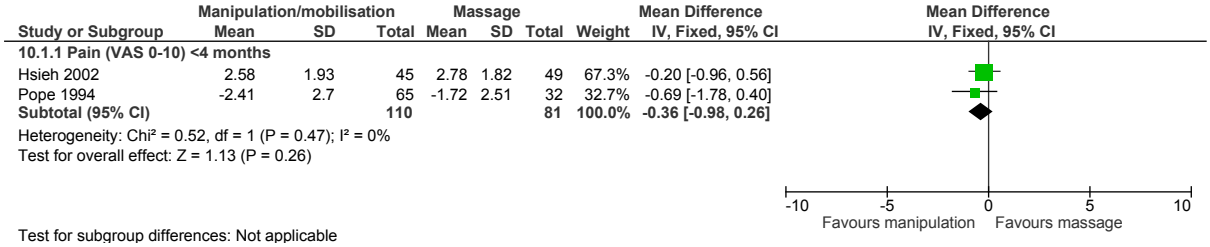


Figure 570: Pain severity (VAS, 0-10) >4 months

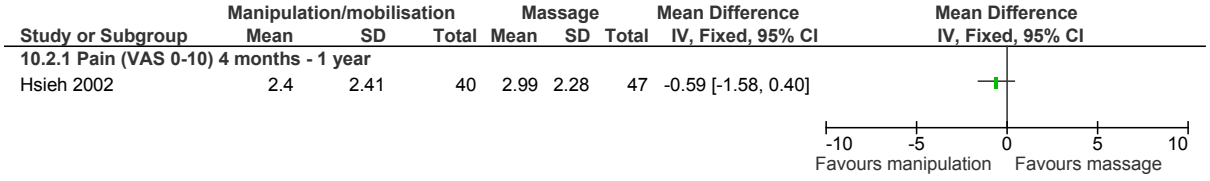


Figure 571: Function (RMDQ, 0-24) ≤4 months

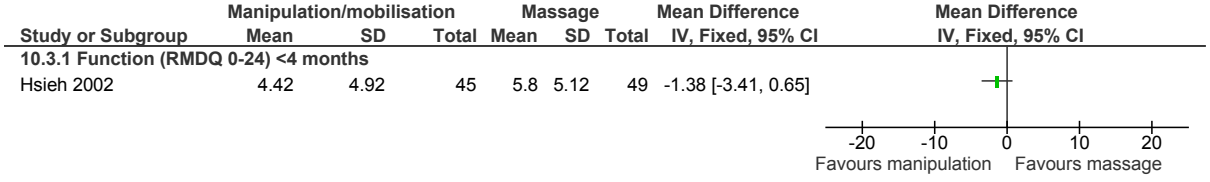
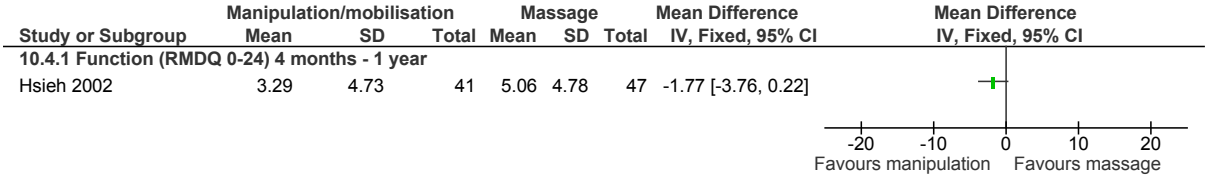


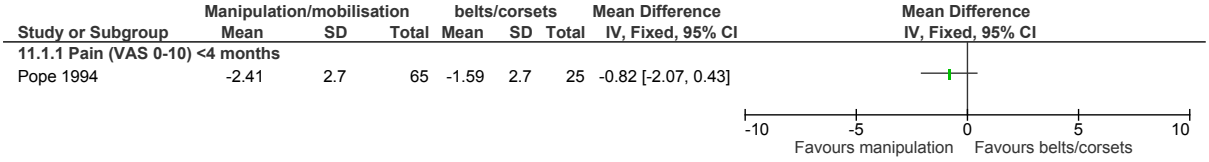
Figure 572: Function (RMDQ, 0-24) >4 months



K.8.3.4 Manipulation/mobilisation versus belts/corsets

K.8.3.4.1 Population – low back pain without sciatica

Figure 573: Pain (VAS, 0-10) ≤4 months



K.8.3.5 Manipulation/mobilisation versus exercise

K.8.3.5.1 Population - mixed population of low back pain with or without sciatica

Figure 574: Pain severity (NRS, 0-10) < 4 months

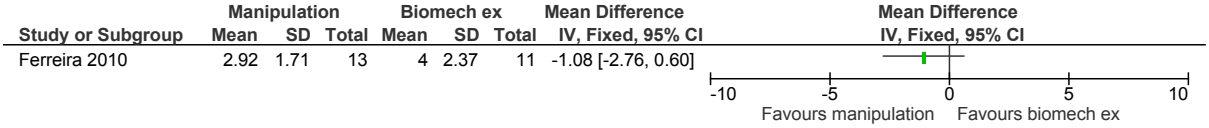
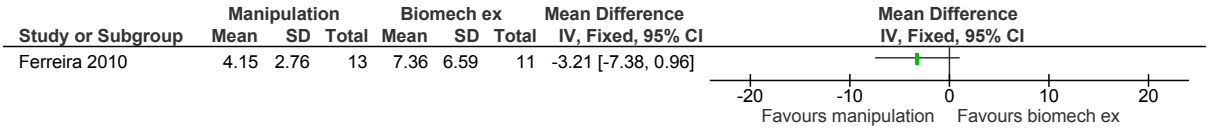


Figure 575: Function (RMDQ, 0-24) < 4 months



K.8.3.6 Manipulation/mobilisation versus interferential therapy

K.8.3.6.1 Population: Low back population with or without sciatica (mixed population)

Figure 576: Quality of life (EQ-5D, 0-1) ≤4 months

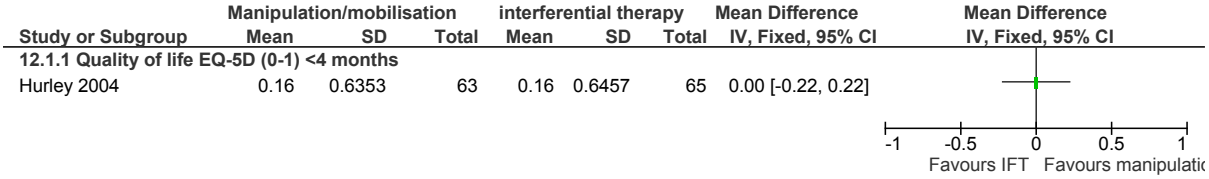


Figure 577: Quality of life (EQ-5D, 0-1) >4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	interferential therapy Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
12.2.1 Quality of life EQ-5D (0-1) 4 months - 1 year							
Hurley 2004	0.15	0.5388	52	0.2	0.3699	55	-0.05 [-0.23, 0.13]

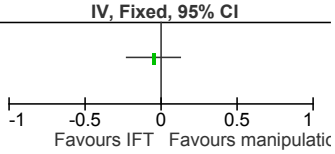


Figure 578: Quality of life (SF-36, 0-100) ≤4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	interferential therapy Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
12.3.2 General health							
Hurley 2004	-1.25	16.4783	63	-0.87	16.2639	65	-0.38 [-6.05, 5.29]
12.3.3 Physical function							
Hurley 2004	15.26	20.8063	63	10.62	20.6628	65	4.64 [-2.55, 11.83]
12.3.4 Physical role limitation							
Hurley 2004	28.58	40.8185	63	31.37	41.0432	65	-2.79 [-16.97, 11.39]
12.3.5 Bodily pain							
Hurley 2004	22.89	22.5931	63	22.68	22.5193	65	0.21 [-7.61, 8.03]
12.3.6 Vitality							
Hurley 2004	8.17	18.9401	63	6.32	19.0486	65	1.85 [-4.73, 8.43]
12.3.7 Social function							
Hurley 2004	15.56	25.2535	63	12.51	25.4653	65	3.05 [-5.74, 11.84]
12.3.8 Mental health							
Hurley 2004	3.89	15.0488	63	1.54	15.9007	65	2.35 [-3.01, 7.71]
12.3.9 Emotional role limitation							
Hurley 2004	10.2	43.2009	63	18.03	42.0925	65	-7.83 [-22.61, 6.95]

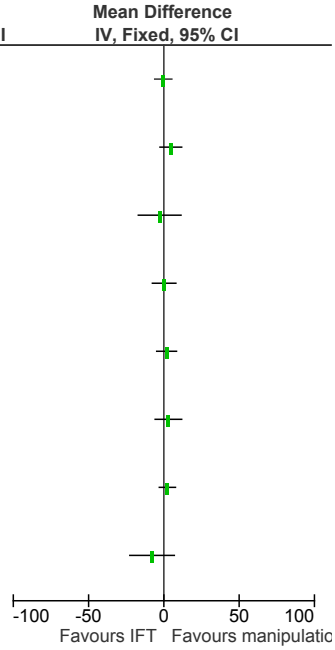


Figure 579: Quality of life (SF-36, 0-100) >4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	interferential therapy Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
12.4.2 General health							
Hurley 2004	-2.53	20.0071	52	-0.87	26.0045	55	-1.66 [-10.42, 7.10]
12.4.3 Physical function							
Hurley 2004	9.36	23.9223	52	10.62	20.049	55	-1.26 [-9.65, 7.13]
12.4.4 Physical role limitation							
Hurley 2004	36.9	44.5399	52	37.7	45.1287	55	-0.80 [-17.79, 16.19]
12.4.5 Bodily pain							
Hurley 2004	23.8	24.4251	52	30.4	24.4139	55	-6.60 [-15.86, 2.66]
12.4.6 Vitality							
Hurley 2004	11.23	20.5818	52	9.4	19.975	55	1.83 [-5.86, 9.52]
12.4.7 Social function							
Hurley 2004	24.4	35.2009	52	16.1	34.7713	55	8.30 [-4.97, 21.57]
12.4.8 Mental health							
Hurley 2004	4.72	18.0315	52	0.84	17.5336	55	3.88 [-2.86, 10.62]
12.4.9 Emotional role limitation							
Hurley 2004	21.3	38.4337	52	18.7	38.4704	55	2.60 [-11.98, 17.18]

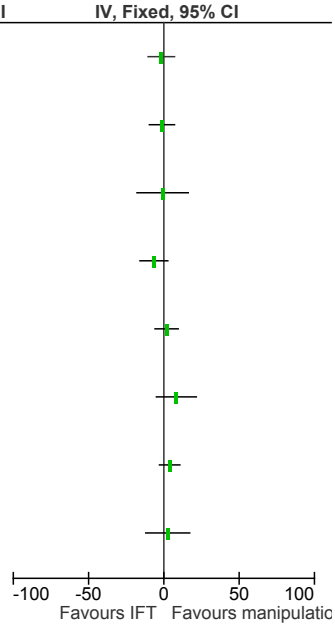


Figure 580: Pain severity (VAS, 0-10) ≤4 months

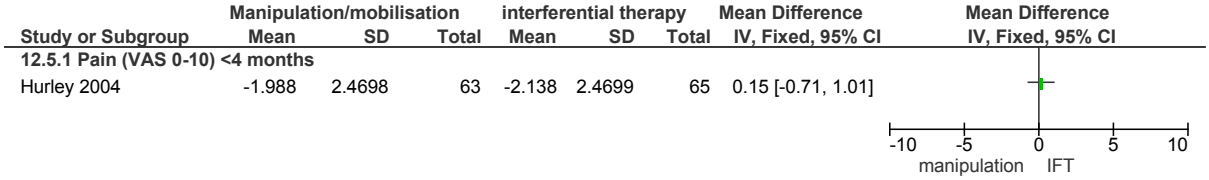


Figure 581: Pain severity (VAS, 0-10) >4 months

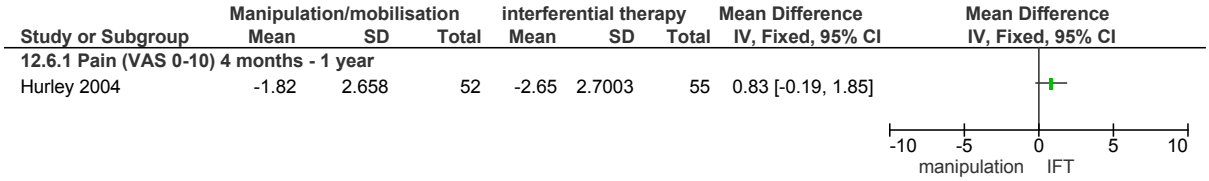


Figure 582: Function (RMDQ, 0-24) ≤4 months

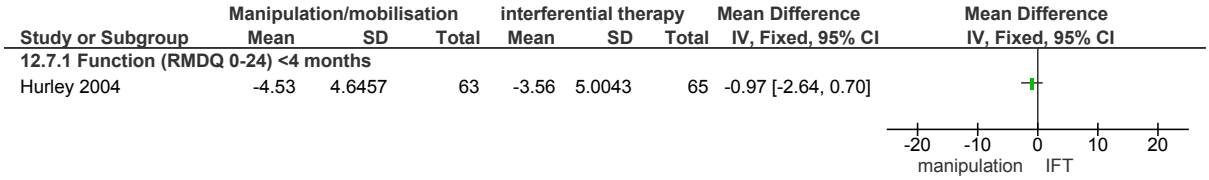
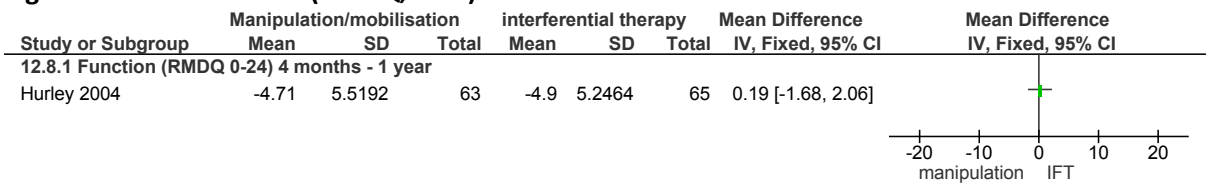


Figure 583: Function (RMDQ, 0-24) >4 months



K.8.3.7 Manipulation/mobilisation versus ultrasound therapy

K.8.3.7.1 Population – low back pain without sciatica

Figure 584: Pain severity (VAS, 0-10) ≤4 months

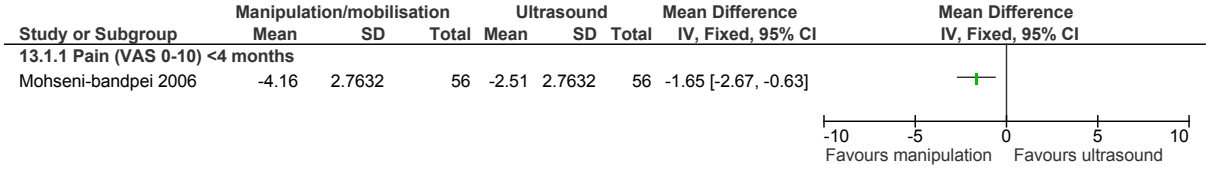


Figure 585: Pain severity (VAS, 0-10) >4 months

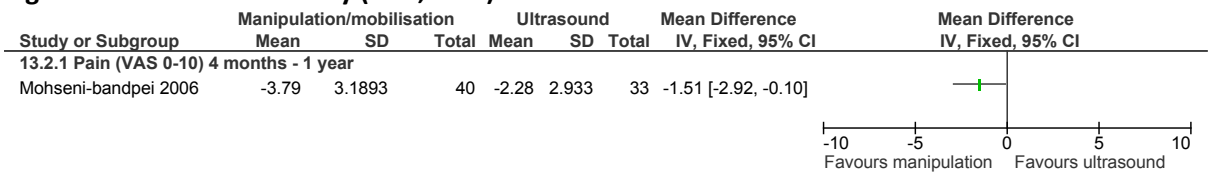


Figure 586: Function (ODI, 0-100) ≤4 months

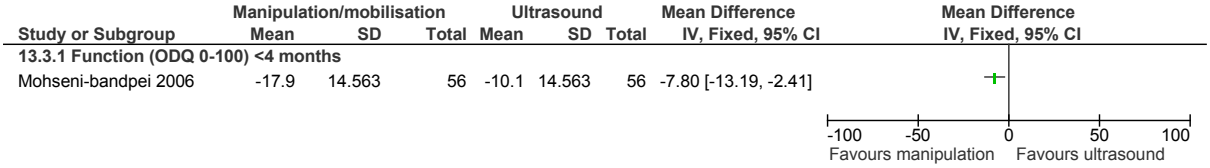
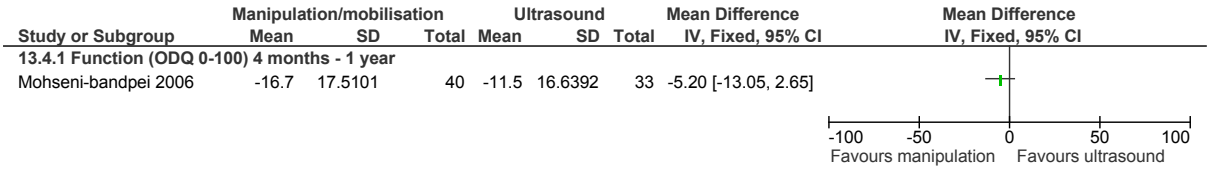


Figure 587: Function (ODI, 0-100) >4 months



K.8.3.8 Manipulation/mobilisation versus self-management

K.8.3.8.1 Population - mixed population of low back pain with or without sciatica

Figure 588: Pain severity (VAS, 0-10) ≤4 months

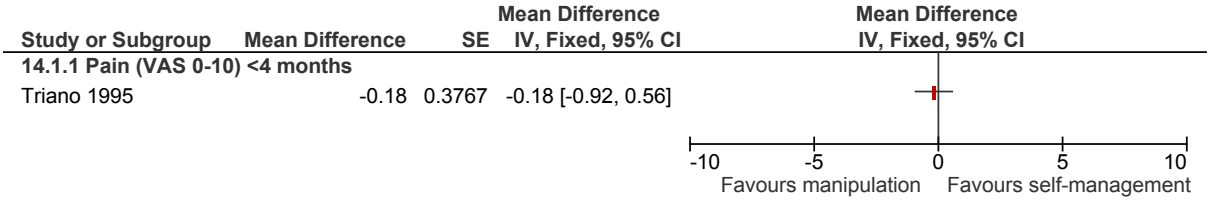
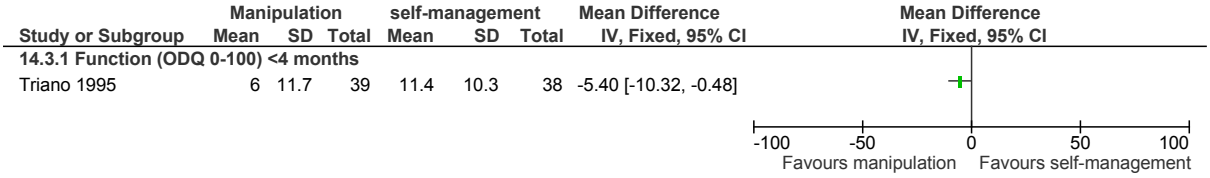


Figure 589: Function (ODI, 0-100) ≤4 months



K.8.3.9 Manipulation/mobilisation versus NSAIDs

K.8.3.9.1 Population – low back pain without sciatica

Figure 590: Pain severity (VAS, 0-10) < 4 months

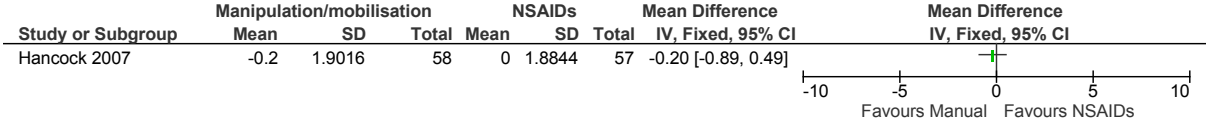
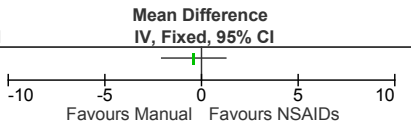


Figure 591: Function (RMDQ, 0-24) < 4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	NSAIDs Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Hancock 2007	-0.5	4.5638	58	-0.1	4.5226	57	-0.40 [-2.06, 1.26]



K.8.3.9.2 Population - mixed population of low back pain with or without sciatica

Figure 592: Pain severity (VAS, 0-10) ≤4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	NSAIDs Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Bronfort 1996	2.7	2	56	3.5	2.2	40	-0.80 [-1.66, 0.06]

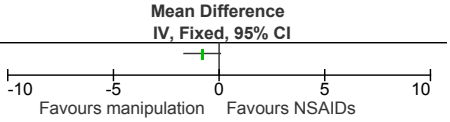
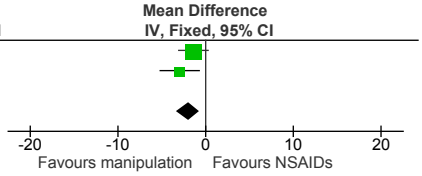


Figure 593: Function (RMDQ, 0-24) ≤4 months

Study or Subgroup	Manipulation/mobilisation Mean	SD	Total	NSAIDs Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Bronfort 1996	3.624	4.176	56	5.016	4.08	40	63.8%	-1.39 [-3.06, 0.28]
Vonheymann 2013	-7.71	4.88	38	-4.75	4.93	37	36.2%	-2.96 [-5.18, -0.74]
Total (95% CI)			**94**			**77**	**100.0%**	**-1.96 [-3.29, -0.62]**

Heterogeneity: Chi² = 1.22, df = 1 (P = 0.27); I² = 18%
Test for overall effect: Z = 2.88 (P = 0.004)



K.8.3.10 Manipulation/mobilisation versus combination of interventions (exercise + education)

K.8.3.10.1 Population - mixed population of low back pain with or without sciatica

Figure 594: Pain severity (NRS, 0-10) < 4 months

Study or Subgroup	Manipulation Mean	SD	Total	Biomech ex Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ferreira 2010	2.92	1.71	13	4.7	1.77	10	-1.78 [-3.22, -0.34]

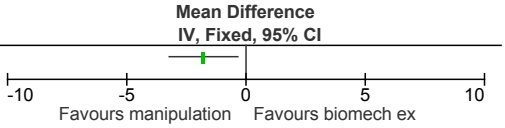
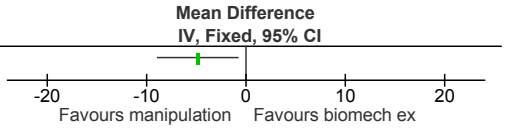


Figure 595: Function (RMDQ, 0-24) < 4 months

Study or Subgroup	Manipulation Mean	SD	Total	Biomech ex Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ferreira 2010	4.15	2.76	13	9	6.04	10	-4.85 [-8.88, -0.82]



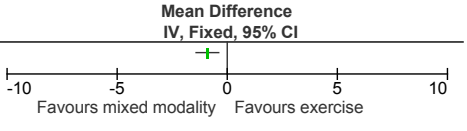
K.8.4 Mixed modality manual therapy

K.8.4.1 Mixed modality manual therapy versus usual care

K.8.4.1.1 Population – low back pain without sciatica

Figure 596: Pain severity (Melzak pain score, 0-5) < 4 months

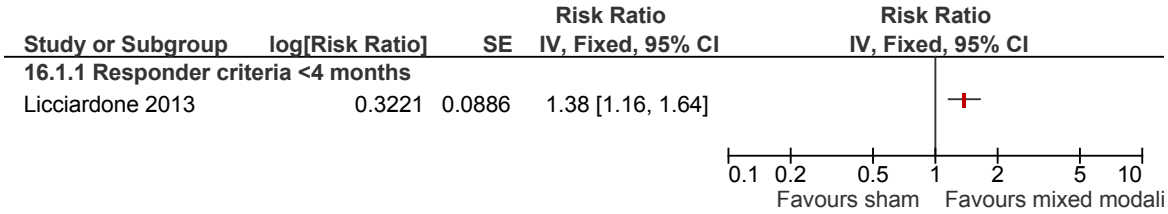
Study or Subgroup	Mixed modality Mean	SD	Total	biomechanical exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Zylbergold 1981	-1.5	0.1	8	-0.6	0.82	10	-0.90 [-1.41, -0.39]



K.8.4.2 Mixed modality manual therapy versus sham

K.8.4.2.1 Population – low back pain without sciatica

Figure 597: Responder criteria (pain) ≤4 months



K.8.4.2.2 Population – mixed population of low back pain with or without sciatica

Figure 598: Pain severity (NRS 0-10) ≤4 months

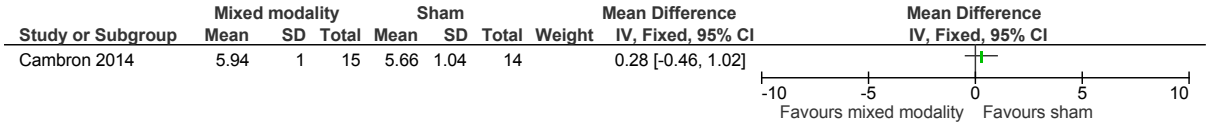


Figure 599: Pain severity (NRS 0-10) > 4 months

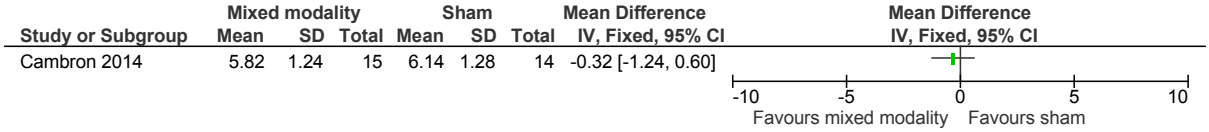


Figure 600: Function (ODI 0-100 change score) ≤4 months

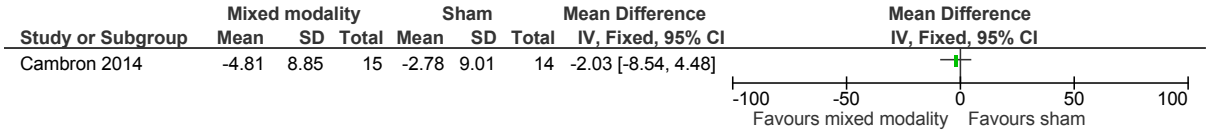
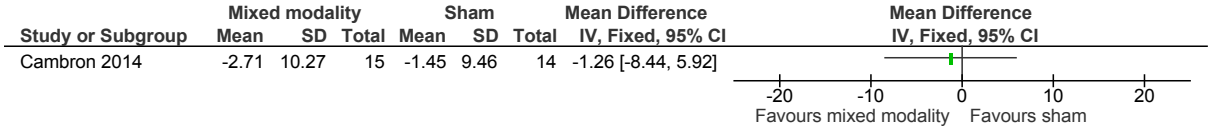


Figure 601: Function (ODI 0-100 change score) > 4 months



K.8.4.3 Mixed modality manual therapy versus manipulation/mobilisation

K.8.4.3.1 Population – low back pain without sciatica

Figure 602: Pain severity (VAS, 0-10) ≤4 months

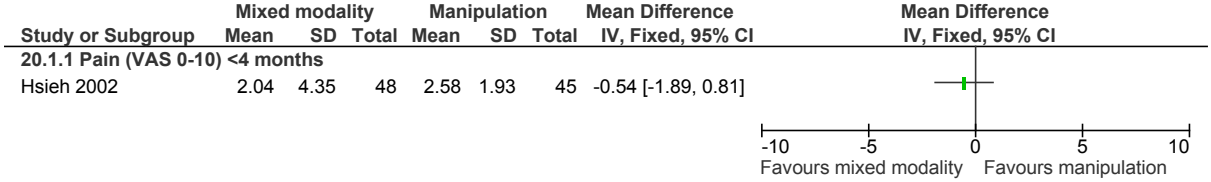


Figure 603: Pain severity (VAS, 0-10) > 4 months

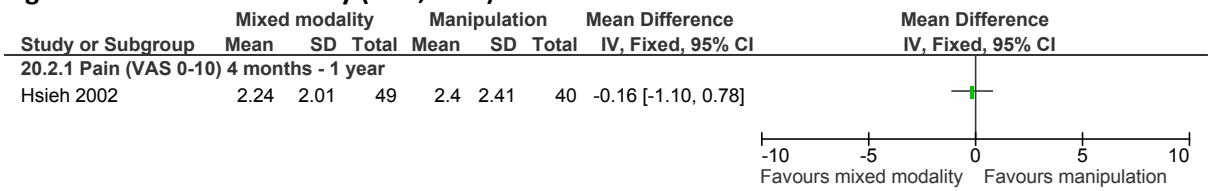


Figure 604: Function (RMDQ, 0-24) ≤4 months

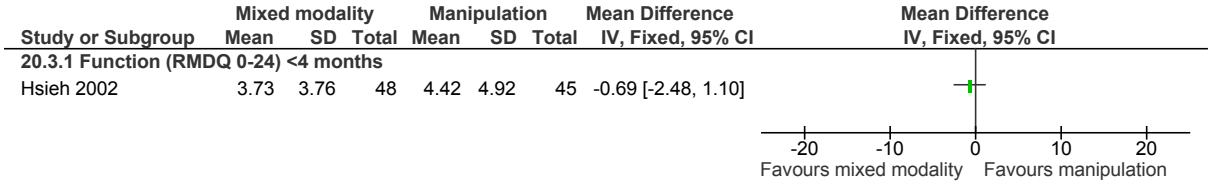
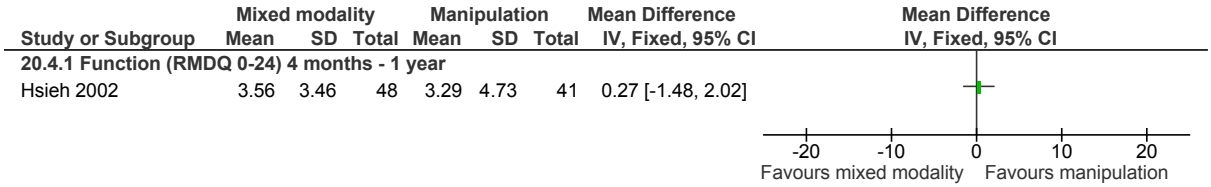


Figure 605: Function (RMDQ, 0-24) > 4 months



K.8.4.4 Mixed modality manual therapy versus soft tissue techniques (massage)

K.8.4.4.1 Population – low back pain without sciatica

Figure 606: Pain severity (VAS, 0-10) ≤4 months

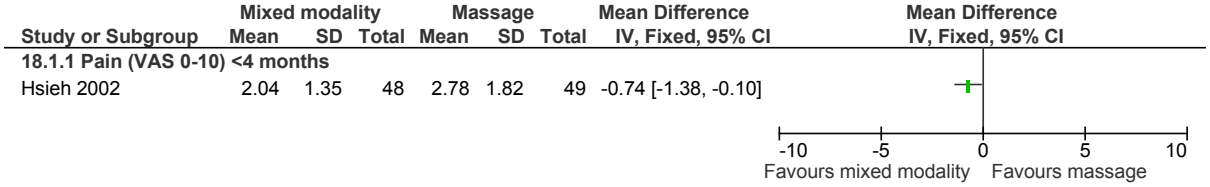


Figure 607: Pain severity (VAS, 0-10) > 4 months

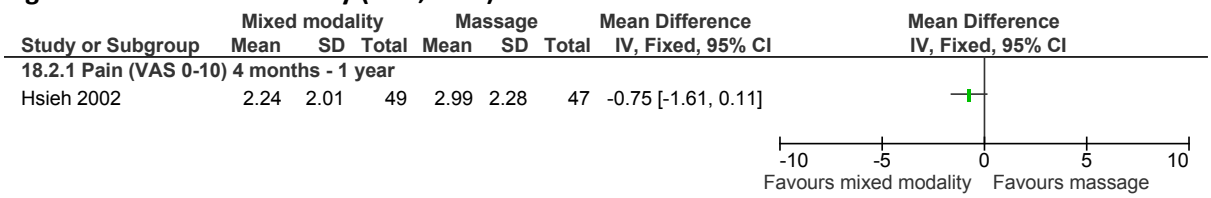


Figure 608: Function (RMDQ, 0-24) ≤4 months

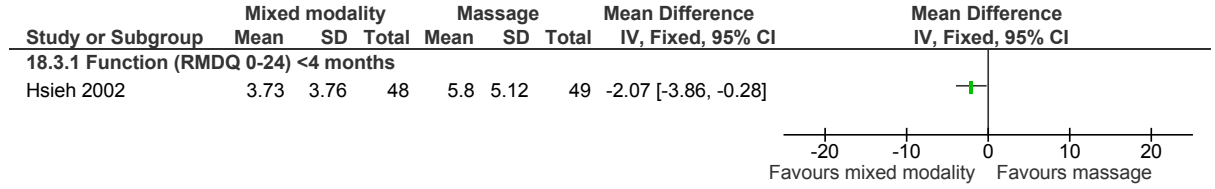
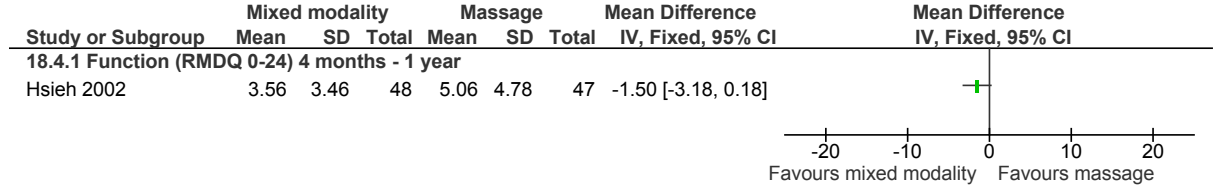


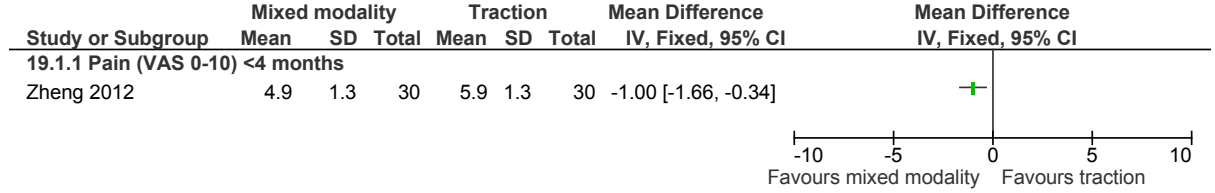
Figure 609: Function (RMDQ, 0-24) > 4 months



K.8.4.5 Mixed modality manual therapy versus traction

K.8.4.5.1 Population – low back pain without sciatica

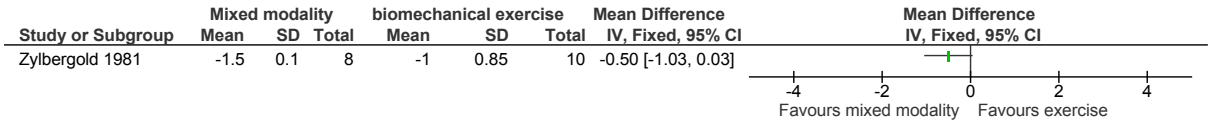
Figure 610: Pain severity (VAS) ≤4 months



K.8.4.6 Mixed modality manual therapy versus biomechanical exercise

K.8.4.6.1 Population – low back pain without sciatica

Figure 611: Pain severity (Melzack pain score, 0-5) ≤4 months



K.8.5 Combination interventions – manual therapy adjunct

K.8.5.1 Low back pain with sciatica

K.8.5.1.1 Manual therapy (manipulation) + self-management (education) + exercise (aerobic) vs. self-management (education) + exercise (aerobic + McKenzie),

Figure 612: Pain severity (VAS, 0-10, change score) ≤ 4 months

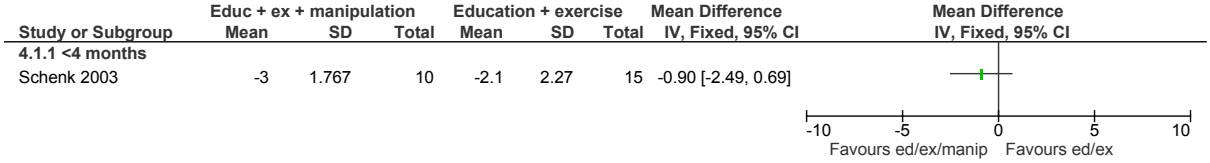
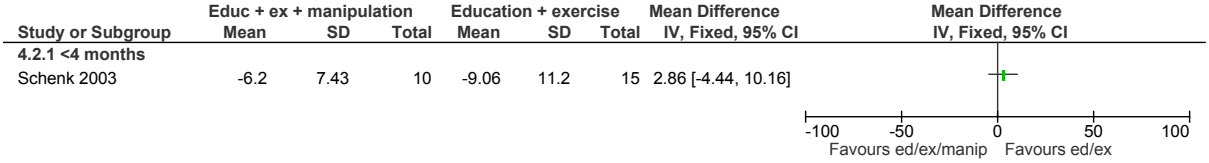


Figure 613: Function (ODI, 0-100) ≤ 4 months



K.8.5.1.2 Manual therapy (soft tissue techniques – muscle energy technique) + biomechanical exercise (McKenzie) + self management (unsupervised exercise) versus biomechanical exercise (McKenzie) + self management (unsupervised exercise)

Figure 614: Pain severity (VAS, 0-10) < 4 months

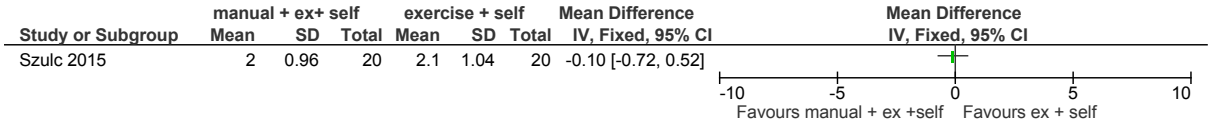
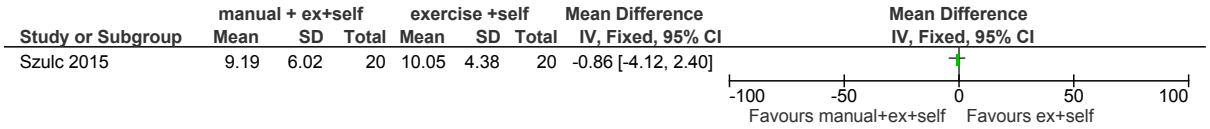


Figure 615: Function (ODI, 0-24) < 4 months



K.8.5.1.3 Manual therapy (soft tissue techniques – muscle energy technique) + biomechanical exercise (McKenzie) + self management (unsupervised exercise) versus standart treatment (massage + laser + TENS) + self management

Figure 616: Pain severity (VAS, 0-10) < 4 months

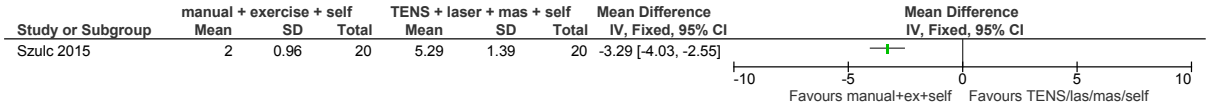
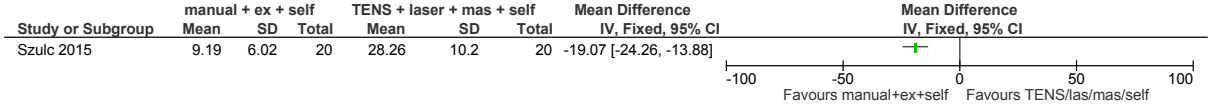


Figure 617: Function (ODI, 0-24) < 4 months



K.8.5.2 Low back pain without sciatica

K.8.5.2.1 Manual therapy (soft tissue techniques - massage) + self-management (exercise prescription) versus postural therapy (Alexander technique - 6 lessons)

Figure 618: Quality of life (SF-36, 0-100) > 4 months

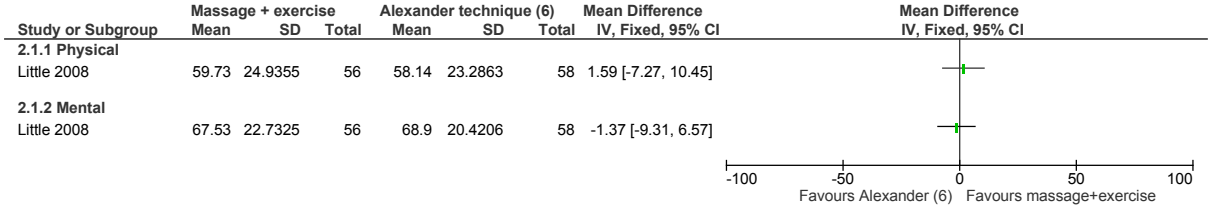


Figure 619: Pain severity (Von Korff pain scale, 0-10) > 4 months

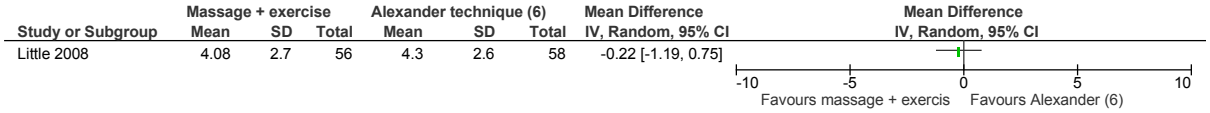


Figure 620: Function (RMDQ, 0-24) > 4 months

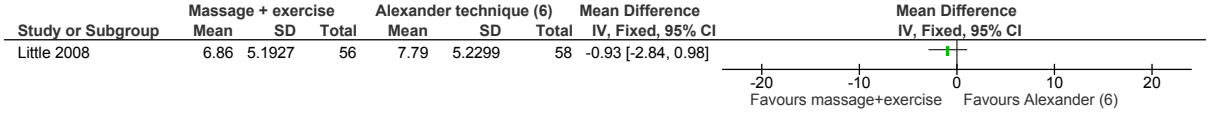
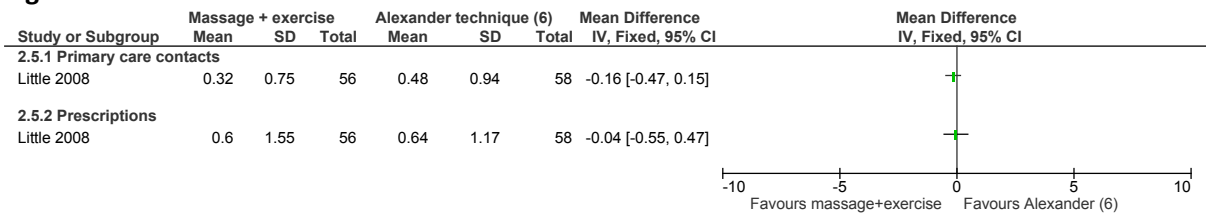


Figure 621: Healthcare utilisation > 4 months



K.8.5.2.2 Manual therapy (soft tissue techniques - massage) + self-management (exercise prescription) versus postural therapy (Alexander technique - 24 lessons)

Figure 622: Quality of life (SF-36, 0-100) > 4 months

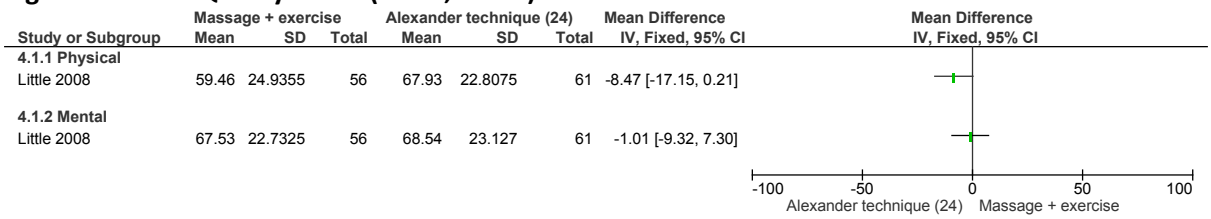


Figure 623: Pain severity (Von Korff pain scale, 0-10) > 4 months

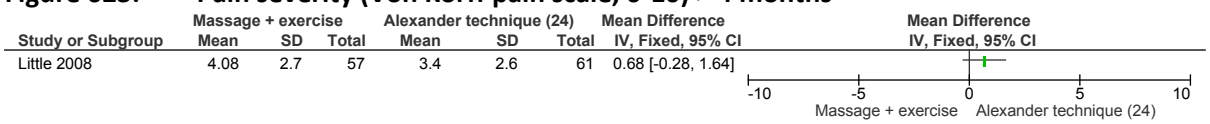


Figure 624: Function (RMDQ, 0-24) > 4 months

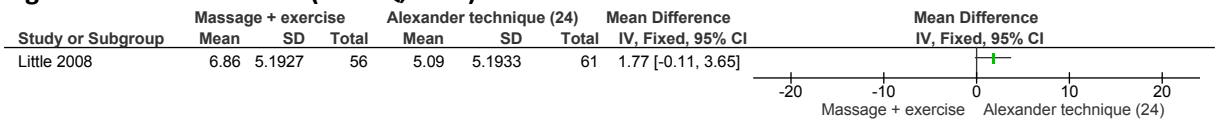
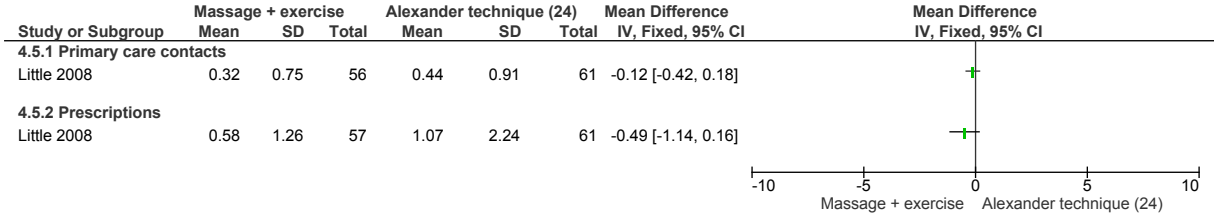
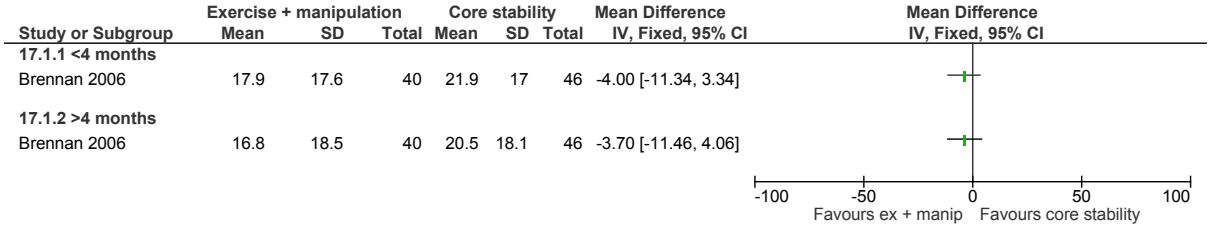


Figure 625: Healthcare utilisation > 4 months



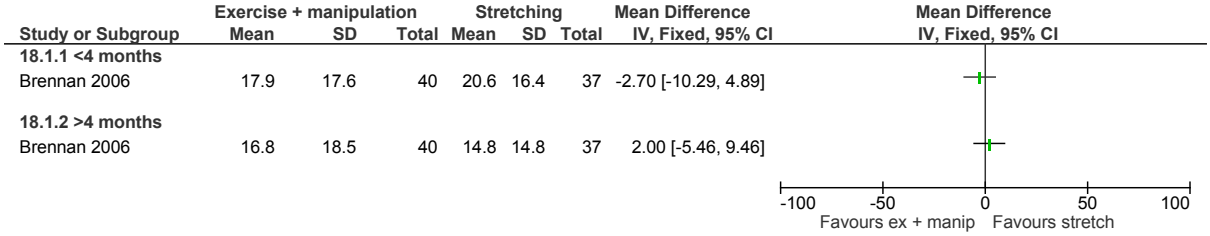
K.8.5.2.3 Manual therapy (manipulation) + exercise (biomechanical - McKenzie) compared to exercise (biomechanical - core stability)

Figure 626: Function (ODI, 0-100)



K.8.5.2.4 Manual therapy (manipulation) + exercise (biomechanical - McKenzie) compared to exercise (biomechanical – stretching)

Figure 627: Function (ODI, 0-100)



K.8.5.2.5 Manual therapy (manipulation) + exercise (aerobic) compared to exercise (aerobic)

Figure 628: Pain severity (VAS, 0-10) ≤ 4 months

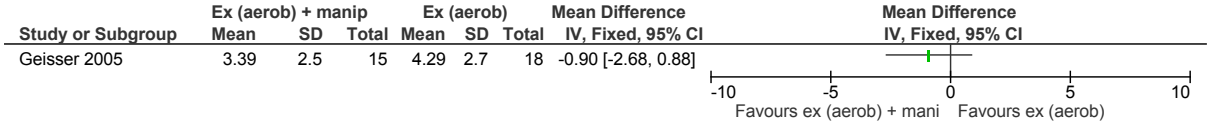
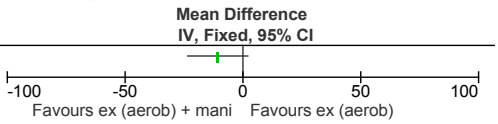


Figure 629: Function (Quebec back pain disability scale, 0-100) ≤ 4 months

Study or Subgroup	Ex (aerob) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	31.8	18	15	42.5	19.3	18	-10.70 [-23.45, 2.05]



K.8.5.2.6 Manual therapy (manipulation) + exercise (aerobic) compared to exercise (biomechanical)

Figure 630: Pain severity (VAS, 0-10) ≤ 4 months

Study or Subgroup	Ex (biom) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	3.39	2.5	15	3.46	2	18	-0.07 [-1.64, 1.50]

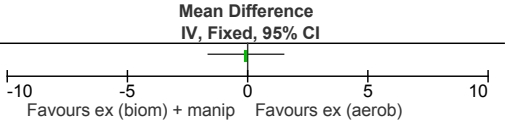
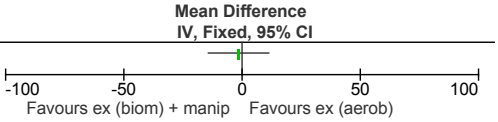


Figure 631: Function (Quebec back pain disability scale, 0-100) ≤ 4 months

Study or Subgroup	Ex (biom) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	31.8	18	15	33.28	19.4	18	-1.48 [-14.26, 11.30]



K.8.5.2.7 Manual therapy (manipulation) + exercise (biomechanical) compared to exercise (aerobic)

Figure 632: Pain severity (VAS, 0-10) ≤ 4 months

Study or Subgroup	Ex (biom) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	2.4	2	21	4.29	2.7	18	-1.89 [-3.40, -0.38]

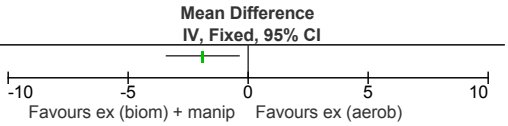
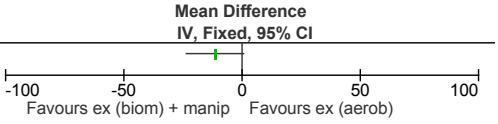


Figure 633: Function (Quebec back pain disability scale, 0-100) ≤ 4 months

Study or Subgroup	Ex (biom) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	31.05	19.1	21	42.5	19.3	18	-11.45 [-23.54, 0.64]



K.8.5.2.8 Manual therapy (manipulation) + exercise (biomechanical) compared to exercise (biomechanical)

Figure 634: Pain severity (VAS, 0-10) ≤ 4 months

Study or Subgroup	Ex (biom) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	2.4	2	21	3.46	2	18	-1.06 [-2.32, 0.20]

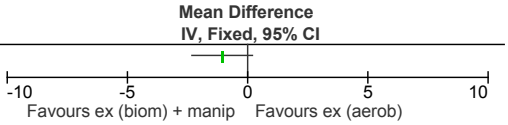
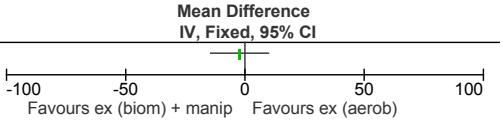


Figure 635: Function (Quebec back pain disability scale, 0-100) ≤ 4 months

Study or Subgroup	Ex (biom) + manip Mean	SD	Total	Ex (aerob) Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Geisser 2005	31.05	19.1	21	33.28	19.4	18	-2.23 [-14.36, 9.90]



K.8.5.2.9 Manual therapy (manipulation) + exercise (biomechanical) compared to manual therapy (manipulation) + exercise (aerobic)

Figure 636: Pain severity (VAS, 0-10) ≤ 4 months

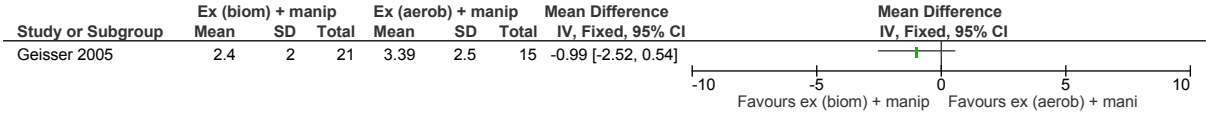
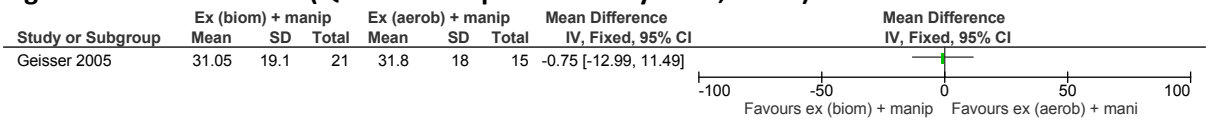


Figure 637: Function (Quebec back pain disability scale, 0-100) ≤ 4 months



K.8.5.2.10 Manual therapy (manipulation plus soft tissue techniques - massage) compared to sham

Figure 638: Pain severity (Pain disability index) ≤ 4 months

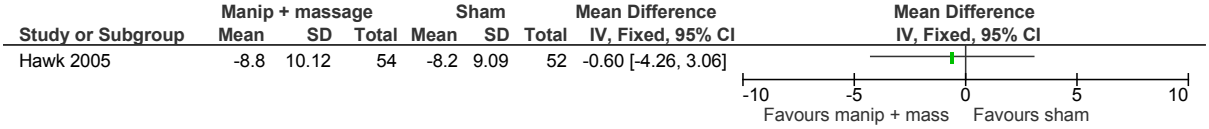
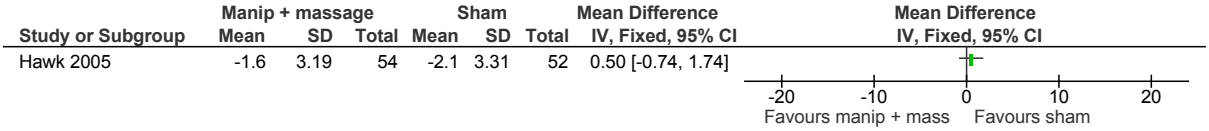


Figure 639: Function (RMDQ, 0-24) ≤ 4 months



K.8.5.3 Overall: Low back pain with/without sciatica

K.8.5.3.1 Manual therapy (manipulation/mobilisation) + self management (home exercise) compared to self management (home exercise)+ exercise

Figure 640: Pain severity (0-100 VAS converted to 0-10)

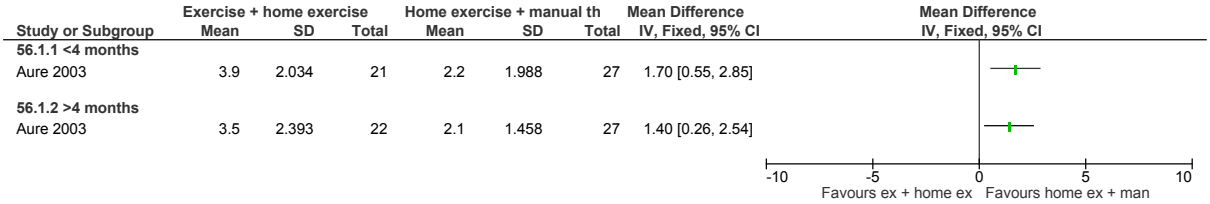
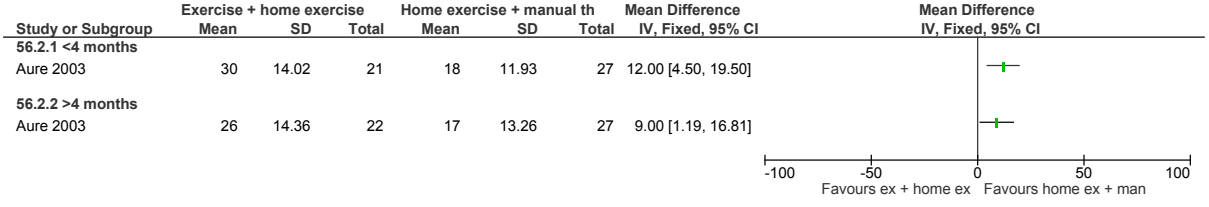


Figure 641: Function (ODI, 0-100)



K.8.5.3.2 Manual therapy (traction) + physical therapy (infra-red) + exercise (biomechanical - stretching) compared to physical (infra-red) + exercise (biomechanical – stretching)

Figure 642: Pain severity (NRS, 0-10)

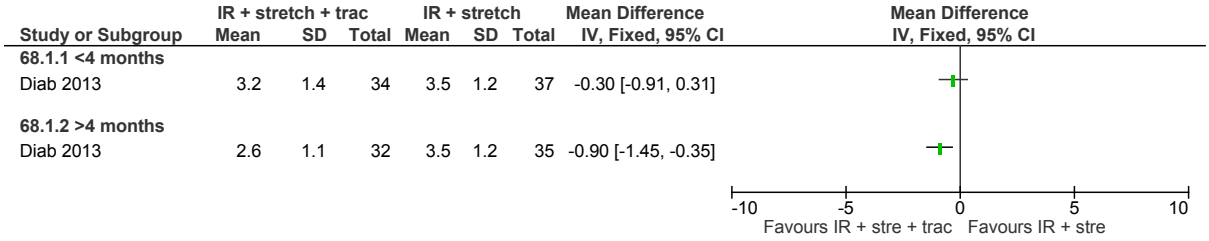


Figure 643: Function (ODI, 0-100)

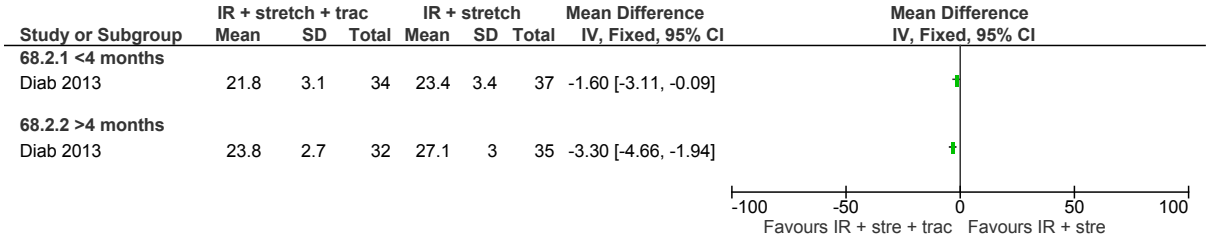
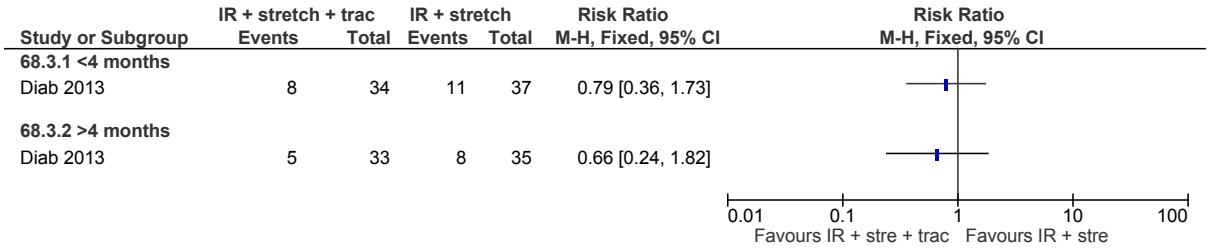


Figure 644: Healthcare utilisation (medication use)



K.8.5.3.3 Manual therapy (manipulation) + electrotherapy (interferential) compared to electrotherapy (interferential)

Figure 645: Quality of life (EQ-5D, 0-1)

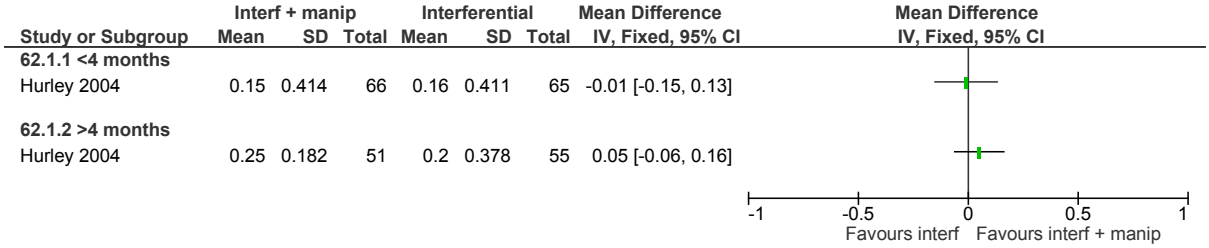


Figure 646: Quality of life (SF-36, 0-100)

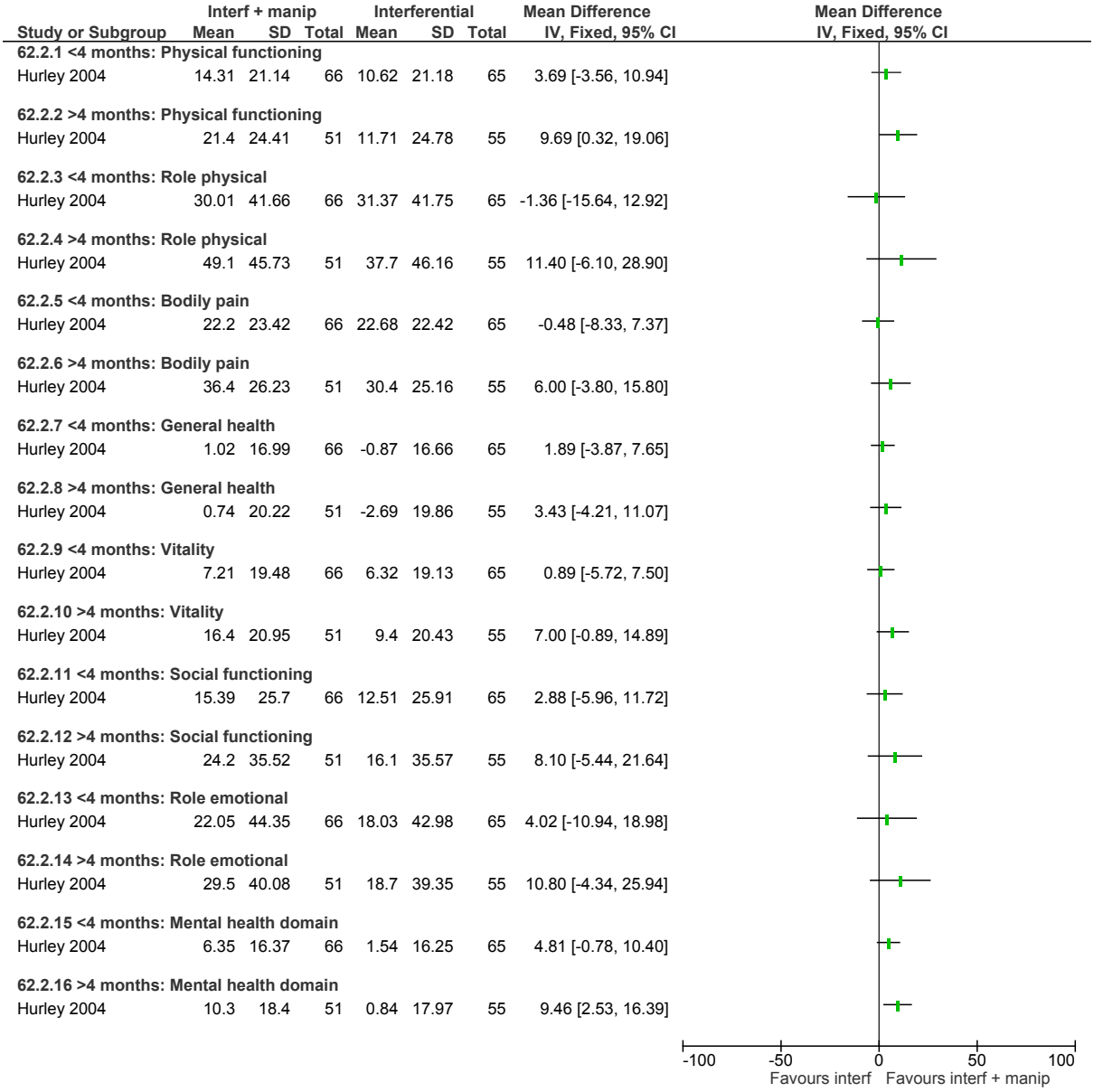


Figure 647: Pain severity (0-100 VAS converted to 0-10)

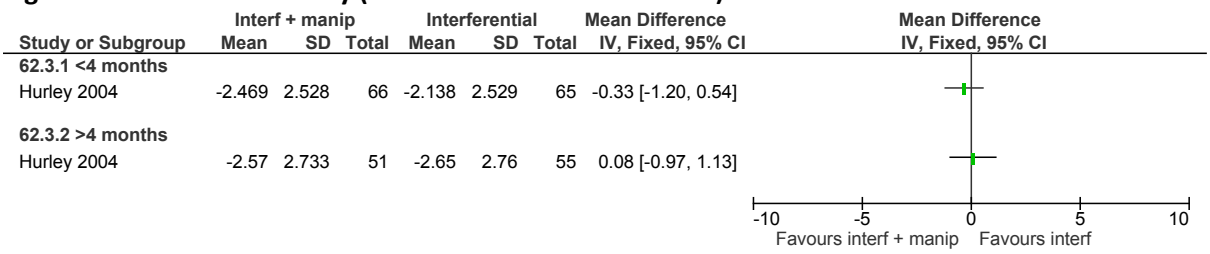


Figure 648: Pain severity (McGill Pain Rating Index, range not stated)

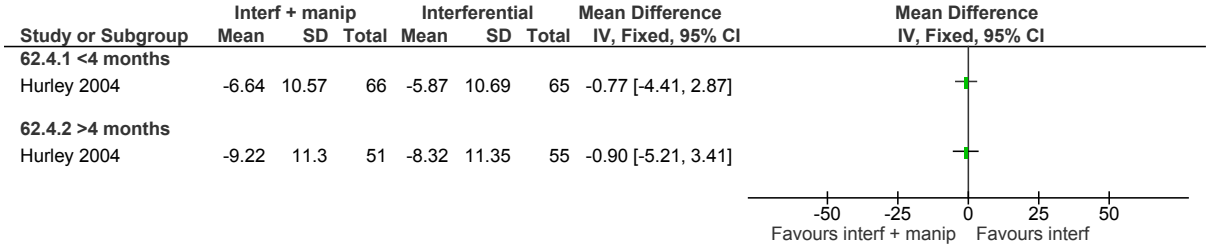
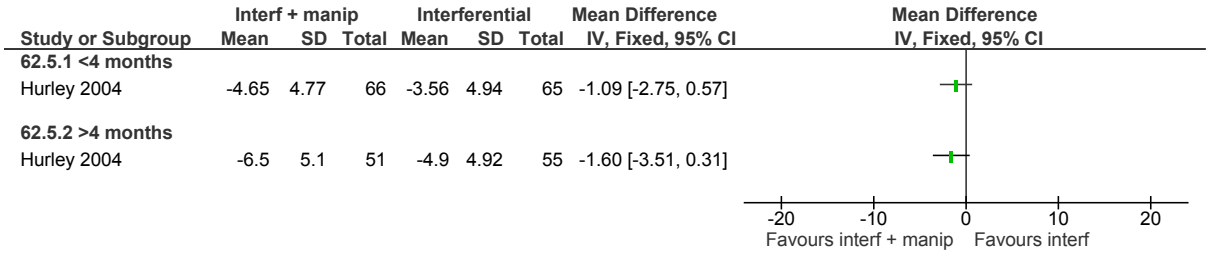


Figure 649: Function (RMDQ, 0-24)



K.8.5.3.4 Manual therapy (manipulation) + exercise (biomechanical – core stability) compared to exercise (biomechanical – core stability)

Figure 650: Healthcare utilisation (medication use) >4 months

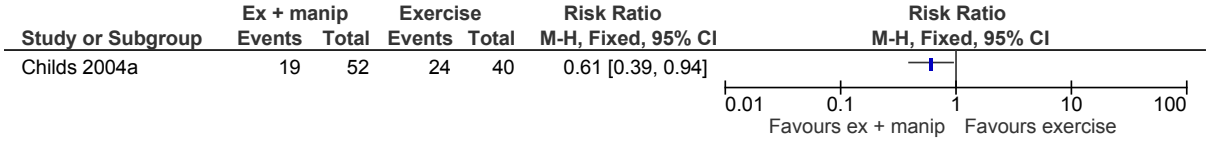
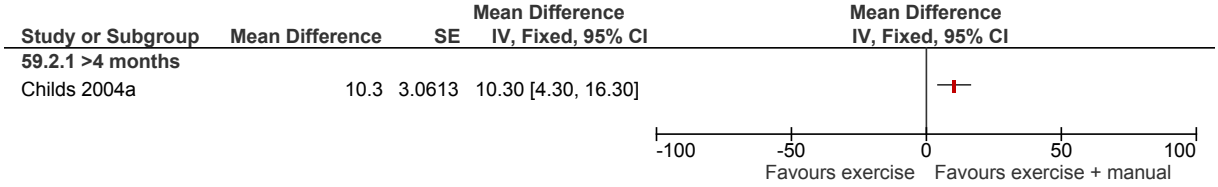


Figure 651: Function (ODI 0-100) >4 months



K.8.5.3.5 Manual therapy (manipulation) + exercise (trunk strengthening exercise) compared to pharmacological treatment (NSAID) + exercise (trunk strengthening exercise)

Figure 652: Pain severity (11-box scale, 0-10) ≤ 4 months

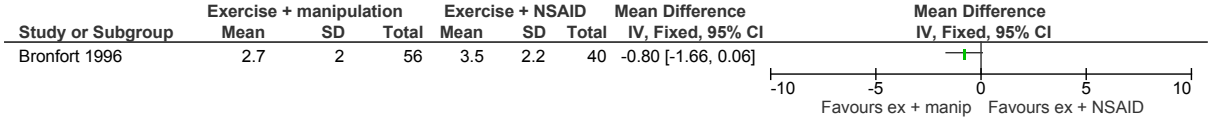
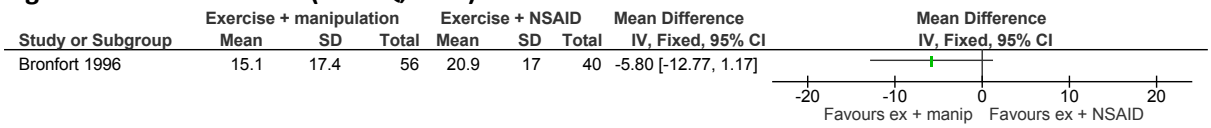


Figure 653: Function (RMDQ, 0-24) ≤ 4 months



K.8.5.3.6 Manual therapy (manipulation) + exercise (trunk stretching exercises) compared to pharmacological treatment (NSAID) + exercise (trunk strengthening)

Figure 654: Pain severity (11-box scale 0-10) ≤ 4 months

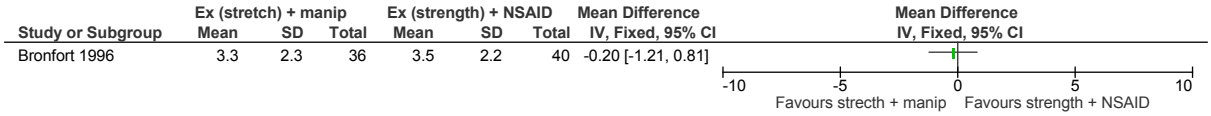
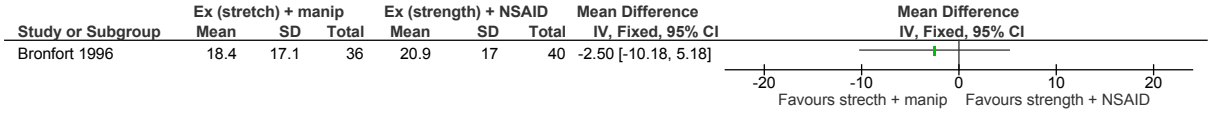


Figure 655: Function (RMDQ, 0-24) ≤ 4 months



K.8.5.3.7 Mixed modality manual therapy + self-management compared to self-management

Figure 656: Quality of life (SF-36, 0-100)

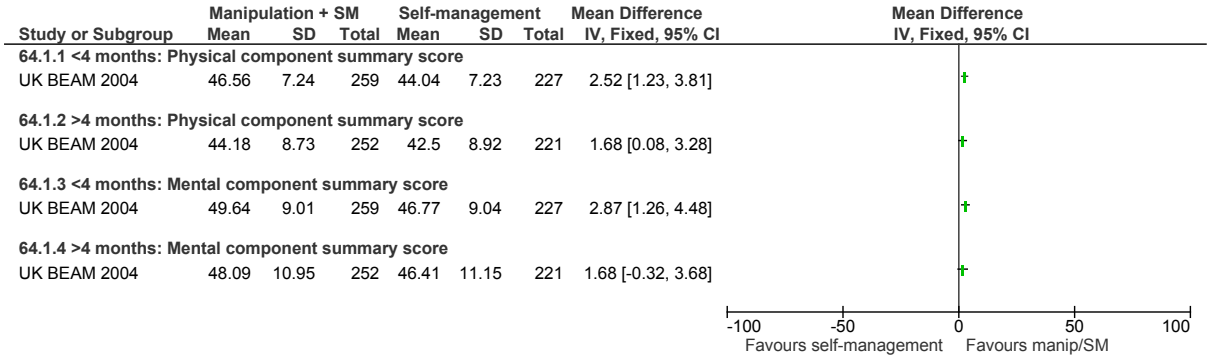


Figure 657: Quality of life (EQ-5D, 0-1)

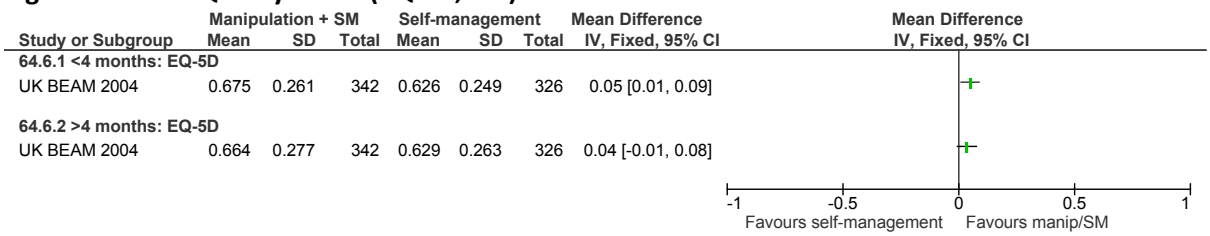


Figure 658: Pain severity (Modified Von Korff scale 0-100 converted to 0-10)

Study or Subgroup	Manipulation + SM Mean	SD	Total	Self-management Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
64.2.1 <4 months							
UK BEAM 2004	4.09	2.487	275	4.959	2.504	239	-0.87 [-1.30, -0.44]
64.2.2 >4 months							
UK BEAM 2004	4.168	2.567	264	4.756	2.591	235	-0.59 [-1.04, -0.13]

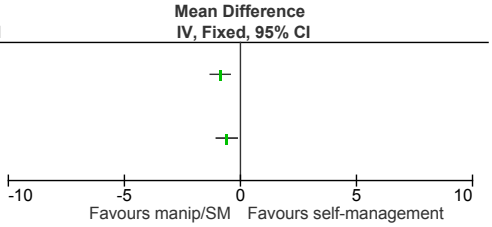


Figure 659: Function (RMDQ, 0-24)

Study or Subgroup	Manipulation + SM Mean	SD	Total	Self-management Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
64.3.1 <4 months							
UK BEAM 2004	5.09	4.74	287	6.66	4.8	256	-1.57 [-2.37, -0.77]
64.3.2 >4 months							
UK BEAM 2004	5.15	4.79	273	6.16	4.88	248	-1.01 [-1.84, -0.18]

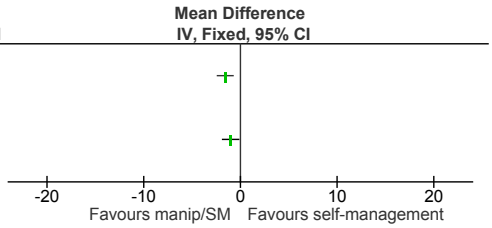


Figure 660: Function (Modified Von Korff scale 0-100 converted to 0-10)

Study or Subgroup	Manipulation + SM Mean	SD	Total	Self-management Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
64.4.1 <4 months							
UK BEAM 2004	3.114	2.454	275	3.511	2.489	239	-0.40 [-0.83, 0.03]
64.4.2 >4 months							
UK BEAM 2004	2.985	2.428	262	3.55	2.453	235	-0.56 [-0.99, -0.14]

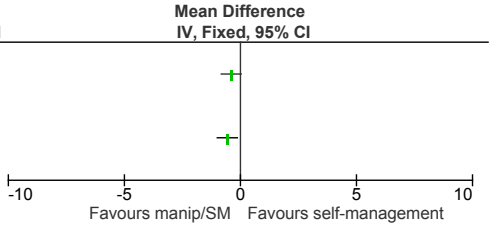
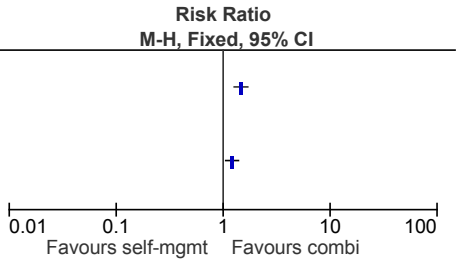


Figure 661: Responder criteria (≥30% improvement in RMDQ)

Study or Subgroup	Manip/SM Events	Total	Self-management Events	Total	Risk Ratio M-H, Fixed, 95% CI
64.5.1 <4 months					
UK BEAM 2004	193	268	125	255	1.47 [1.27, 1.70]
64.5.2 >4 months					
UK BEAM 2004	187	275	139	248	1.21 [1.06, 1.39]



K.8.5.3.8 Mixed modality manual therapy + exercise (biomechanical) + self-management compared to self-management

Figure 662: Pain severity (modified Von Korff 0-100 converted to 0-10 scale)

Study or Subgroup	Ex/manip/SM Mean	SD	Total	Self-management Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
65.2.1 <4 months							
UK BEAM 2004	4.076	2.49	246	4.896	2.47	239	-0.82 [-1.26, -0.38]
65.2.2 >4 months							
UK BEAM 2004	3.968	2.583	245	4.639	2.544	235	-0.67 [-1.13, -0.21]

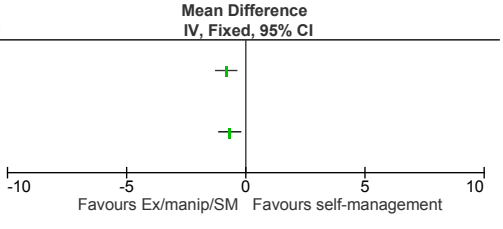


Figure 663: Quality of life(SF-36, 0-100)

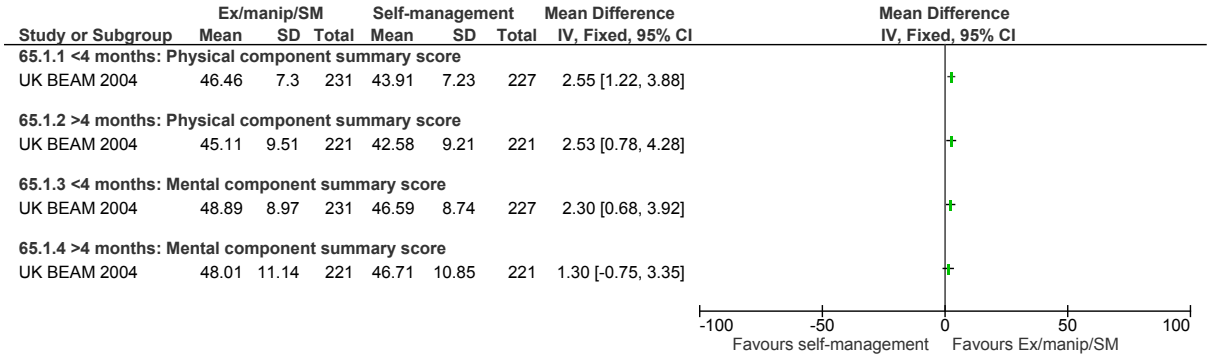


Figure 664: Quality of life (EQ-5D, 0-1)

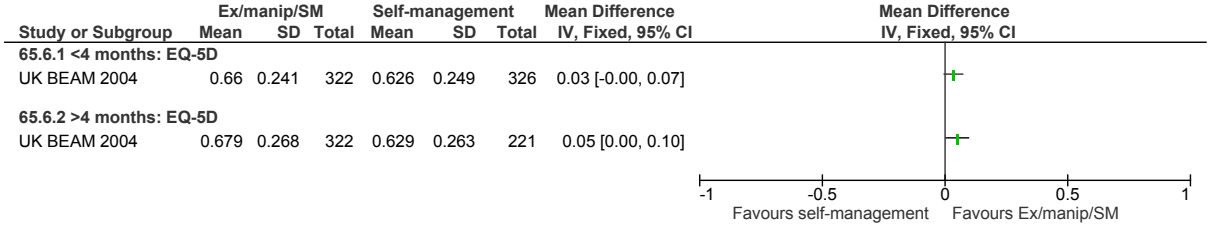


Figure 665: Function (RMDQ, 0-24).

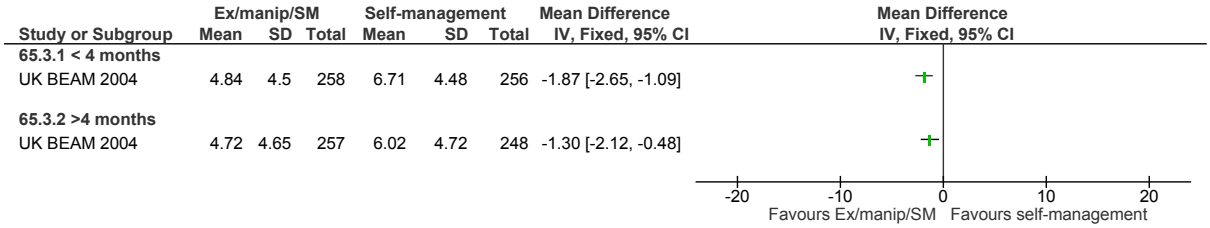


Figure 666: Function (modified Von Korff 0-100 converted to 0-10 scale).

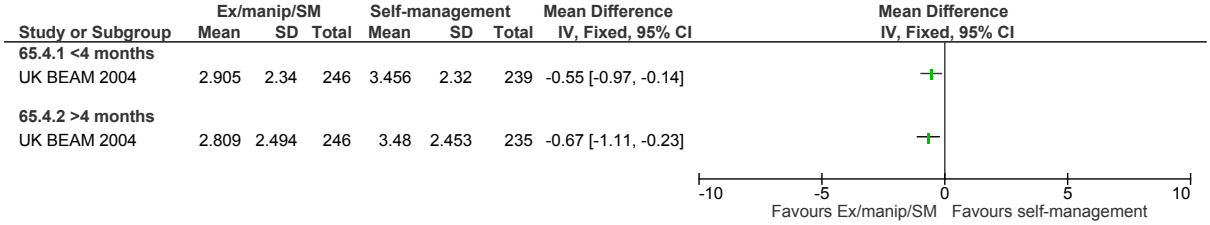
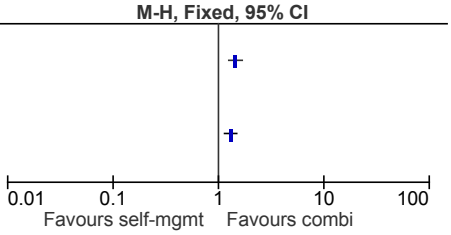


Figure 667: Responder criteria (≥30% improvement in RMDQ)

Study or Subgroup	Ex/manip/SM Events	Total	Self-management Events	Total	Risk Ratio M-H, Fixed, 95% CI
65.5.1 <4 months					
UK BEAM 2004	185	260	125	255	1.45 [1.25, 1.68]
65.5.2 >4 months					
UK BEAM 2004	180	246	139	248	1.31 [1.14, 1.49]



K.8.5.3.9 Mixed modality manual therapy + self-management compared to exercise (biomechanical) self-management

Figure 668: Pain severity (modified Von Korff 0-100 converted to 0-10 scale)

Study or Subgroup	Man + self Mean	SD	Total	Ex + self Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
81.2.1 < 4 months							
UK BEAM 2004	4.09	2.487	275	4.473	2.442	204	-0.38 [-0.83, 0.06]
81.2.2 > 4 months							
UK BEAM 2004	4.168	2.567	264	4.154	2.602	200	0.01 [-0.46, 0.49]

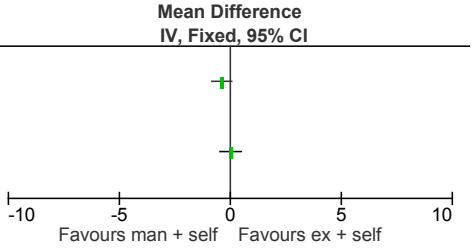


Figure 669: Function (RMDQ, 0-24)

Study or Subgroup	Man + self Mean	SD	Total	Ex + self Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
81.1.1 < 4 months							
UK BEAM 2004	5.09	4.74	287	5.47	4.35	225	-0.38 [-1.17, 0.41]
81.1.2 > 4 months							
UK BEAM 2004	5.15	4.79	273	5.74	4.56	216	-0.59 [-1.42, 0.24]

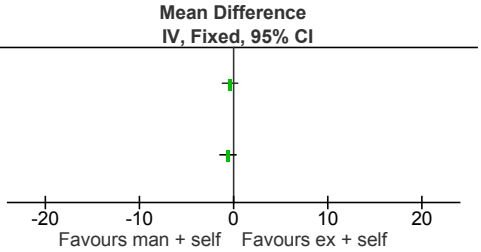


Figure 670: Quality of life (SF-36, 0-100)

Study or Subgroup	Man + self Mean	SD	Total	Ex + self Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
81.3.1 < 4 months: Physical component							
UK BEAM 2004	46.56	7.24	259	46.35	6.63	191	0.21 [-1.08, 1.50]
81.3.2 > 4 months: Physical component							
UK BEAM 2004	44.18	8.73	252	44.39	8.77	194	-0.21 [-1.85, 1.43]
81.3.3 < 4 months: Mental component							
UK BEAM 2004	49.64	9.01	259	47.24	9.26	191	2.40 [0.69, 4.11]
81.3.4 > 4 months: Mental component							
UK BEAM 2004	48.09	10.95	252	46.77	11.28	194	1.32 [-0.77, 3.41]

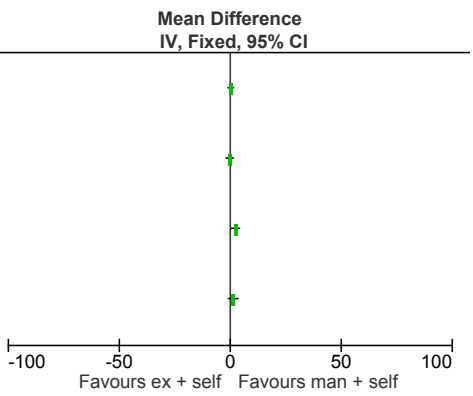
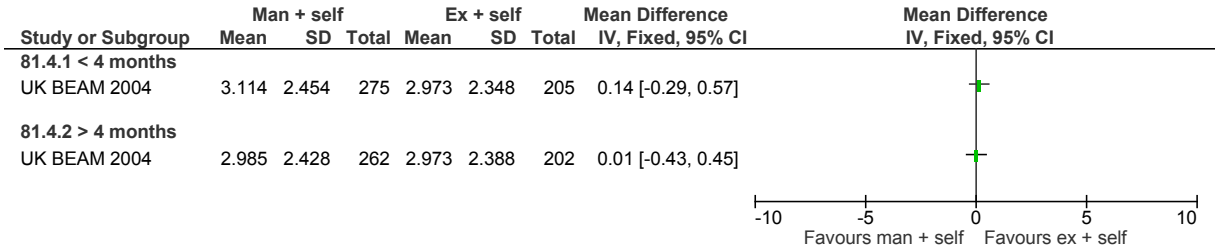


Figure 671: Function (modified Von Korff 0-100 converted to 0-10 scale)



K.8.5.3.10 Manual therapy (manipulation/mobilisation) + exercise (biomechanical) + self-management compared to self-management

Figure 672: Quality of life (15D, 0-1) > 4 months

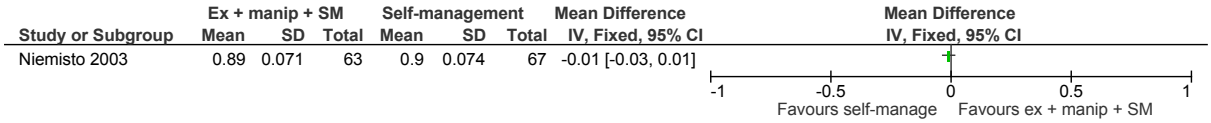


Figure 673: Pain severity (0-100 VAS converted to 0-10) > 4 months

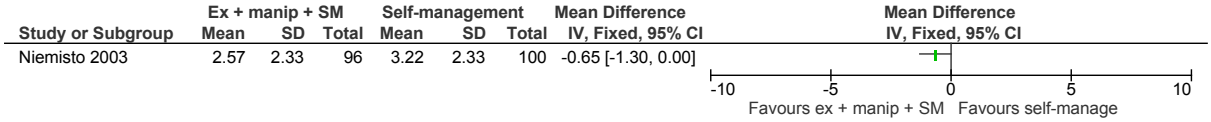


Figure 674: Function (ODI, 0-100) > 4 months

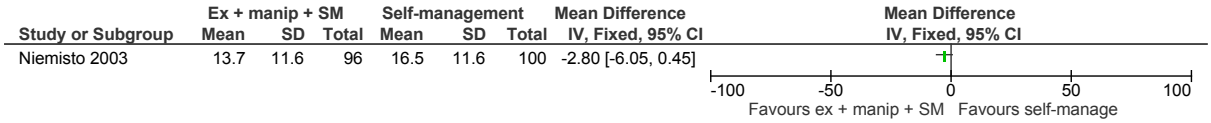


Figure 675: Healthcare utilisation (visits to physicians) > 4 months

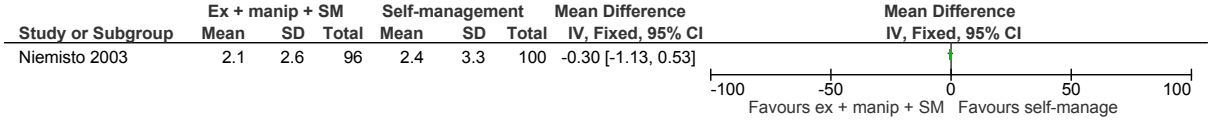
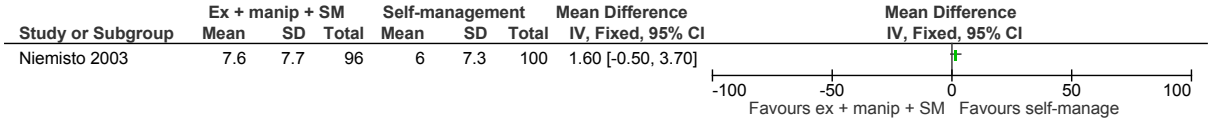


Figure 676: Healthcare utilisation (visits to physiotherapy or other therapies) > 4 months



K.8.5.3.11 Manual therapy (manipulation plus soft tissue techniques - massage) + exercise (biomechanical) + self-management compared to exercise (biomechanical - McKenzie) + self-management

Figure 677: Pain severity (Back and leg pain, 0-60)

Study or Subgroup	Ex + man + mass + SM Mean	SD	Total	Ex + SM Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
64.1.1 <4 months							
Petersen 2011	13	12.4	161	14.4	13	168	-1.40 [-4.14, 1.34]
64.1.2 >4 months							
Petersen 2011	12.2	13.7	163	15	13.6	161	-2.80 [-5.77, 0.17]

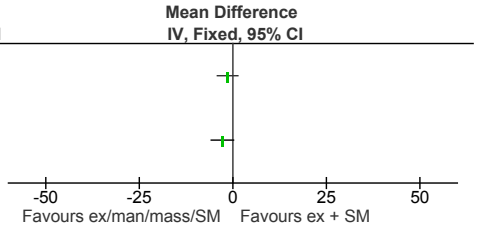


Figure 678: Function (RMDQ, 0-24)

Study or Subgroup	Ex + man + mass + SM Mean	SD	Total	Ex + SM Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
64.2.1 <4 months							
Petersen 2011	5.2	5.9	161	6.7	5.8	168	-1.50 [-2.76, -0.24]
64.2.2 >4 months							
Petersen 2011	5.6	6.5	163	7.1	6.1	161	-1.50 [-2.87, -0.13]

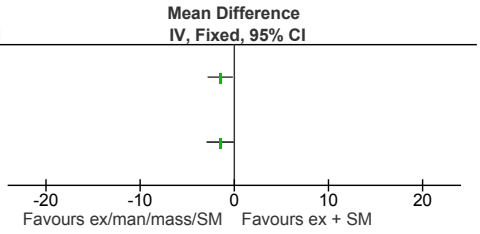


Figure 679: Healthcare utilisation (contact with healthcare in previous 2 months)

Study or Subgroup	Ex + man + mass + SM Events	Total	Ex + SM Events	Total	Risk Ratio M-H, Fixed, 95% CI
64.3.1 <4 months					
Petersen 2011	70	160	60	170	1.24 [0.95, 1.62]
64.3.2 >4 months					
Petersen 2011	89	163	87	162	1.02 [0.83, 1.24]

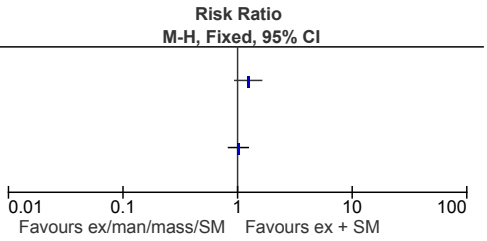
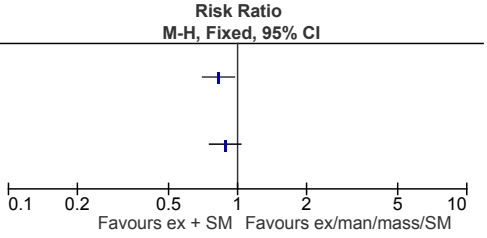


Figure 680: Responder criteria ("Success" = decrease 5 points or absolute score below 5 points on RMDQ)

Study or Subgroup	Ex + man + mass + SM Events	Total	Ex + SM Events	Total	Risk Ratio M-H, Fixed, 95% CI
64.4.1 <4 months					
Petersen 2011	95	161	120	168	0.83 [0.70, 0.97]
64.4.2 >4 months					
Petersen 2011	101	163	113	161	0.88 [0.75, 1.03]



K.8.5.3.12 Manual therapy (manipulation) + exercise +self-management (education + advice to stay active) compared to exercise + self-management (education + advice to stay active)

Figure 681: Pain severity (0-100 VAS converted to 0-10) ≤ 4 months

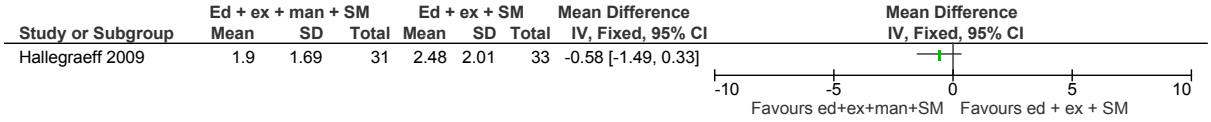
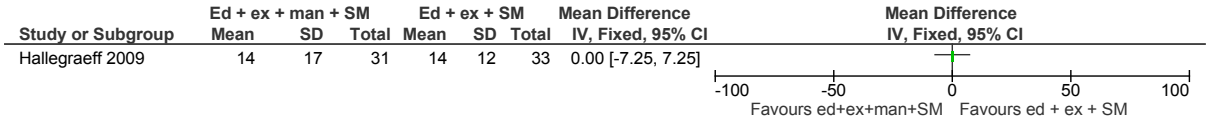


Figure 682: Function (ODI, 0-100) ≤ 4 months



K.8.5.3.13 Manual therapy (manipulation) + self-management (advice) + pharmacological therapy (NSAIDs) compared to usual care

Figure 683: Function (RMDQ, 0-24) change score

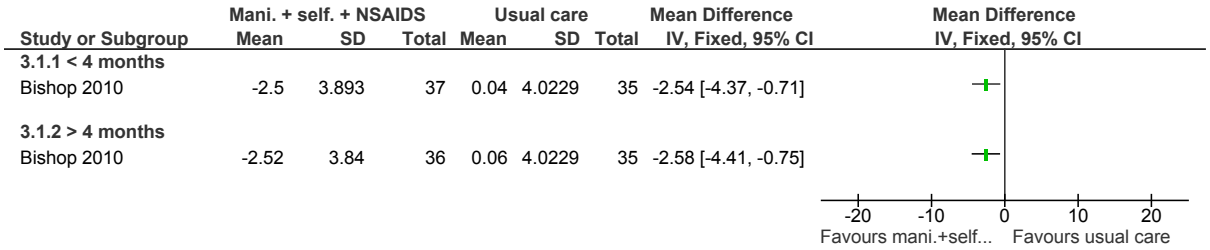


Figure 684: Quality of life (SF-36) ≤4 months

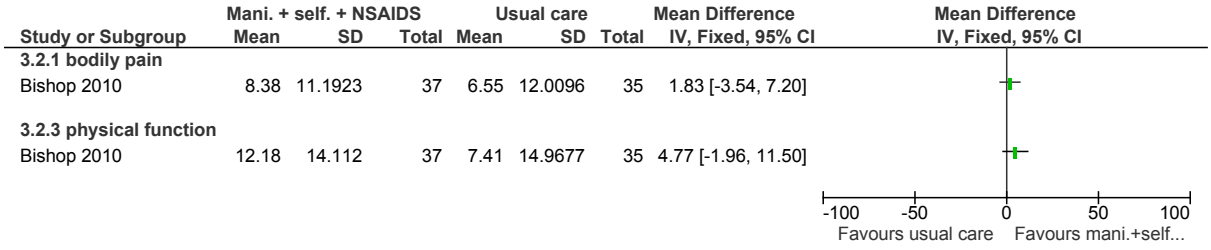
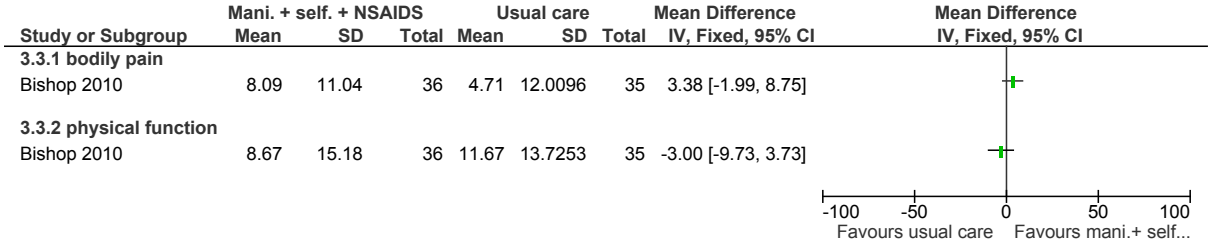


Figure 685: Quality of life (SF-36) >4 months



K.9 Acupuncture

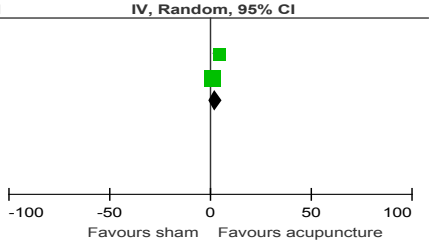
K.9.1 Acupuncture versus sham/placebo

K.9.1.1 Low back pain without sciatica population

Figure 686: Quality of life SF-36/SF12 (0-100) Physical composite score ≤4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.1.1 Physical component summary score								
Brinkhaus 2006A	40.5	9.7	140	36.2	10.3	70	41.9%	4.30 [1.40, 7.20]
Haake 2007	40.3	10.1	370	39.2	9.7	372	58.1%	1.10 [-0.33, 2.53]
Subtotal (95% CI)			**510**			**442**	**100.0%**	**2.44 [-0.65, 5.54]**

Heterogeneity: Tau² = 3.76; Chi² = 3.77, df = 1 (P = 0.05); I² = 73%
Test for overall effect: Z = 1.55 (P = 0.12)

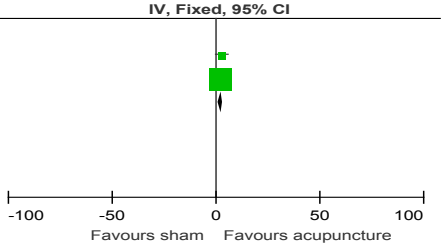


Test for subgroup differences: Not applicable

Figure 687: Quality of life SF-36/SF12 (0-100) Physical composite score > 4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
1.2.1 Physical component summary score								
Brinkhaus 2006A	38.9	10	137	36.1	10.3	68	19.9%	2.80 [-0.17, 5.77]
Haake 2007	41.6	10.5	373	39.5	10.1	372	80.1%	2.10 [0.62, 3.58]
Subtotal (95% CI)			**510**			**440**	**100.0%**	**2.24 [0.92, 3.56]**

Heterogeneity: Chi² = 0.17, df = 1 (P = 0.68); I² = 0%
Test for overall effect: Z = 3.32 (P = 0.0009)

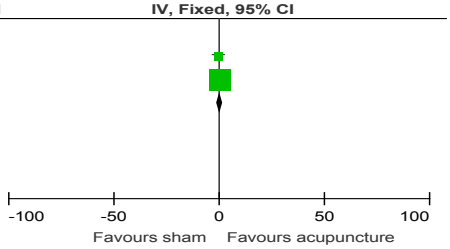


Test for subgroup differences: Not applicable

Figure 688: Quality of life SF-36/SF12 Mental composite score (0-100) ≤4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
1.3.3 Mental component summary score								
Brinkhaus 2006A	50.6	9.5	140	51	9.8	70	24.6%	-0.40 [-3.18, 2.38]
Haake 2007	50.5	11.1	370	50.2	11	372	75.4%	0.30 [-1.29, 1.89]
Subtotal (95% CI)			**510**			**442**	**100.0%**	**0.13 [-1.25, 1.51]**

Heterogeneity: Chi² = 0.18, df = 1 (P = 0.67); I² = 0%
Test for overall effect: Z = 0.18 (P = 0.86)

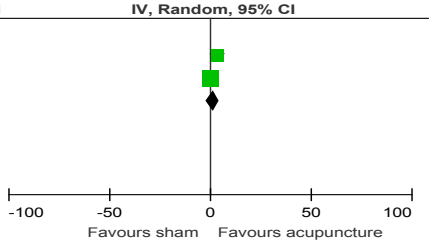


Test for subgroup differences: Not applicable

Figure 689: Quality of life SF-36/SF12 mental composite score (0-100) > 4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
1.4.2 Mental component summary score								
Brinkhaus 2006A	50.5	10.4	137	47.2	11.9	68	40.9%	3.30 [-0.02, 6.62]
Haake 2007	50.7	11.1	373	50.9	10.8	372	59.1%	-0.20 [-1.77, 1.37]
Subtotal (95% CI)			**510**			**440**	**100.0%**	**1.23 [-2.14, 4.60]**

Heterogeneity: Tau² = 4.37; Chi² = 3.48, df = 1 (P = 0.06); I² = 71%
Test for overall effect: Z = 0.72 (P = 0.47)



Test for subgroup differences: Not applicable

Figure 690: Quality of life SF-36 individual domain scores (0-100) ≤4 months

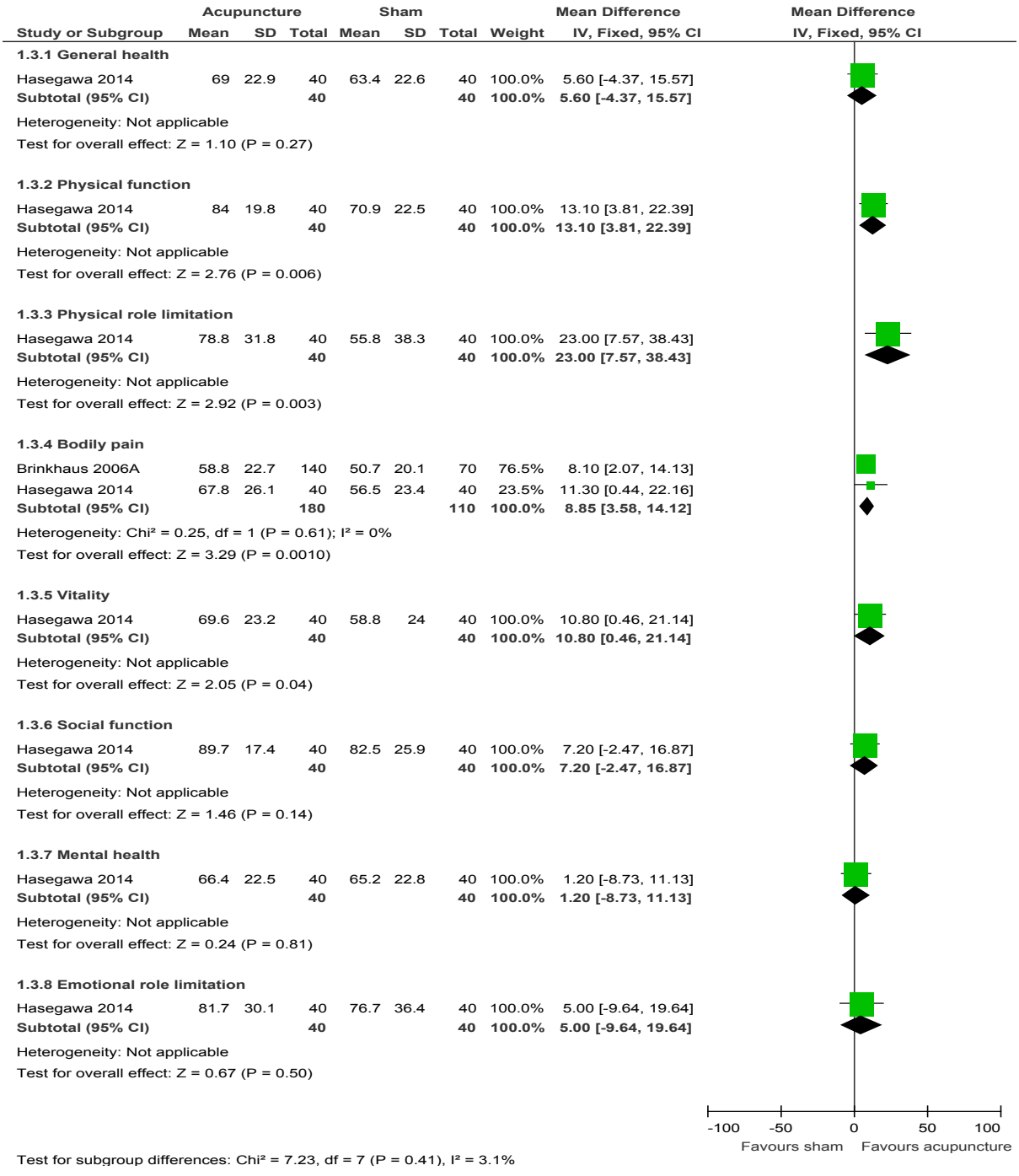


Figure 691: Quality of life SF-36 individual domain scores (0-100) >4 months

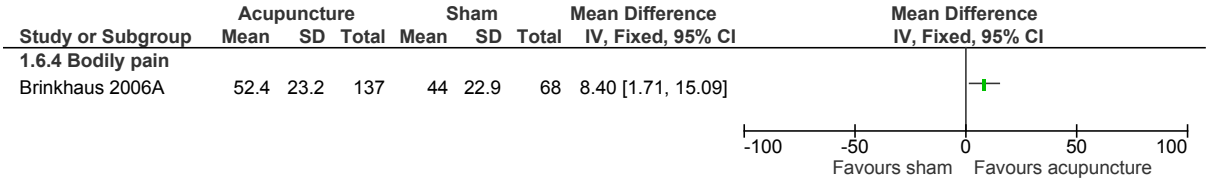


Figure 692: Pain severity (VAS/Von Korff Chronic Pain Grade Scale 0–10) ≤4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Brinkhaus 2006A	3.45	2.85	140	4.37	2.98	70	11.6%	-0.92 [-1.76, -0.08]
Cherkin 2009 (SA)	3.3	2.5	152	3	2.4	159	14.6%	0.30 [-0.25, 0.85]
Cho 2013	2.78	2.32	57	4.06	2.19	59	11.8%	-1.28 [-2.10, -0.46]
Haake 2007	4.54	1.94	373	4.85	1.95	376	16.9%	-0.31 [-0.59, -0.03]
Hasegawa 2014	1.98	2.12	40	3.38	2.26	40	10.5%	-1.40 [-2.36, -0.44]
Inoue 2006	4.7	0.7	15	5.5	1.3	16	12.8%	-0.80 [-1.53, -0.07]
Leibing 2002	-2.7	2.2	40	-2.1	2.2	45	10.7%	-0.60 [-1.54, 0.34]
Molsberger 2002	2.3	2	47	4.3	2.3	41	11.0%	-2.00 [-2.91, -1.09]
Total (95% CI)			**864**			**806**	**100.0%**	**-0.80 [-1.29, -0.32]**

Heterogeneity: Tau² = 0.34; Chi² = 29.05, df = 7 (P = 0.0001); I² = 76%
Test for overall effect: Z = 3.23 (P = 0.001)

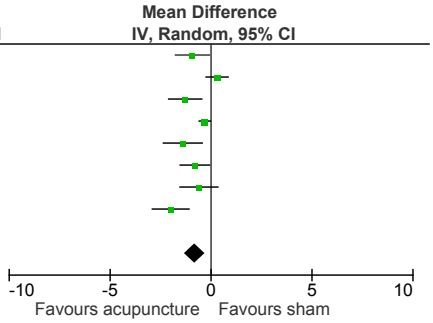
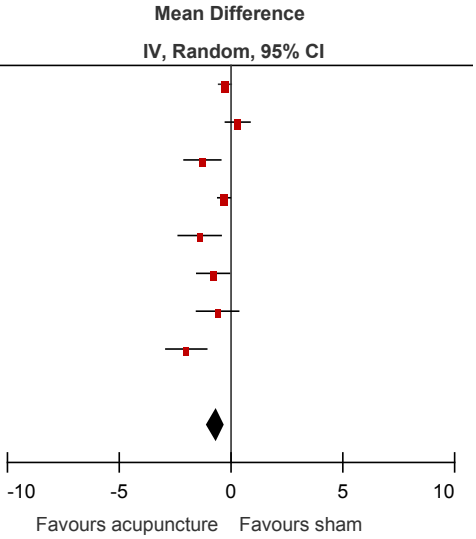


Figure 693: Sensitivity analysis – Pain severity (VAS/Von Korff Chronic Pain Grade Scale 0–10) ≤4 months

Study or Subgroup	Mean Difference	SE	Weight	Mean Difference IV, Random, 95% CI
Brinkhaus 2006A	-0.27	0.1429	17.5%	-0.27 [-0.55, 0.01]
Cherkin 2009 (SA)	0.3	0.2806	14.1%	0.30 [-0.25, 0.85]
Cho 2013	-1.28	0.4184	10.7%	-1.28 [-2.10, -0.46]
Haake 2007	-0.31	0.1429	17.5%	-0.31 [-0.59, -0.03]
Hasegawa 2014	-1.4	0.4898	9.2%	-1.40 [-2.36, -0.44]
Inoue 2006	-0.8	0.3725	11.8%	-0.80 [-1.53, -0.07]
Leibing 2002	-0.6	0.4796	9.4%	-0.60 [-1.54, 0.34]
Molsberger 2002	-2	0.4643	9.7%	-2.00 [-2.91, -1.09]
Total (95% CI)			**100.0%**	**-0.67 [-1.08, -0.27]**

Heterogeneity: Tau² = 0.22; Chi² = 29.24, df = 7 (P = 0.0001); I² = 76%
Test for overall effect: Z = 3.24 (P = 0.001)



IPD data for Brinkhaus 2006A

Figure 694: Pain severity (VAS 0–10) > 4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Sham Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Brinkhaus 2006A	3.92	2.92	137	4.49	3.04	68	8.2%	-0.57 [-1.44, 0.30]
Cherkin 2009 (SA)	3.5	2.7	147	3.4	2.7	152	16.6%	0.10 [-0.51, 0.71]
Cho 2013	2.79	2.44	57	3.52	2.53	59	7.6%	-0.73 [-1.63, 0.17]
Haake 2007	4.02	2.25	377	4.33	2.3	376	59.0%	-0.31 [-0.64, 0.02]
Leibing 2002	-1.7	1.8	40	-1.8	2.2	45	8.6%	0.10 [-0.75, 0.95]
Total (95% CI)			**758**			**700**	**100.0%**	**-0.26 [-0.51, -0.01]**

Heterogeneity: Chi² = 3.63, df = 4 (P = 0.46); I² = 0%
Test for overall effect: Z = 2.04 (P = 0.04)

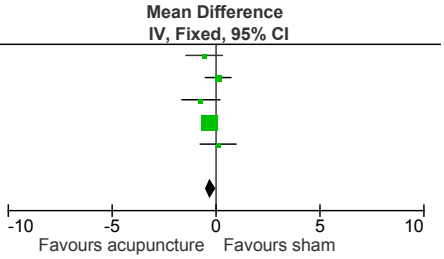
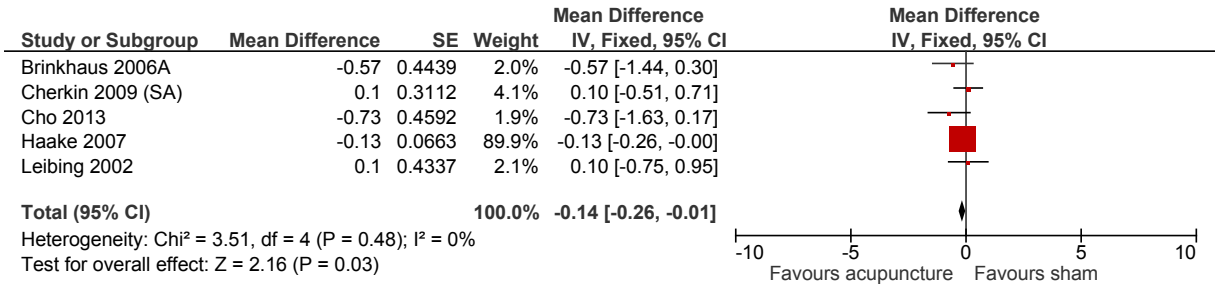


Figure 695: Sensitivity analysis – Pain severity (VAS 0–10) >4 months



IPD data for Haake 2007

Figure 696: Function (RMDQ, 0-23) ≤4 months

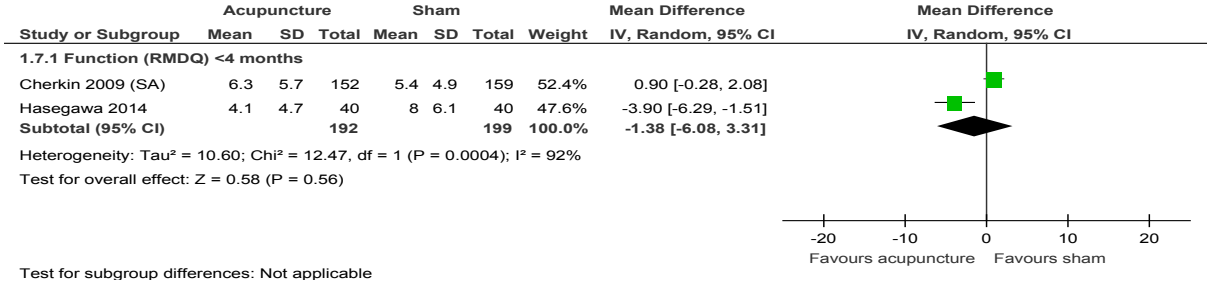


Figure 697: Function (RMDQ, 0-23) > 4 months

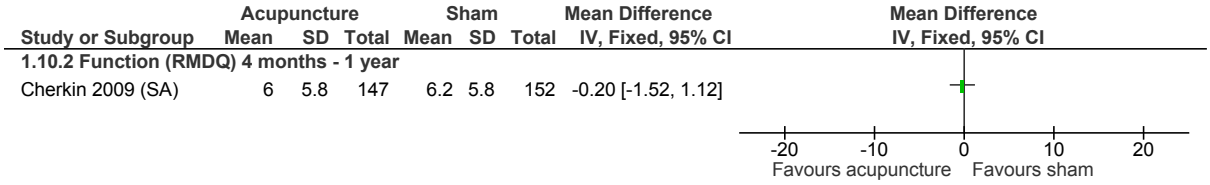


Figure 698: Function (FFbH-R/HFAQ, (0-100) ≤4 months

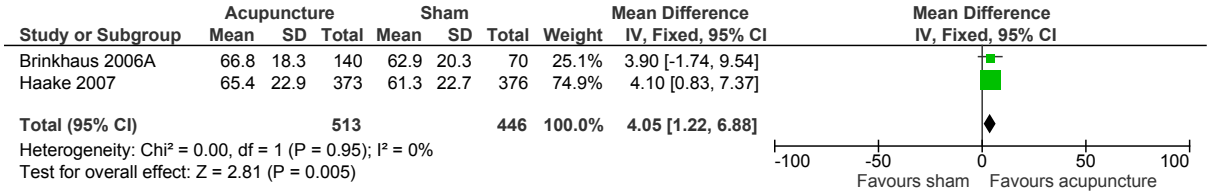


Figure 699: Function (FFbH-R/HFAQ, 0-100) > 4 months

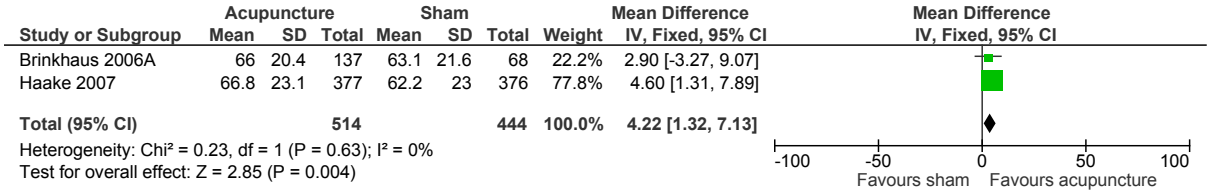


Figure 700: Function (PDI, 0-70) ≤4 months

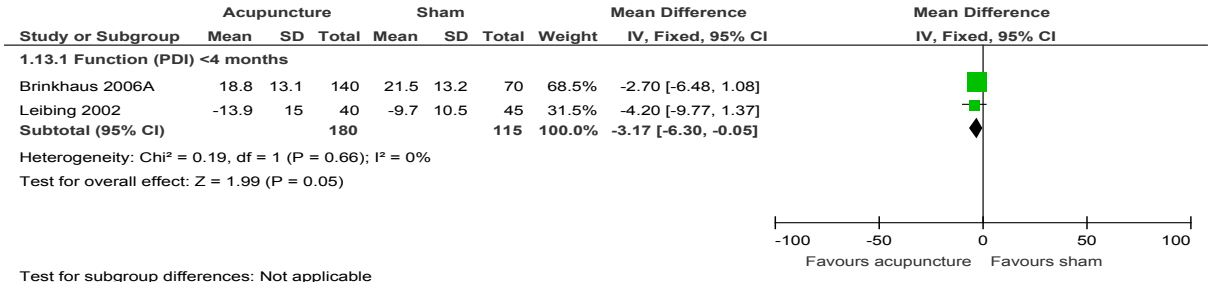


Figure 701: Function (PDI, 0-70) > 4 months

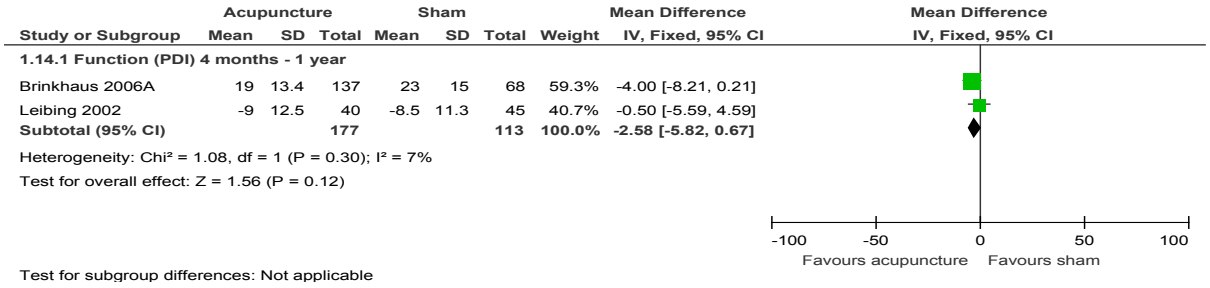


Figure 702: Function (ODI 0–100) [change scores] ≤ 4 months

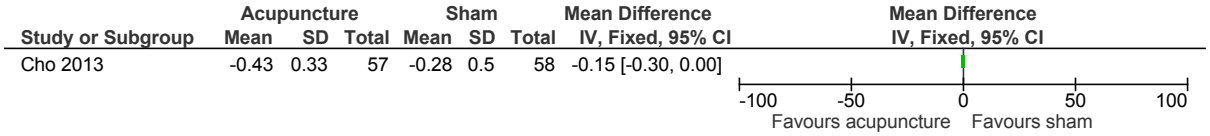


Figure 703: Function (ODI 0–100) [change scores] > 4 months

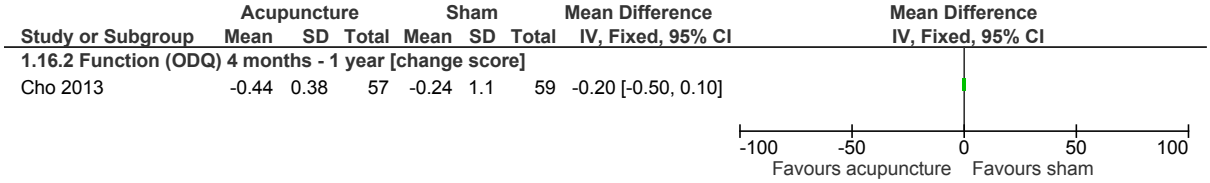


Figure 704: Function (FFbH-R, 0-100) ≤4 months

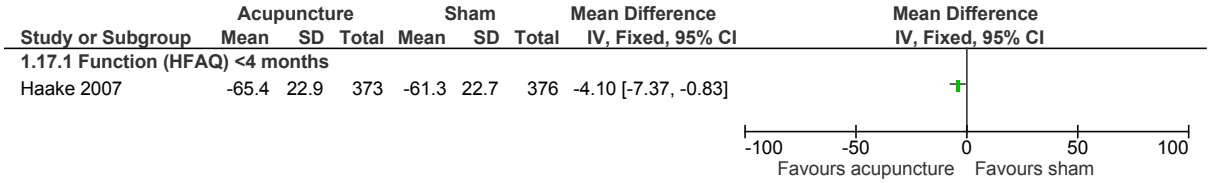


Figure 705: Function (FFbH-R, 0-100) > 4 months

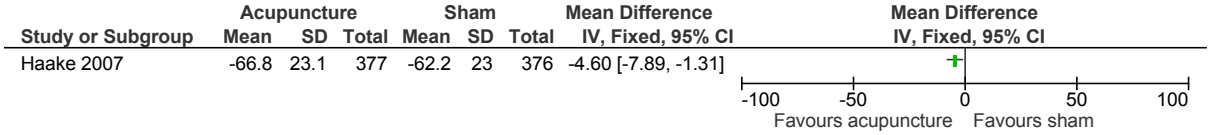


Figure 706: Psychological distress (CES-D, 0-60) ≤ 4 months

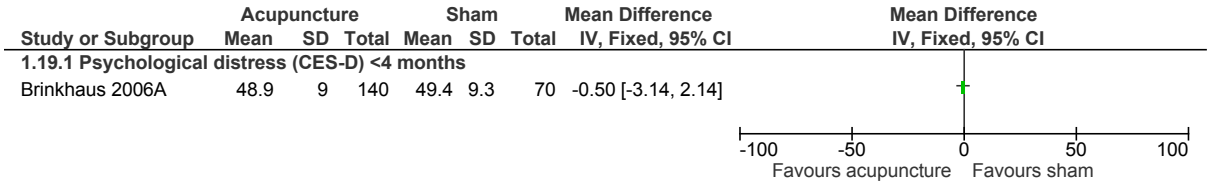


Figure 707: Psychological distress (CES-D, 0-60) > 4 months

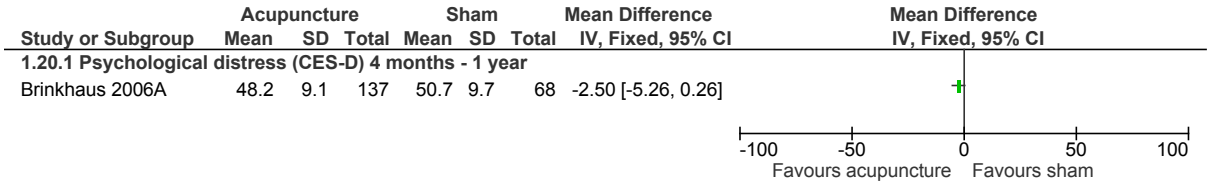


Figure 708: Psychological distress (BDI, 0-100) [change scores] ≤4 months

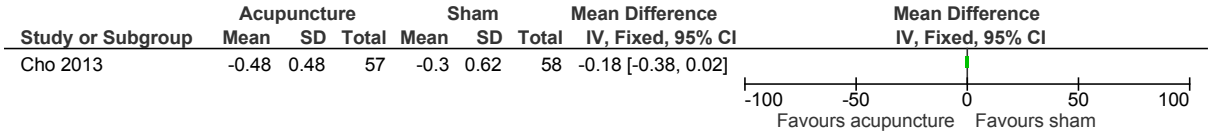


Figure 709: Psychological distress (BDI, 0-100) [change scores] > 4 months

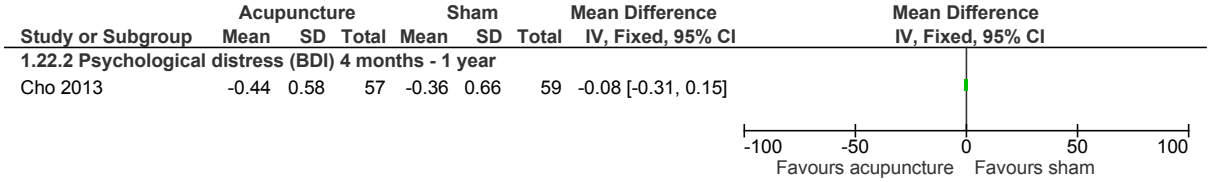


Figure 710: Psychological distress (HADS, 0-42) [change scores] ≤4 months

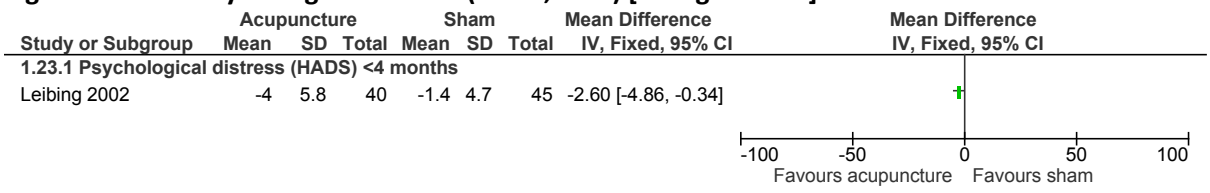


Figure 711: Psychological distress (HADS, 0-42)[change scores] > 4 months

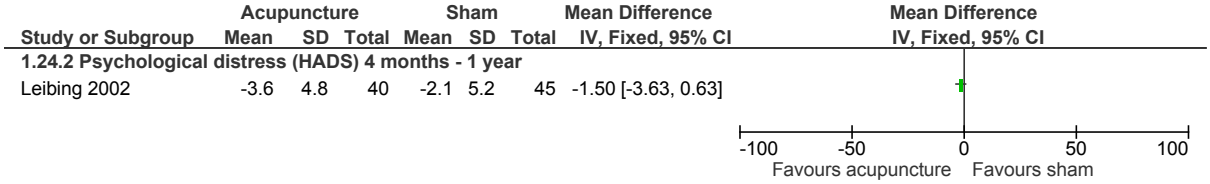


Figure 712: Adverse effects – serious adverse events (apparently not treatment-related)

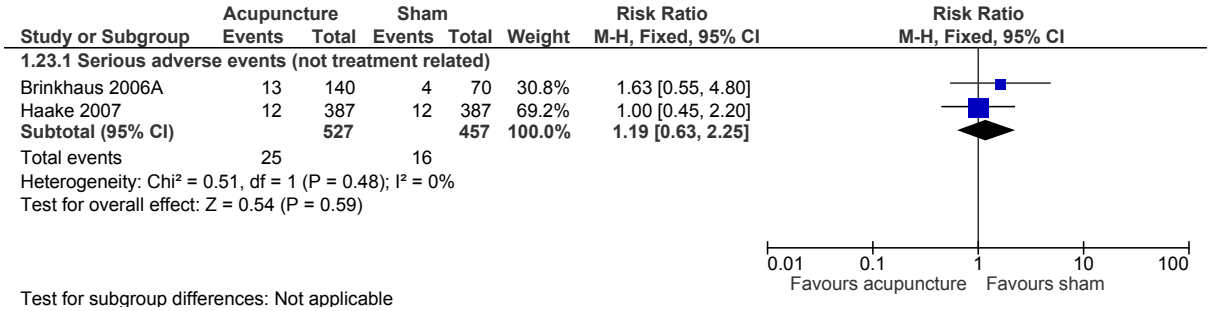


Figure 713: Adverse effects – adverse effects (possibly treatment-related)

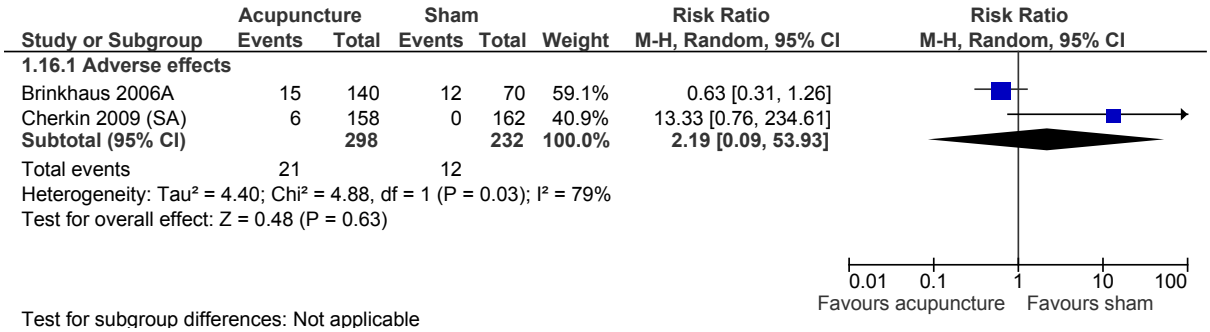


Figure 714: Days with analgesics ≤4 months

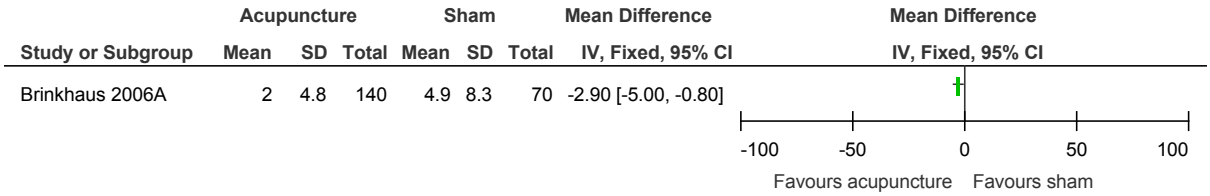
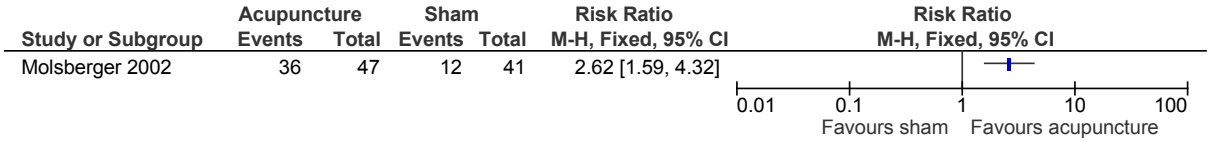


Figure 715: Responder criteria (50%) ≤4 months



K.9.1.2 Overall population (mixed) with and without sciatica

Figure 716: Pain severity (VAS 0–10) ≤4 months

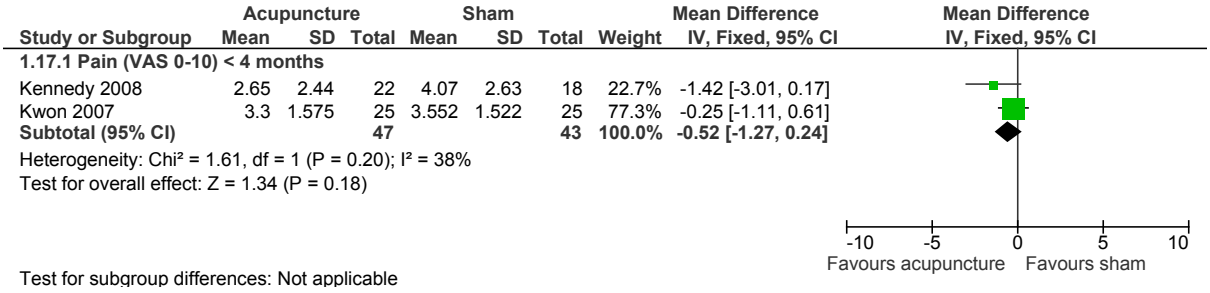
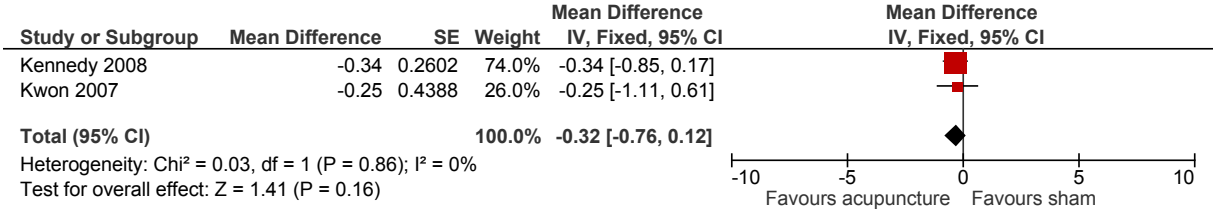


Figure 717: Sensitivity analysis – Pain severity (VAS 0-10) ≤4 months



IPD data for Kennedy 2008

Figure 718: Function (RMDQ, 0-23) ≤4 months

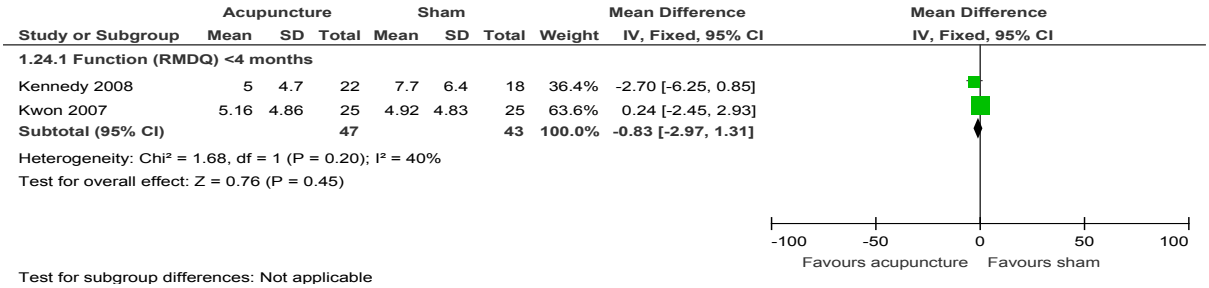


Figure 719: Adverse effects – adverse effects (possibly related to treatment)

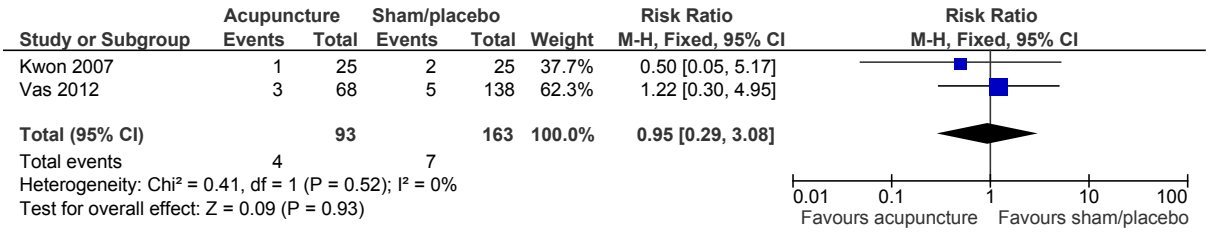
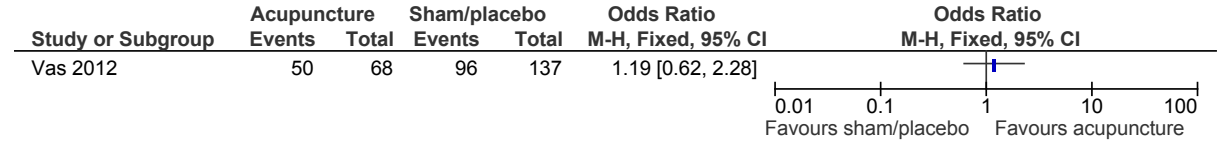


Figure 720: Responder criteria (improvement in function >35%) ≤4 months



K.9.2 Acupuncture versus usual care

K.9.2.1 Low back pain without sciatica population

Figure 721: Quality of life SF-36 composite scores ≤4 months

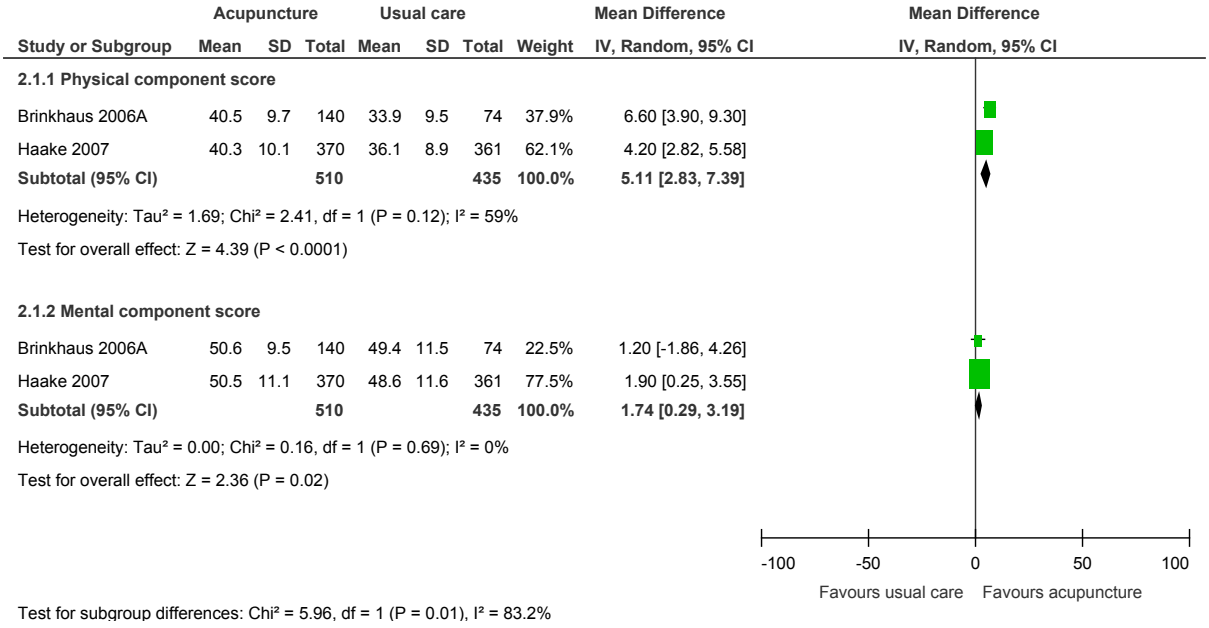


Figure 722: Quality of life SF-36 (0-100) individual domain scores ≤4 months

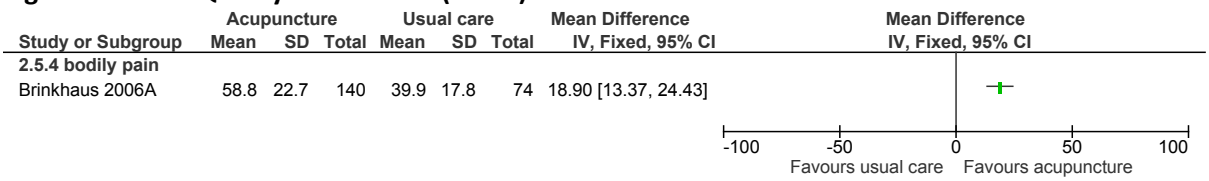


Figure 723: Quality of life SF-12 (0-100) composite scores > 4 months

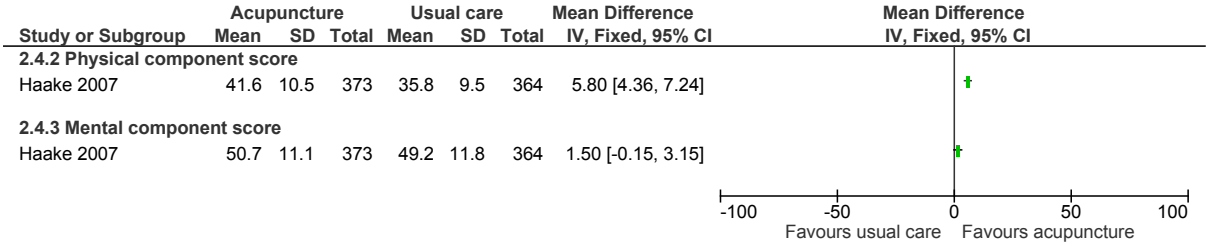


Figure 724: Pain severity (VAS 0–10) ≤4 months

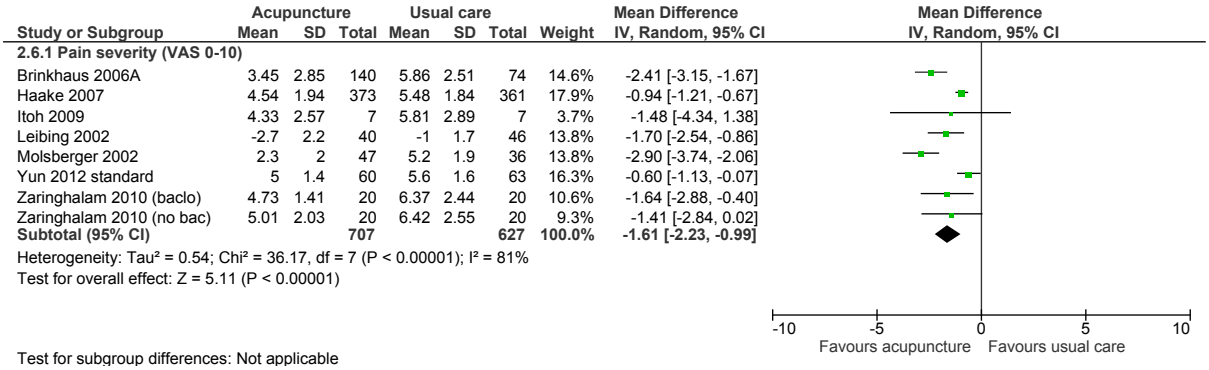
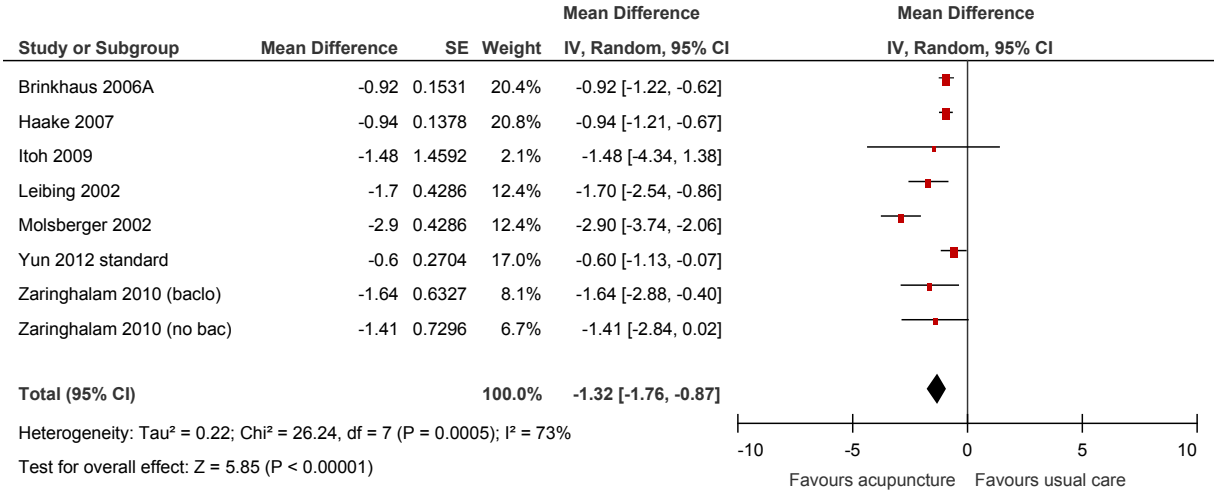


Figure 725: Sensitivity analysis - Pain severity (VAS 0–10) ≤4 months



IPD data for Brinkhaus 2006A

Figure 726: Pain severity (VAS 0–10) > 4 months

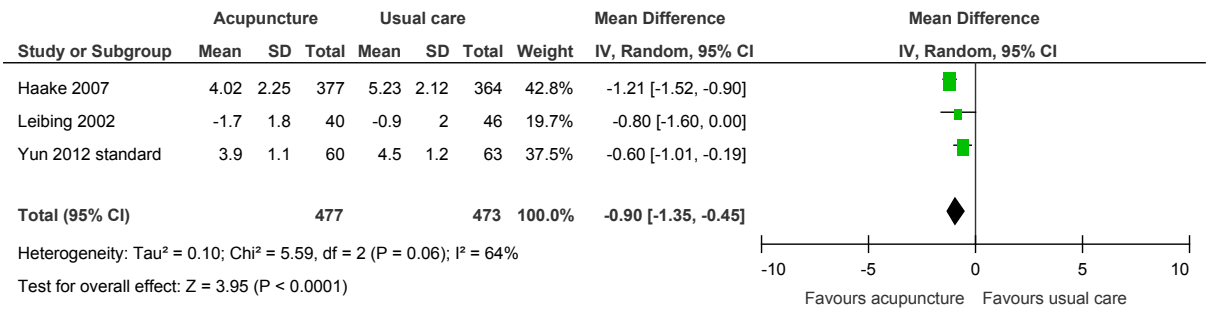
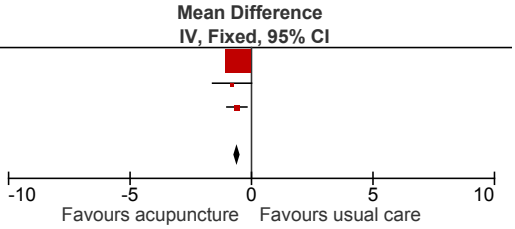


Figure 727: Sensitivity analysis - Pain severity (VAS 0–10) > 4 months

Study or Subgroup	Mean Difference	SE	Weight	Mean Difference IV, Fixed, 95% CI
Haake 2007	-0.56	0.0663	88.7%	-0.56 [-0.69, -0.43]
Leibing 2002	-0.8	0.4082	2.3%	-0.80 [-1.60, 0.00]
Yun 2012 standard	-0.6	0.2092	8.9%	-0.60 [-1.01, -0.19]
Total (95% CI)			**100.0%**	**-0.57 [-0.69, -0.45]**

Heterogeneity: Chi² = 0.36, df = 2 (P = 0.84); I² = 0%
Test for overall effect: Z = 9.11 (P < 0.00001)



IPD data for Haake 2007

Figure 728: Function (RMDQ, 0-24) final scores ≤4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Usual care Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Cherkin 2009 (SA)	6.3	5.7	152	8.9	6	148	13.5%	-2.60 [-3.92, -1.28]
Itoh 2009	6.7	4.8	7	7.7	4.6	7	1.0%	-1.00 [-5.93, 3.93]
Yun 2012 standard	6.6	1.5	60	8.8	2.4	63	47.8%	-2.20 [-2.90, -1.50]
Yun 2012A standard	7.6	2.9	82	9.5	2.7	74	30.6%	-1.90 [-2.78, -1.02]
Zaringhalam 2010 (baclo)	5.8	0.58	20	9.5	4.1	20	7.2%	-3.70 [-5.51, -1.89]
Total (95% CI)			**321**			**312**	**100.0%**	**-2.26 [-2.74, -1.77]**

Heterogeneity: Chi² = 3.60, df = 4 (P = 0.46); I² = 0%
Test for overall effect: Z = 9.10 (P < 0.00001)

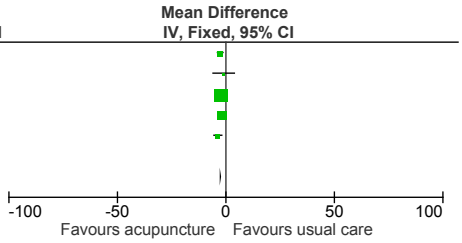
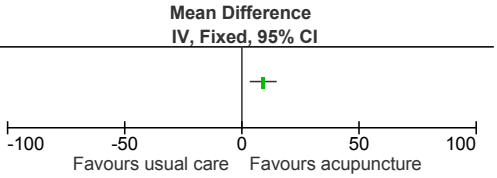


Figure 729: Function (FFbH-R, 0-100) ≤4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Usual care Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
2.9.1 Function (FFbH-R) <4 months							
Brinkhaus 2006A	66.8	18.3	140	57.7	19.9	74	9.10 [3.65, 14.55]



Data not reported for FFbH-R vs. usual care at > 4 months

Figure 730: Function (PDI 0–70) ≤4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Usual care Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
2.10.1 Function (PDI) <4 months								
Brinkhaus 2006A	18.8	13.1	140	27.1	14.1	74	64.0%	-8.30 [-12.18, -4.42]
Leibing 2002	-13.9	15	40	-2.6	7.8	46	36.0%	-11.30 [-16.47, -6.13]
Subtotal (95% CI)			**180**			**120**	**100.0%**	**-9.38 [-12.48, -6.28]**

Heterogeneity: Chi² = 0.83, df = 1 (P = 0.36); I² = 0%
Test for overall effect: Z = 5.93 (P < 0.00001)

Test for subgroup differences: Not applicable

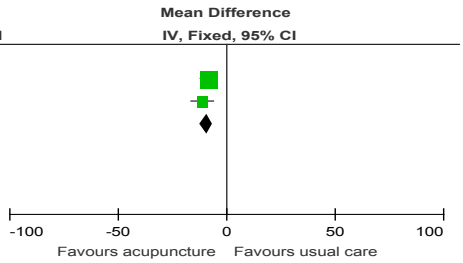


Figure 731: Function (PDI 0–70) >4 months

Study or Subgroup	Acupuncture Mean	SD	Total	Usual care Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Leibing 2002	-9	12.5	40	-2.3	10	46		-6.70 [-11.53, -1.87]

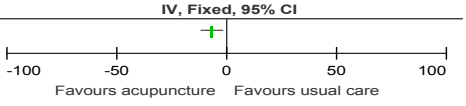
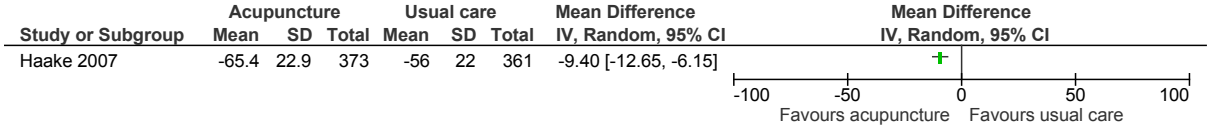


Figure 732: Function HFAQ, 0-100 ≤4 months



Witt et al.: usual care = waiting list

Figure 733: Function (RMDQ, 0-24) final scores > 4 months

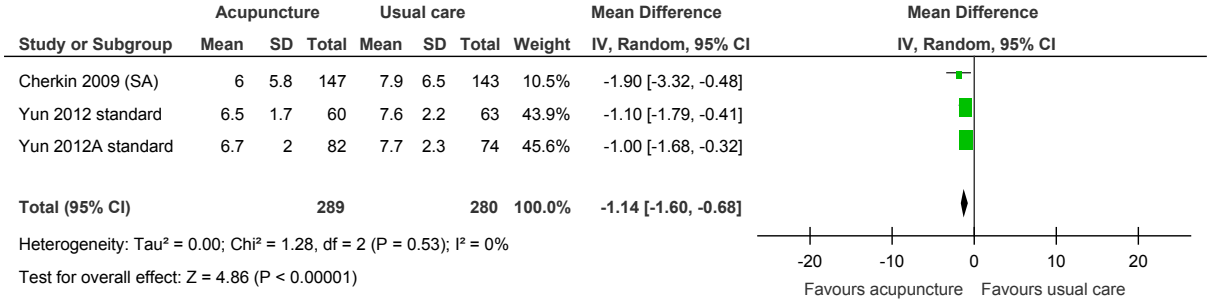


Figure 734: Function (FFbH-R, 0-100) > 4 months

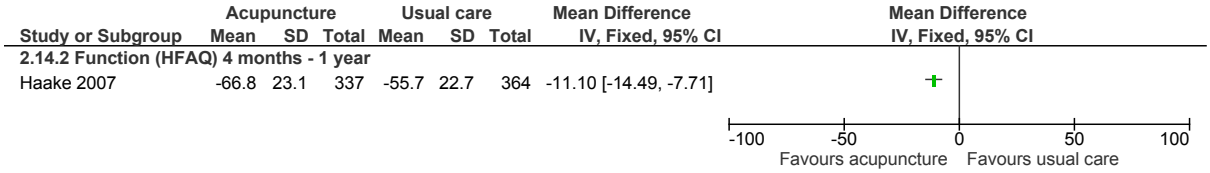


Figure 735: Psychological distress (CES-D, 0-60) ≤4 months

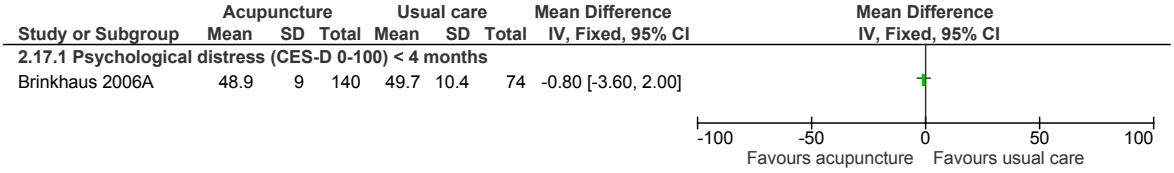


Figure 736: Psychological distress (HADS 0–42) ≤4 months

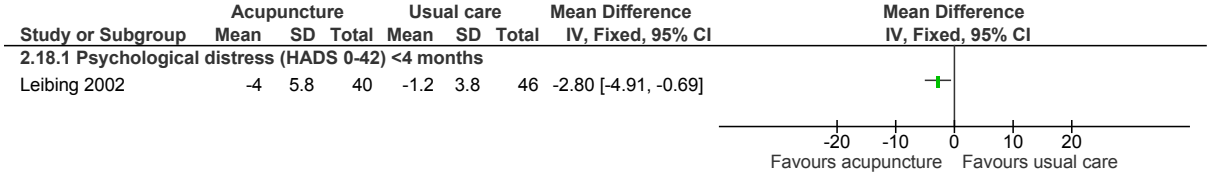


Figure 737: Psychological distress (HADS 0–42) > 4 months

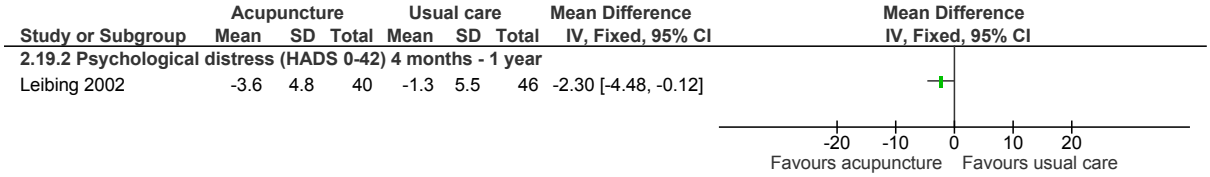


Figure 738: Adverse effects – serious adverse events (apparently not treatment-related)

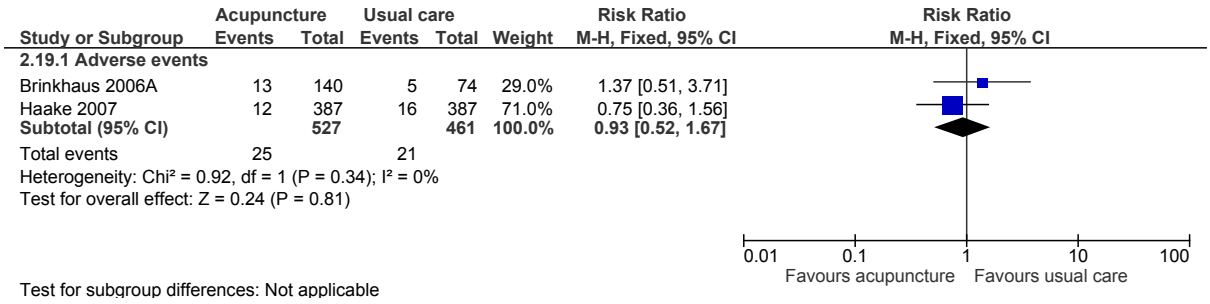


Figure 739: Days with analgesics ≤4 months

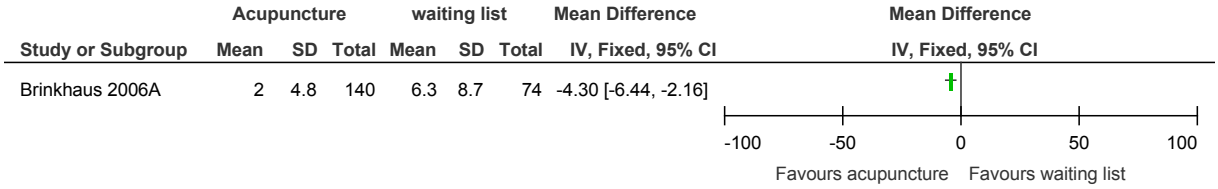
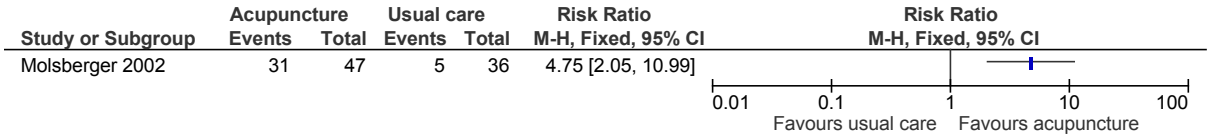


Figure 740: Responder criteria (50%)



K.9.2.2 Overall population (mixed) with and without sciatica

Figure 741: Quality of life EQ-5D (0–1) ≤4 months

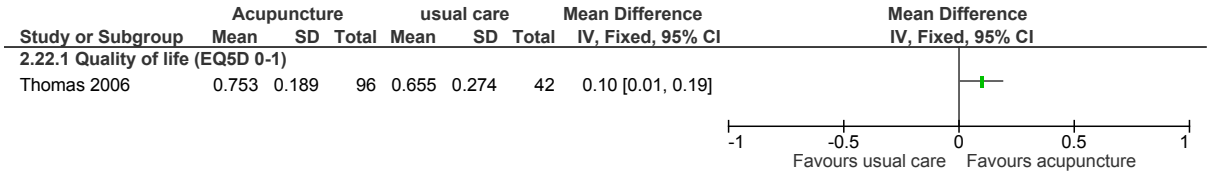


Figure 742: Quality of life EQ-5D (0–1) > 4 months

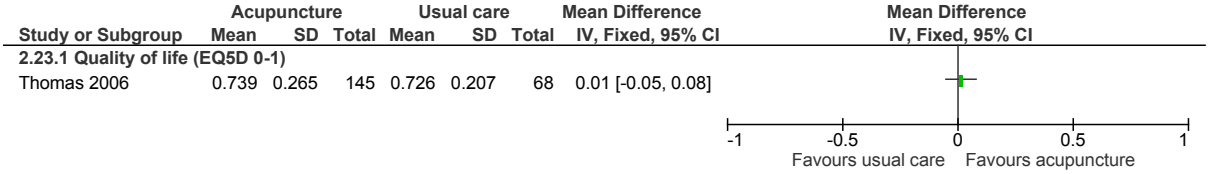


Figure 743: Quality of life SF-36 (0-100) individual domain scores ≤4 months

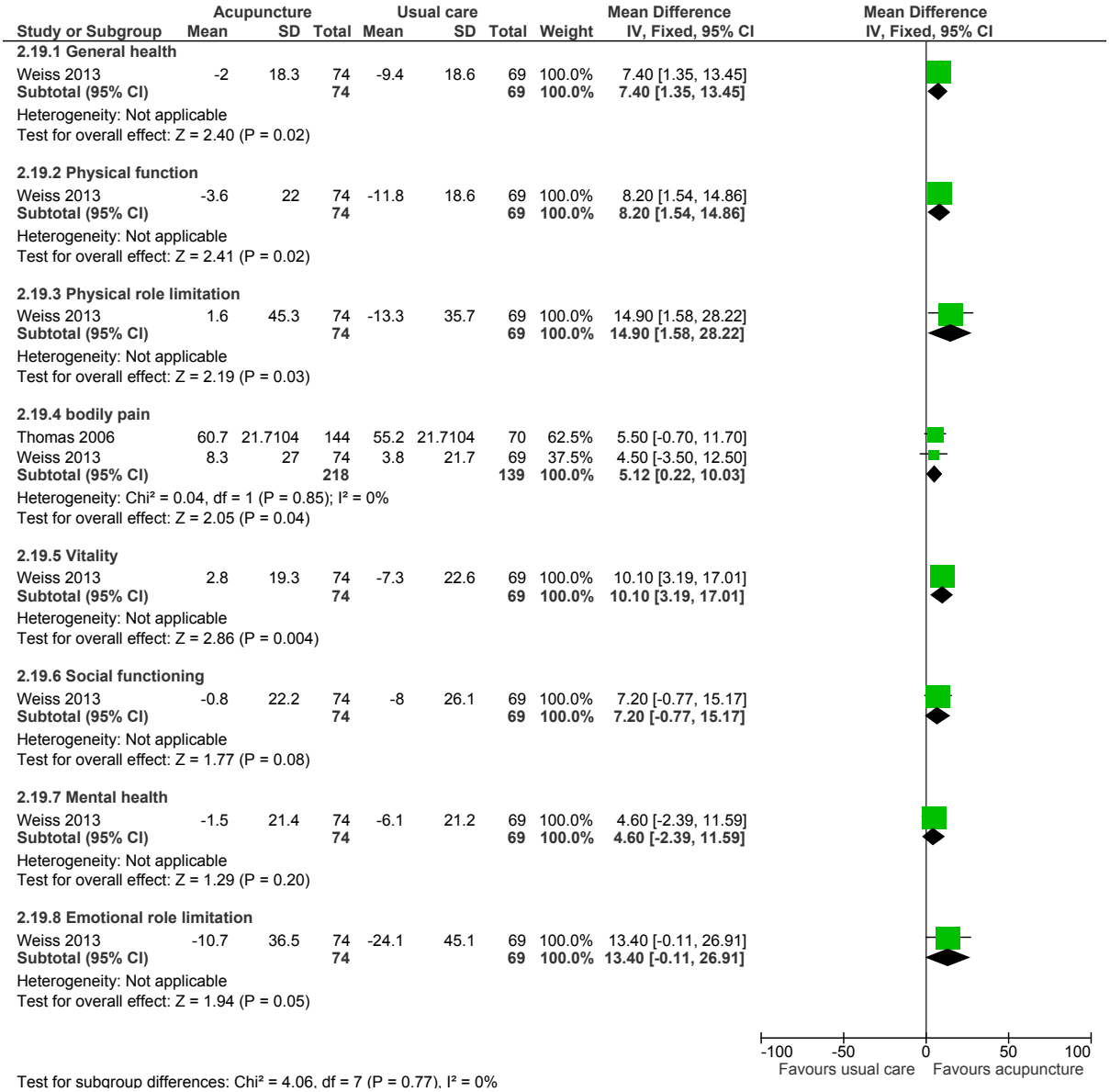


Figure 744: Quality of life SF-36 (0-100) individual domain scores > 4 months

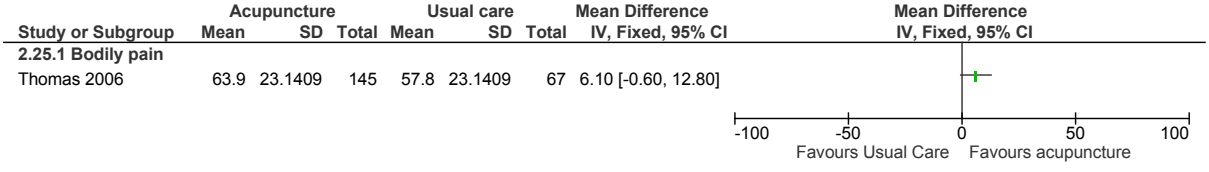


Figure 745: Quality of life SF-36 (0-100) ≤4 months

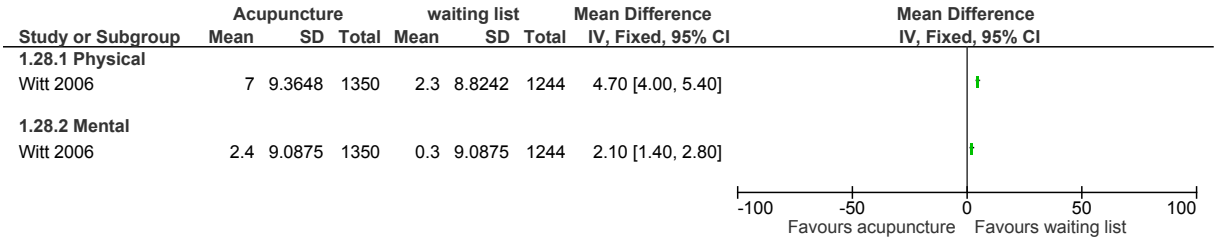


Figure 746: Quality of life SF-36 (0-100) >4 months

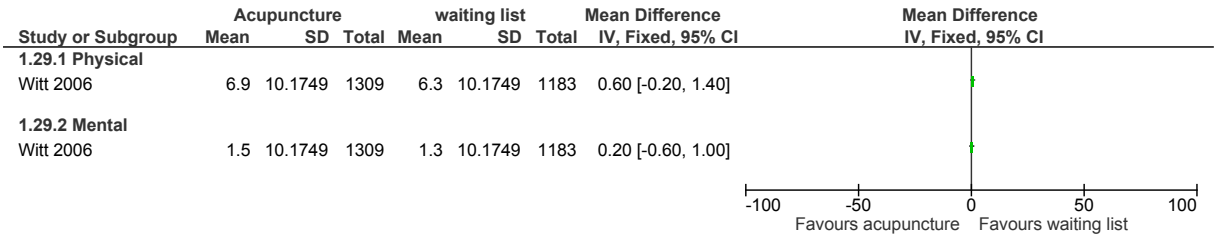


Figure 747: Pain severity (VAS 0–10) ≤4 months

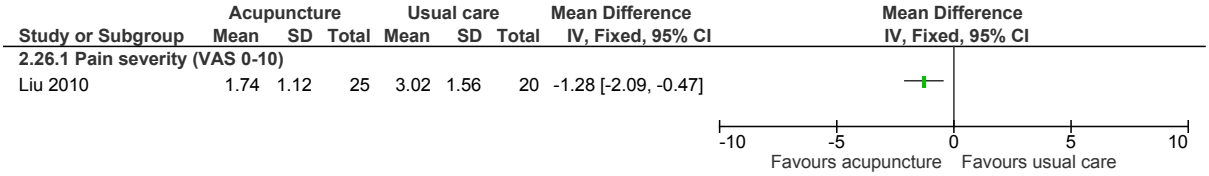


Figure 748: Pain severity (VAS 0–10) > 4 months

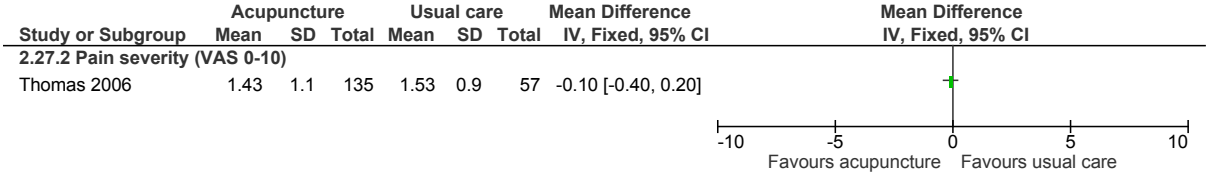


Figure 749: Sensitivity analysis - Pain severity (VAS 0–10) > 4 months

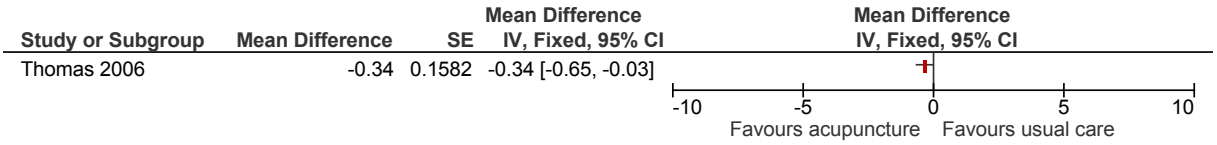
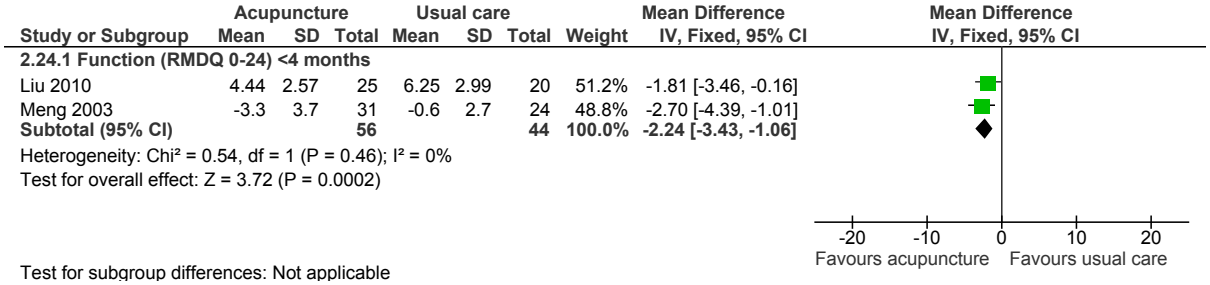


Figure 750: Function (RMDQ 0–24) ≤4 months [change and final scores]



Test for subgroup differences: Not applicable

Figure 751: Function (ODI) > 4 months

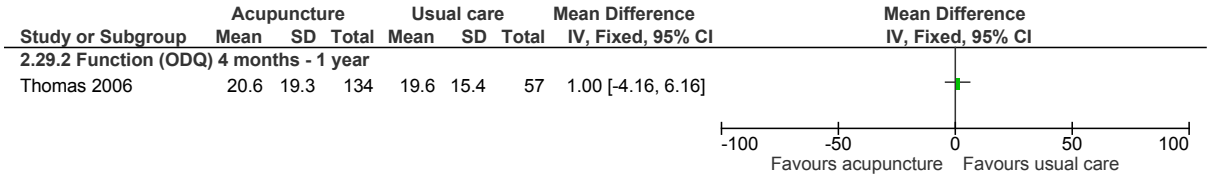


Figure 752: Responder criteria (improvement in function >35%) ≤4 months

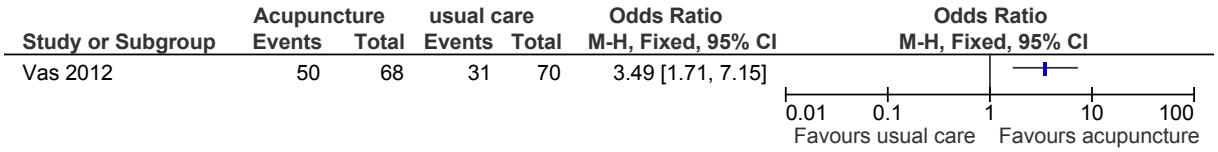
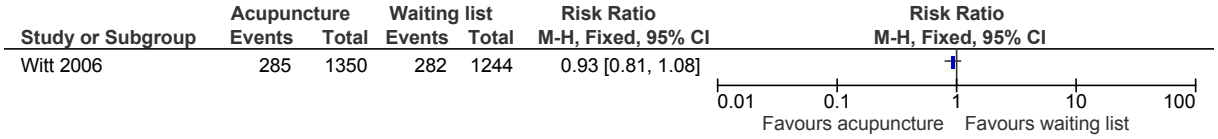


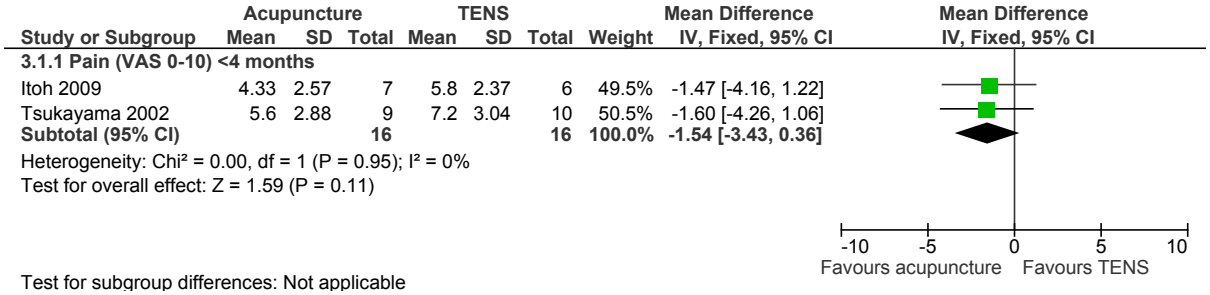
Figure 753: Healthcare utilisation (prescription for analgesics) ≤4 months



K.9.3 Acupuncture versus TENS

K.9.3.1 Low back pain without sciatica population

Figure 754: Pain severity (VAS 0–10) ≤4 months



Test for subgroup differences: Not applicable

Figure 755: Function (RMDQ 0–24) ≤4 months

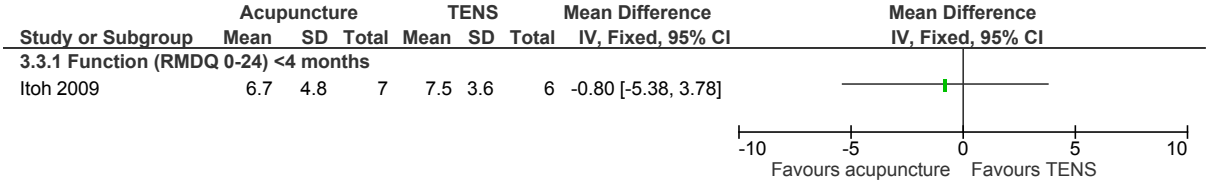


Figure 756: Function (ability, JOA score 0-17); low back pain without sciatica

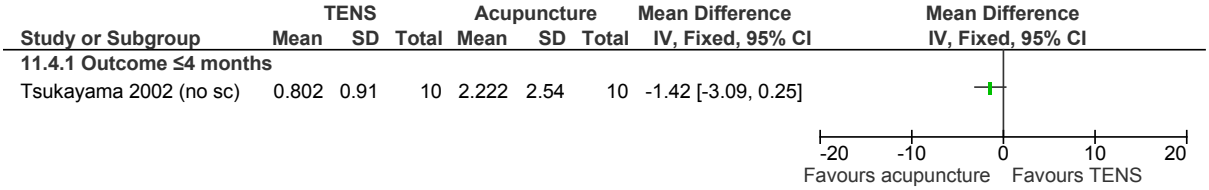
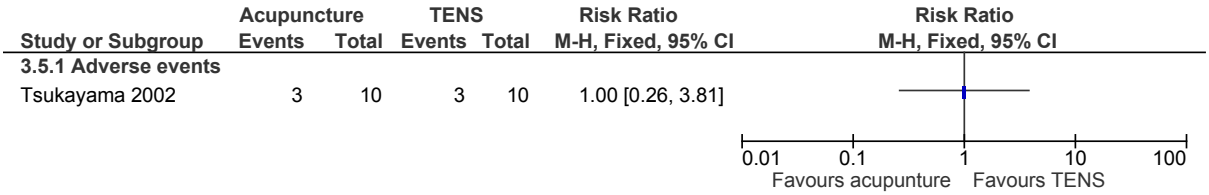


Figure 757: Adverse effects – adverse events ≤4 months



K.9.4 Acupuncture versus NSAIDs

K.9.4.1 Overall (mixed) population with or without sciatica

Figure 758: Pain severity (VAS 0–10) ≤4 months

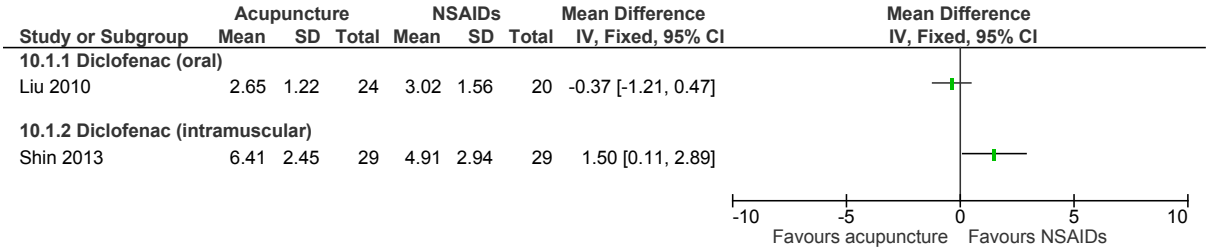


Figure 759: Pain severity (VAS 0–10) > 4 months

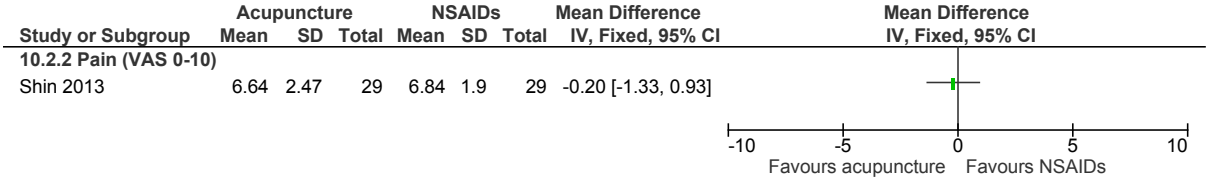


Figure 760: Function (RMDQ /ODQ) ≤4 months

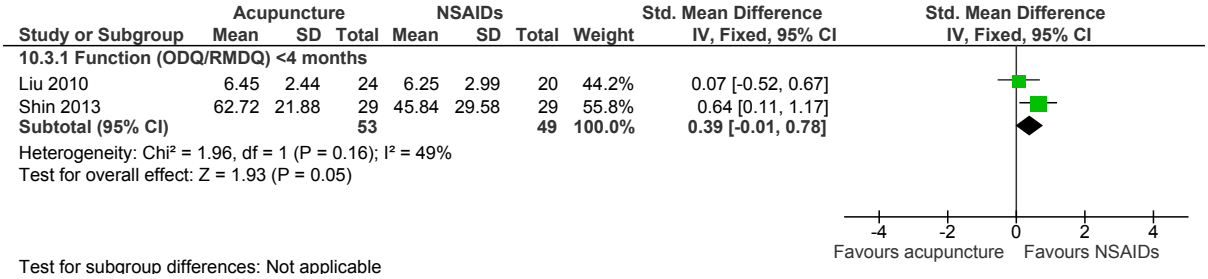


Figure 761: Function (ODI 0–100) > 4 months

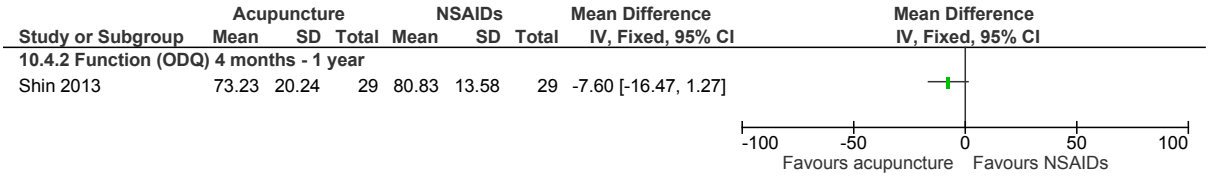


Figure 762: Healthcare utilisation – inpatient care ≤4 months

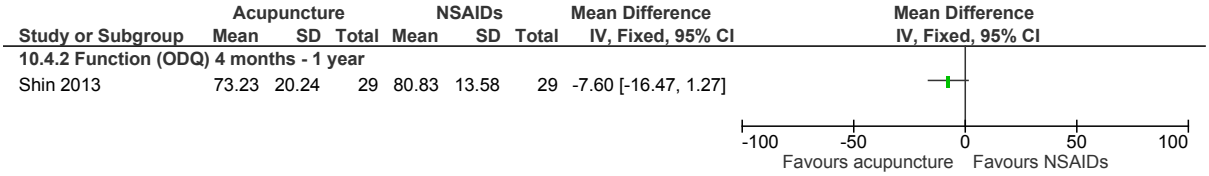
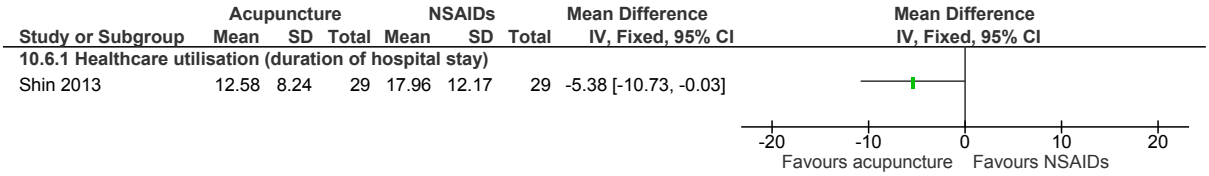


Figure 763: Healthcare utilisation – duration of hospital stay ≤4 months



K.9.4.2 Combination of interventions – acupuncture adjunct

K.9.4.2.1 Low back pain without sciatica

K.9.4.2.2 Acupuncture plus electrotherapy (TENS) compared with usual care

Figure 764: Pain (VAS 0–10) ≤ 4 months

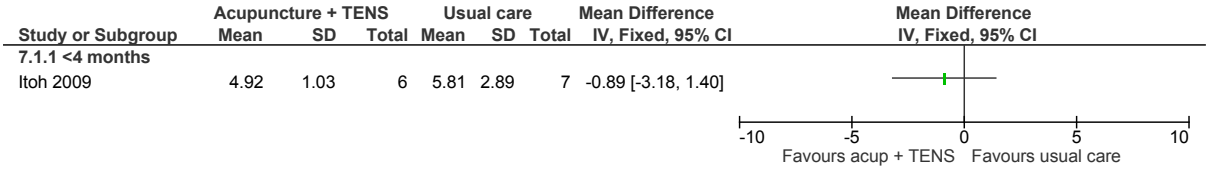
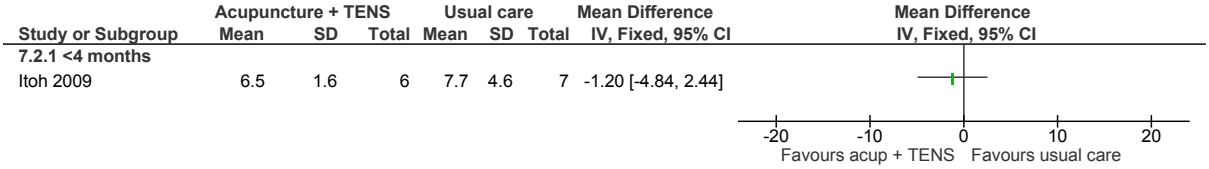


Figure 765: Function (RMDQ, 0–23) ≤ 4 months



K.9.4.2.3 Acupuncture plus electrotherapy (TENS) compared with electrotherapy (TENS)

Figure 766: Pain severity (0–100 VAS converted to 0–10) ≤ 4 months

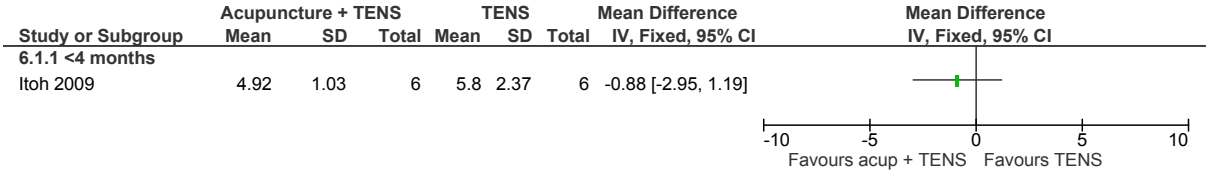
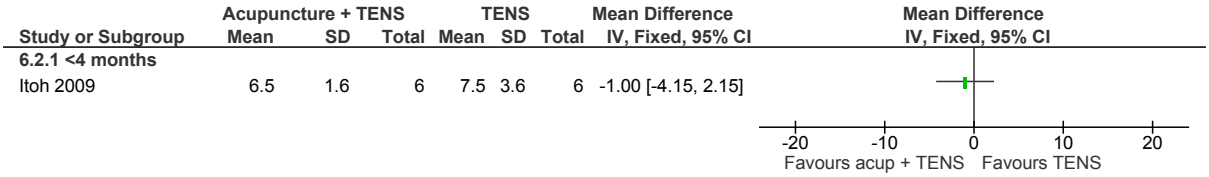
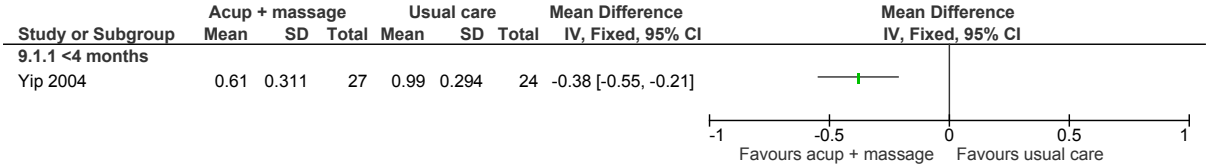


Figure 767: Function (RMDQ, 0–24) ≤ 4 months



K.9.4.2.4 Acupuncture + manual therapy (massage) compared with usual care

Figure 768: Pain (proportion of baseline value) ≤ 4 months



K.9.4.2.5 Acupuncture + exercise (group biomechanical + aerobic exercise) + self-management (education – Back Book + unsupervised exercise) compared with exercise (group biomechanical + aerobic exercise) + self-management (education – Back Book + unsupervised exercise)

Figure 769: Quality of life (EQ-5D, 0–1)

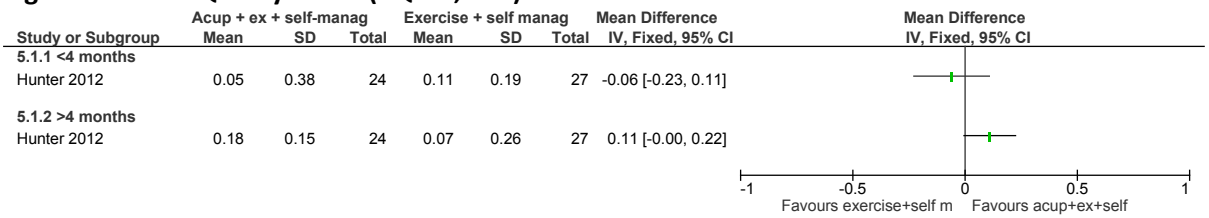


Figure 770: Pain (VAS, 0–10)

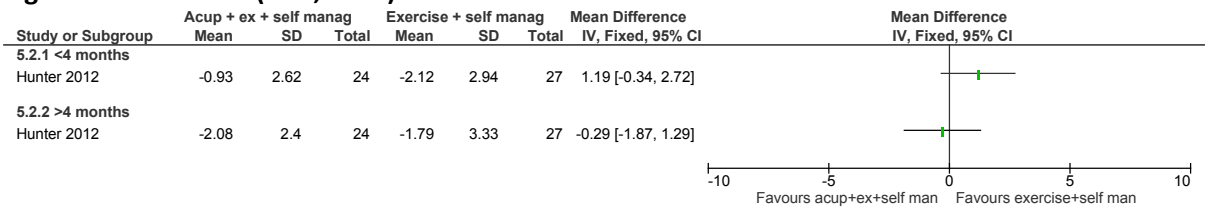
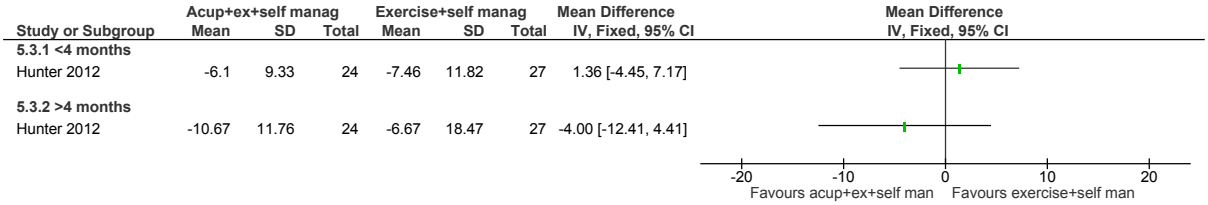


Figure 771: Function (ODI, 0–100)

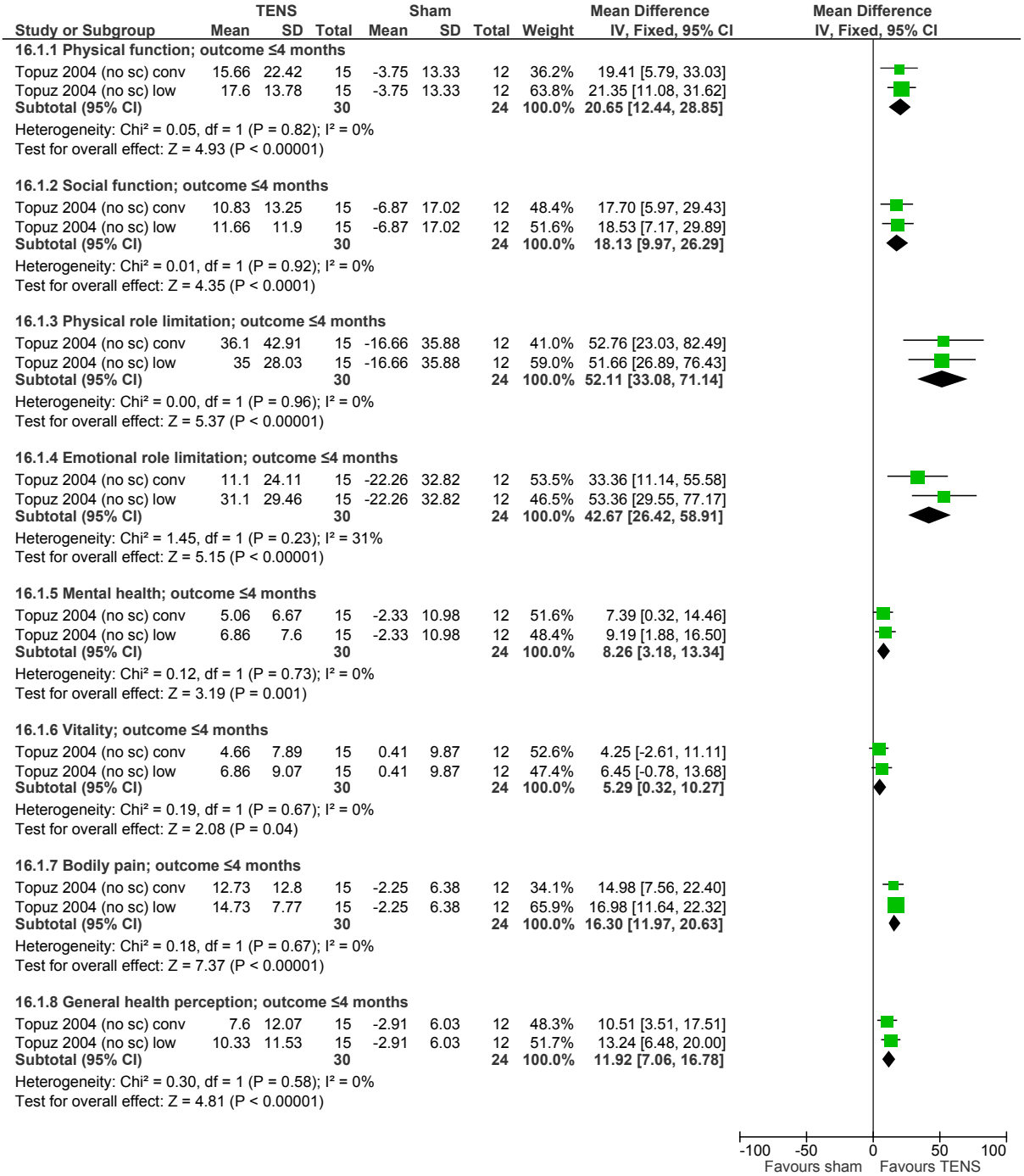


K.10 Electrotherapies

K.10.1 TENS

K.10.1.1 TENS versus sham

Figure 772: Quality of life (SF-36); low back pain without sciatica



Note: conv; conventional TENS: low; low frequency TENS

Figure 773: Quality of life (SF-36, Composite scores); low back pain ± sciatica

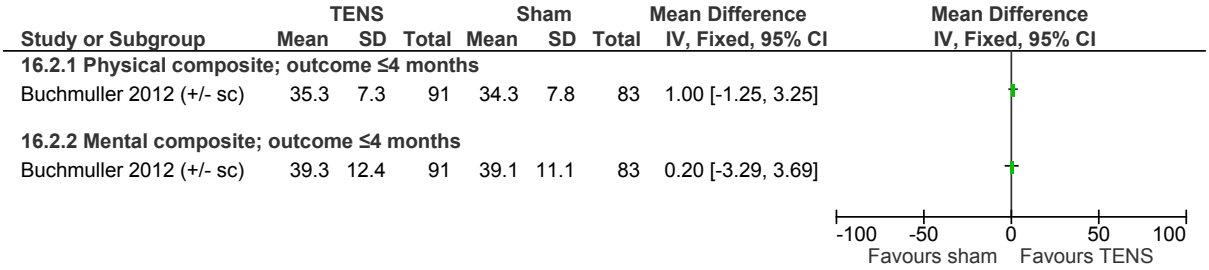
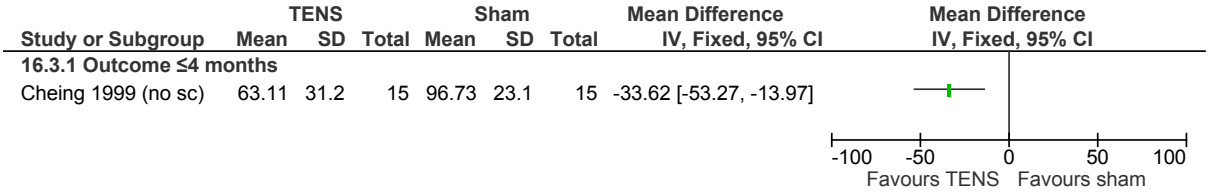
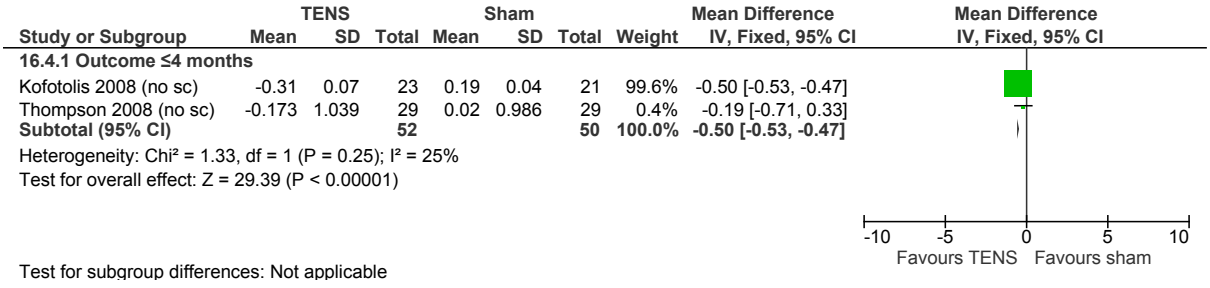


Figure 774: Pain intensity (VAS, % of baseline); low back pain without sciatica



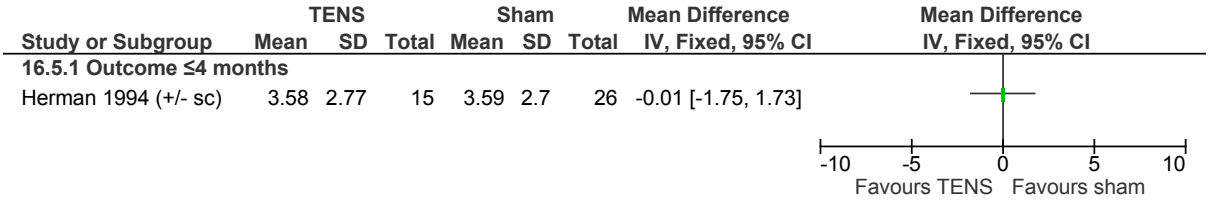
Scales: VAS 0-100

Figure 775: Pain intensity; low back pain without sciatica



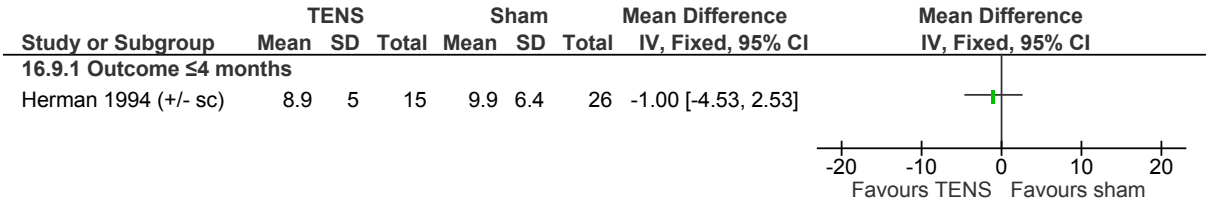
Scales: Kofotolis 2008: Borg verbal rating pain 0-10; Thompson 2008: VAS 0-10.

Figure 776: Pain intensity (VAS); low back pain ± sciatica



Scales: VAS 0-10

Figure 777: Function (RMDQ); low back pain ± sciatica



Scale: RMDQ 0-24

Figure 778: Function (RMDQ improvement of 4 points [median 15 at baseline]); low back pain ± sciatica

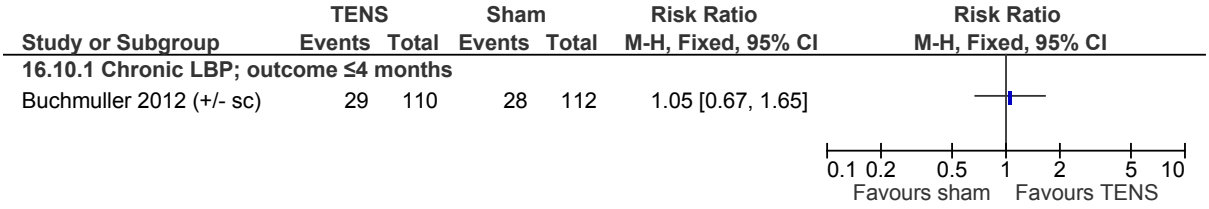
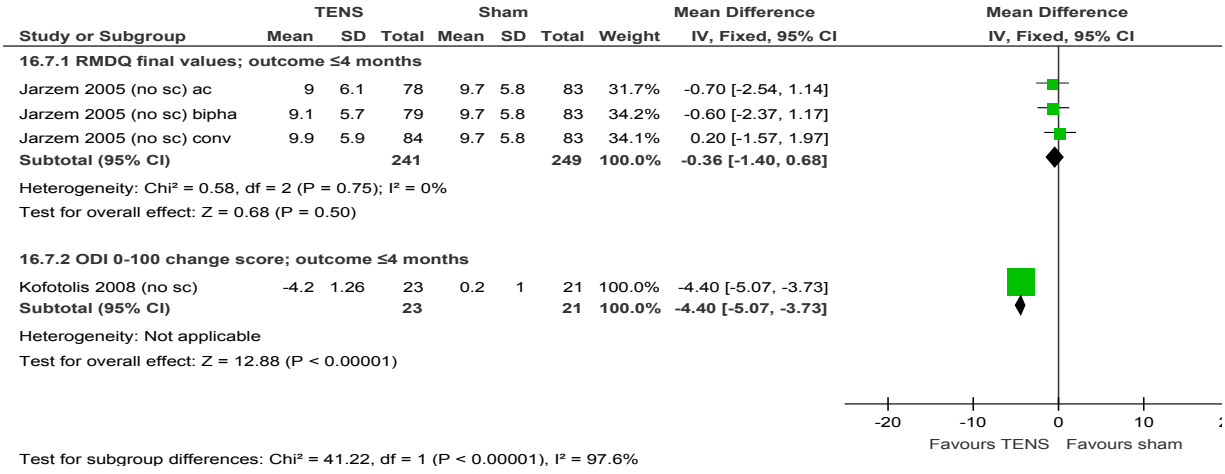


Figure 779: Function (RMDQ); low back pain without sciatica

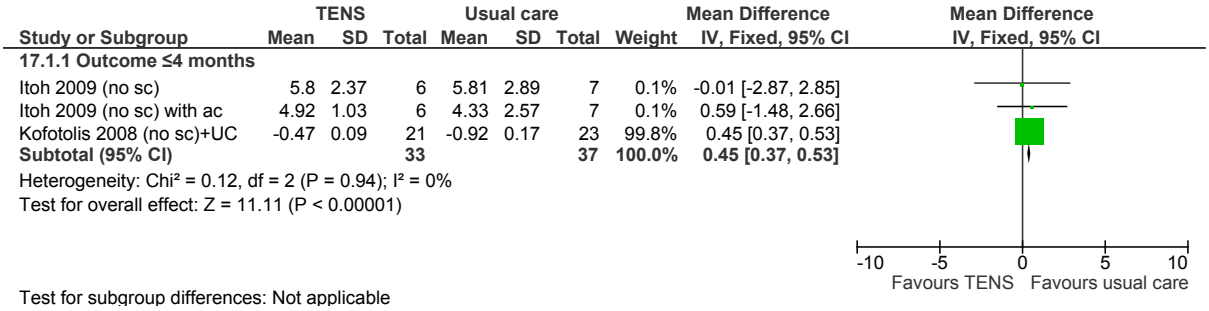


Scales: Jarzem 2005: RMDQ 0-24; Kofotolis 2008: ODI 0-100. Could not pool into SMD as change scores and final values

Note: ac; acupuncture TENS: bipha; biphasic TENS: conv; conventional TENS

K.10.1.2 TENS versus usual care

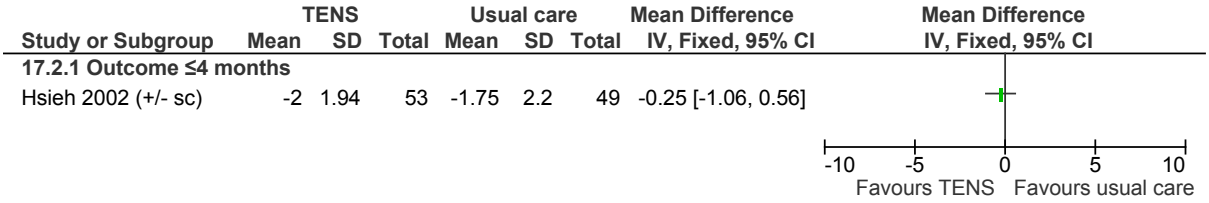
Figure 780: Pain intensity (VAS); low back pain without sciatica



Scales: VAS 0-10

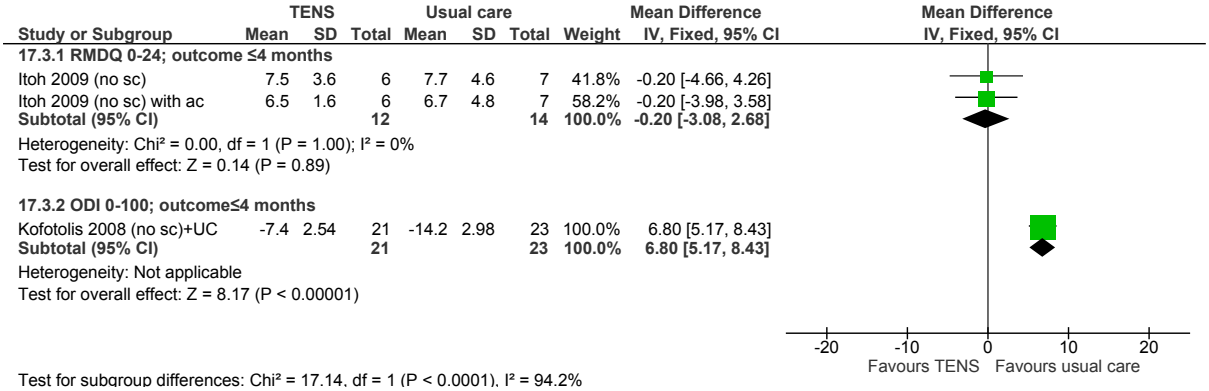
Note: ac; acupuncture: UC; usual care

Figure 781: Pain intensity (VAS); low back pain ± sciatica



Scales: VAS 0-10

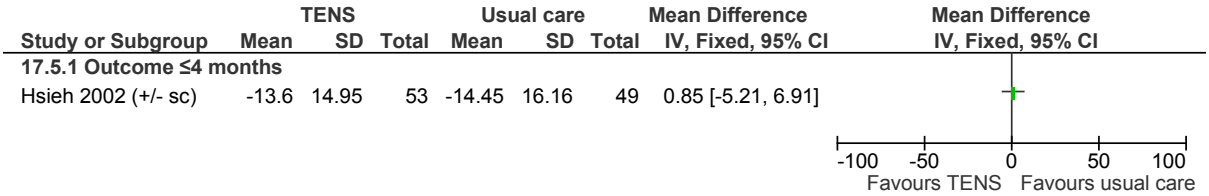
Figure 782: Function (RMDQ); low back pain without sciatica



Scales: Itoh 2009: RMDQ 0-24; Kofotolis 2008: ODI 0-100. Could not pool into SMD as change scores and final values

Note: ac; acupuncture: UC; usual care

Figure 783: Function (Quebec Back Pain Disability Scale); low back pain ±sciatica

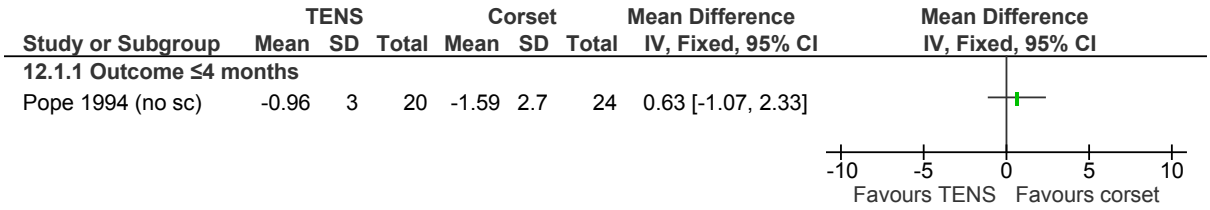


Scale: Quebec Back Pain Disability Scale 0-100

Scales: : Japanese Orthopaedic Association score (JOA): subjective symptoms and activities of daily living at 2 weeks; 0-20, high is good outcome

K.10.1.3 TENS versus corset

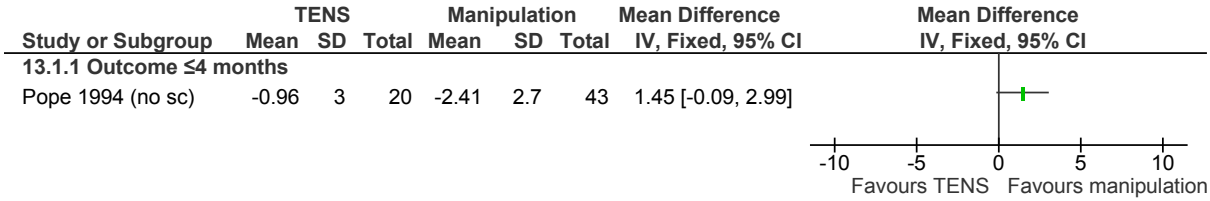
Figure 784: Pain intensity (VAS); low back pain without sciatica



Scales: VAS 0-10

K.10.1.4 TENS versus manipulation

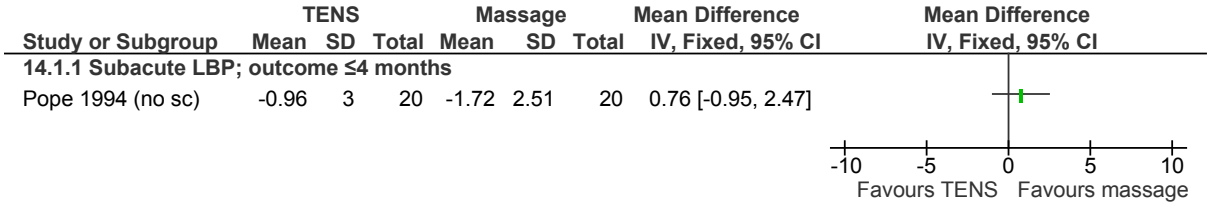
Figure 785: Pain intensity (VAS); low back pain without sciatica



Scales: VAS 0-10

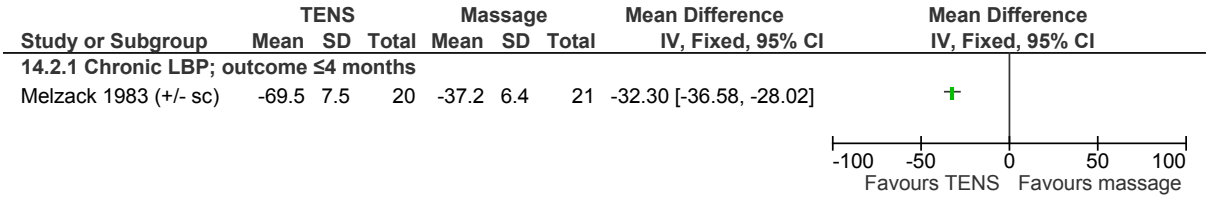
K.10.1.5 TENS versus massage

Figure 786: Pain intensity (VAS); low back pain without sciatica



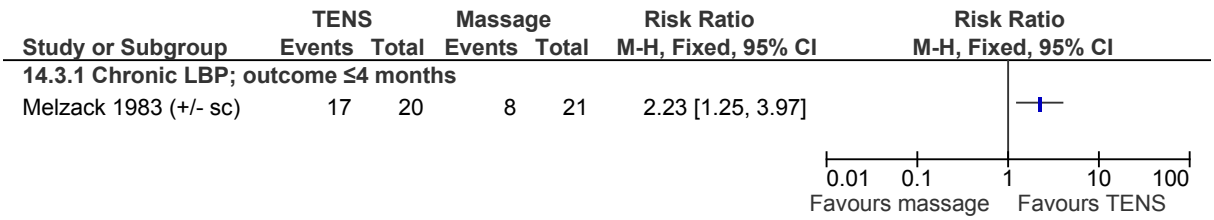
Scales: VAS 0-10

Figure 787: Pain intensity (McGill Pain Rating Index); low back pain ± sciatica



Scales: McGill Pain Rating Index 0-100

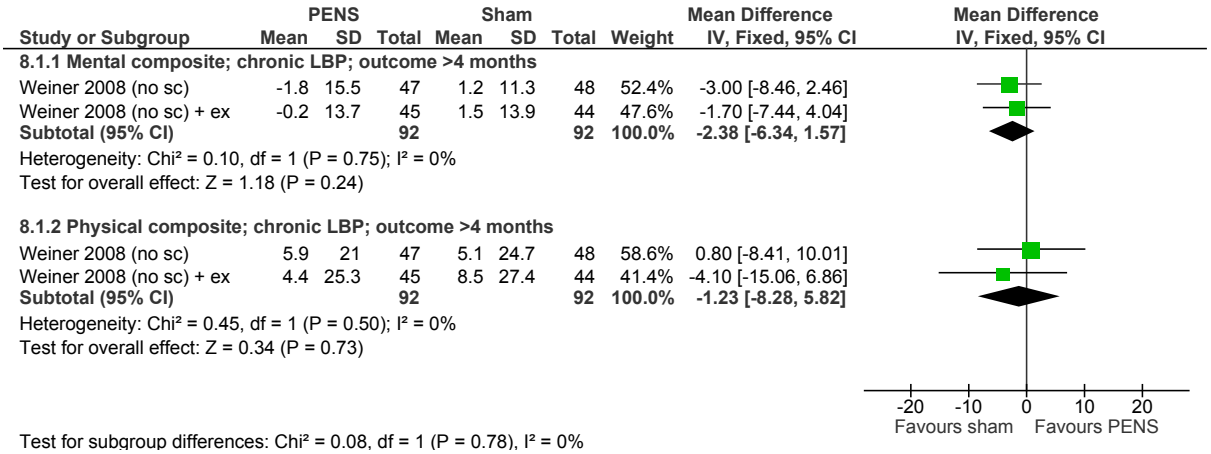
Figure 788: Responder criteria (>50% decrease in pain); low back pain ± sciatica



K.10.2 PENS

K.10.2.1 PENS versus sham

Figure 789: SF-36 Composite scores; stratum = without sciatica



Note: ex; exercise

Figure 790: SF-36 Domain scores; stratum = without sciatica

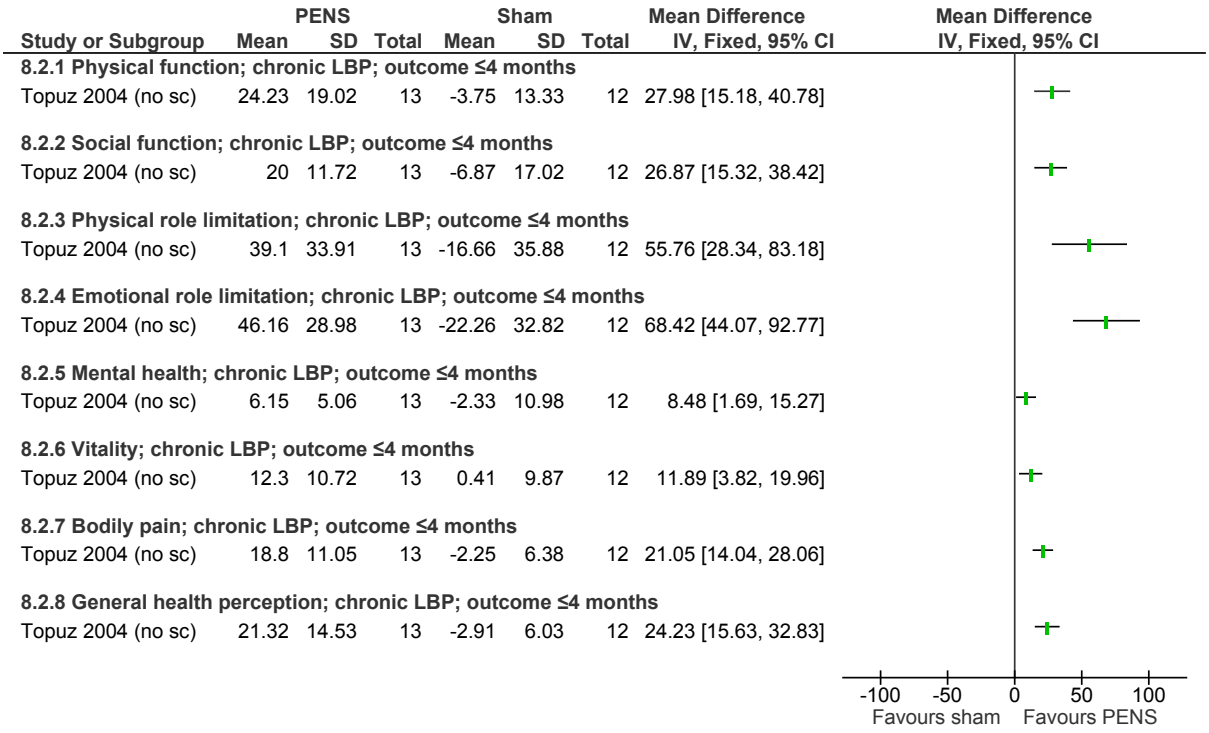
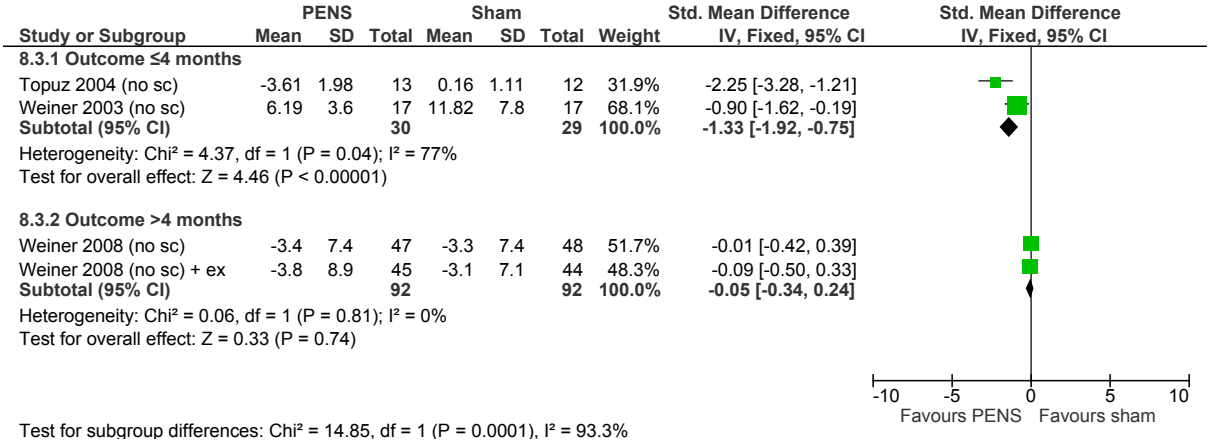


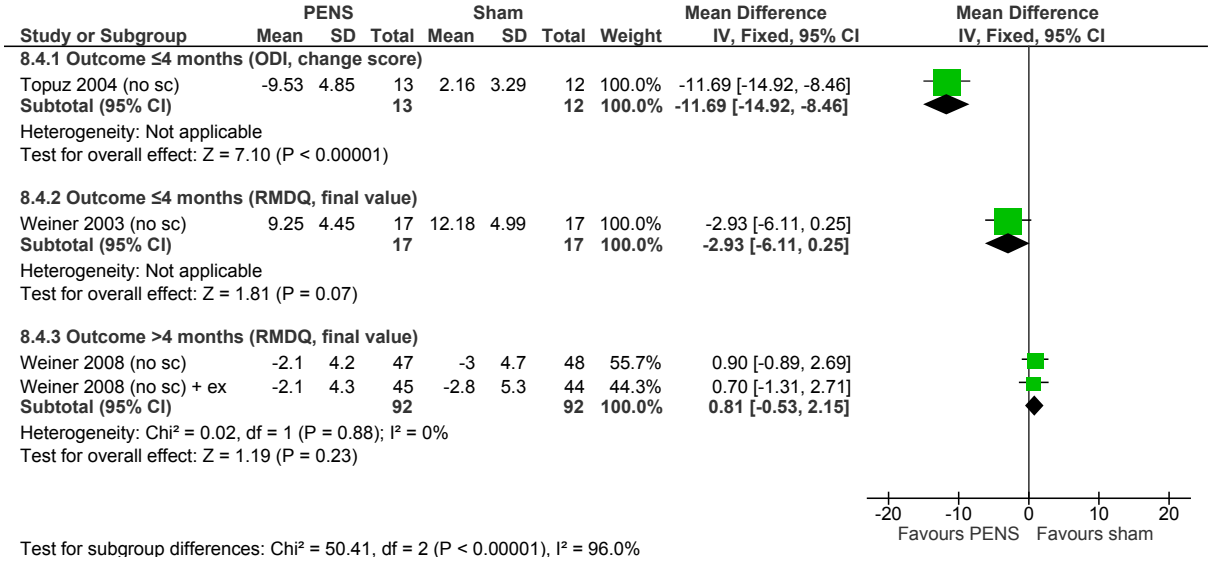
Figure 791: Pain intensity (VAS); low back pain without sciatica



Scales: Topuz 2004 and Weiner 2008: VAS 0-10. Weiner 2003: Pain Inventory

Note: ex; exercise

Figure 792: Function (ODI/RMDQ); low back pain without sciatica

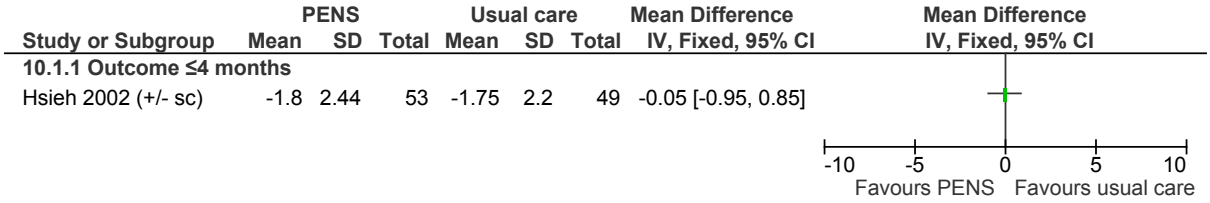


Scale: Topuz 2004: ODI 0-50. Weiner 2003 and Weiner 2008: RMDQ 0-24

Note: ex; exercise

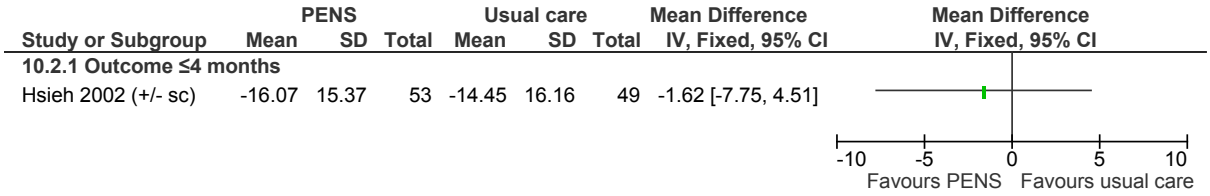
K.10.2.2 PENS versus usual care

Figure 793: Pain intensity (VAS); low back pain ± sciatica



Scales: VAS 0-10

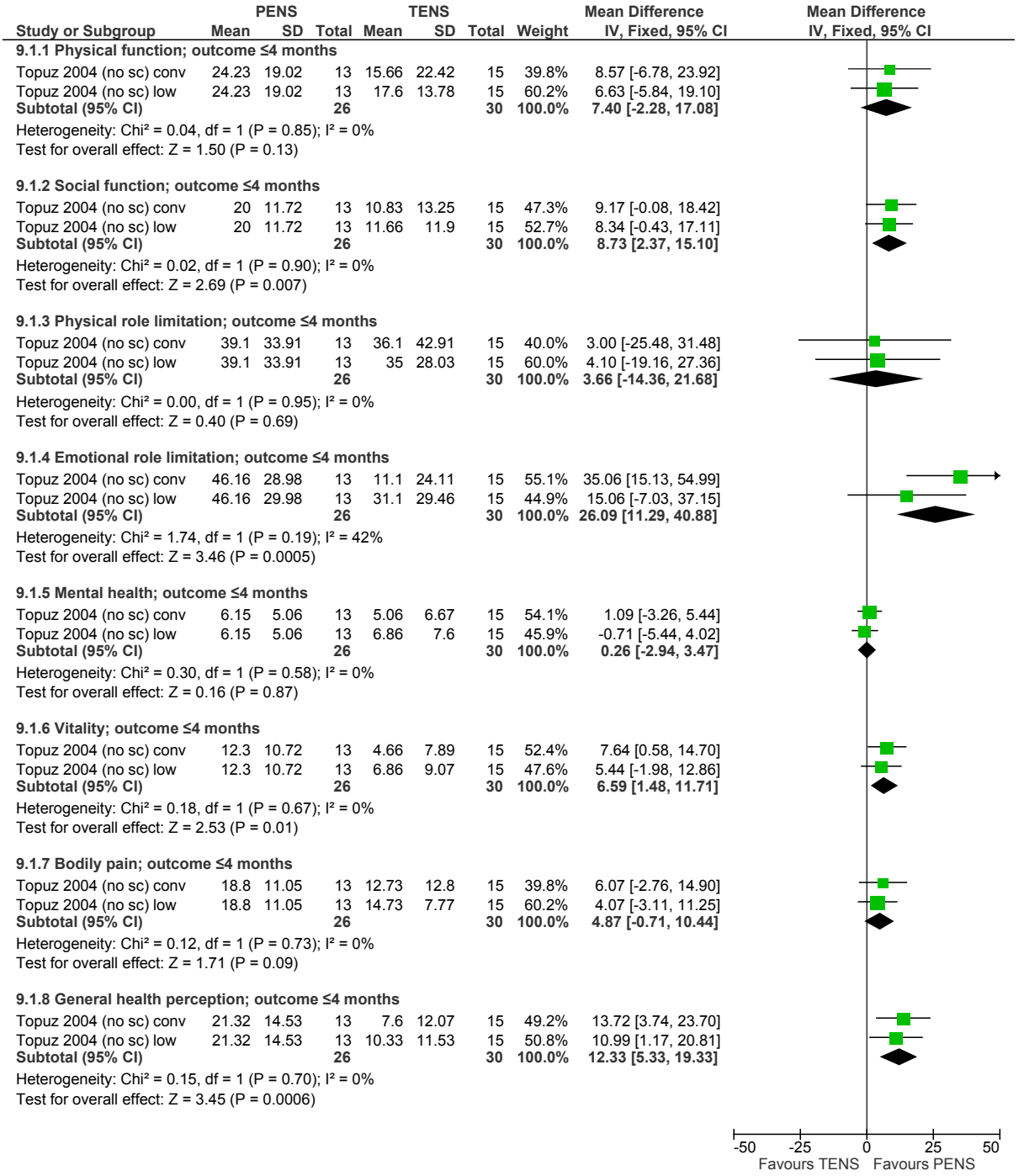
Figure 794: Function (Quebec Back Pain Disability scale); low back pain ± sciatica



Scales: Quebec Back Pain Disability Scale 0-100

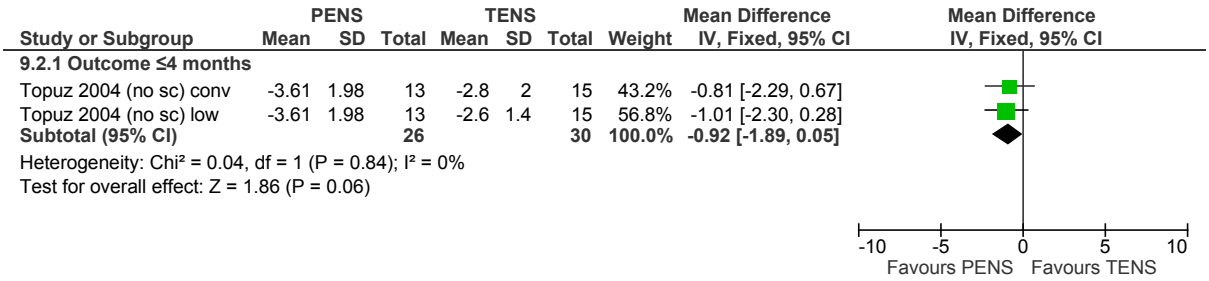
K.10.2.3 PENS versus TENS

Figure 795: Quality of life (SF-36); low back pain without sciatica



Note: conv; conventional TENS: low; low frequency TENS

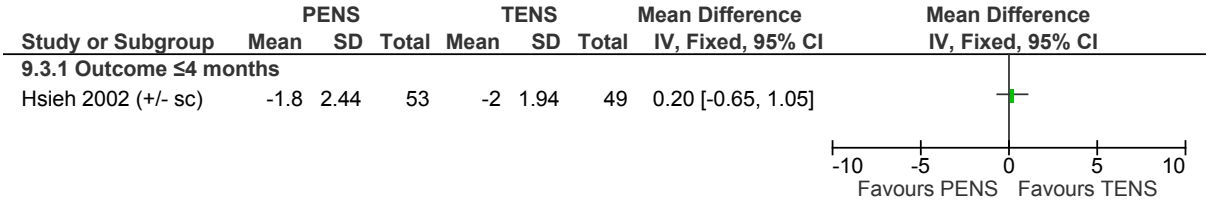
Figure 796: Pain intensity (VAS); low back pain without sciatica



Scales: VAS 0-10

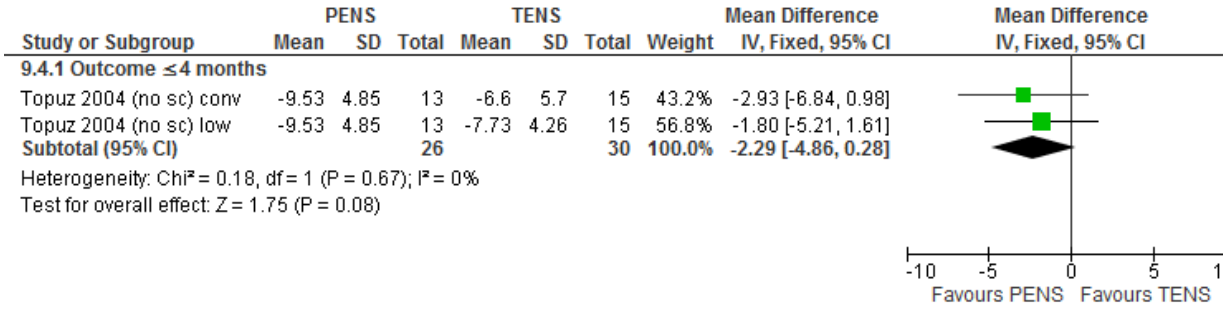
Note: conv; conventional TENS: low; low frequency TENS

Figure 797: Pain intensity (VAS); low back pain ± sciatica



Scales: VAS 0-10

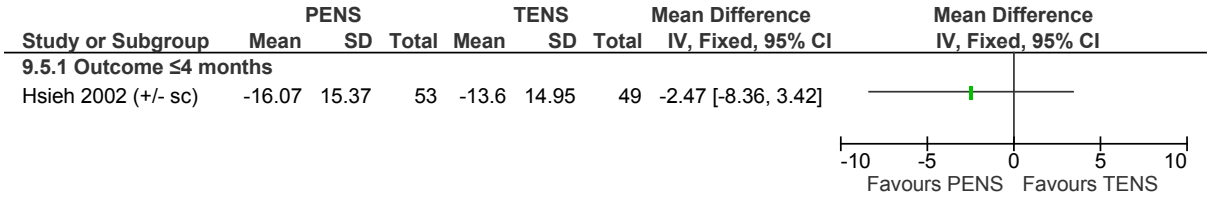
Figure 798: Function (ODI); low back pain without sciatica



Scales: ODI

Note: conv; conventional TENS: low; low frequency TENS

Figure 799: Function (Quebec Back Pain Disability scale); low back pain ± sciatica

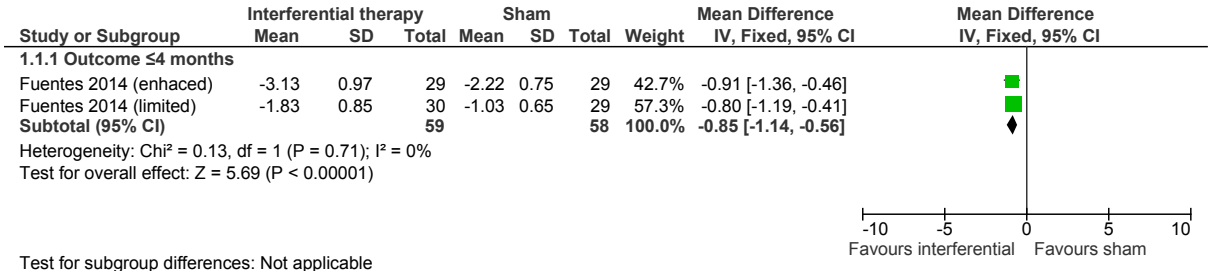


Scales: Quebec Back Pain Disability Scale 0-100

K.10.3 Interferential therapy

K.10.3.1 Interferential therapy versus placebo/sham

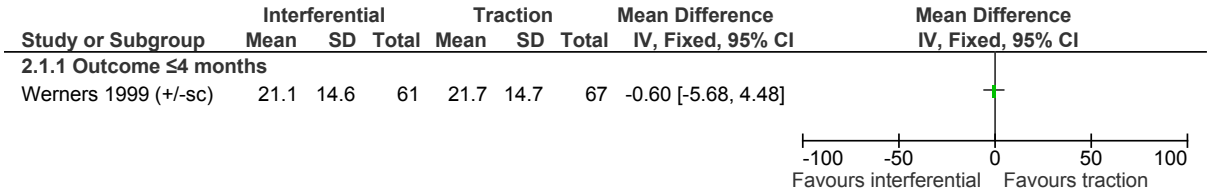
Figure 800: Pain intensity (NRS, cm); low back pain without sciatica



Scale: 0-10

K.10.3.2 Interferential versus traction

Figure 801: Function (ODI); low back pain without sciatica

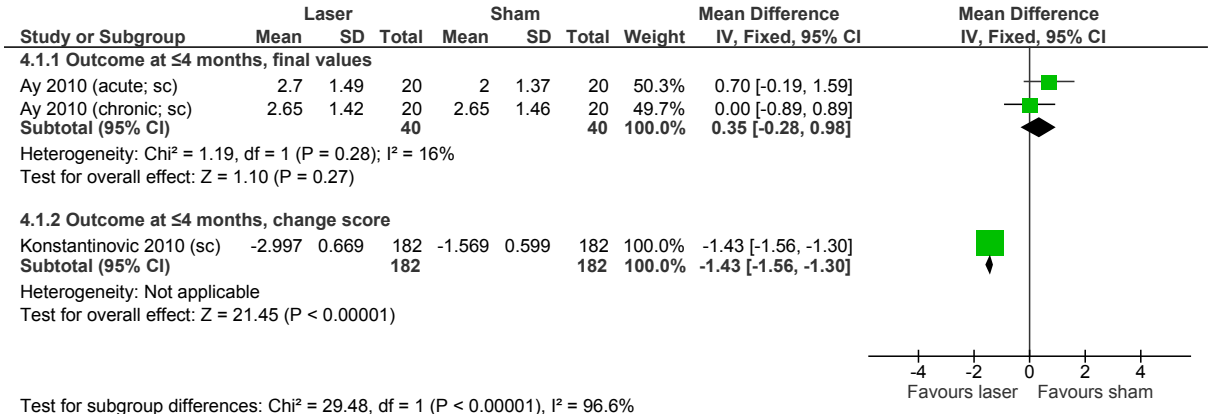


Scale: 0-100

K.10.4 Laser therapy

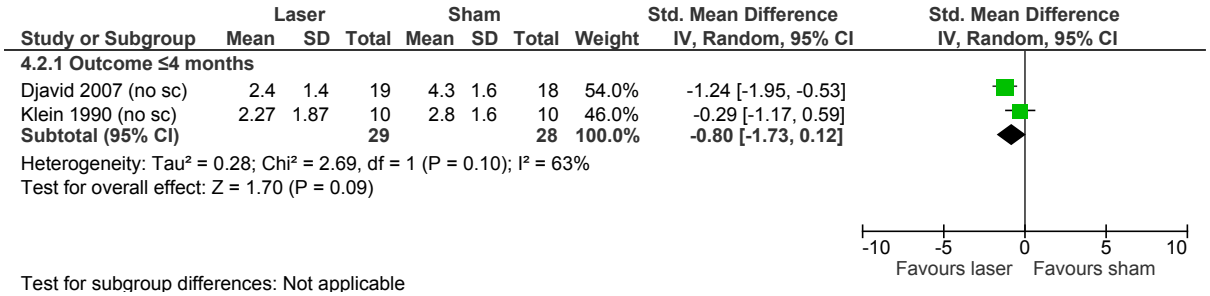
K.10.4.1 Laser versus sham

Figure 802: Pain intensity (VAS); low back pain with sciatica



Scale: 0-10

Figure 803: Pain intensity (VAS); low back pain without sciatica



Scale: Djavid 2007: VAS 0-10; Klein 1990: VAS 0-7.5

Figure 804: Difference between means in maximal pain in last 24 hours, VAS (0-10); stratum = without sciatica; ≤4 months

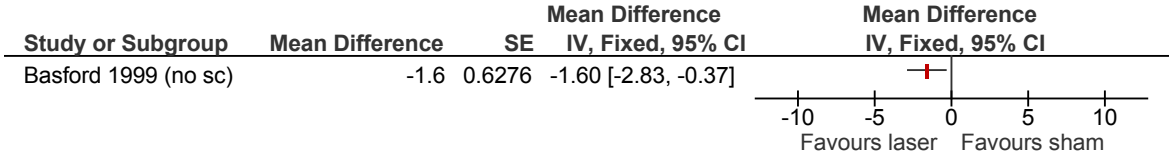
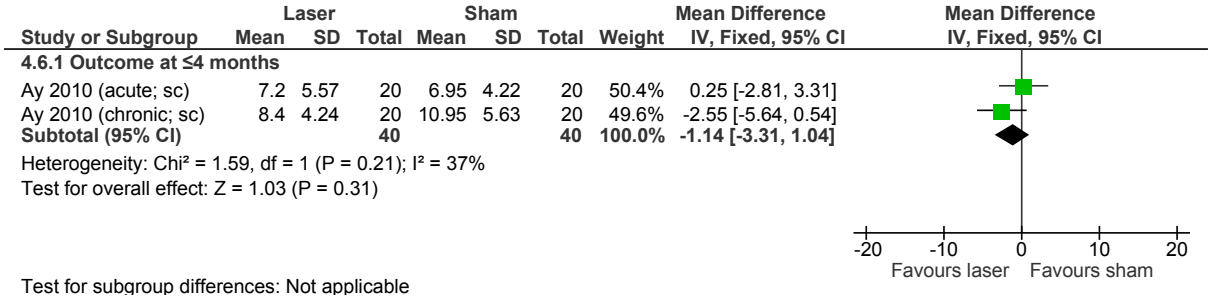
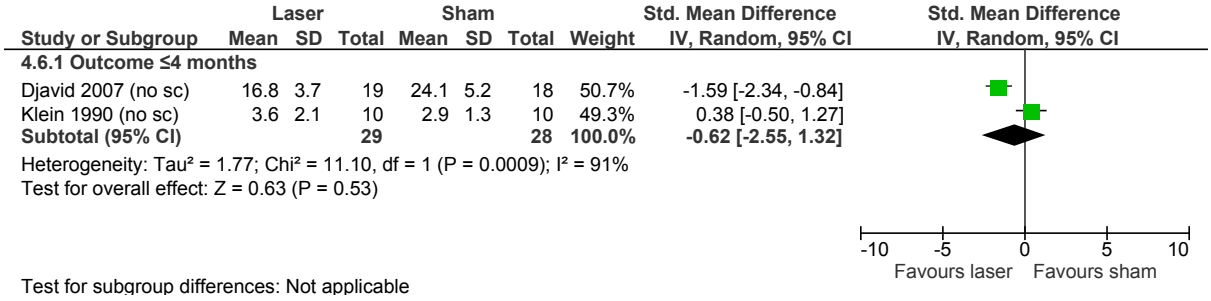


Figure 805: Disability (RMDQ); stratum = with sciatica



Scale: RMDQ 0-24

Figure 806: Disability (RMDQ/ODI – SMD to ODI 0-100); stratum = without sciatica



Scale: Klein 1990:RMDQ 0-24; Djavid 2007: ODI 0-100

Figure 807: Responder (disability improvement, no. of patients); stratum = with sciatica

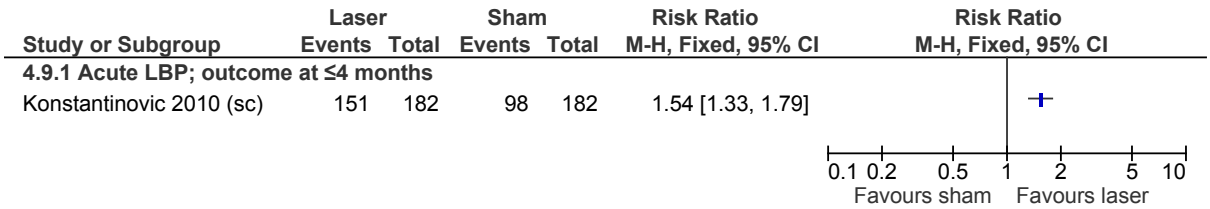


Figure 808: Responder criteria (pain improvement >60%): stratum = without sciatica

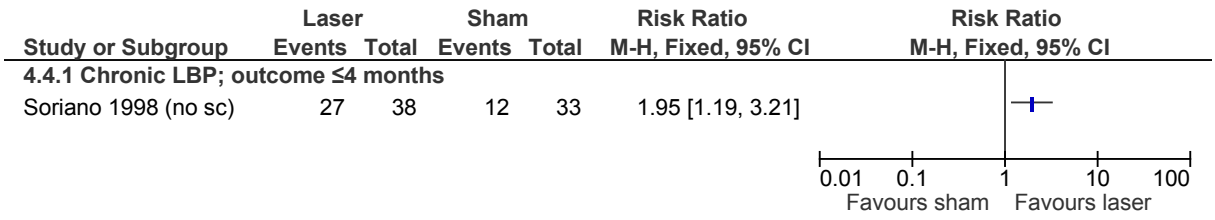
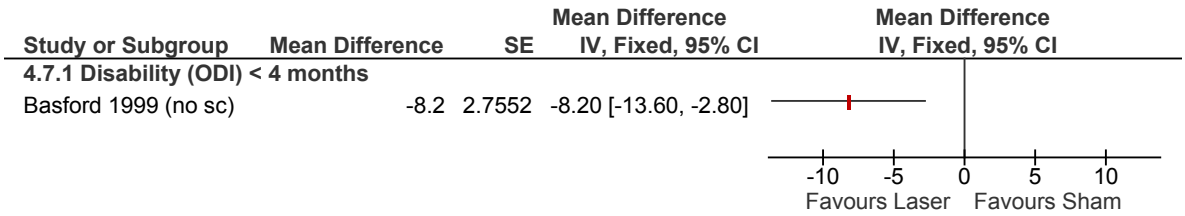
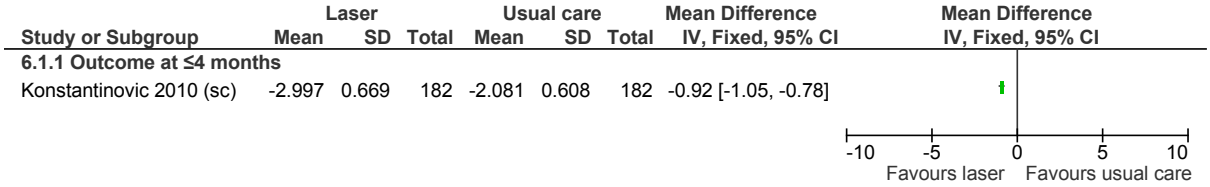


Figure 809: Disability (ODI) < 4 months



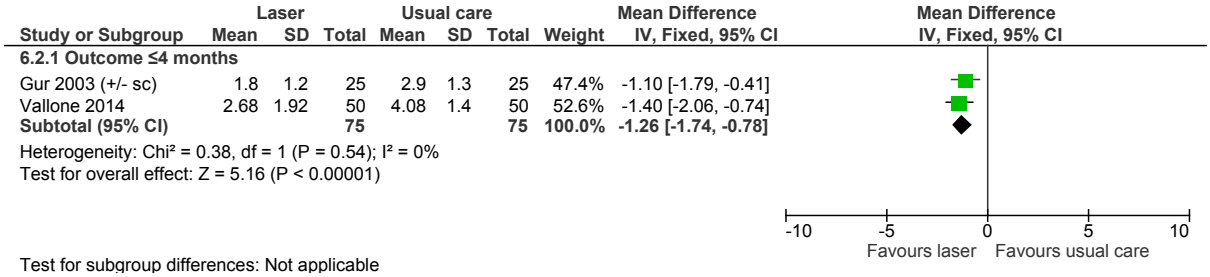
K.10.4.2 Laser versus usual care

Figure 810: Pain intensity (VAS); low back pain with sciatica (change score)



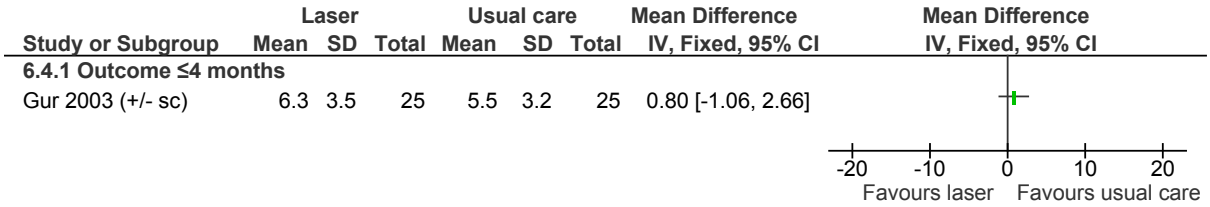
Scale: VAS 0-10

Figure 811: Pain intensity (VAS); low back pain ± sciatica



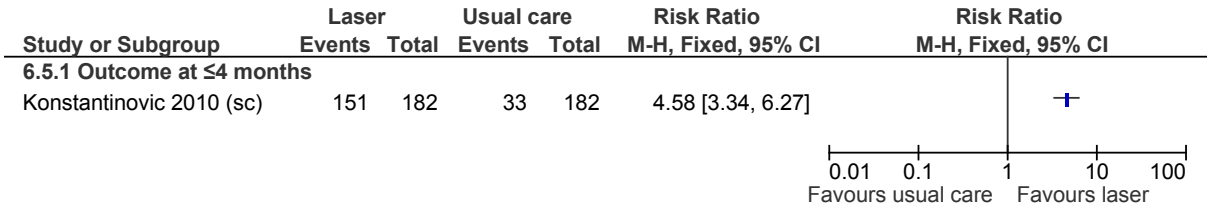
Scale: VAS 0-10

Figure 812: Function (disability, RMDQ); low back pain ± sciatica



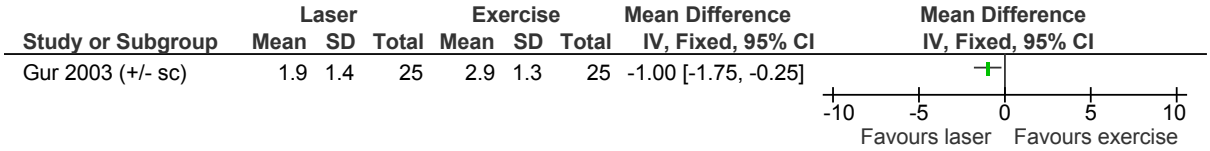
Scale: RMDQ 0-24

Figure 813: Disability improvement; low back pain with sciatica



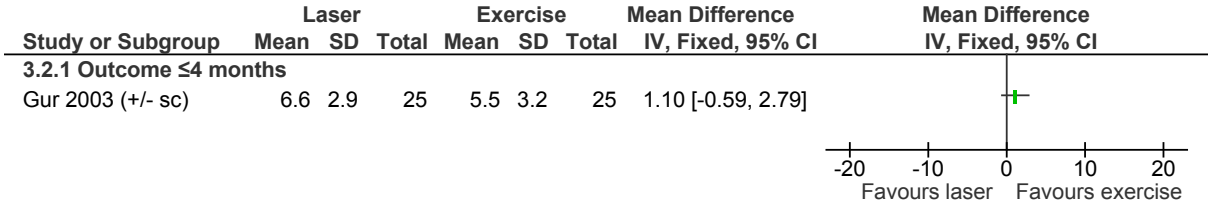
K.10.4.3 Laser versus exercise

Figure 814: Pain intensity (VAS); low back pain ± sciatica



Scale: 0-10

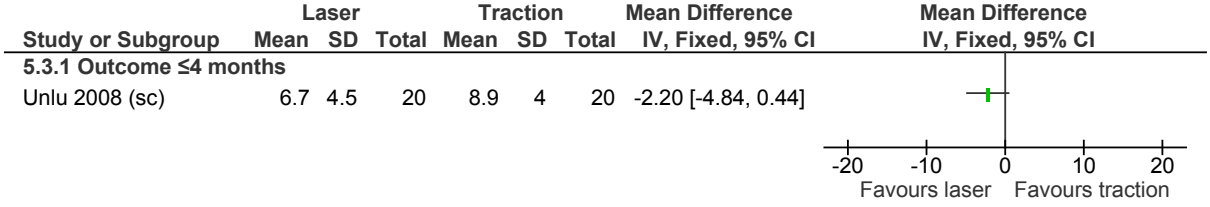
Figure 815: Disability (RMDQ); low back pain ± sciatica



Scale: RMDQ 0-24

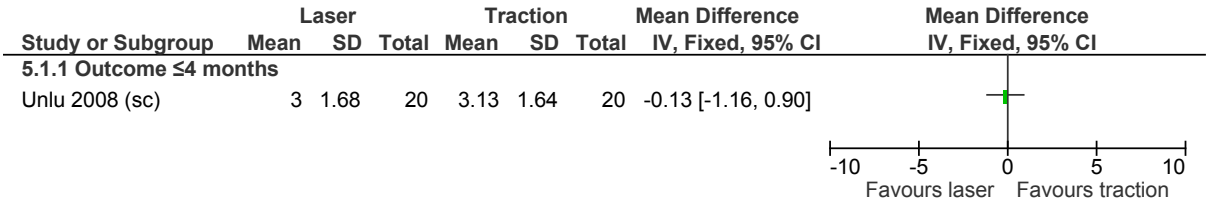
K.10.4.4 Laser versus traction

Figure 816: Function (RMDQ); low back pain with sciatica



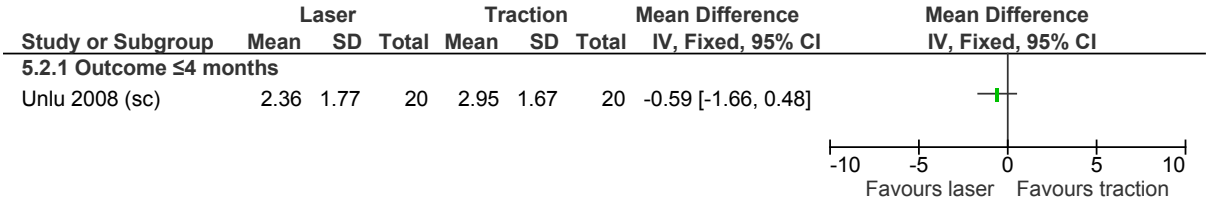
Scale: RMDQ 0-24

Figure 817: Back pain intensity; low back pain with sciatica



Scale: VAS 0-10

Figure 818: Radicular pain; low back pain with sciatica

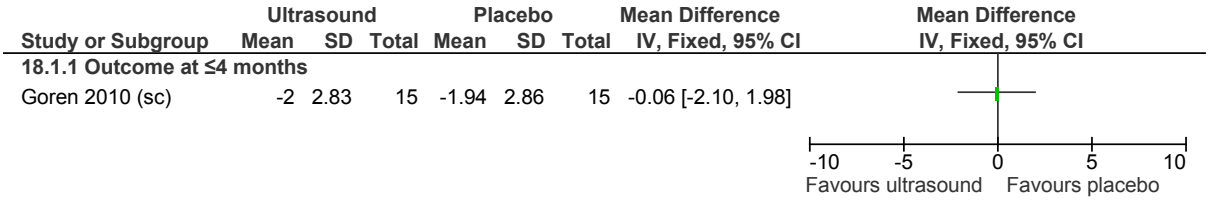


Scale: VAS 0-10

K.10.5 Ultrasound

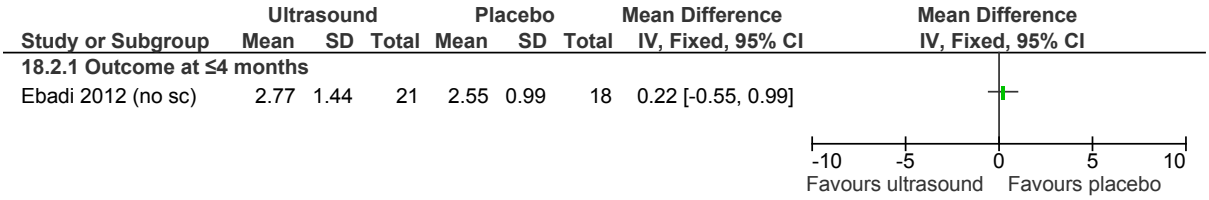
K.10.5.1 Ultrasound versus placebo/sham

Figure 819: Pain intensity (VAS); low back pain with sciatica



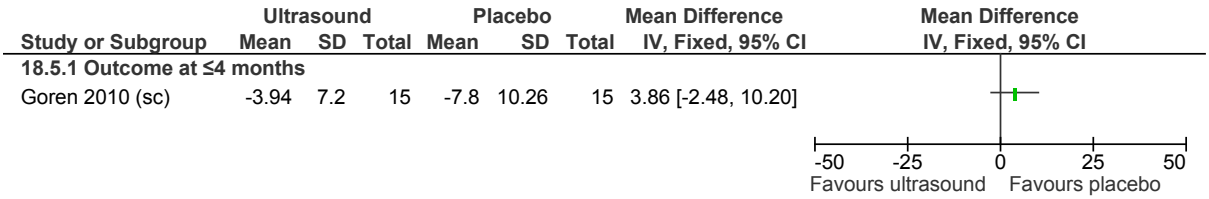
Scales: VAS 0-10

Figure 820: Pain intensity (VAS); low back pain without sciatica



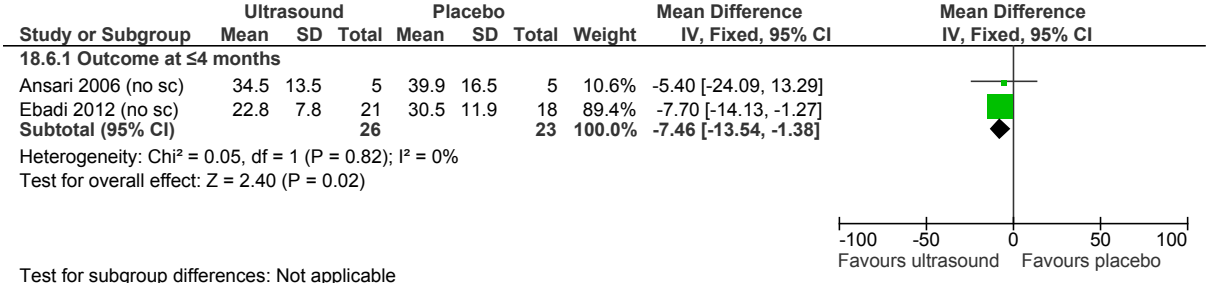
Scales: VAS 0-10

Figure 821: Function (ODI); low back pain with sciatica



Scale: ODI 0-50

Figure 822: Function (Functional Rating Index); low back pain without sciatica



Scale: Functional Rating Index 0-100

Figure 823: Responder criteria (>30% pain reduction); low back pain without sciatica

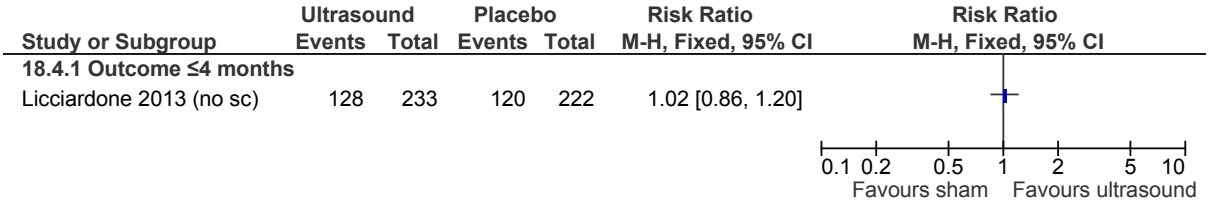
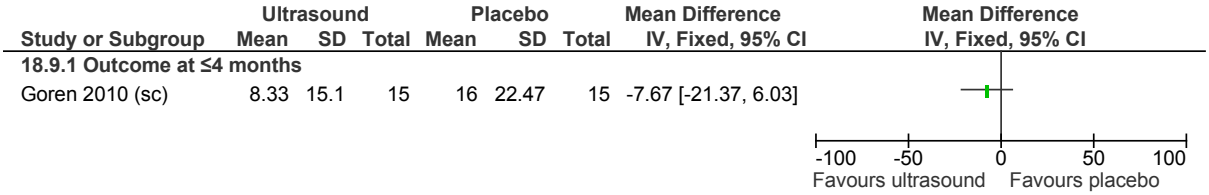


Figure 824: Healthcare utilisation (paracetamol use); low back pain with sciatica



K.10.5.2 Ultrasound versus usual care (both groups had exercise)

Figure 825: Quality of life (SF-36); low back pain without sciatica

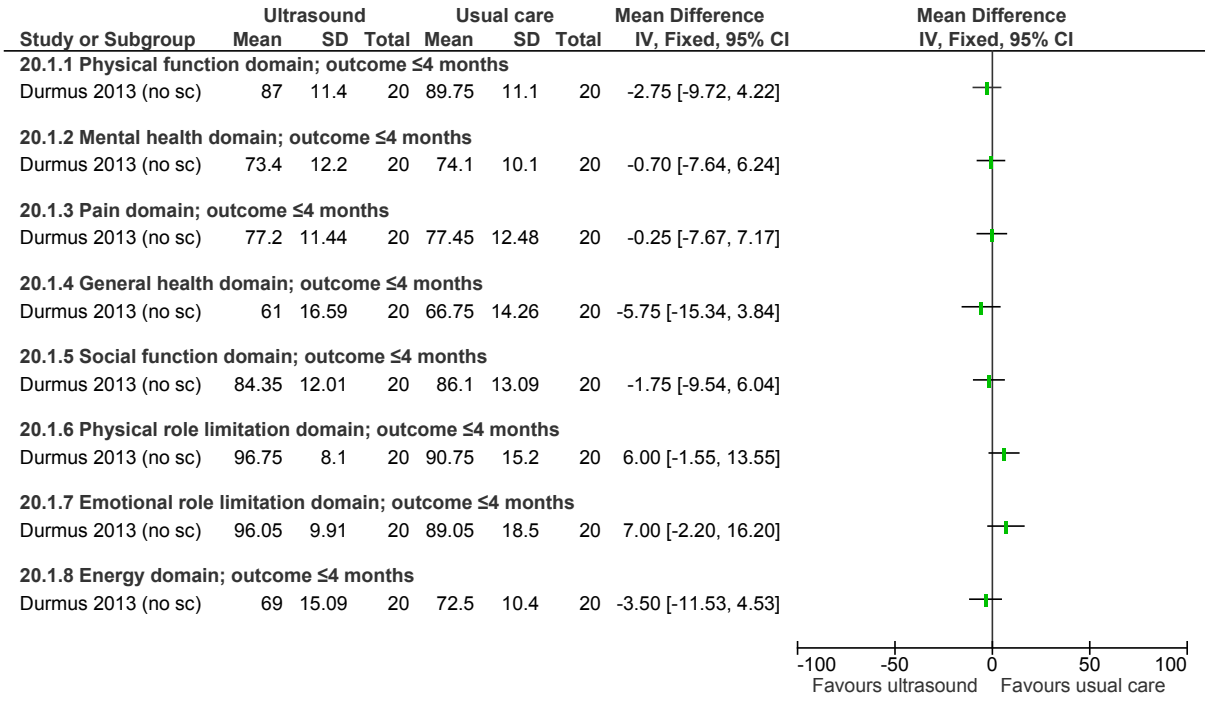
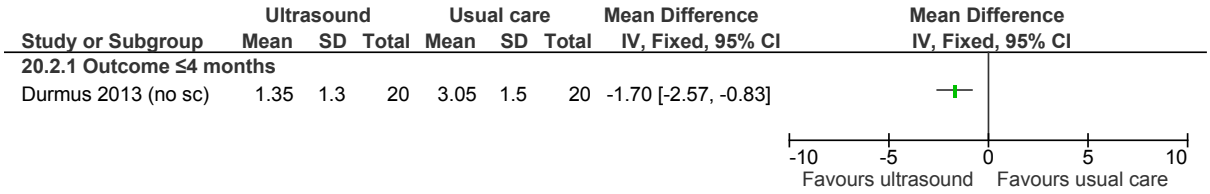
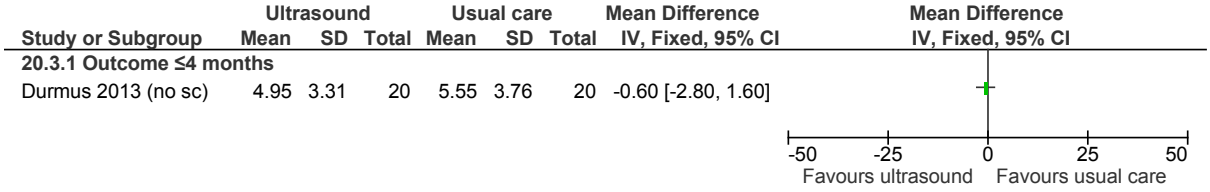

Ultrasound
Usual care
Mean Difference
Mean Difference
Study or Subgroup Mean SD Total Mean SD Total IV, Fixed, 95% CI
IV, Fixed, 95% CI
20.1.1 Physical function domain; outcome ≤4 months
Durmus 2013 (no sc) 87 11.4 20 89.75 11.1 20 -2.75 [-9.72, 4.22]
20.1.2 Mental health domain; outcome ≤4 months
Durmus 2013 (no sc) 73.4 12.2 20 74.1 10.1 20 -0.70 [-7.64, 6.24]
20.1.3 Pain domain; outcome ≤4 months
Durmus 2013 (no sc) 77.2 11.44 20 77.45 12.48 20 -0.25 [-7.67, 7.17]
20.1.4 General health domain; outcome ≤4 months
Durmus 2013 (no sc) 61 16.59 20 66.75 14.26 20 -5.75 [-15.34, 3.84]
20.1.5 Social function domain; outcome ≤4 months
Durmus 2013 (no sc) 84.35 12.01 20 86.1 13.09 20 -1.75 [-9.54, 6.04]
20.1.6 Physical role limitation domain; outcome ≤4 months
Durmus 2013 (no sc) 96.75 8.1 20 90.75 15.2 20 6.00 [-1.55, 13.55]
20.1.7 Emotional role limitation domain; outcome ≤4 months
Durmus 2013 (no sc) 96.05 9.91 20 89.05 18.5 20 7.00 [-2.20, 16.20]
20.1.8 Energy domain; outcome ≤4 months
Durmus 2013 (no sc) 69 15.09 20 72.5 10.4 20 -3.50 [-11.53, 4.53]
-100
-50
0
50
100
Favours ultrasound
Favours usual care

Figure 826: Pain intensity (VAS); low back pain without sciatica



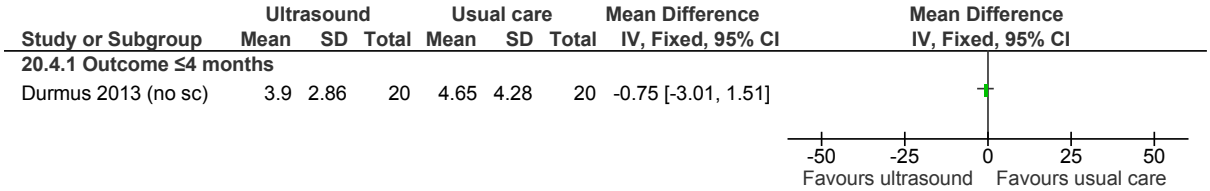
Scales: VAS 0-10

Figure 827: Function (ODI); low back pain without sciatica



Scale: ODI 0-50

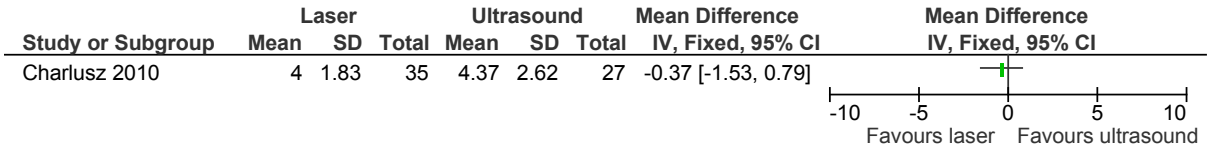
Figure 828: Psychological distress (Beck Depression Inventory); low back pain without sciatica



Scale: Beck Depression Inventory 0-63 Top=High is poor outcome

K.10.5.3 Ultrasound versus laser

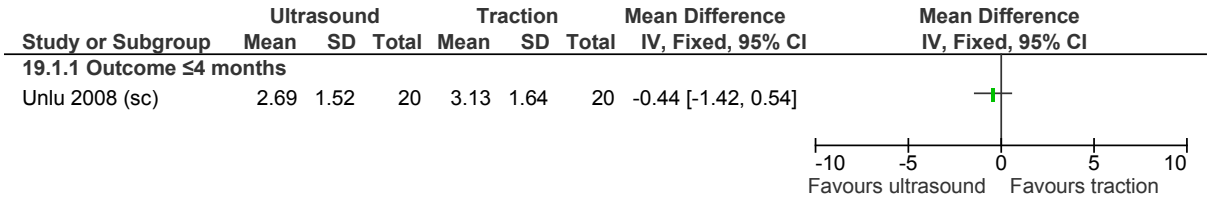
Figure 829: Pain intensity (VAS); low back pain ± sciatica



Scales: VAS 0-10

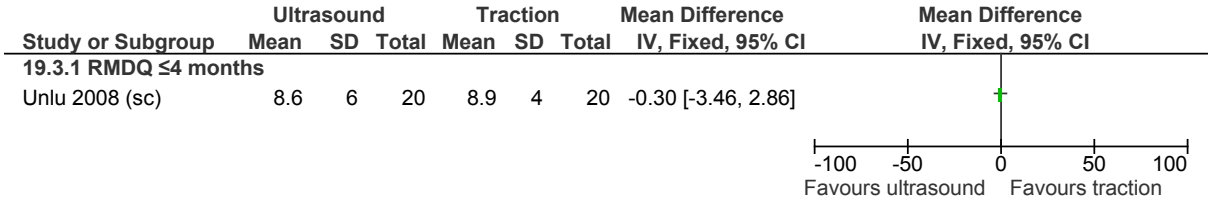
K.10.5.4 Ultrasound versus traction

Figure 830: Pain intensity (VAS); low back pain with sciatica



Scales: VAS 0-10

Figure 831: Function (RMDQ SMD); low back pain with sciatica



K.10.6 Combinations of interventions – electrotherapy adjunct

K.10.6.1 Low back pain with sciatica

K.10.6.1.1 Electrotherapy (ultrasound) + exercise (biomechanical + aerobics) compared to waiting list control

Figure 832: Pain (Back pain VAS, 0-10) ≤ 4 months

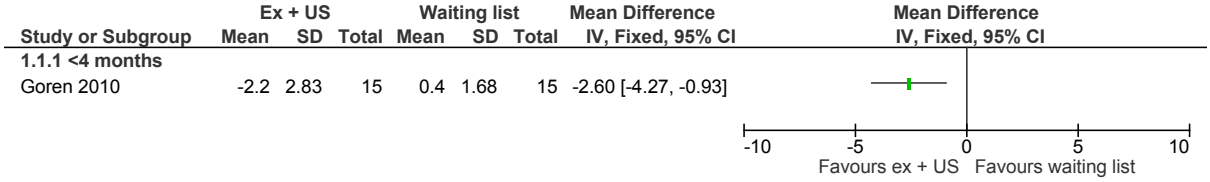


Figure 833: Pain severity (Leg pain VAS, 0-10) ≤4 months

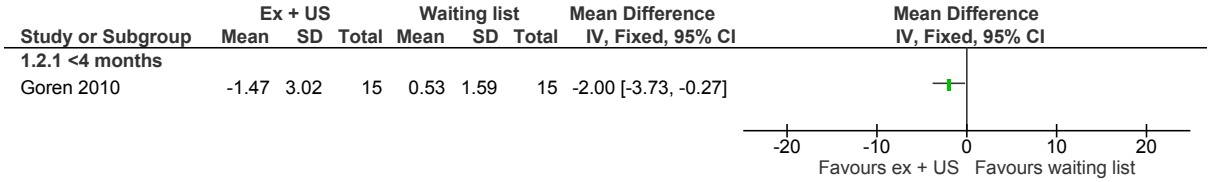


Figure 834: Function (ODI, 0-100) ≤ 4 months

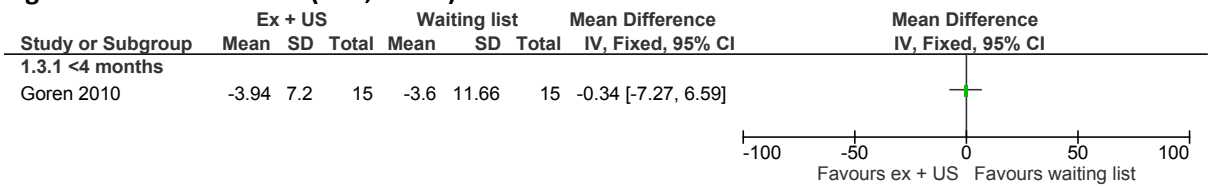
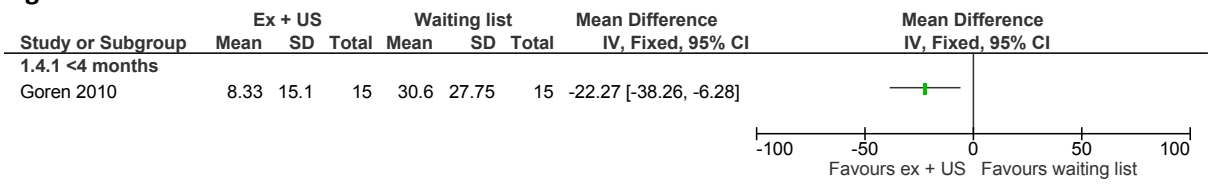


Figure 835: Medication use ≤ 4 months



K.10.6.1.2 Electrotherapy (ultrasound) + exercise (biomechanical + aerobics) compared to exercise (biomechanical + aerobics)

Figure 836: Pain (Back pain VAS 0-10) ≤ 4 months

Study or Subgroup	Ex + US Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
2.1.1 <4 months							
Goren 2010	-2.2	2.83	15	-1.94	2.86	15	-0.26 [-2.30, 1.78]

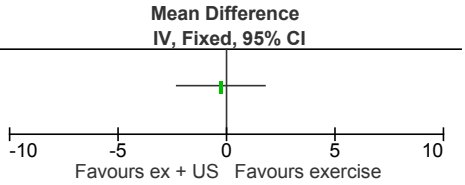


Figure 837: Pain (Leg Pain VAS, 0-10) ≤ 4 months

Study or Subgroup	Ex + US Mean	SD	Total	Waiting list Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
2.2.1 <4 months							
Goren 2010	-1.47	3.02	15	-2.47	3.75	15	1.00 [-1.44, 3.44]

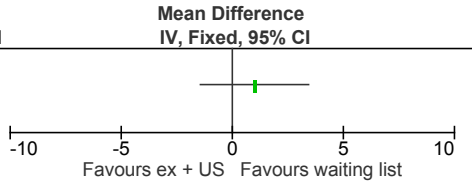


Figure 838: Function (ODI, 0-100) ≤ 4 months

Study or Subgroup	Ex + US Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
2.3.1 <4 months							
Goren 2010	-3.94	7.2	15	-7.8	10.26	15	3.86 [-2.48, 10.20]

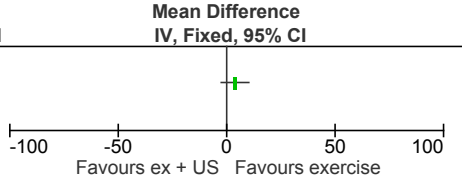
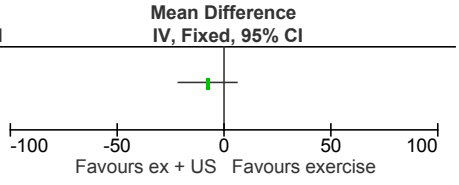


Figure 839: Medication use ≤ 4 months

Study or Subgroup	Ex + US Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
2.4.1 <4 months							
Goren 2010	8.33	15.1	15	16	22.47	15	-7.67 [-21.37, 6.03]

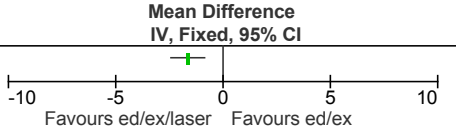


K.10.6.2 Low back pain without sciatica

K.10.6.2.1 Electrotherapy (laser) + self-management (education) + exercise (biomechanical) compared to self-management (education) + exercise (biomechanical)

Figure 840: Pain severity (VAS, 0-10) ≤ 4 months

Study or Subgroup	Ed + ex + laser Mean	SD	Total	Ed + ex Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Vallone 2014	-3.96	2.2	50	-2.32	1.78	50	-1.64 [-2.42, -0.86]



K.10.6.2.2 Electrotherapy (TENS) + acupuncture compared to acupuncture

Figure 841: Pain (0-100 VAS converted to 0-10) ≤ 4 months

Study or Subgroup	Acupuncture + TENS Mean	SD	Total	Acupuncture Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Itoh 2009	4.92	1.03	6	4.33	2.57	7	0.59 [-1.48, 2.66]

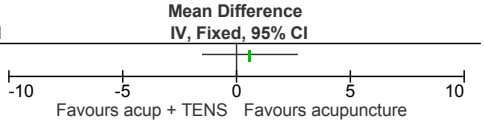
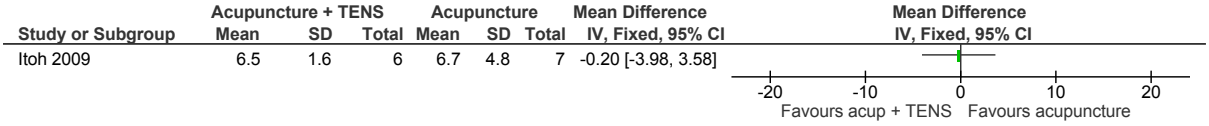


Figure 842: 32 Function (RMDQ, 0-24) ≤ 4 months



K.10.6.2.3 Electrotherapy (TENS) + exercise (biomechanical) compared to sham electrotherapy (TENS)

Figure 843: Pain severity (Borg verbal pain rating scale, 0-10) ≤ 4 months

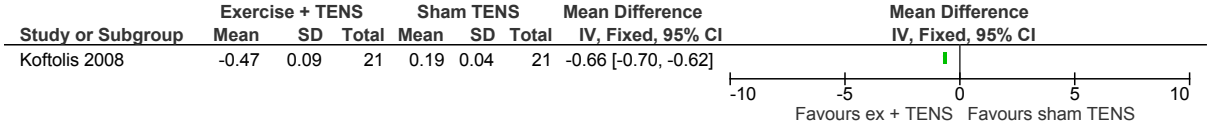
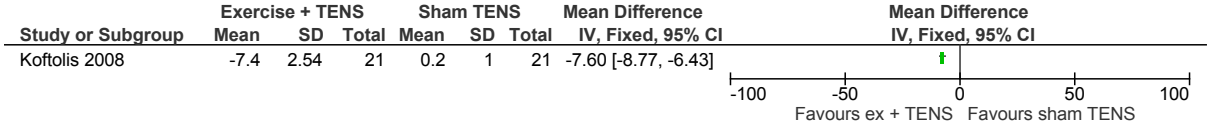
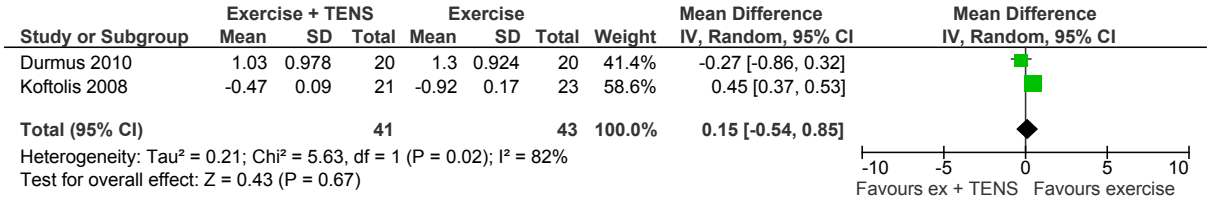


Figure 844: Function (ODI, 0-100) ≤ 4 months



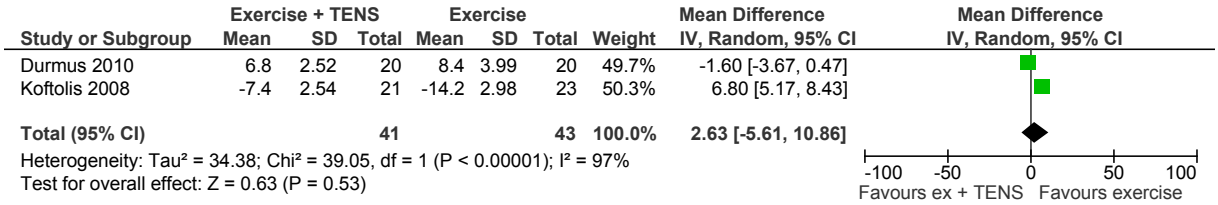
K.10.6.2.4 Electrotherapy (TENS) + exercise (biomechanical) compared to exercise (biomechanical)

Figure 845: 33 Pain severity (Borg verbal pain rating scale, and Pain disability index (PDI), converted to 0-10) ≤ 4 months



Note: Unresolved heterogeneity

Figure 846: Function (ODI, 0-100) ≤ 4 months



Note: Unresolved heterogeneity

Figure 847: 35 Quality of life (SF-36, 0-100) ≤ 4 months

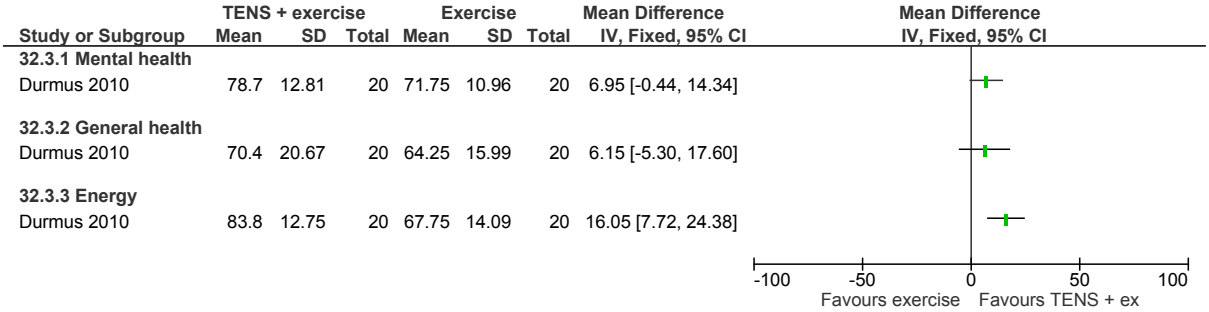
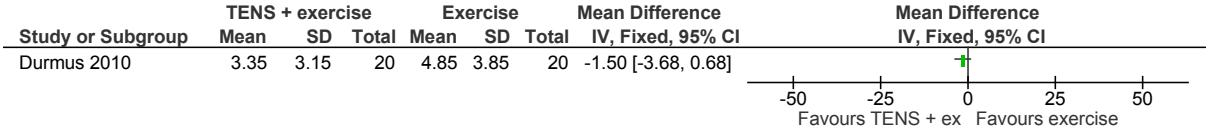


Figure 848: Psychological distress (BDI, 0-63) ≤ 4 months



K.10.6.2.5 Electrotherapy (PENS) + exercise (biomechanical + aerobics) compared to sham electrotherapy (PENS) + exercise (biomechanical + aerobics)

Figure 849: Quality of life (SF-36, 0-100)

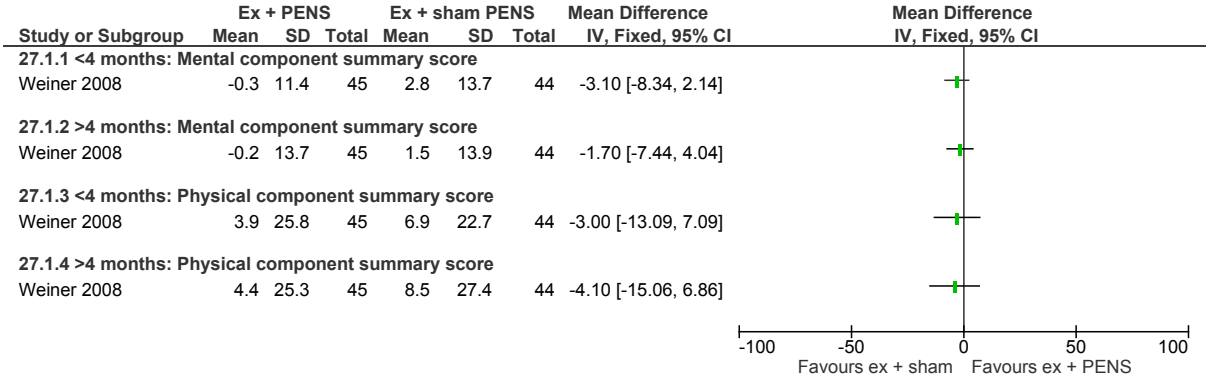


Figure 850: Pain severity (McGill, 0-78)

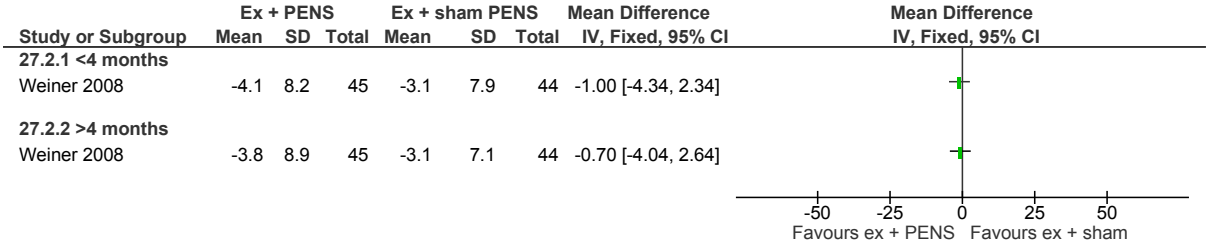
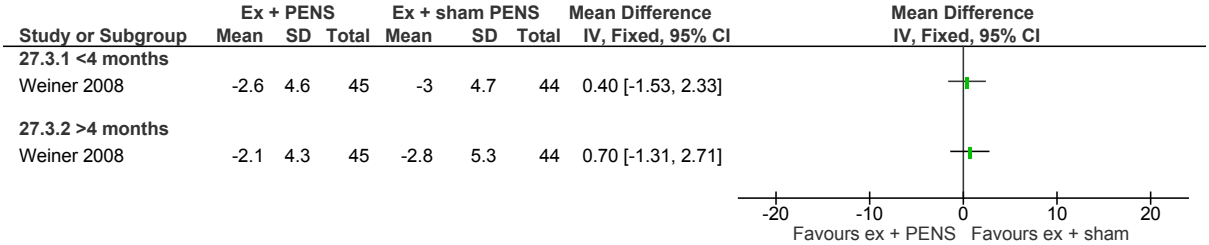


Figure 851: Function (RMDQ, 0-24)



K.10.6.2.6 Electrotherapy (ultrasound) + exercise (biomechanical – core stabilisation) compared to exercise (biomechanical – core stabilisation)

Figure 852: Quality of life (SF-36, 0-100) ≤ 4 months

Study or Subgroup	US + exercise Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
34.1.1 Mental health							
Durmus 2010	73.05	12.49	19	71.75	10.96	20	1.30 [-6.09, 8.69]
34.1.2 General health							
Durmus 2010	65.52	16.9	19	64.25	15.99	20	1.27 [-9.07, 11.61]
34.1.3 Energy							
Durmus 2010	68.68	15.44	19	67.75	14.09	20	0.93 [-8.36, 10.22]

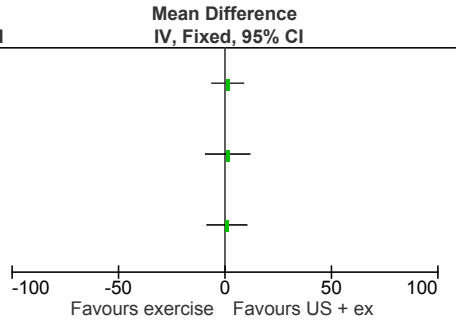


Figure 853: Pain severity (pain disabiltiy index, 0-50) ≤ 4 months

Study or Subgroup	US + exercise Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Durmus 2010	6.21	4.23	19	6.5	4.62	20	-0.29 [-3.07, 2.49]

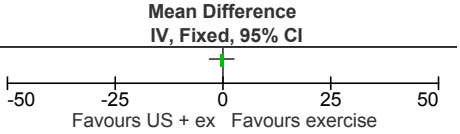


Figure 854: Function (ODI, 0-100) ≤ 4 months

Study or Subgroup	US + exercise Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Durmus 2010	8.68	3.37	19	8.4	3.99	20	0.28 [-2.03, 2.59]

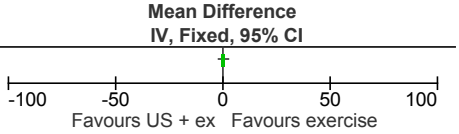
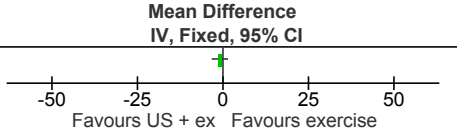


Figure 855: Psychological distress (BDI, 0-63) ≤ 4 months

Study or Subgroup	US + exercise Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Durmus 2010	3.94	2.93	19	4.85	3.85	20	-0.91 [-3.05, 1.23]



K.10.6.2.7 Electrotherapy (ultrasound) + exercise + self-management compared to exercise + self-management

Figure 856: Pain (0-100 VAS converted to 0-10) ≤ 4 months

Study or Subgroup	Ex + self-m + US Mean	SD	Total	Ex + self-m Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ebadi 2012	2.77	1.44	21	2.55	0.99	18	0.22 [-0.55, 0.99]

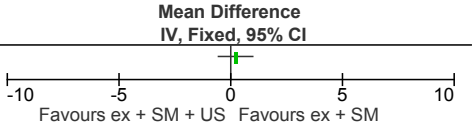
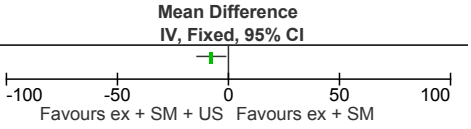


Figure 857: Function (Functional Rating Index) ≤ 4 months

Study or Subgroup	Ex + self-m + US Mean	SD	Total	Ex + self-m Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Ebadi 2012	22.8	7.8	21	30.5	11.9	18	-7.70 [-14.13, -1.27]



K.10.6.3 Low back pain with/ without sciatica

K.10.6.3.1 Electrotherapy (electroacupuncture) + exercise + self-management (education + home exercise) compared to exercise + self-management (education + home exercise)

Figure 858: Pain severity (NRS, 0-10) ≤ 4 months

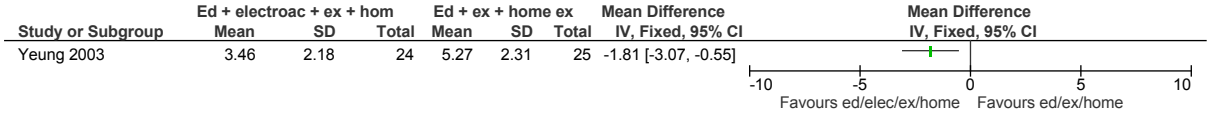


Figure 859: Function (Aberdeen LBP scale 0-100 converted to 0-10 scale) ≤ 4 months

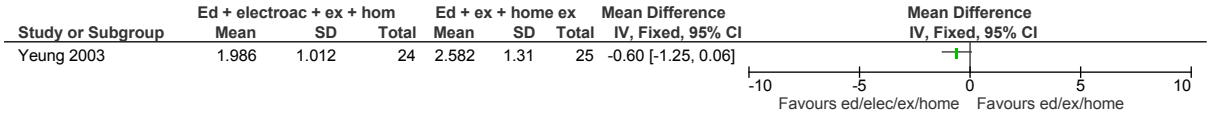
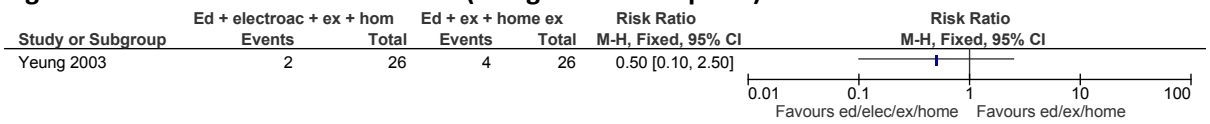


Figure 860: Healthcare utilisation (analgesic consumption) ≤ 4 months



K.10.6.3.2 Electrotherapy (interferential therapy) + manual therapy (manipulation) compared to manual therapy (manipulation)

Figure 861: Quality of life (EQ-5D, 0-1)

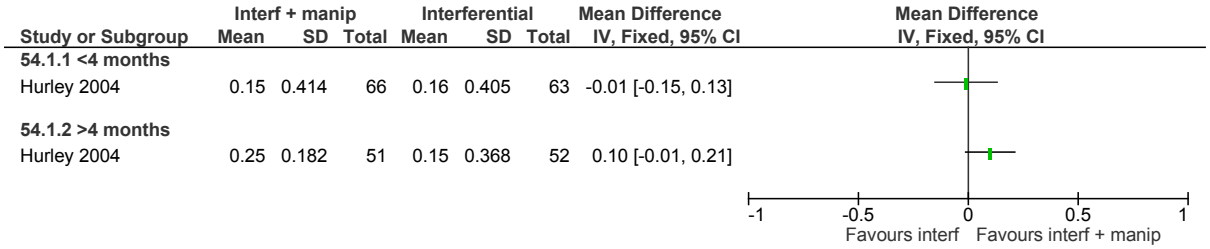


Figure 862: Quality of life (SF-36, 0-100)

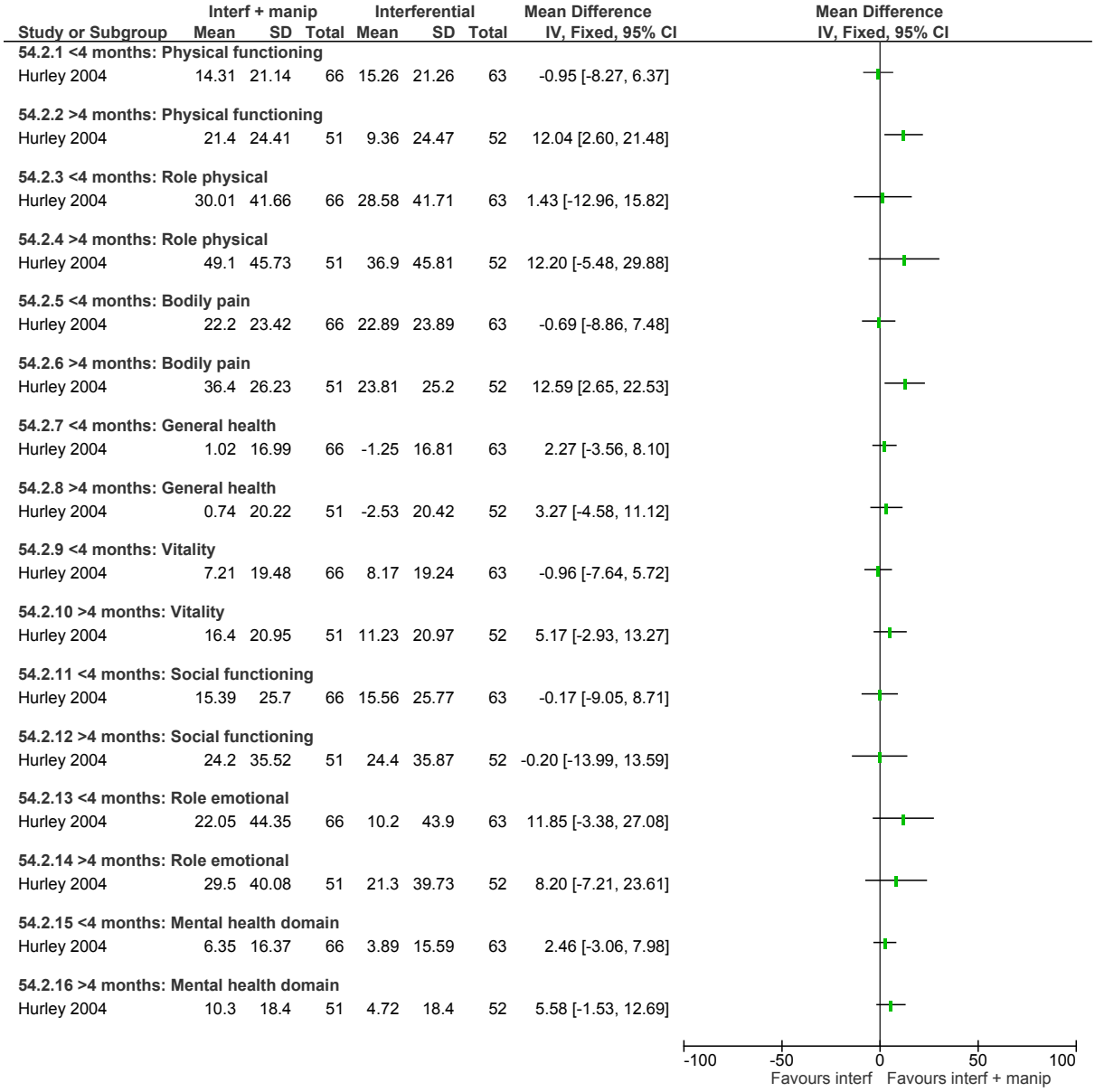


Figure 863: Pain severity (0-100 VAS converted to 0-10)

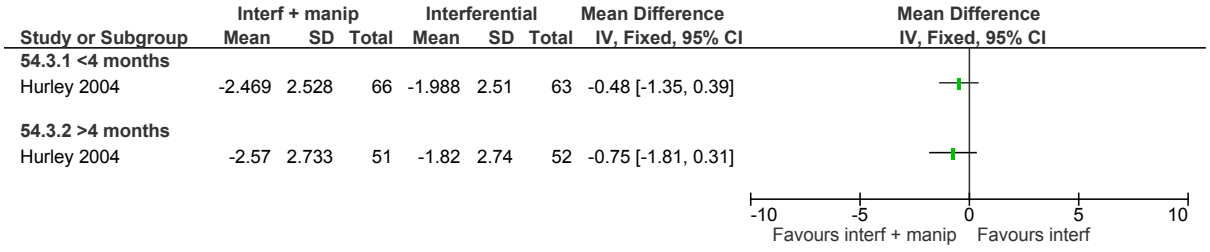
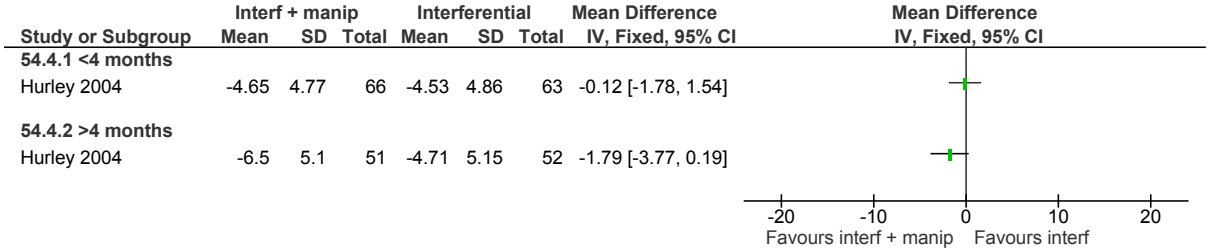
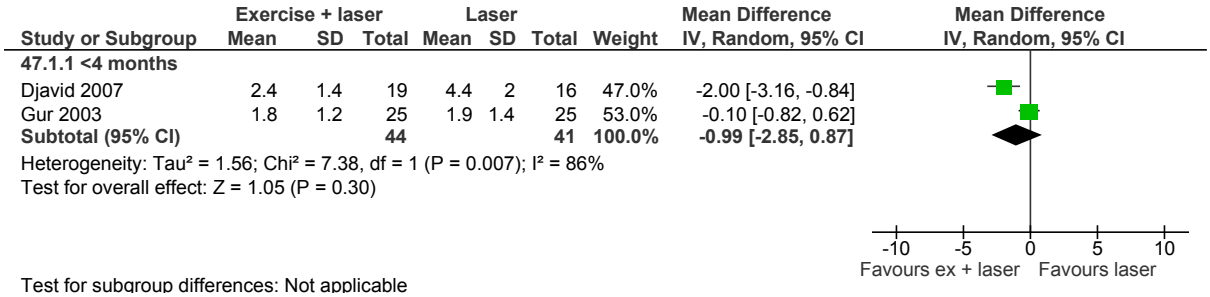


Figure 864: Function (RMDQ, 0-24)



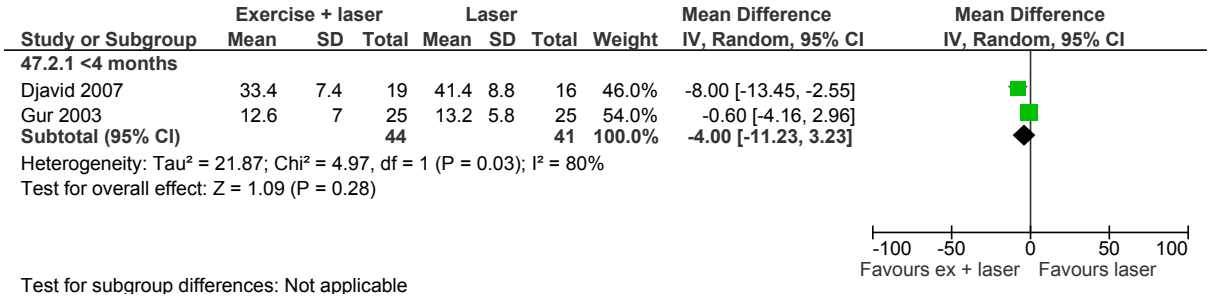
K.10.6.3.3 Electrotherapy (laser) + self-management (home exercise) compared to self-management (home exercise)

Figure 865: Pain severity (VAS, 0-10)



Note: Unresolved heterogeneity

Figure 866: Function (ODI, 0-100).



Note: Unresolved heterogeneity

K.10.6.3.4 Electrotherapy (HILT Laser) + self-management (unsupervised exercise) compared to placebo HILT laser + self-management (unsupervised exercise)

Figure 867: Pain severity (VAS, 0-10) ≤ 4 months

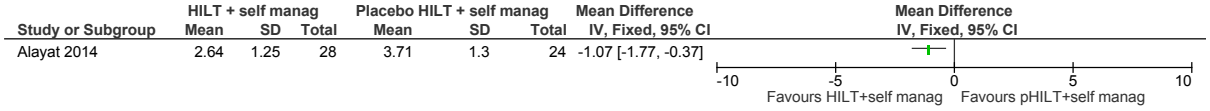


Figure 868: Function (RMDQ, 0-24) ≤ 4 months

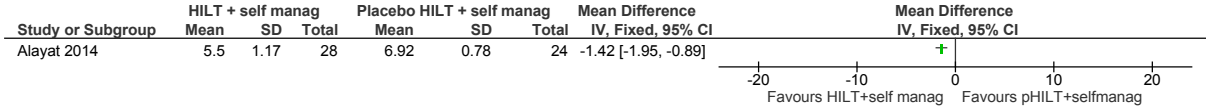
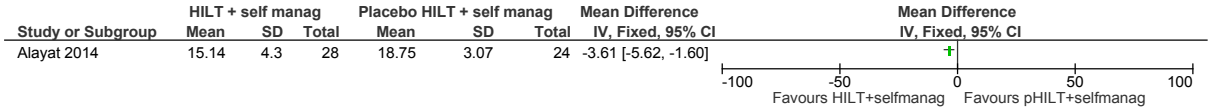


Figure 869: Function (MODQ, 0-100) ≤ 4 months



K.10.6.6.1 Electrotherapy (BEMER + TENS) + exercise + manual therapy (massage) compared to placebo BEMER + TENS + exercise + manual therapy (massage)

Figure 870: Quality of life (SF-36, 0-100, change score) ≤ 4 months

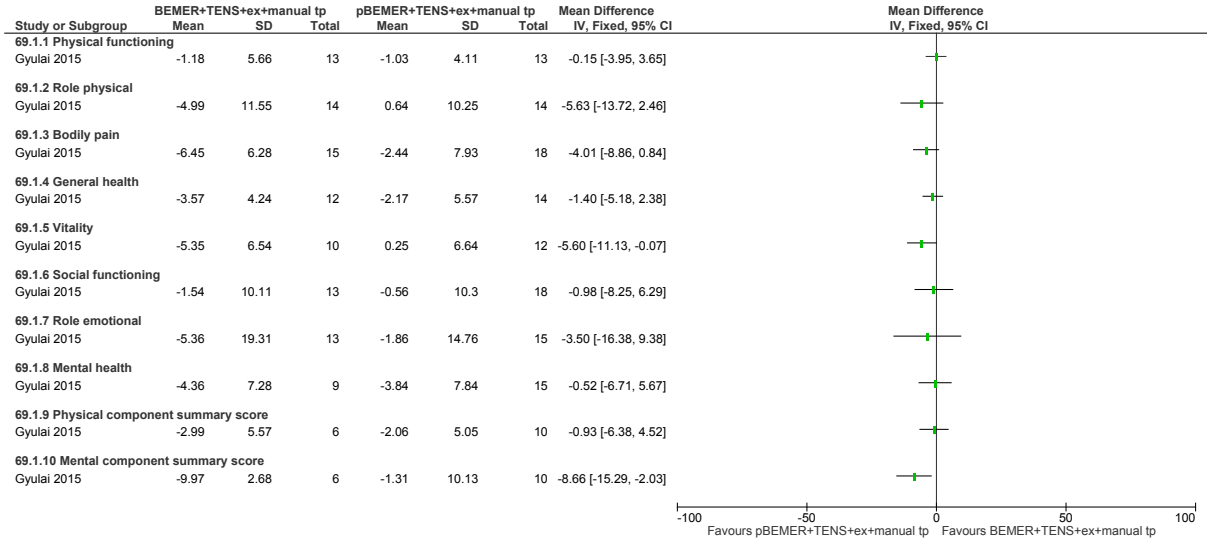


Figure 871: Pain severity (exercise VAS, 0-10, change score) ≤ 4 months

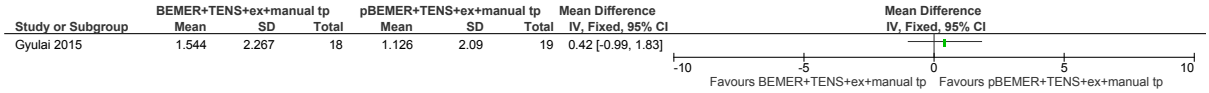


Figure 872: Pain severity (resting VAS, 0-10, change score) ≤ 4 months

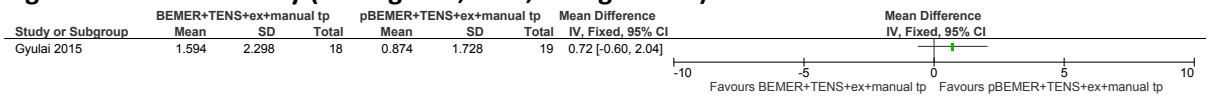
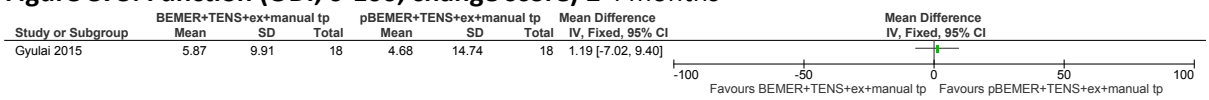


Figure 873: Function (ODI, 0-100, change score) ≤ 4 months



K.11 Psychological interventions

K.11.1 Cognitive behavioural approaches versus placebo/sham

K.11.1.1 Low back pain with or without sciatica

Figure 874: Pain severity (pain and impairment relationship scale) > 4 months

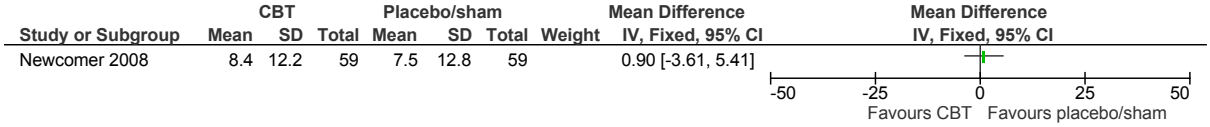
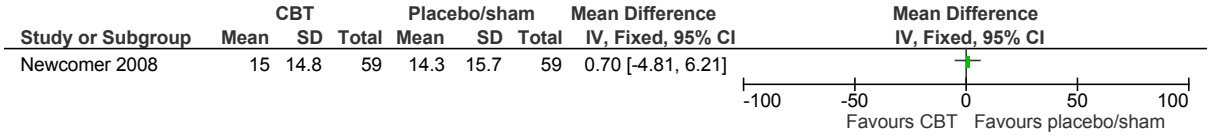


Figure 875: Function (ODI, 0-100) > 4 months



K.11.2 Cognitive behavioural approaches versus usual care/waiting list

K.11.2.1 Low back pain with or without sciatica

Figure 876: Pain severity (VAS 0-10, final values)

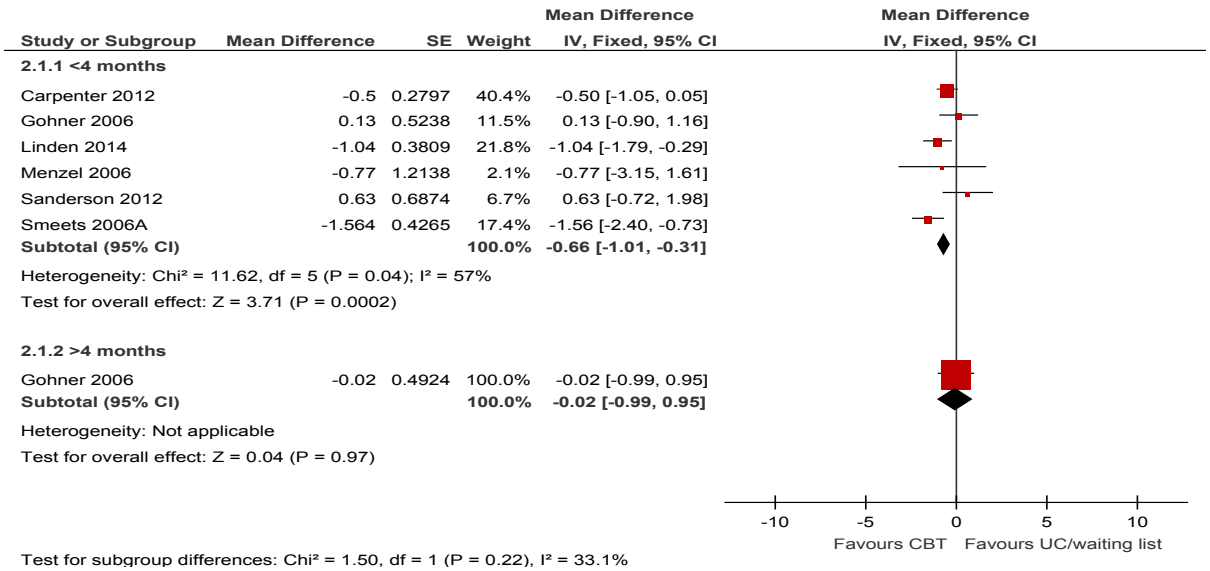
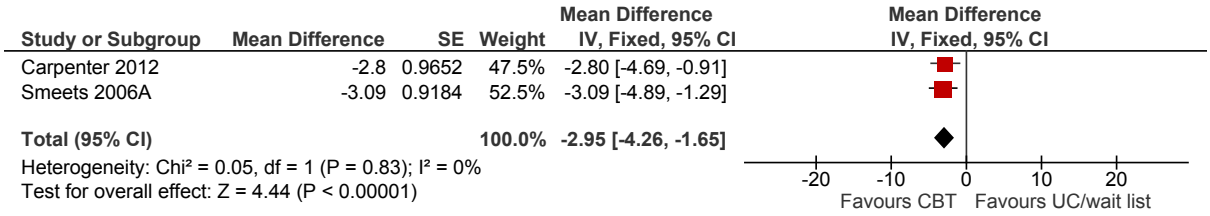
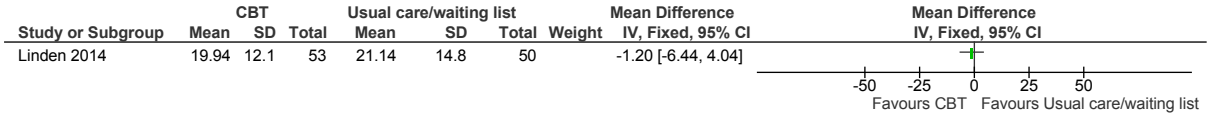


Figure 877: Function (RMDQ, 0-24) < 4 months



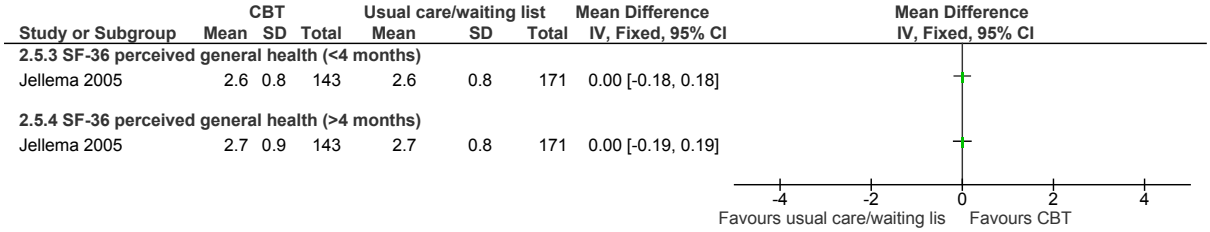
Carpenter and Smeets = waiting list control.

Figure 878: Function (PDI, pain disability index, 0-70) < 4 months



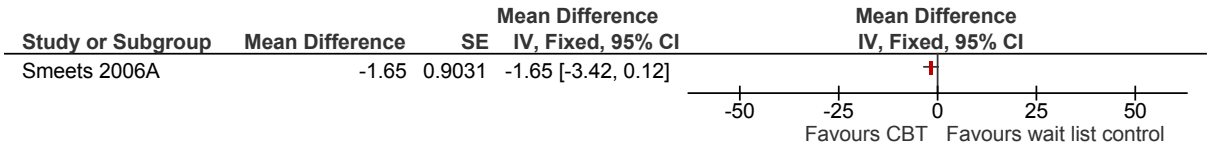
Linden = usual care

Figure 879: Quality of life (SF-36 perceived general health, first question of general health perception subscale, 0-5)



Jellema 2005 (usual care)

Figure 880: Psychological distress (BDI, 0-63) < 4 months



Smeets: waiting list control

K.11.3 Cognitive behavioural approaches versus behavioural therapy

K.11.3.1 Low back pain with or without sciatica

Figure 881: Pain severity (MPQ VAS, 0-100 converted to 0-10)

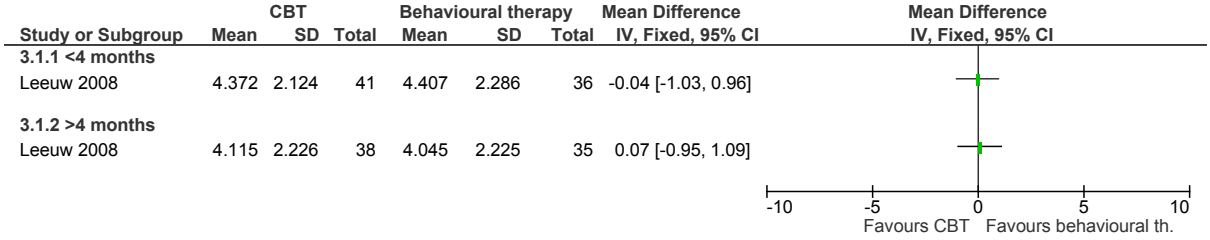


Figure 882: Function (Quebec back pain disability scale, 0-100) > 4 months

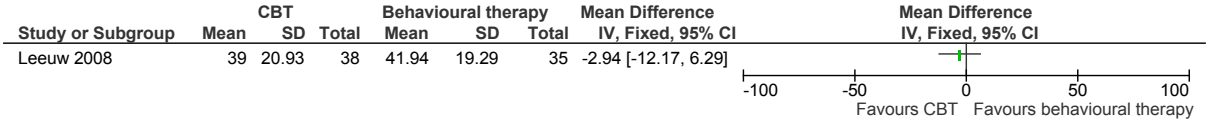
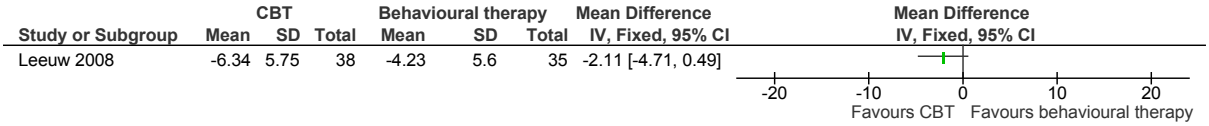


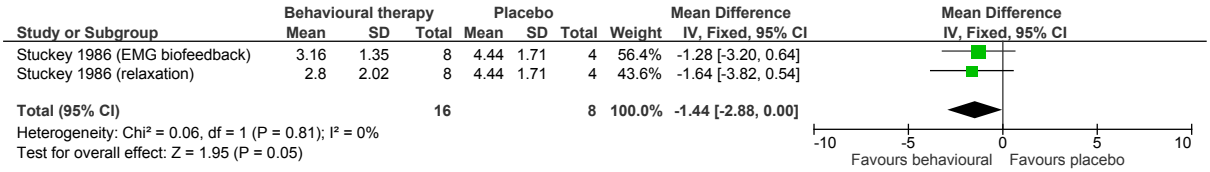
Figure 883: Function (RMDQ, 0-24) > 4 months



K.11.4 Behavioural therapy versus placebo

K.11.4.1 Low back pain with or without sciatica

Figure 884: Pain severity (VAS, 0-10) ≤4 months

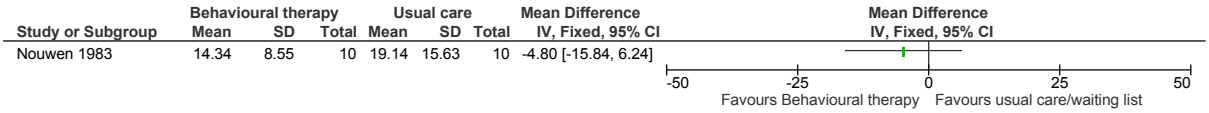


Scale: 0-100 (converted to 0-10)

K.11.5 Behavioural therapy versus usual care/waiting list

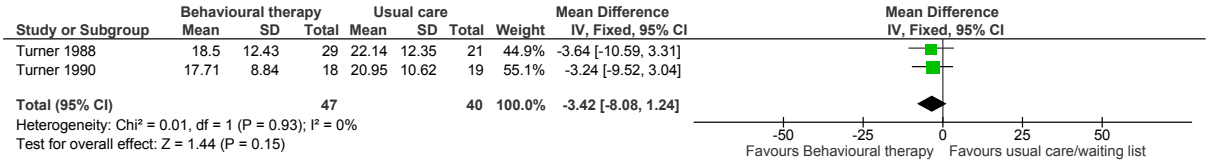
K.11.5.1 Low back pain with or without sciatica

Figure 885: Pain severity (Back pain log) < 4 months



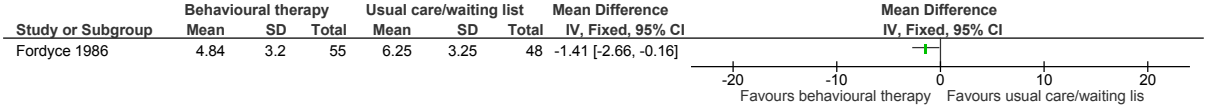
Nouwen 1983 (waiting list): Back pain log, a modification of Budzinsky 1973, to rate the intensity of the pain on a 5-point scale each waking hour of the day

Figure 886: Pain severity (McGill Pain questionnaire, 0-78)



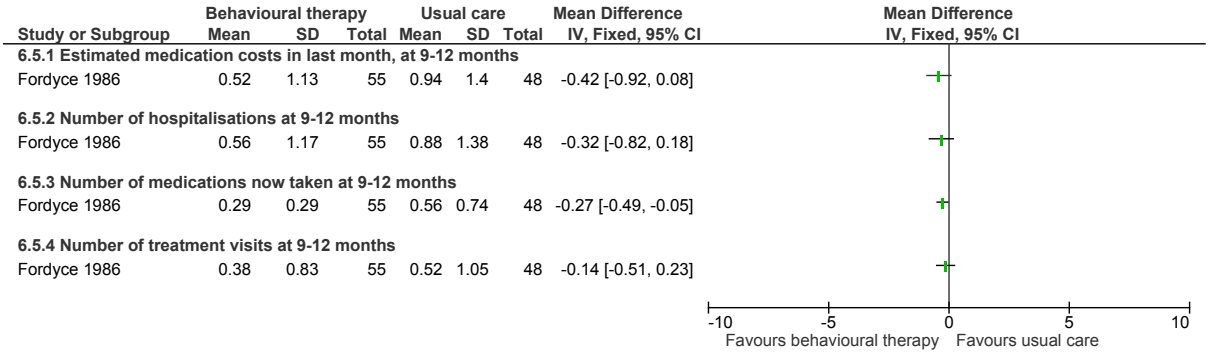
Turner 1988 (waiting list) and Turner 1990 (waiting list)

Figure 887: Function (Modified activity form score) > 4 months



Fordyce 1986 (usual care): Modified Activity Form score (number of nights in preceding week awakened by pain not included). High is poor outcome

Figure 888: Healthcare utilisation > 4 months

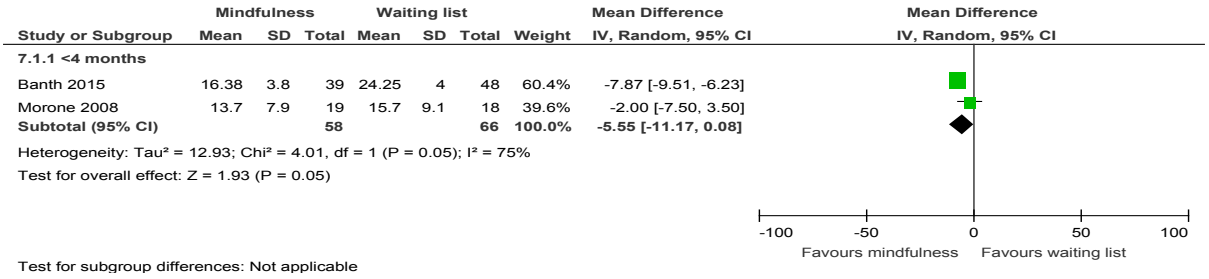


Fordyce 1986: usual care

K.11.6 Mindfulness versus usual care/waiting list

K.11.6.1 Low back pain with or without sciatica

Figure 889: Pain severity (McGill pain 0-78) < 4 months



Heterogeneity: unable to investigate as studies same in terms of pre-specified subgroups. Thus downgraded in GRADE and RE model used.

Figure 890: Function (RMDQ 0-24) < 4 months

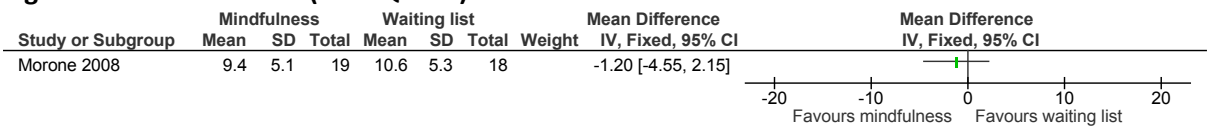
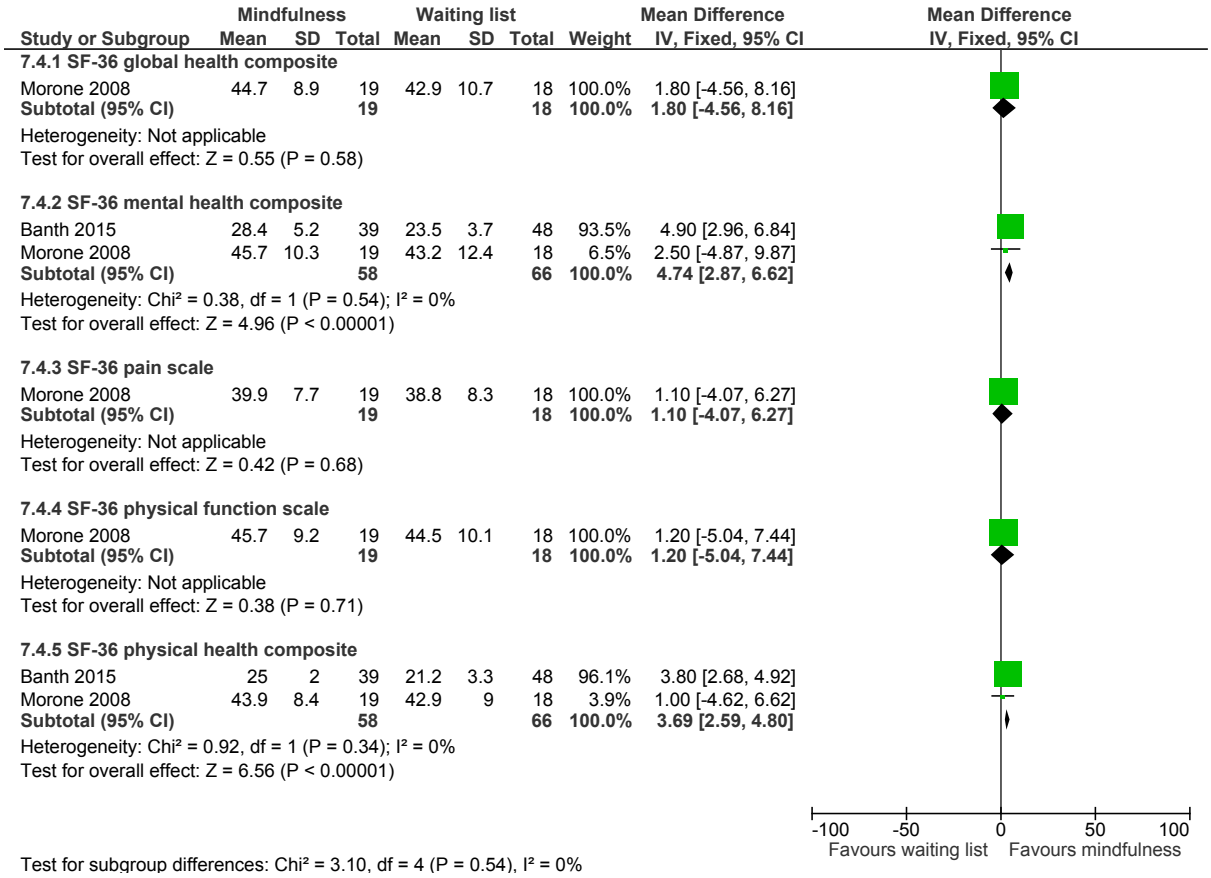


Figure 891: Quality of life (SF-36, 0-100) < 4 months

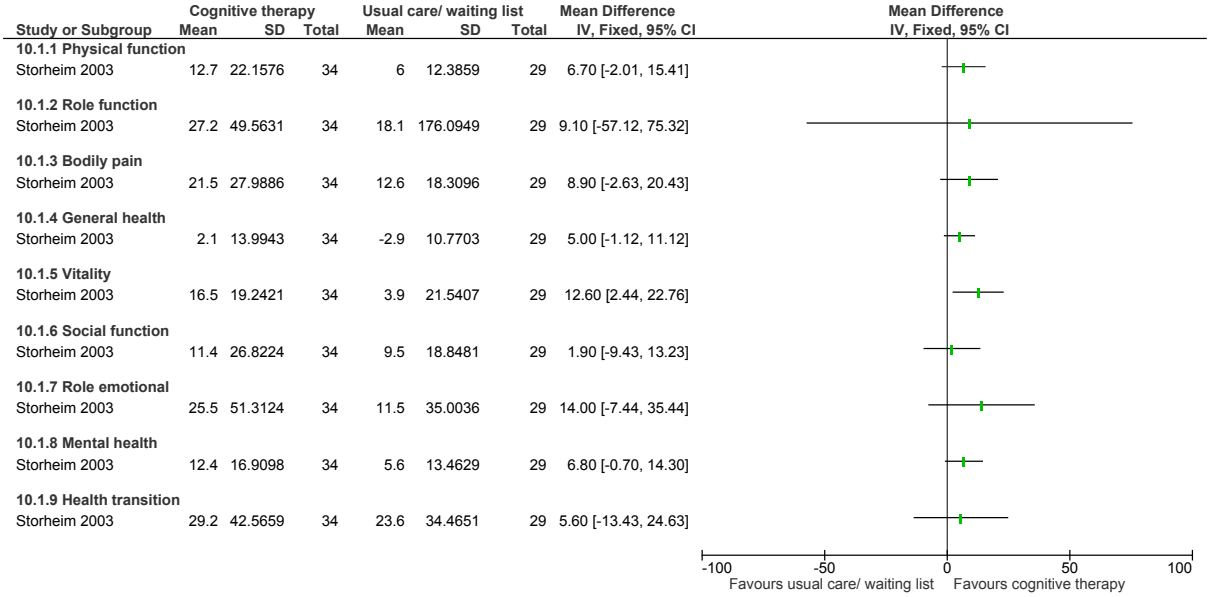


Test for subgroup differences: Chi² = 3.10, df = 4 (P = 0.54), I² = 0%

K.11.7 Cognitive therapy versus usual care/waiting list

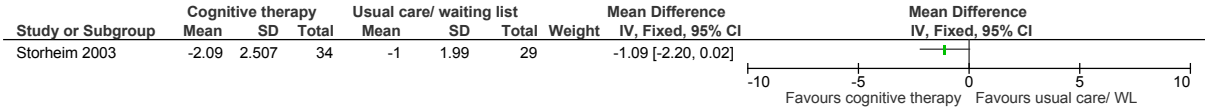
K.11.7.1 Low back pain without sciatica

Figure 892: Quality of life (SF-36) >4 months



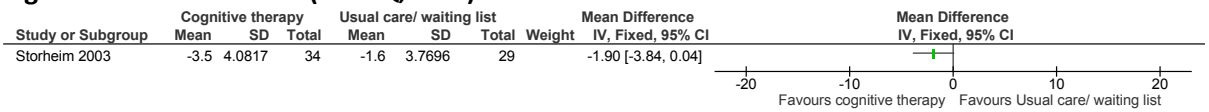
Storheim 2003: usual care

Figure 893: Pain (VAS, 0-100 converted to 0-10) >4 months



Storheim 2003: usual care

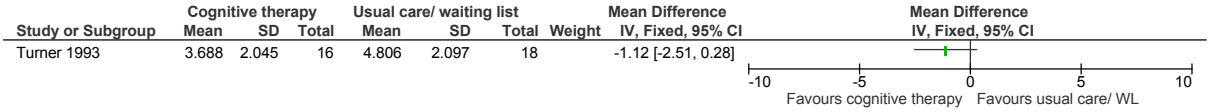
Figure 894: Function (RMDQ, 0-24) >4 months



Storheim 2003: usual care

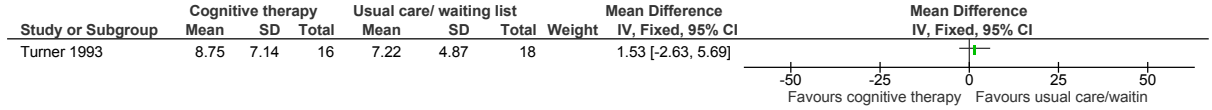
K.11.7.2 Low back pain with or without sciatica

Figure 895: Pain severity (VAS, 0-100 converted to 0-10, final values) ≤4 months



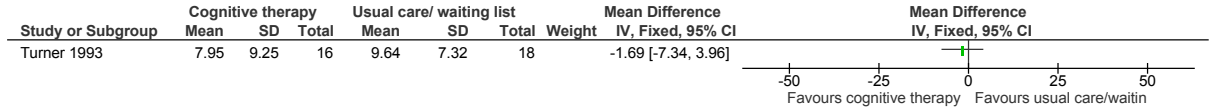
Turner 1993: waiting list

Figure 896: Psychological distress (BDI, 0-63) ≤4 months



Turner 1993: waiting list

Figure 897: Function (Sickness impact profile, 0-68) ≤4 months



Turner 1993: waiting list

K.11.8 Cognitive therapy versus exercise (biomechanical plus aerobics)

K.11.8.1 Low back pain without sciatica

Figure 898: Quality of life (SF-36, 0-100) >4 months

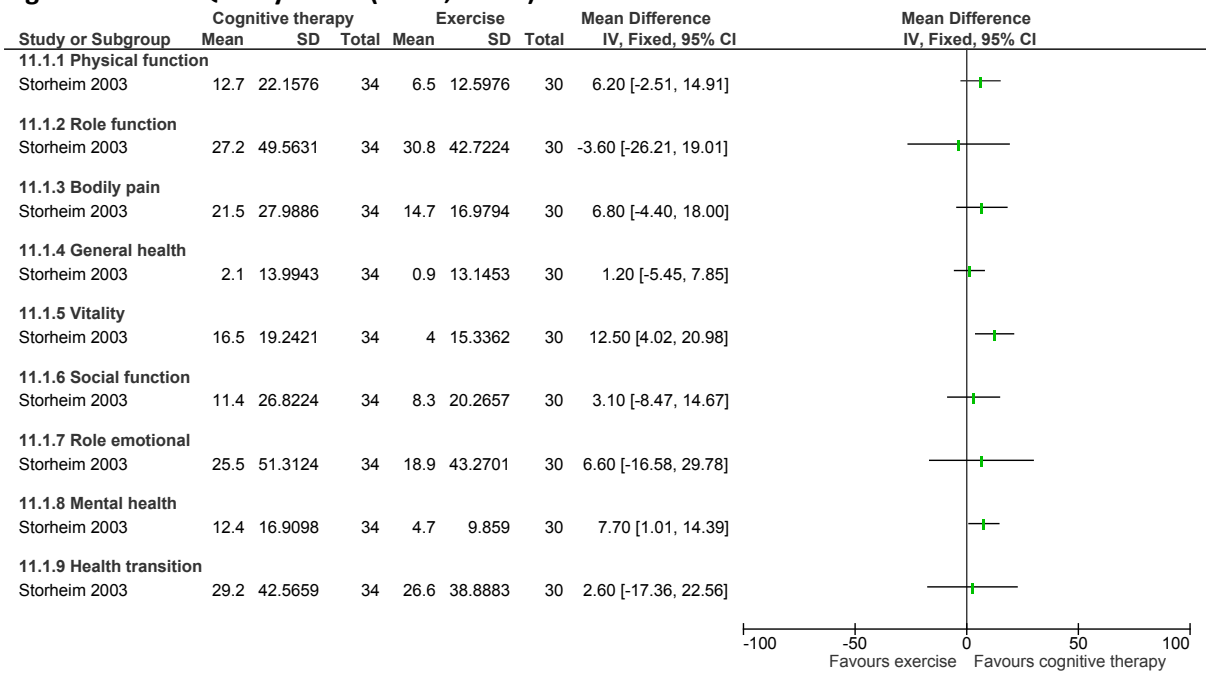


Figure 899: Pain severity (VAS 0-100, converted to 0-10) >4 months

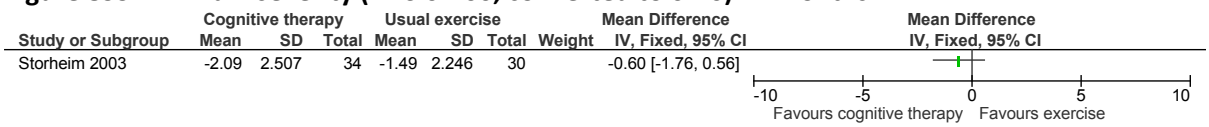
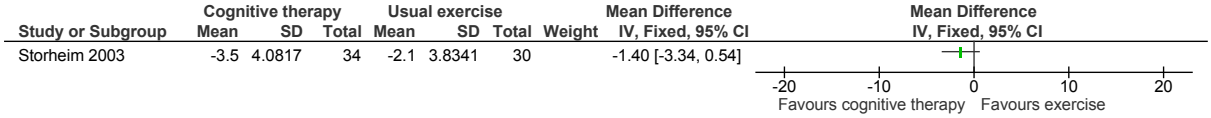


Figure 900: Function (RMDQ, 0-24) >4 months

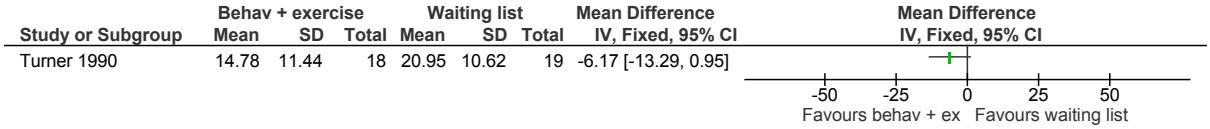


K.11.9 Combination of interventions – psychological adjunct

K.11.9.1 Low back pain without sciatica

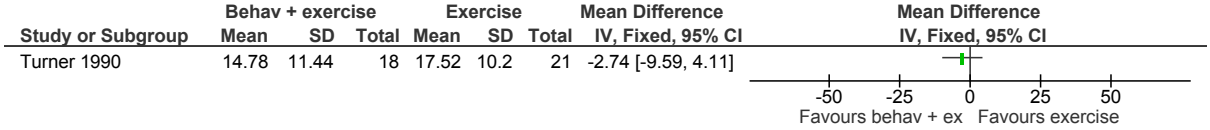
K.11.9.1.1 Psychological intervention (behavioural therapy) + exercise (aerobic) compared to waiting list (usual care not specified)

Figure 901: Pain severity (McGill, 0-63) ≤ 4 months



K.11.9.1.2 Psychological intervention (behavioural therapy) + exercise (aerobic) compared to exercise (aerobic)

Figure 902: Pain (McGill, 0-63) ≤ 4 months



K.11.9.2 Low back pain with or without sciatica

K.11.9.2.1 Psychological intervention (cognitive behavioural approaches) + exercise (mixed: biomechanical + aerobic) compared to exercise (mixed: biomechanical + aerobic)

Figure 903: Pain severity (0-100 NRS converted to 0-10 scale)

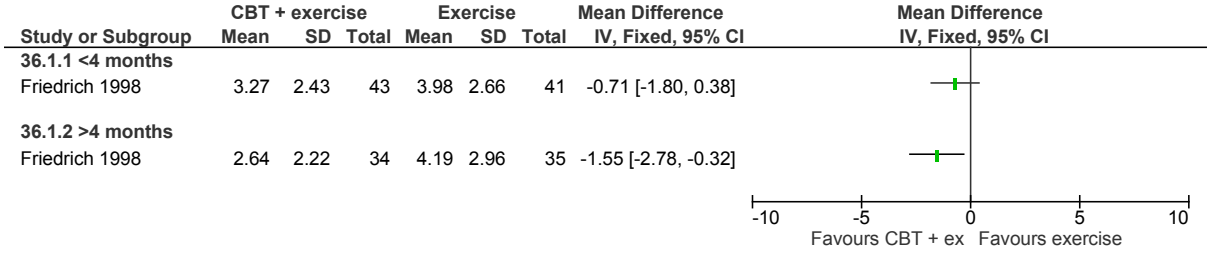
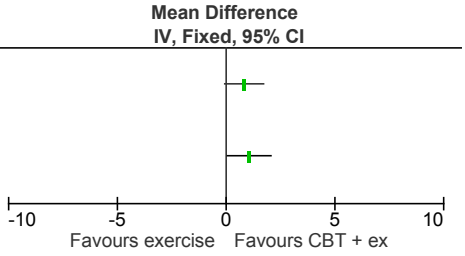


Figure 904: Function (Low back outcome scale questionnaire 0-75 converted to 0-10)

Study or Subgroup	CBT + exercise Mean	SD	Total	Exercise Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
36.2.1 <4 months							
Friedrich 1998	7.63	2.09	43	6.8	2.09	41	0.83 [-0.06, 1.72]
36.2.2 >4 months							
Friedrich 1998	7.85	1.68	34	6.79	2.49	35	1.06 [0.06, 2.06]



K.11.9.2.2 Psychological intervention (cognitive behavioural approaches) + self-management compared to self-management

Figure 905: Pain severity (0-100 von Korff converted to 0-10 scale)

Study or Subgroup	CBT + self-m Mean	SD	Total	Self-manage Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
37.1.1 <4 months							
Lamb 2010b	-1.22	2.273	355	-0.54	2.078	190	-0.68 [-1.06, -0.30]
37.1.2 >4 months							
Lamb 2010b	-1.34	2.645	399	-0.64	2.346	199	-0.70 [-1.12, -0.28]

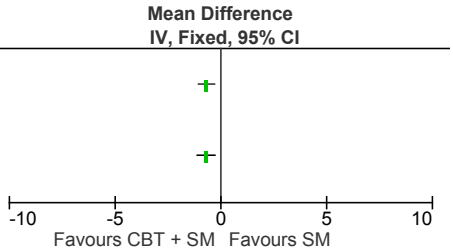


Figure 906: Function (RMDQ, 0-24)

Study or Subgroup	CBT + self-m Mean	SD	Total	Self-manage Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
37.2.1 <4 months							
Lamb 2010b	-2	4.09	355	-1.1	4.18	190	-0.90 [-1.63, -0.17]
37.2.2 >4 months							
Lamb 2010b	-2.4	4.84	399	-1.1	4.79	199	-1.30 [-2.12, -0.48]

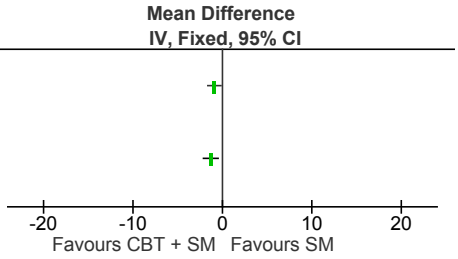


Figure 907: Function (0-100 von Korff scale converted to 0-10)

Study or Subgroup	CBT + self-m Mean	SD	Total	Self-manage Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
37.3.1 <4 months							
Lamb 2010b	-1.32	2.475	355	-0.89	2.359	190	-0.43 [-0.85, -0.01]
37.3.2 >4 months							
Lamb 2010b	-1.38	2.492	399	-0.54	2.487	199	-0.84 [-1.26, -0.42]

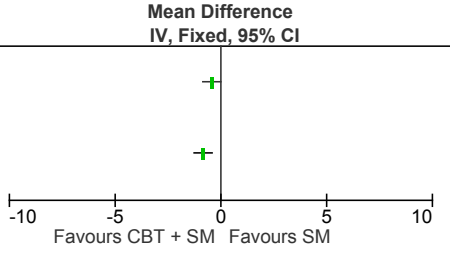


Figure 908: Quality of life (EQ-5D, 0-1)

Study or Subgroup	CBT + self-m Mean	SD	Total	Self-manage Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
37.4.1 <4 months							
Lamb 2010b	0.628	0.264	349	0.567	0.29	179	0.06 [0.01, 0.11]
37.4.2 >4 months							
Lamb 2010b	0.64	0.29	327	0.592	0.29	163	0.05 [-0.01, 0.10]

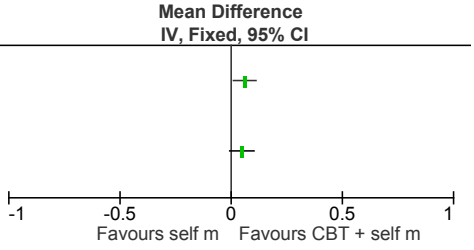


Figure 909: Quality of life (SF-12, 0-100) ≤ 4 months

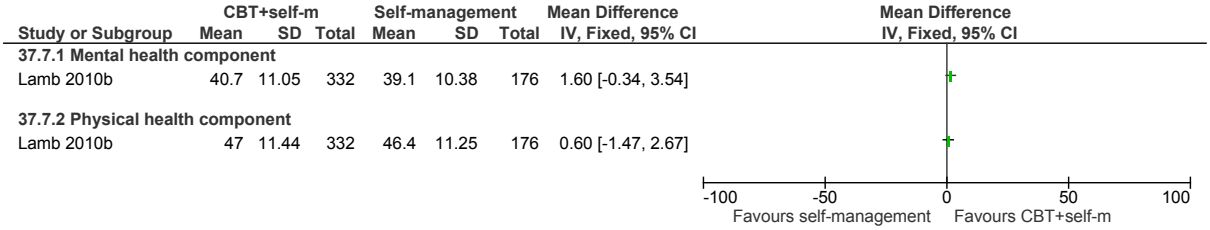
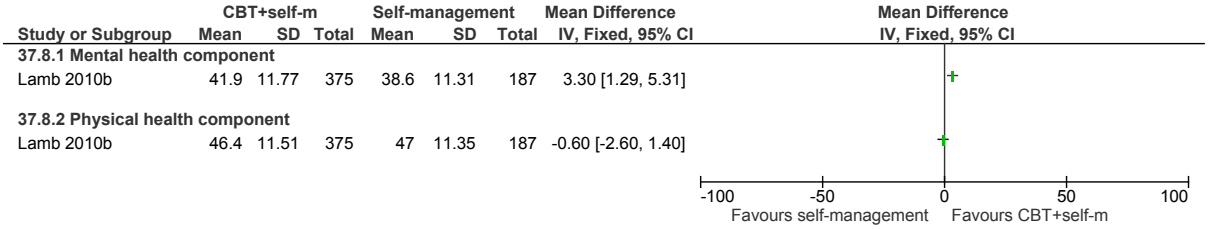


Figure 910: Quality of life (SF-12, 0-100) >4 months



K.12 Pharmacological interventions

K.12.1 Antidepressants versus placebo

K.12.1.1 SSRIs versus placebo

K.12.1.1.1 Low back pain population

Figure 911: Pain severity (final values, DSS 0-20) at ≤4 months

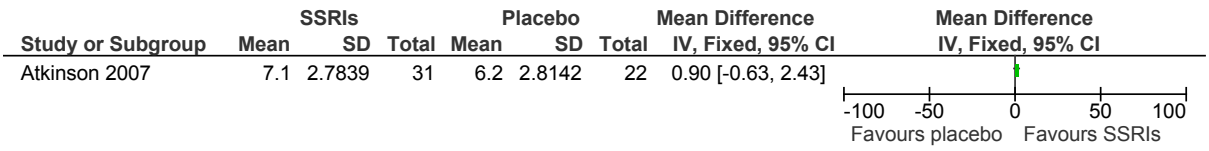
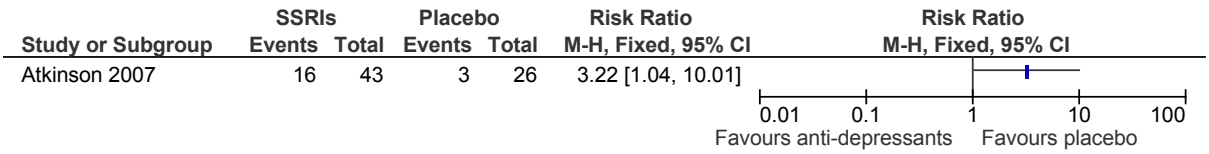


Figure 912: Adverse events at ≤4 months



K.12.1.1.2 Low back pain with/without sciatica population

Figure 913: Pain severity (Descriptor Differential Scale 0-20, VAS 0-100) at ≤4 months

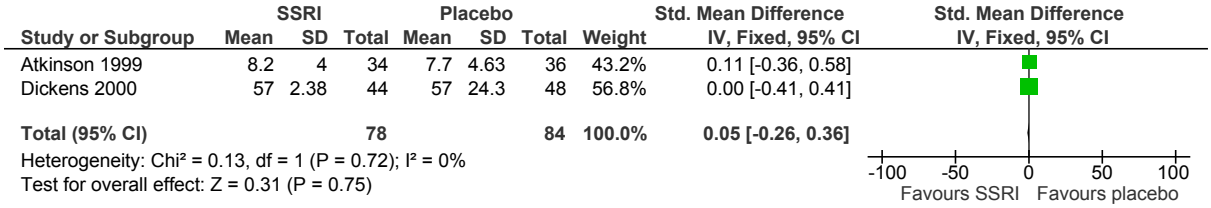


Figure 914: Function (final values, ODI 0-100) at ≤4 months

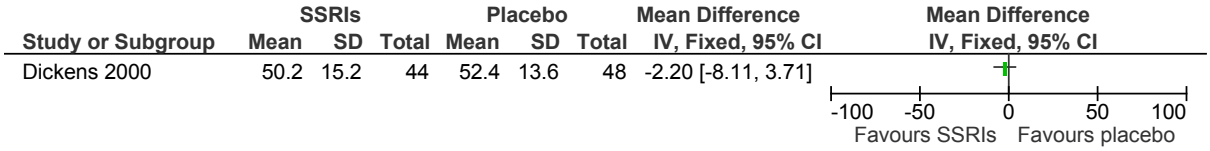


Figure 915: Psychological distress (final value, MADRS 0-60) at ≤4 months

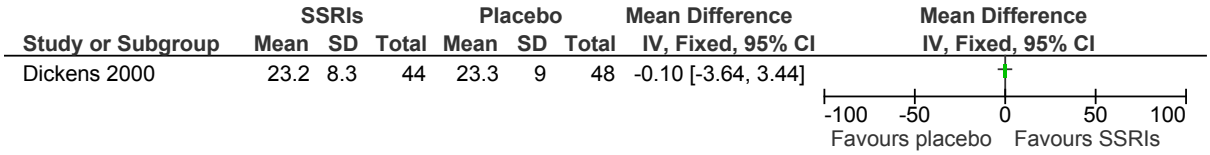
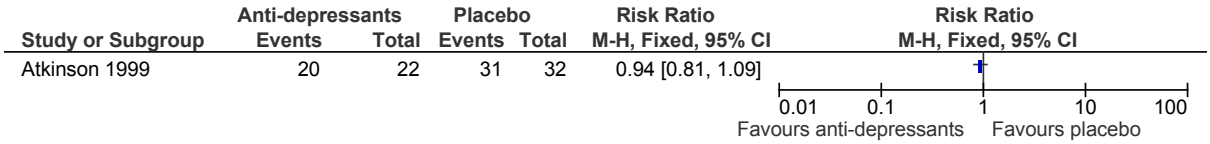


Figure 916: Adverse events at ≤4 months



K.12.1.2 Tricyclic antidepressants versus placebo

K.12.1.2.1 Low back pain with/without sciatica population

Figure 917: Pain severity (pooled mean change and final values, DSS 0-21 and VAS 0-10) at ≤4 months

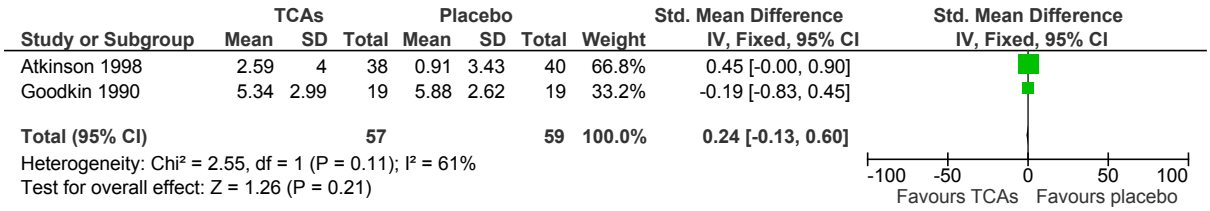


Figure 918: Psychological distress (final values, BDI 0-63) at ≤4 months

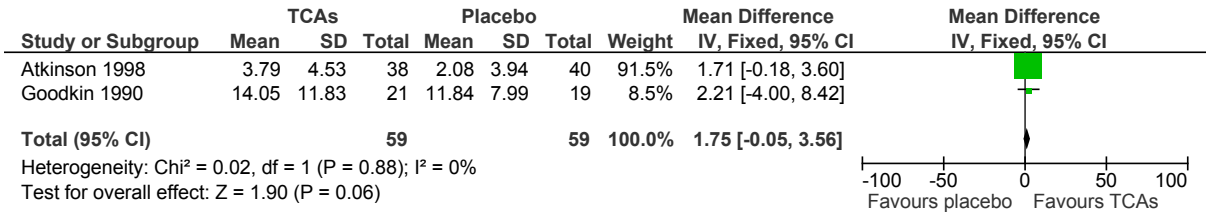


Figure 919: Psychological distress (mean change, STAI 20-80) at ≤4 months

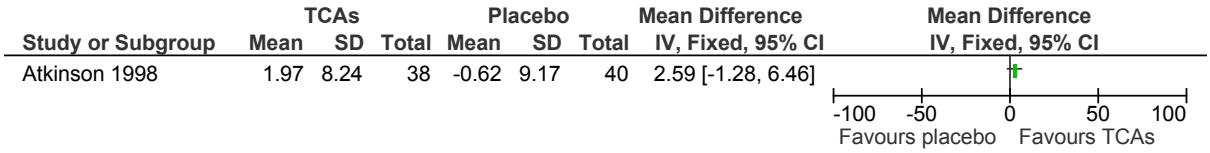
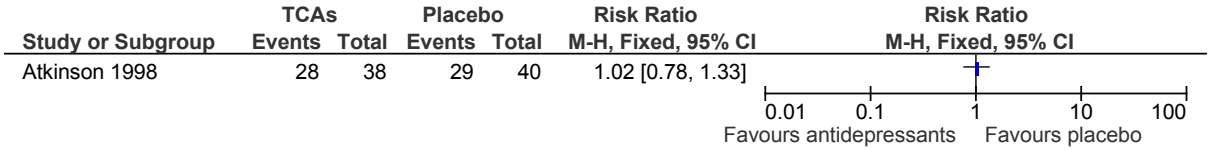


Figure 920: Adverse events at ≤4 months



K.12.1.3 SNRIs versus placebo

K.12.1.3.1 Low back pain with or without sciatica

Figure 921: Pain severity (mean change, BPI-severity 0-10) at ≤4 months

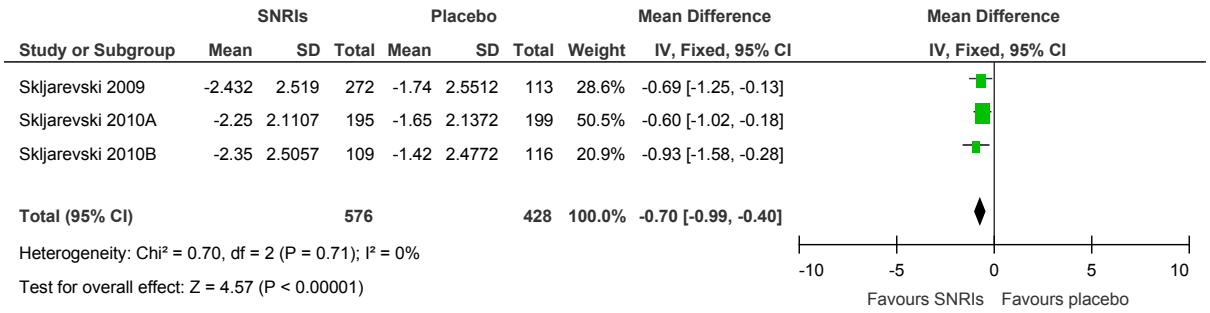


Figure 922: Function (mean change, BPI-I 0-10, RMDQ 0-24) at ≤4 months

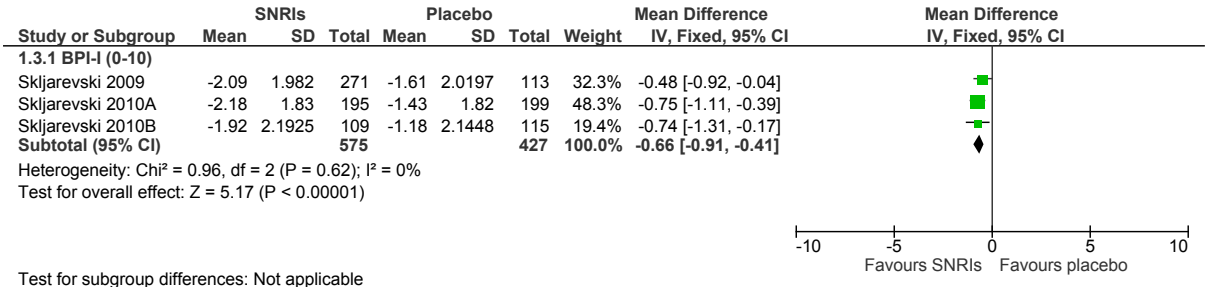


Figure 923: Responder criteria (pain reduction more than 30%) at ≤4 months

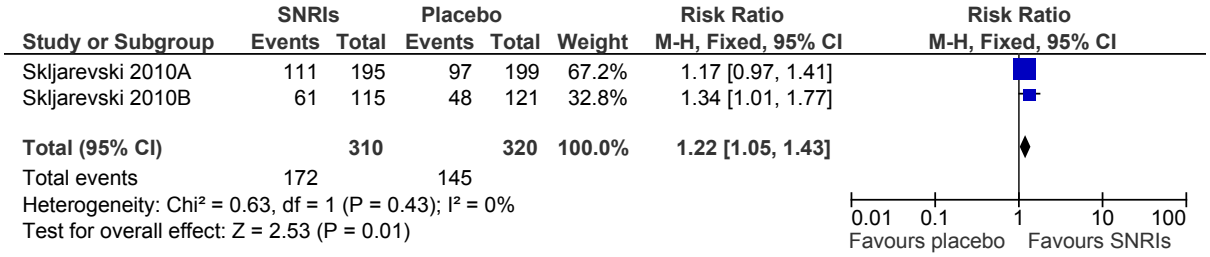


Figure 924: EQ-5D (mean change, 0.0-1.0) at ≤4 months

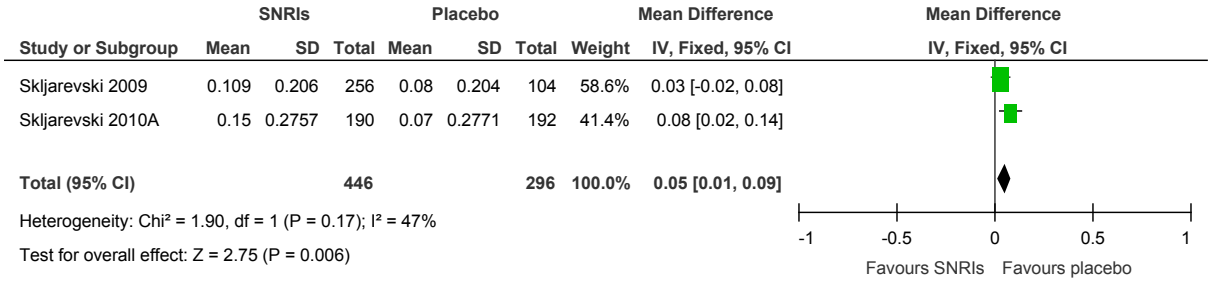


Figure 925: Healthcare utilisation (final values, At least 1 treatment emergent adverse event) at ≤4 months

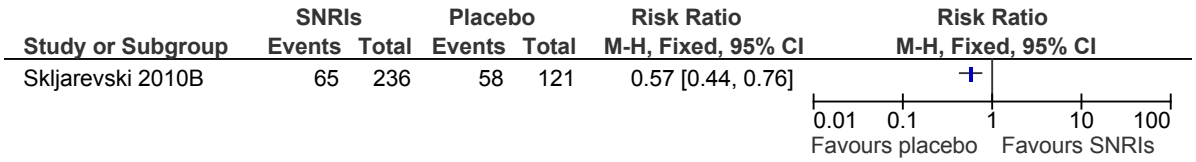
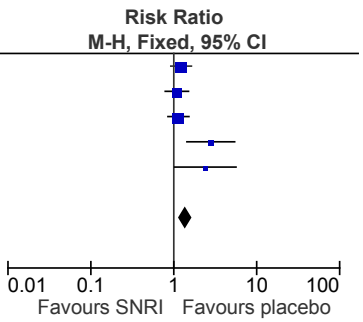


Figure 926: Adverse events at ≤4 months

Study or Subgroup	SNRIs Events	SNRIs Total	Placebo Events	Placebo Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Skljarevski 2009 (120mg)	81	112	23	39	29.9%	1.23 [0.92, 1.63]
Skljarevski 2009 (20mg)	38	59	23	39	24.3%	1.09 [0.79, 1.51]
Skljarevski 2009 (60mg)	78	116	23	39	30.2%	1.14 [0.85, 1.53]
Skljarevski 2010A	30	198	11	203	9.5%	2.80 [1.44, 5.42]
Skljarevski 2010B	16	115	7	121	6.0%	2.40 [1.03, 5.63]
Total (95% CI)		**600**		**441**	**100.0%**	**1.39 [1.17, 1.65]**
Total events	243		87			

Heterogeneity: Chi² = 10.49, df = 4 (P = 0.03); I² = 62%
Test for overall effect: Z = 3.70 (P = 0.0002)



Skljarevski 2010A: 60mg; Skljarevski 2010B:dose titrated between 30mg to 120mg

Figure 927: SF-36 (mean change, 0-100, Duloxetine 60 mg) at ≤4 months

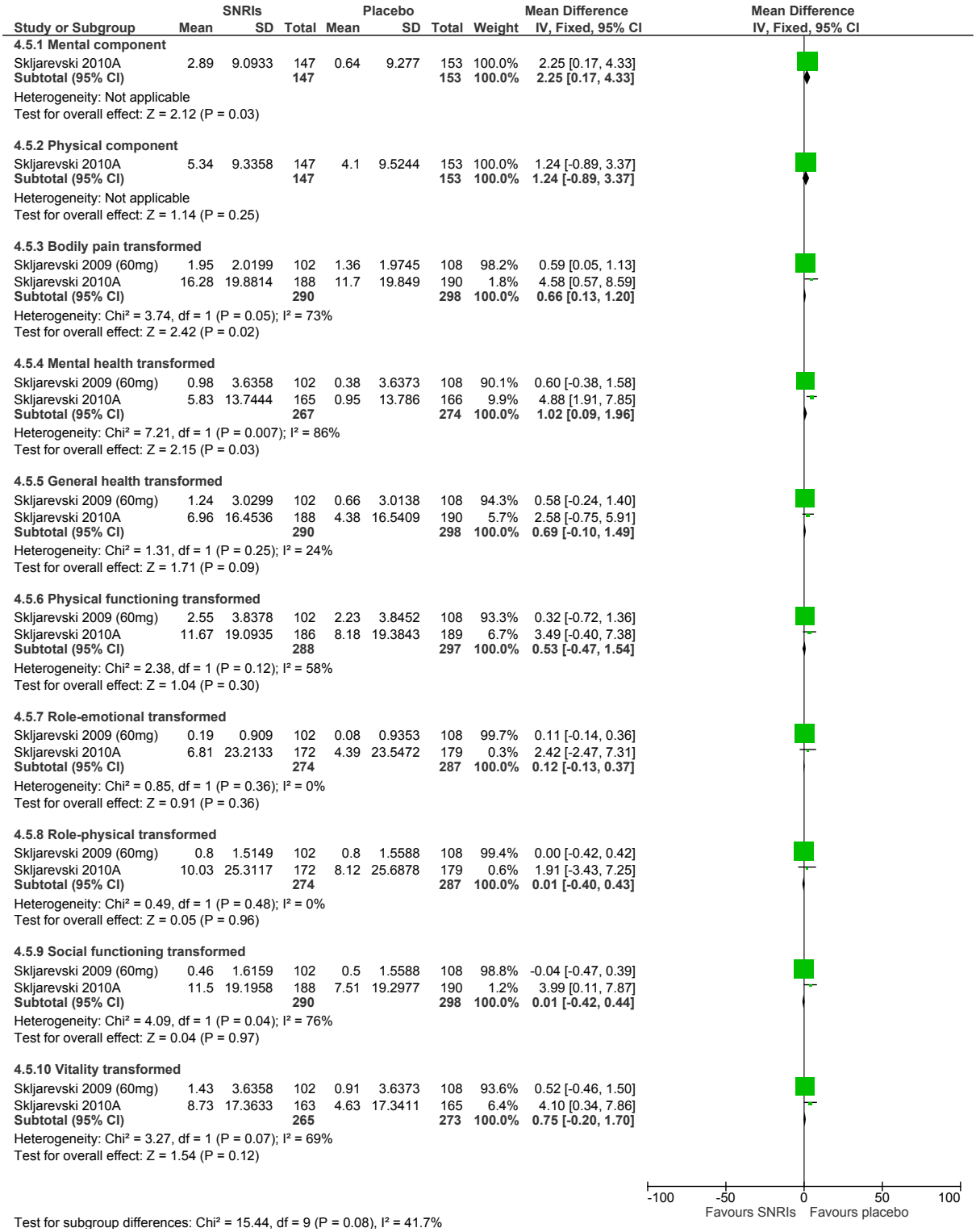


Figure 928: SF-36 (mean change, 0-100, Duloxetine 20) at ≤4 months

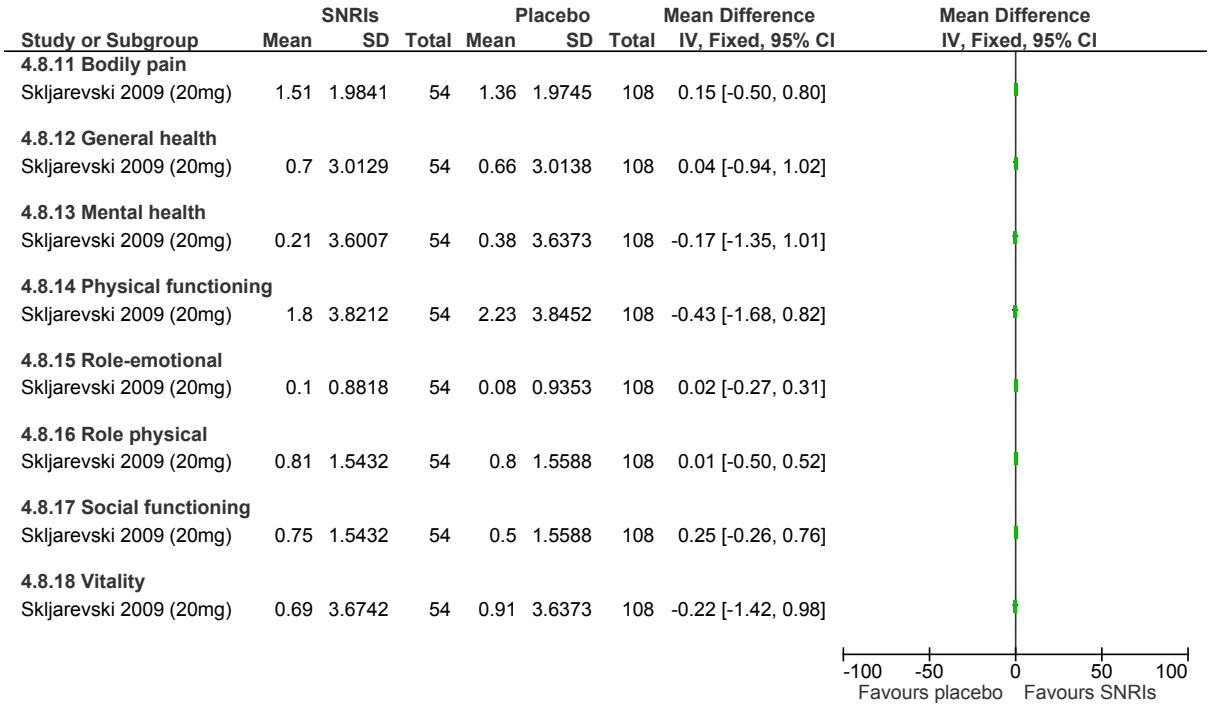
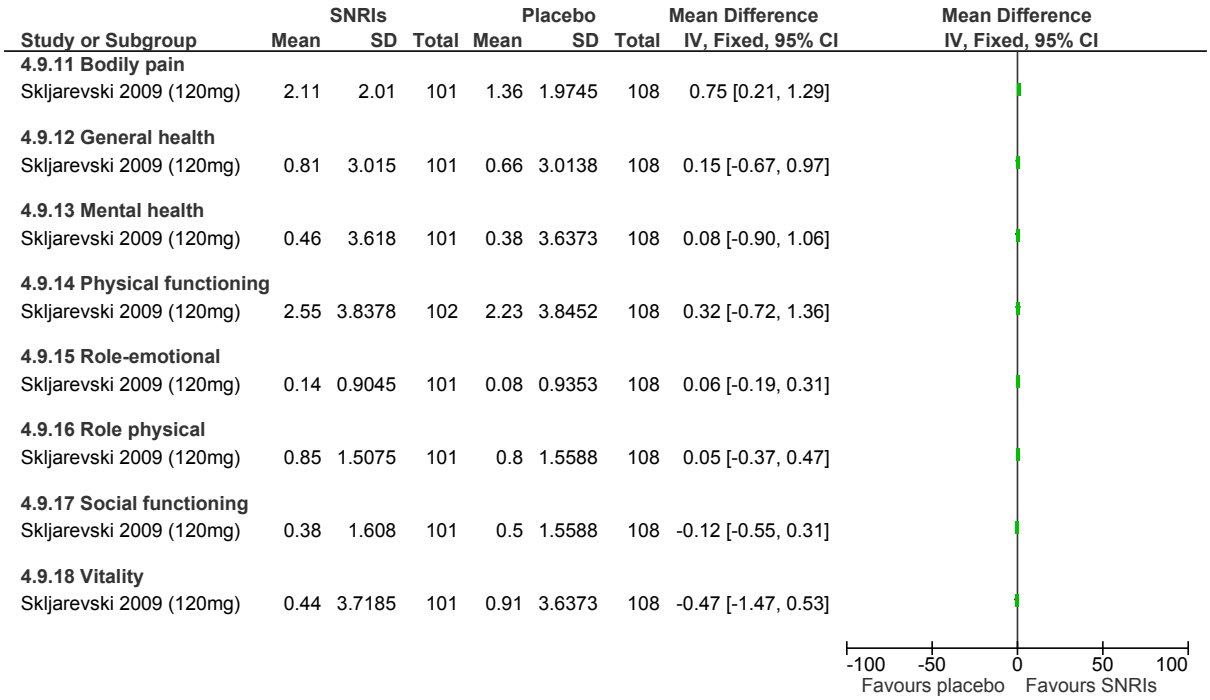


Figure 929: SF-36 (mean change, 0-100, Duloxetine 120) at ≤4 months



K.12.2 Anticonvulsants versus placebo

K.12.2.1 Gabapentinoids versus placebo (RCTs)

K.12.2.1.1 Low back pain with sciatica population

Figure 930: Pain severity (final values, VAS 0-10) at ≤4 months

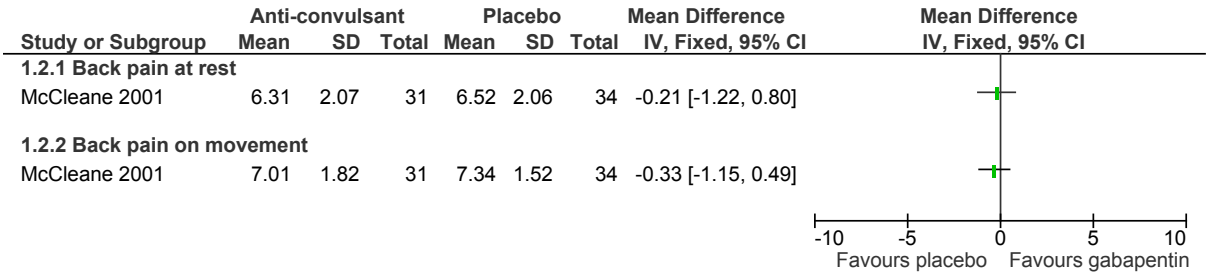
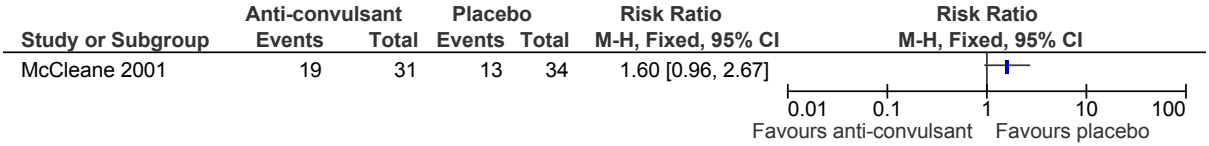


Figure 931: Adverse events at ≤4 months



K.12.2.2 Gabapentinoids versus placebo (cohort study)

K.12.2.2.1 Low back pain with sciatica

Figure 932: Pain intensity (BPI 0-10, change score) at ≤4 months

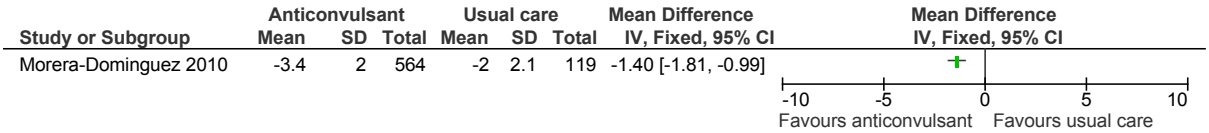


Figure 933: HADS anxiety (0-21) at ≤4 months

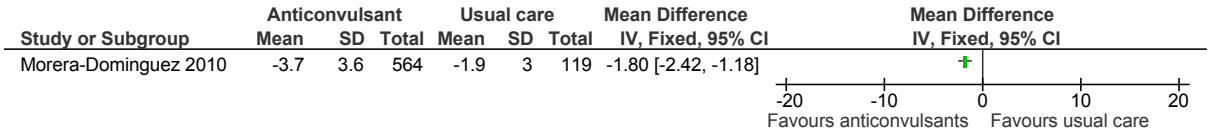


Figure 934: HADS depression (0-21, change score) at ≤4 months

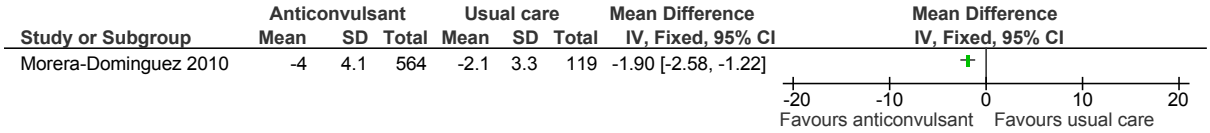


Figure 935: SF-12 physical (0-100, change score) at ≤4 months

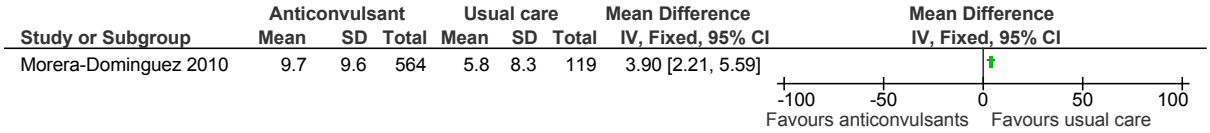


Figure 936: SF-12 mental (0-100, change score) at ≤4 months

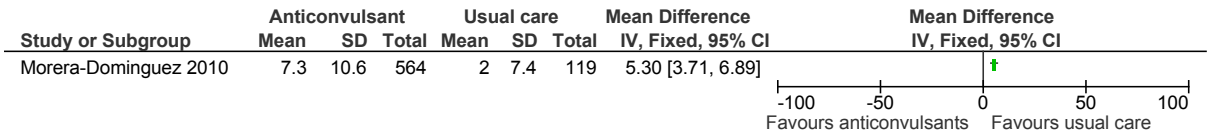
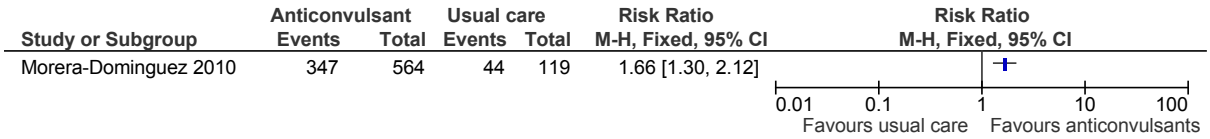


Figure 937: Responder criteria pain reduction more than 50% at ≤4 months



K.12.2.3 Other anticonvulsants versus placebo

K.12.2.3.1 Low back pain with/without sciatica

Figure 938: Function, (final values, ODI 0-100) at ≤4 months

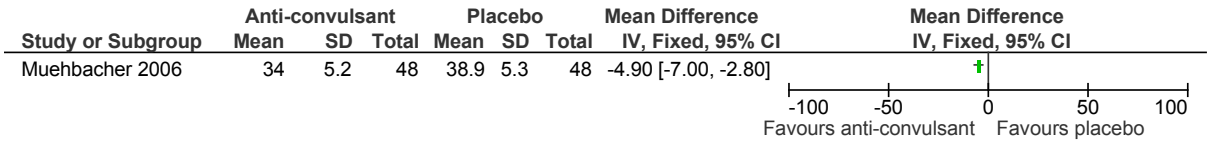


Figure 939: Pain severity (final values, McGill pain questionnaire 0-78) at ≤4 months

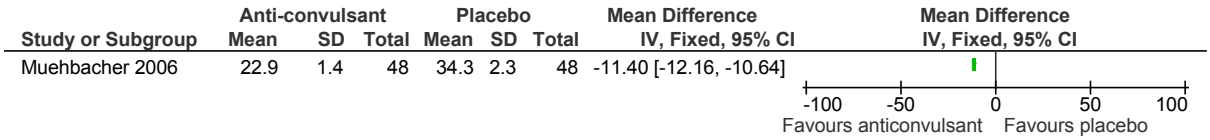


Figure 940: SF-36 (final values, 0-100) at ≤4 months

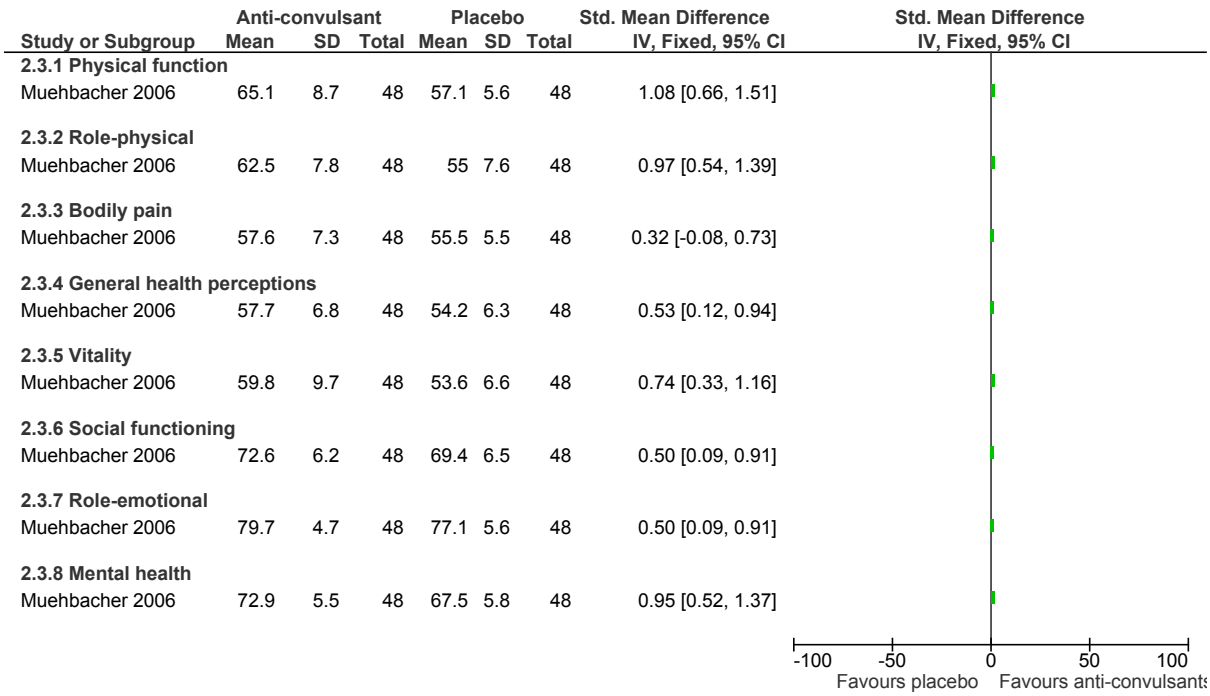
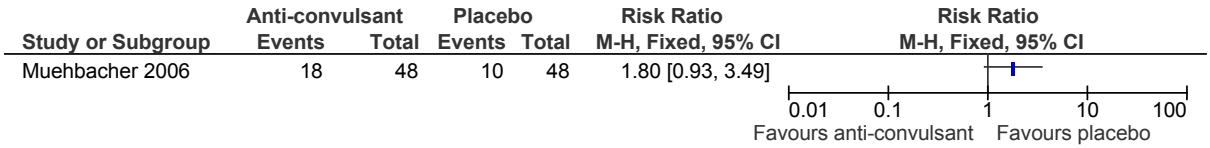


Figure 941: Adverse events at ≤4 months



K.12.3 Muscle relaxants versus placebo

K.12.3.1 Low back pain with/without sciatica population

Figure 942: Pain severity (pooled mean change and final values, VAS 0-10) at ≤4 months

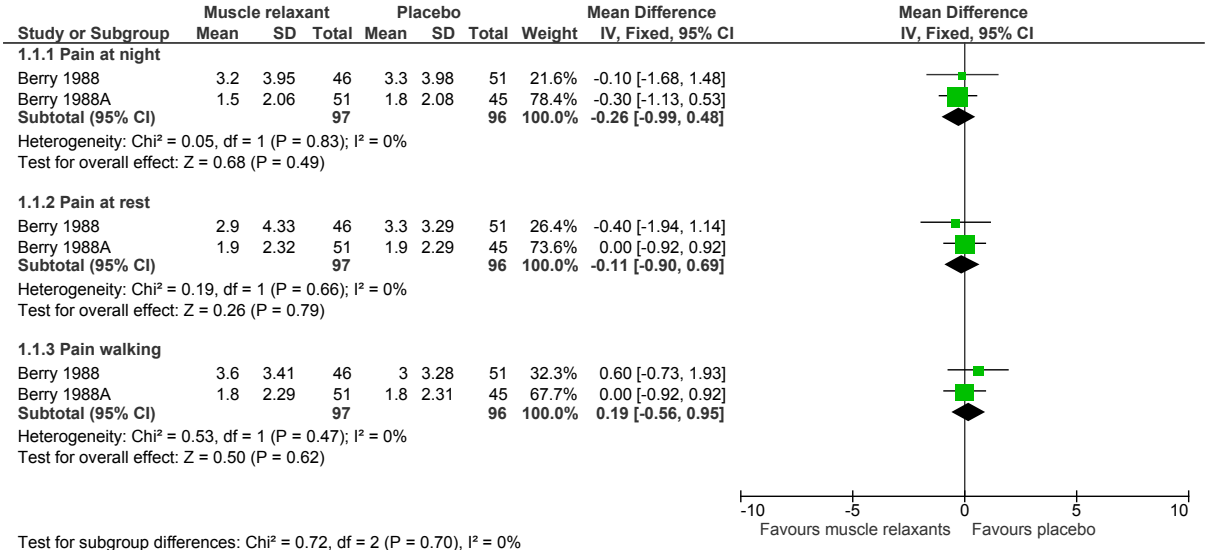


Figure 943: Muscle spasms (1-5 scale of severity, change score) at ≤4 months

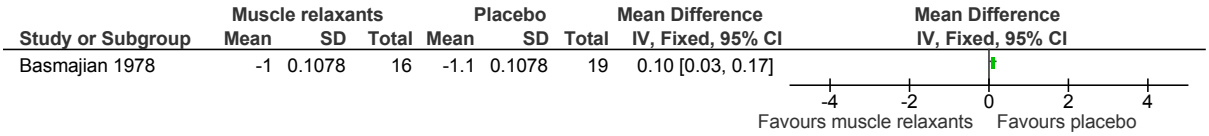
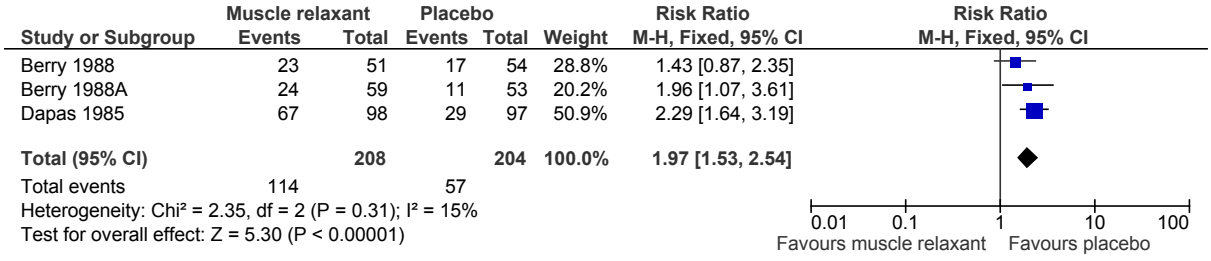


Figure 944: Adverse events at ≤4 months



K.12.4 Muscle relaxant versus usual care

K.12.4.1 Low back pain population

Figure 945: Pain severity (change scores, VAS 0-10) at ≤4 months

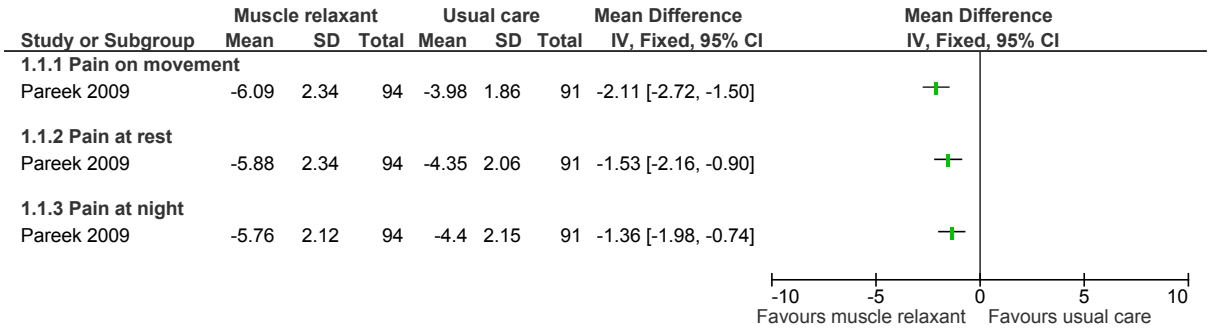
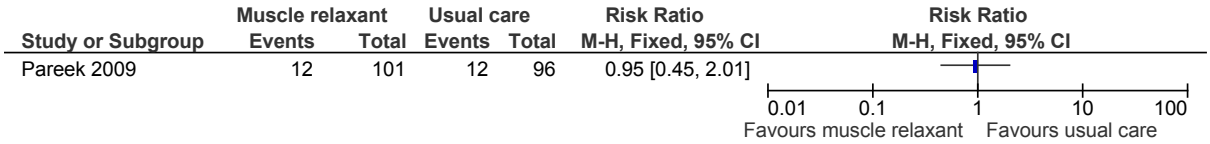


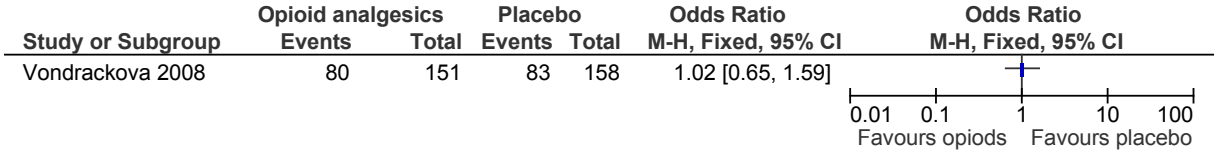
Figure 946: Adverse events at ≤4 months



K.12.5 Opioids versus placebo

K.12.5.1 Low back pain with sciatica population

Figure 947: Adverse events at ≤4 months



K.12.5.2 Low back pain population

Figure 948: Quality of life (Physical component Score, PCS, 0-100) ≤ 4 months

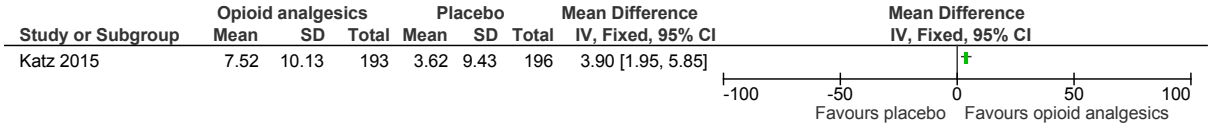


Figure 949: Quality of life (Mental component Score, MCS, 0-100) ≤ 4 months

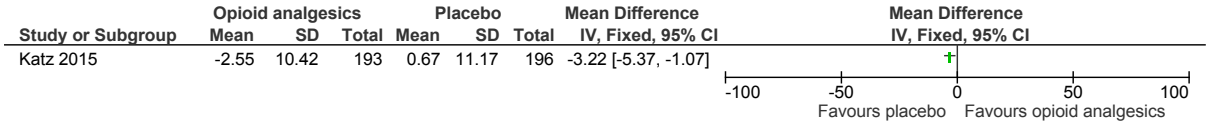


Figure 950: Quality of life (Individual domain scores, SF36, 0-100) ≤ 4 months

Study or Subgroup	Opioid analgesics Mean	SD	Total	Placebo Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
1.9.1 Physical functioning							
Ruoff 2003	52.6	27.8	150	53.3	26.8	146	-0.70 [-6.92, 5.52]
1.9.2 Role - physical							
Ruoff 2003	49.8	41	149	39.7	42.2	146	10.10 [0.60, 19.60]
1.9.3 Bodily pain							
Ruoff 2003	47.8	21.1	151	43.4	21.9	146	4.40 [-0.49, 9.29]
1.9.4 Vitality							
Ruoff 2003	47.2	21.6	151	46.9	21.8	145	0.30 [-4.65, 5.25]
1.9.5 Social functioning							
Ruoff 2003	72.3	27.1	151	70.3	26.8	146	2.00 [-4.13, 8.13]
1.9.6 Role - emotional							
Ruoff 2003	71.5	39.5	151	58.4	41.4	146	13.10 [3.89, 22.31]
1.9.7 Mental health							
Ruoff 2003	75.2	17.4	151	71.9	18	145	3.30 [-0.74, 7.34]
1.9.8 General health							
Ruoff 2003	67.8	21.5	146	68.2	20.9	144	-0.40 [-5.28, 4.48]

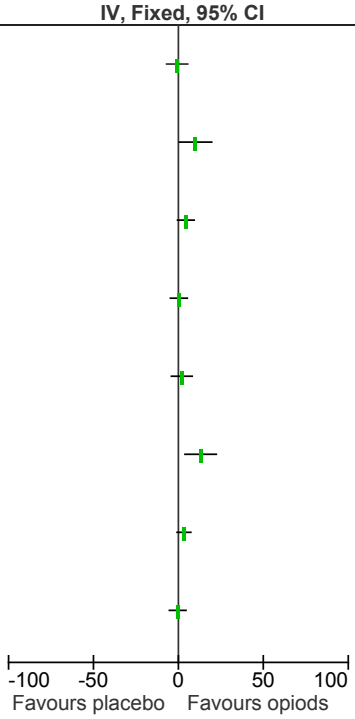


Figure 951: Function (RMDQ 0-24) at ≤4 months

Study or Subgroup	Opioid analgesics Mean	SD	Total	Placebo Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Chu 2012	5.05	4.7	48	7.06	4.6	55	9.9%	-2.01 [-3.81, -0.21]
Hale 2010	9.6	6.33	132	11.7	6.13	132	14.2%	-2.10 [-3.60, -0.60]
Katz 2015	0.4	4.83	193	0.7	5.32	196	31.6%	-0.30 [-1.31, 0.71]
Ruoff 2003	10.7	6.3	151	11.6	6.3	146	15.7%	-0.90 [-2.33, 0.53]
Schnitzer 2000	8.8	6.2	91	10.2	6.2	55	7.5%	-1.40 [-3.48, 0.68]
Vorsanger 2008 (200 mg)	8.5	5.9	87	9.8	5.9	68	9.2%	-1.30 [-3.17, 0.57]
Vorsanger 2008 (300 mg)	8.2	5.5	88	11.2	4.9	68	12.0%	-3.00 [-4.64, -1.36]
Total (95% CI)			**790**			**720**	**100.0%**	**-1.32 [-1.88, -0.75]**

Heterogeneity: Chi² = 9.91, df = 6 (P = 0.13); I² = 39%
Test for overall effect: Z = 4.55 (P < 0.00001)

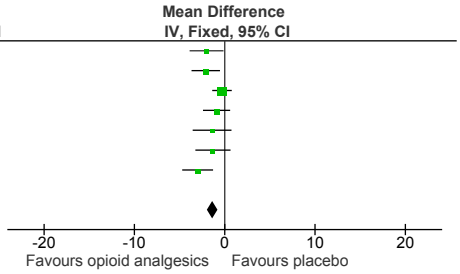


Figure 952: Pain severity (final values, VAS/NRS, 0-10) at ≤4 months

Study or Subgroup	Opioid analgesics Mean	SD	Total	Placebo Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Buynak 2010 (O)	4.6	2.55	323	5.5	2.57	158	0.3%	-0.90 [-1.39, -0.41]
Buynak 2010 (T)	4.6	2.65	312	5.5	2.57	158	0.3%	-0.90 [-1.40, -0.40]
Chu 2012	2.84	1.47	48	3.77	1.48	55	0.2%	-0.93 [-1.50, -0.36]
Hale 2005	5.2	2.38	75	6.4	2.38	67	0.1%	-1.20 [-1.98, -0.42]
Hale 2010	3.8	1.77	113	4.8	2.03	113	0.3%	-1.00 [-1.50, -0.50]
Katz 2015	3.2	1.7	193	3.7	2.4	196	0.4%	-0.50 [-0.91, -0.09]
Ruoff 2003	4.44	1.45	161	5.23	1.49	157	0.7%	-0.79 [-1.11, -0.47]
Schnitzer 2000	3.5	2.79	91	5.1	2.98	55	0.1%	-1.60 [-2.57, -0.63]
Steiner 2011	3.81	0.166	256	4.39	0.152	283	97.3%	-0.58 [-0.61, -0.55]
Vorsanger 2008 (200 mg)	3.41	2.71	87	4.03	2.52	68	0.1%	-0.62 [-1.45, 0.21]
Vorsanger 2008 (300 mg)	3.05	2.3	88	4.03	2.52	68	0.1%	-0.98 [-1.75, -0.21]
Webster 2006	4	2.53	101	5.2	3.05	42	0.1%	-1.20 [-2.25, -0.15]
Total (95% CI)			**1848**			**1420**	**100.0%**	**-0.59 [-0.61, -0.56]**

Heterogeneity: Chi² = 17.93, df = 11 (P = 0.08); I² = 39%
Test for overall effect: Z = 43.27 (P < 0.00001)

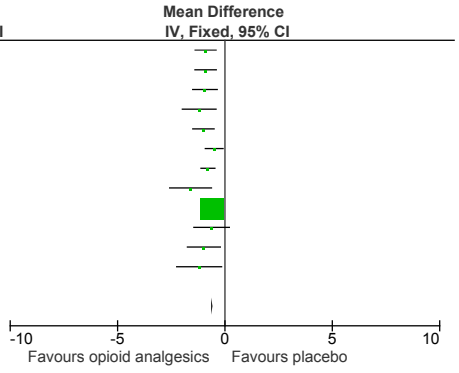


Figure 953: Responder criteria (>30% improvement in pain intensity on NRS scale)

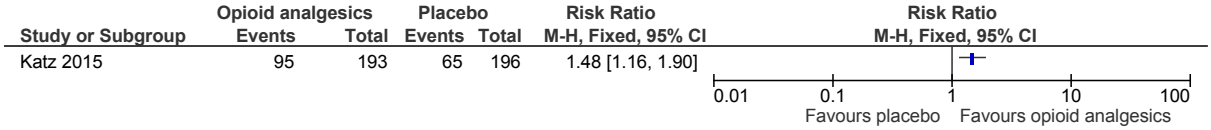


Figure 954: Responder criteria (>50% improvement in pain intensity on NRS scale)

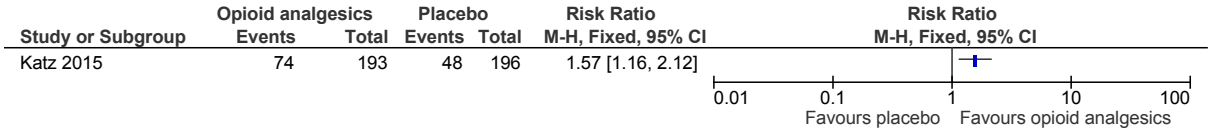
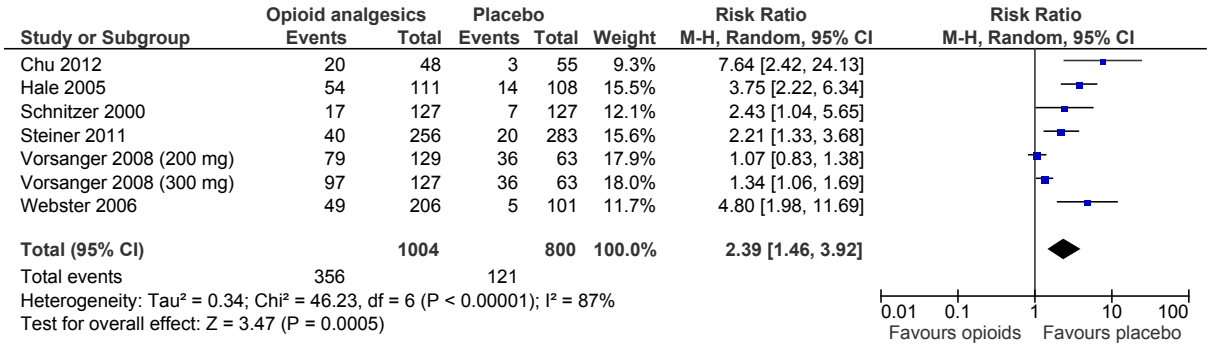


Figure 955: Adverse events at ≤4 months



K.12.6 Paracetamol versus placebo

K.12.6.1 Low back pain with/without sciatica population

Figure 956: Pain severity (final values, VAS 0-10) at ≤4 months

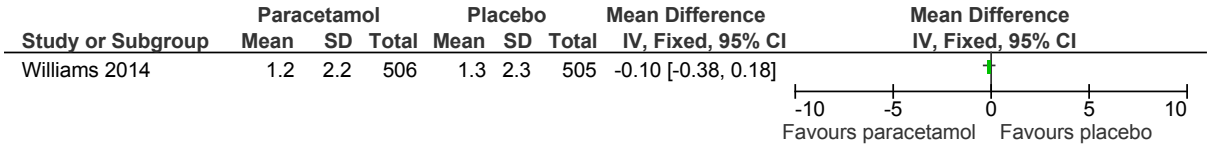


Figure 957: Function (final values, RMDQ 0-24) at ≤4 months

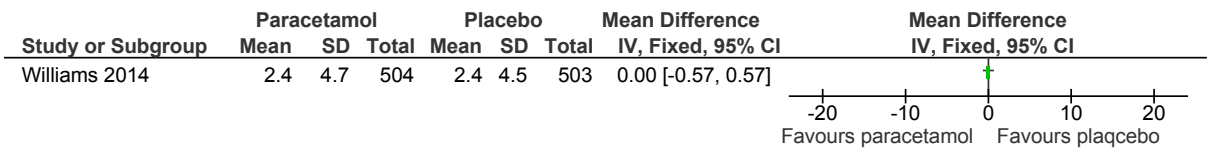


Figure 958: SF-12 Physical score (final values, 0-100) at ≤4 months

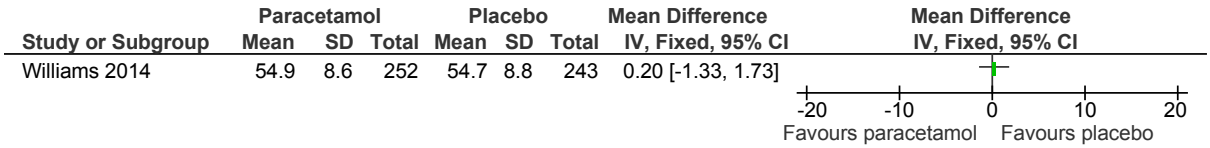


Figure 959: SF-12 Mental score (final values, 0-100) at ≤4 months

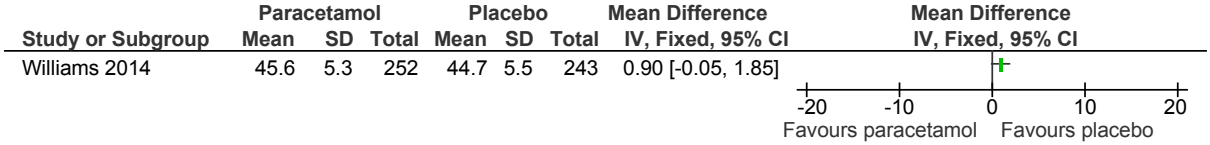
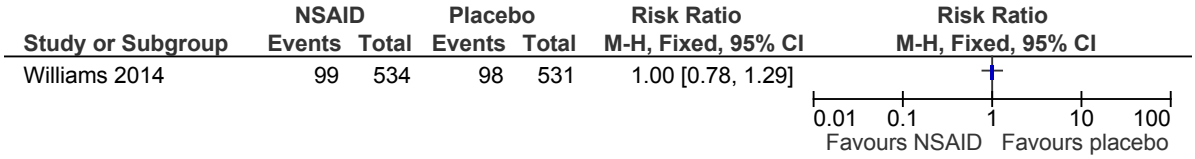


Figure 960: Adverse events at ≤4 months



K.12.7 NSAIDs versus placebo

K.12.7.1 Low back pain without sciatica population

Figure 961: Pain intensity (VAS 0-100, change score) ≤4 months

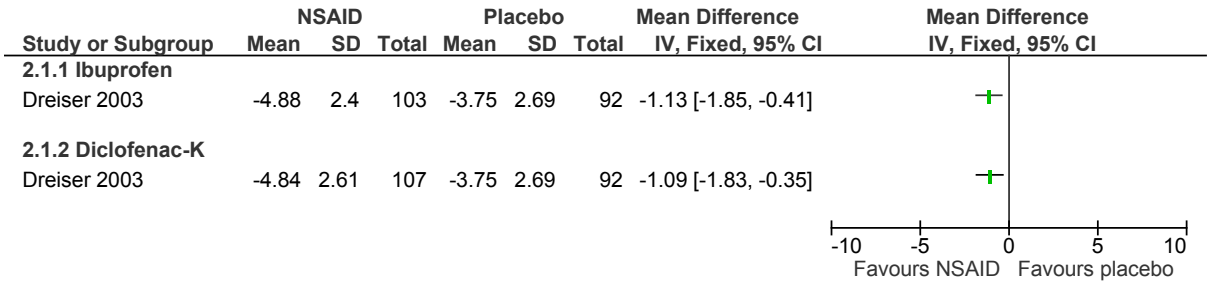
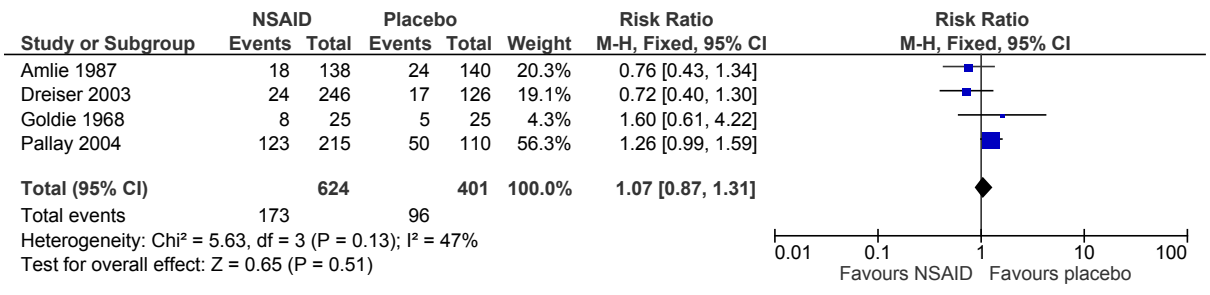


Figure 962: Adverse events at ≤4 months



K.12.7.2 Low back pain with/without sciatica population

Figure 963: Pain intensity (VAS 0-10, mean difference) NSAID 20mg ≤ 4 months

Study or Subgroup	NSAID Mean	NSAID SD	NSAID Total	Placebo Mean	Placebo SD	Placebo Total	Mean Difference IV, Fixed, 95% CI
Szpalski 1994	0.56	1.14	33	0.79	1.09	35	-0.23 [-0.76, 0.30]

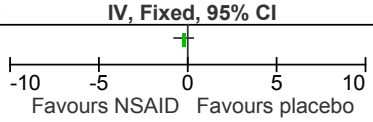


Figure 964: Pain intensity (VAS 0-10, mean difference) NSAID 60mg ≤ 4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	-1.045	0.322	47.0%	-1.04 [-1.68, -0.41]
Pallay 2004	-1.212	0.303	53.0%	-1.21 [-1.81, -0.62]
Total (95% CI)			**100.0%**	**-1.13 [-1.57, -0.70]**

Heterogeneity: Chi² = 0.14, df = 1 (P = 0.71); I² = 0%
Test for overall effect: Z = 5.14 (P < 0.00001)

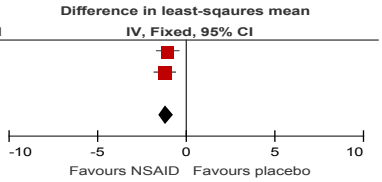


Figure 965: Pain intensity (VAS 0-10 mean difference) NSAID 90mg ≤ 4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	-0.75	0.317	48.1%	-0.75 [-1.37, -0.13]
Pallay 2004	-1.27	0.305	51.9%	-1.27 [-1.87, -0.67]
Total (95% CI)			**100.0%**	**-1.02 [-1.45, -0.59]**

Heterogeneity: Chi² = 1.40, df = 1 (P = 0.24); I² = 28%
Test for overall effect: Z = 4.64 (P < 0.00001)

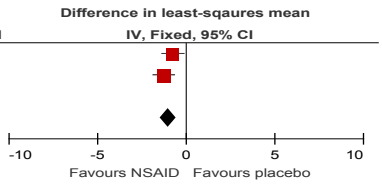


Figure 966: Function (RMDQ 0-24) NSAID 60mg ≤4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	-2.42	0.7398	44.9%	-2.42 [-3.87, -0.97]
Pallay 2004	-2.82	0.6684	55.1%	-2.82 [-4.13, -1.51]
Total (95% CI)			**100.0%**	**-2.64 [-3.61, -1.67]**

Heterogeneity: Chi² = 0.16, df = 1 (P = 0.69); I² = 0%
Test for overall effect: Z = 5.32 (P < 0.00001)

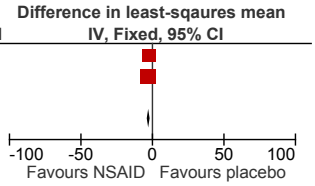


Figure 967: Function (RMDQ 0-24) NSAID 90mg ≤4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	-2.06	0.7143	47.4%	-2.06 [-3.46, -0.66]
Pallay 2004	-2.38	0.6786	52.6%	-2.38 [-3.71, -1.05]
Total (95% CI)			**100.0%**	**-2.23 [-3.19, -1.26]**

Heterogeneity: Chi² = 0.11, df = 1 (P = 0.75); I² = 0%
Test for overall effect: Z = 4.53 (P < 0.00001)

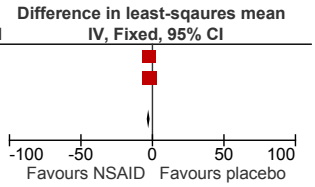


Figure 968: HRQoL - SF12 Physical component NSAID 60mg ≤4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	1.65	1.2806	46.1%	1.65 [-0.86, 4.16]
Pallay 2004	2.88	1.1837	53.9%	2.88 [0.56, 5.20]
Total (95% CI)			**100.0%**	**2.31 [0.61, 4.02]**

Heterogeneity: Chi² = 0.50, df = 1 (P = 0.48); I² = 0%
Test for overall effect: Z = 2.66 (P = 0.008)

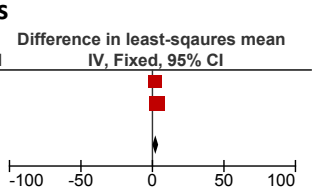


Figure 969: HRQoL - SF12 Physical component NSAID 90mg ≤4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	2.58	1.25	47.9%	2.58 [0.13, 5.03]
Pallay 2004	3	1.199	52.1%	3.00 [0.65, 5.35]
Total (95% CI)			**100.0%**	**2.80 [1.10, 4.49]**

Heterogeneity: Chi² = 0.06, df = 1 (P = 0.81); I² = 0%
Test for overall effect: Z = 3.23 (P = 0.001)

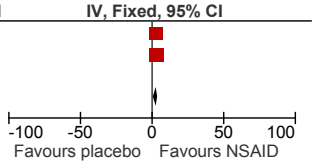


Figure 970: HRQoL - SF12 Mental component NSAID 60mg ≤4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	1.68	1.1174	50.5%	1.68 [-0.51, 3.87]
Pallay 2004	-0.72	1.1276	49.5%	-0.72 [-2.93, 1.49]
Total (95% CI)			**100.0%**	**0.49 [-1.06, 2.05]**

Heterogeneity: Chi² = 2.29, df = 1 (P = 0.13); I² = 56%
Test for overall effect: Z = 0.62 (P = 0.54)

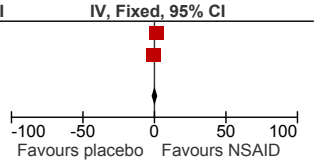


Figure 971: HRQoL - SF12 Mental component NSAID 90mg ≤4 months

Study or Subgroup	Difference in least-sqaures mean	SE	Weight	Difference in least-sqaures mean IV, Fixed, 95% CI
Birbara 2003	-0.92	1.1021	51.4%	-0.92 [-3.08, 1.24]
Pallay 2004	0.82	1.1327	48.6%	0.82 [-1.40, 3.04]
Total (95% CI)			**100.0%**	**-0.07 [-1.62, 1.47]**

Heterogeneity: Chi² = 1.21, df = 1 (P = 0.27); I² = 18%
Test for overall effect: Z = 0.09 (P = 0.93)

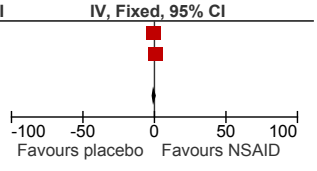
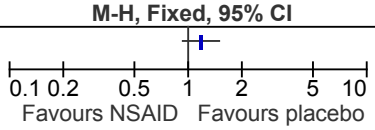


Figure 972: Adverse events at ≤4 months

Study or Subgroup	NSAID Events	NSAID Total	Placebo Events	Placebo Total	Risk Ratio M-H, Fixed, 95% CI
Birbara 2003	116	210	51	109	1.18 [0.93, 1.49]



K.12.8 Antibiotics versus placebo

Figure 973: Healthcare utilisation (doctor consultation for back pain)

Study or Subgroup	Antibiotics Events	Antibiotics Total	Placebo Events	Placebo Total	Risk Ratio M-H, Fixed, 95% CI
Albert 2013	18	77	28	67	0.56 [0.34, 0.92]

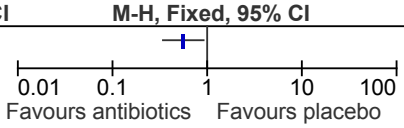
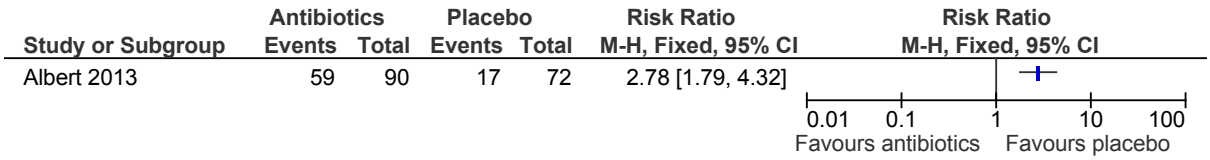


Figure 974: Adverse events

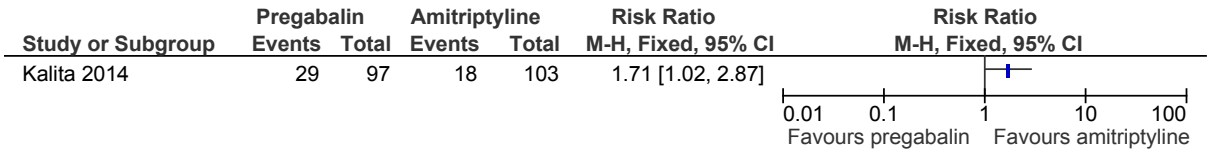


K.12.9 Head to head comparisons

K.12.9.1 Low back pain with/without sciatica population

K.12.9.1.1 Anti-epileptic versus antidepressant (TCA)

Figure 975: Adverse events at ≤ 4 months



K.12.9.1.2 Antidepressant (TCA) versus paracetamol

Figure 976: Pain intensity (Final values, VAS 0-15) at ≤ 4 months

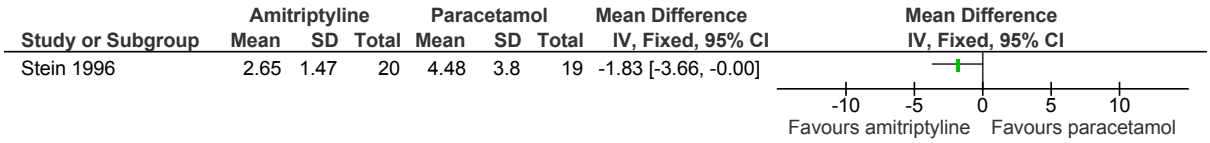


Figure 977: Psychological distress – BDI (Final values, 0-63) at ≤ 4 months

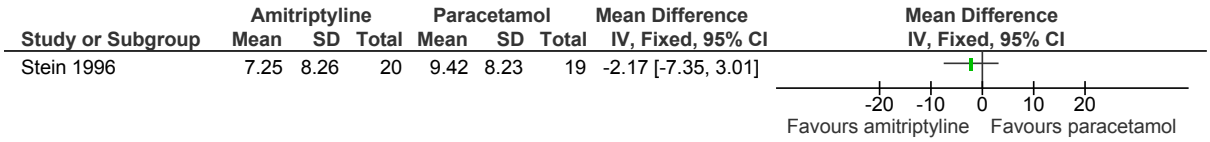
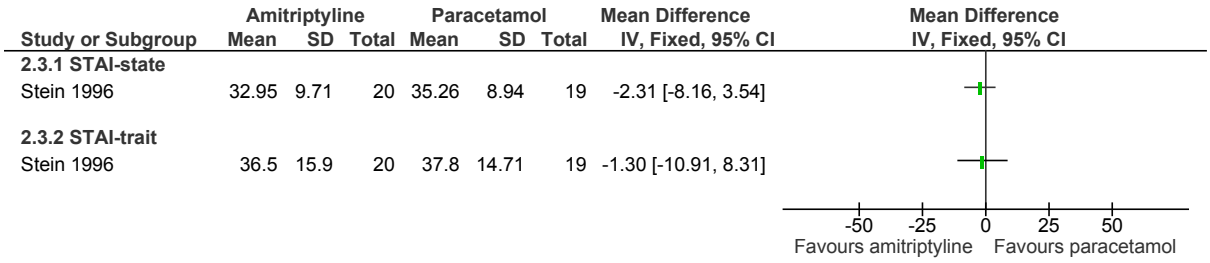
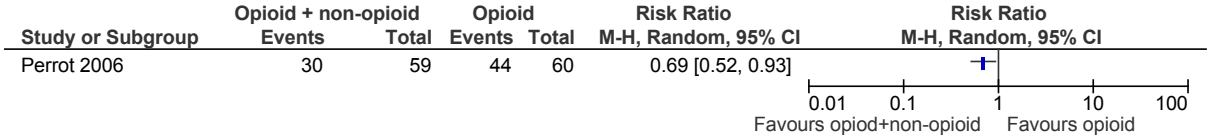


Figure 978: Psychological distress – STAI (Final values, 20-80) at ≤ 4 months



K.12.9.1.3 Opioid plus paracetamol versus opioid

Figure 979: Adverse events



K.12.9.1.4 Opioid plus paracetamol versus NSAIDs

Figure 980: Pain intensity (Final values, 0-10) at ≤ 4 months

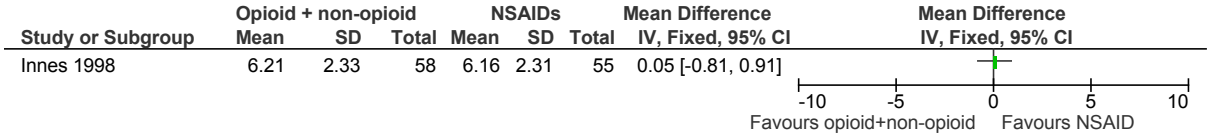
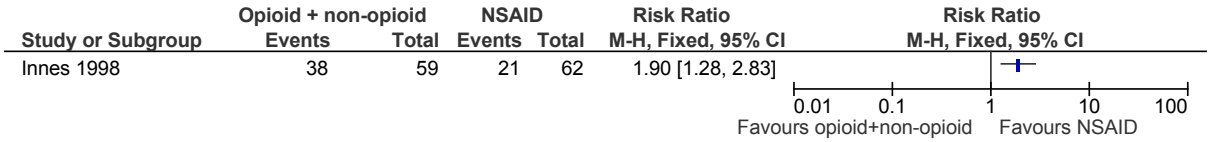


Figure 981: Adverse events



K.12.10 Combined pharmacological treatments versus placebo

K.12.10.1 Opioid+ paracetamol versus placebo (low back pain only)

Figure 982: Pain outcomes at ≤4 months

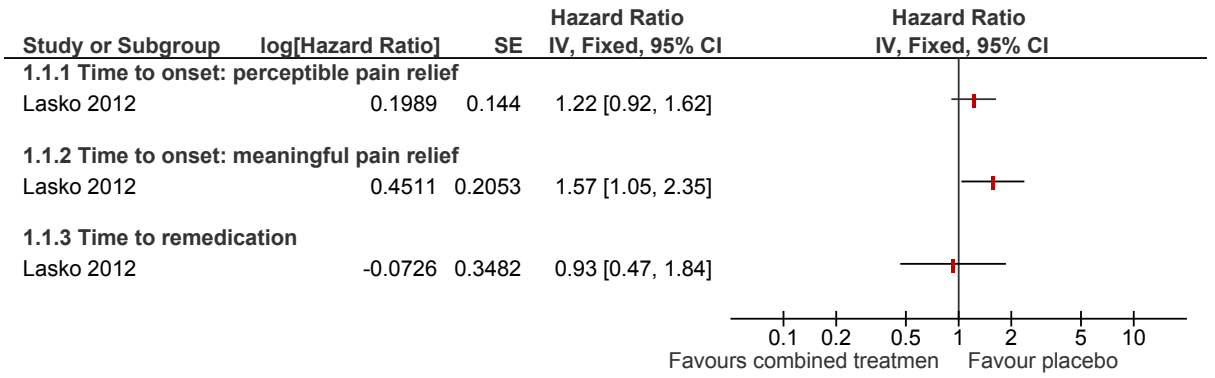


Figure 983: Pain severity (McGill pain questionnaire 0-78, change scores) at ≤4 months

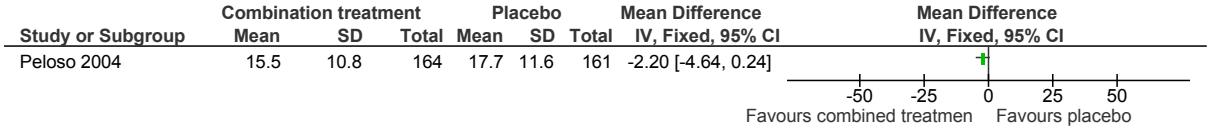


Figure 984: Pain severity (VAS 0-10, final values) at ≤4 months

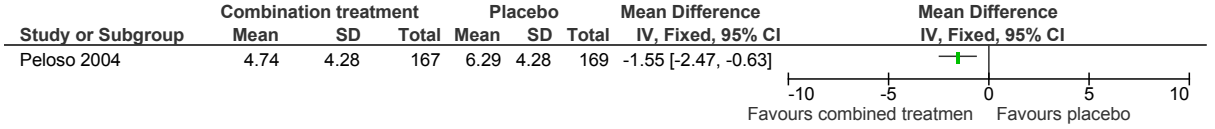


Figure 985: SF-36 (0-100, change scores) at ≤4 months

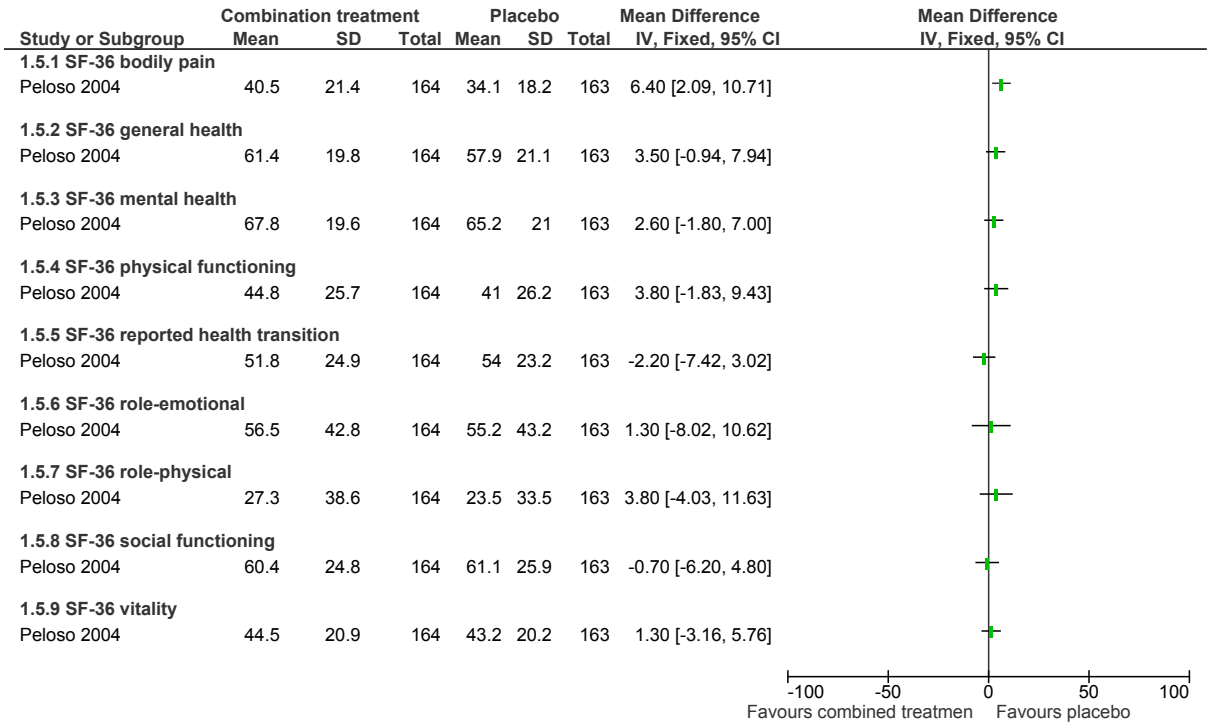


Figure 986: Function (RMDQ 0-24, change scores) at ≤4 months

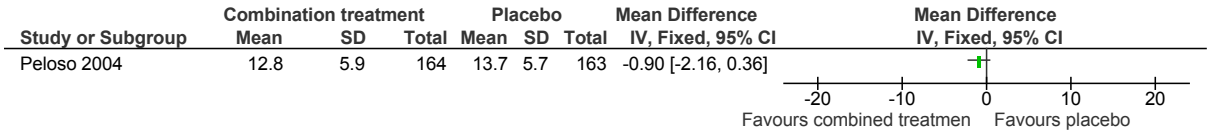
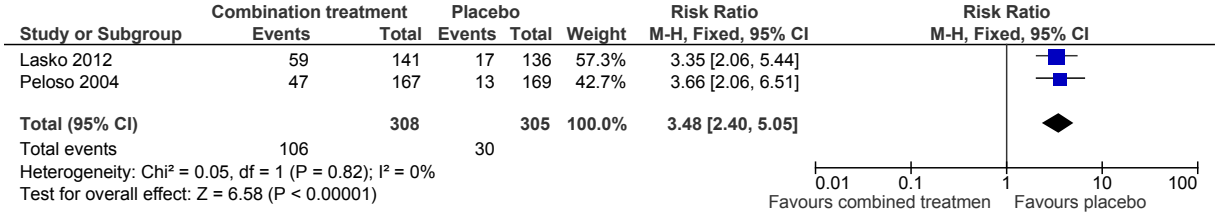


Figure 987: Adverse events at (change scores) ≤4 months



K.12.10.2 Opioid+ paracetamol versus placebo (low back pain with/without sciatica)

Figure 988: Adverse events at ≤4 months

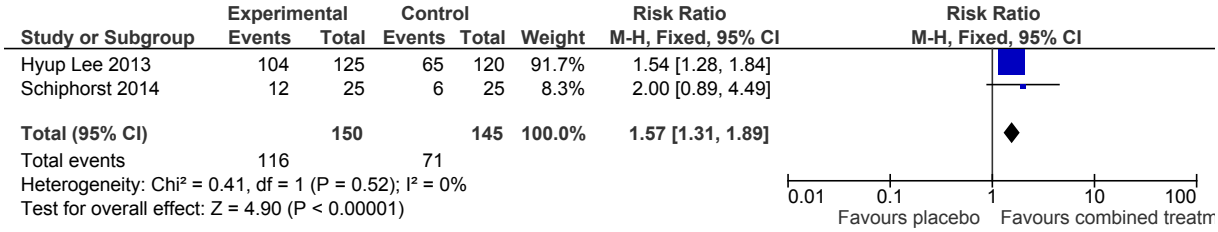


Figure 989: Responder criteria (pain reduction ≥30%) at ≤4 months

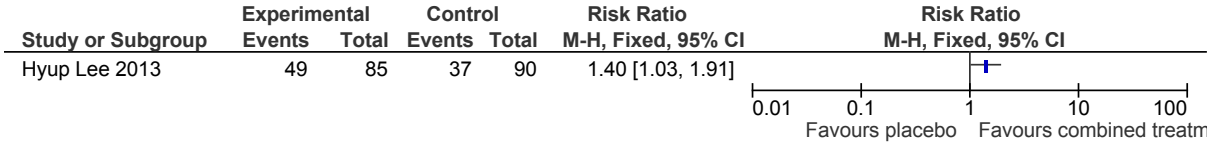


Figure 990: Function (Korean ODI 0-100, change score) at ≤4 months

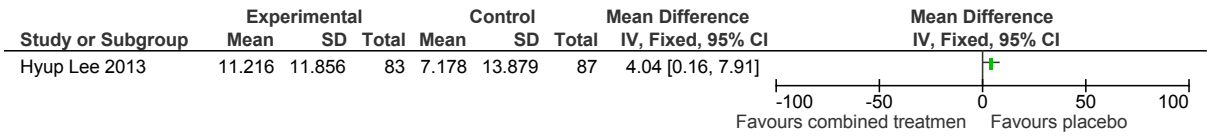
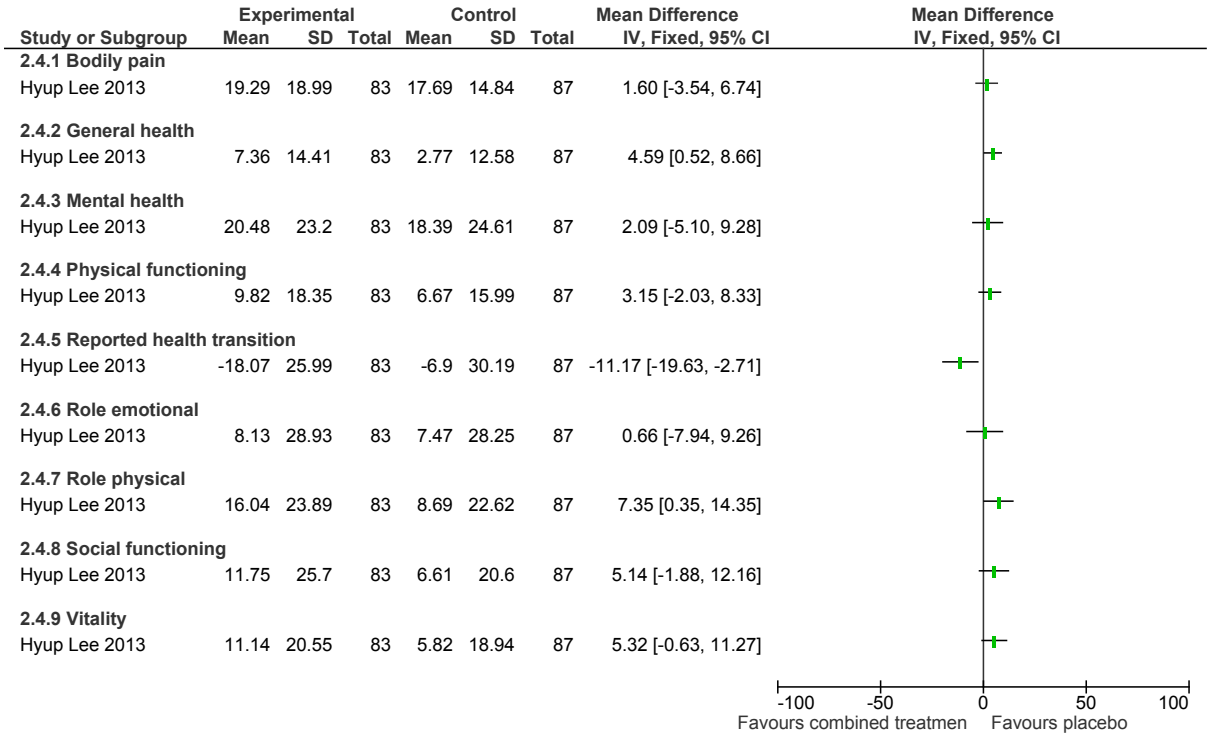


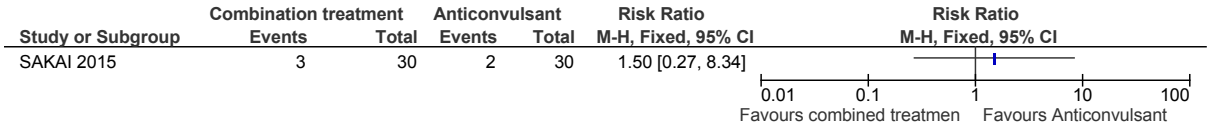
Figure 991: Korean SF-36 (0-100, change scores) at ≤4 months



K.12.11 Combined pharmacological treatments versus other treatment

K.12.11.1 Opioid + paracetamol versus anticonvulsant (low back pain only)

Figure 992: Numer of people discontinued due to adverse events at ≤4 months



K.12.12 Combinations of interventions – pharmacological adjunct

K.12.12.1 Low back pain without sciatica

K.12.12.1.1 NSAID + massage compared to massage

Figure 993: 24 NSAID + Massage vs. massage, outcome: 24.1 Pain (VAS 0-100 converted to 0-10).

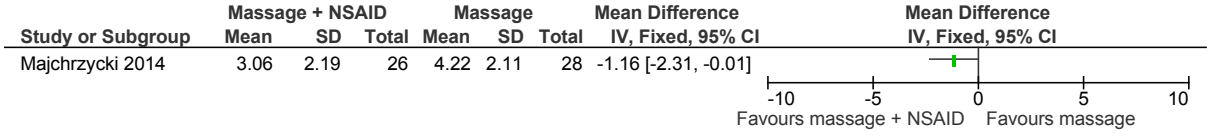


Figure 994: 24 NSAID + Massage vs. massage, outcome: 24.2 Disability (RMDQ).

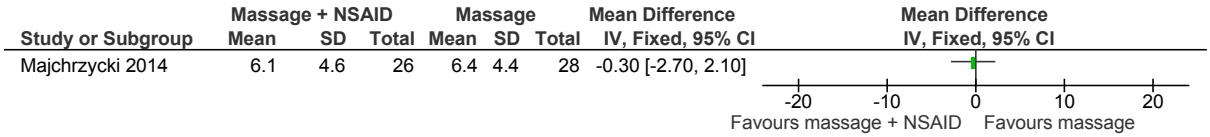
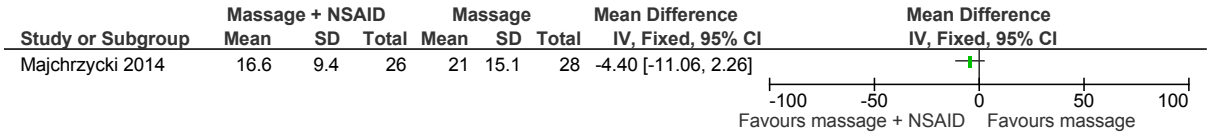
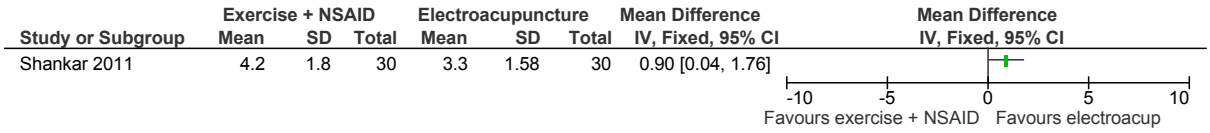


Figure 995: 24 NSAID + Massage vs. massage, outcome: 24.3 Disability (ODI).



K.12.12.1.2 NSAID + exercise (biomech) compared to electroacupuncture

Figure 996: 26 NSAID + exercise (biomech) vs. electroacupuncture, outcome: 26.1 Pain (VAS 0-10).



K.13 Multidisciplinary biopsychosocial rehabilitation (MBR) programmes

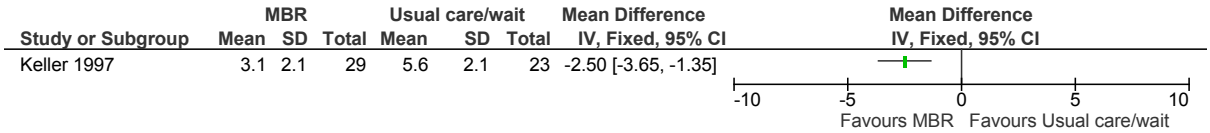
K.13.1 Population: Overall with or without sciatica

K.13.1.1 MBR programme 3 elements: physical + psychological + education vs. Placebo/sham

No studies

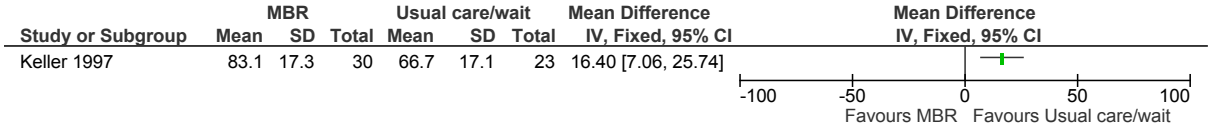
K.13.1.2 MBR programme 3 elements: physical + psychological + education vs. Usual care/waiting list control

Figure 997: Pain severity (VAS, 0-10) > 4 months



Keller 1997: MBR programme delivered by a multidisciplinary team

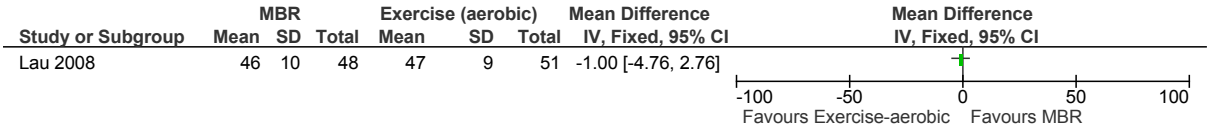
Figure 998: Function (ODI, 0-100) > 4 months



Keller 1997: MBR programme delivered by a multidisciplinary team

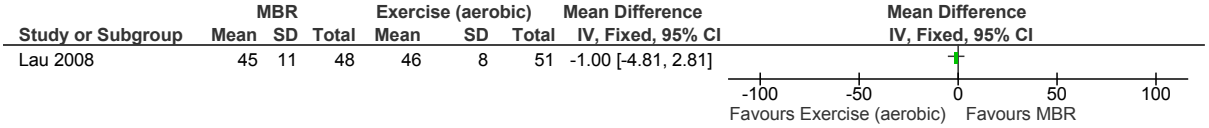
K.13.1.3 MBR programme 3 elements: physical + psychological + education vs. Single intervention

Figure 999: Quality of life (SF-12 physical, 0-100) ≤4 months



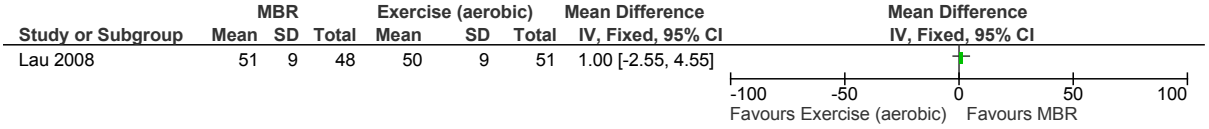
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1000: Quality of life (SF-12 physical, 0-100) > 4 months



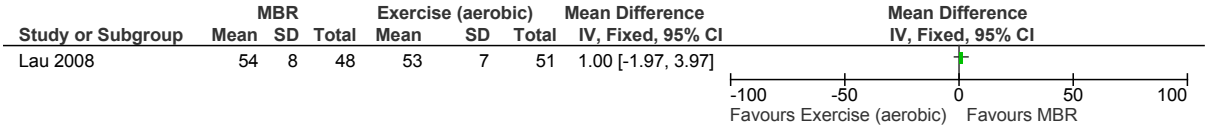
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1001: Quality of life (SF-12 mental, 0-100) ≤4 months



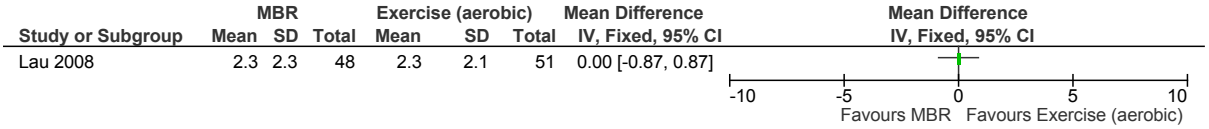
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1002: Quality of life (SF-12 mental, 0-100) > 4 months



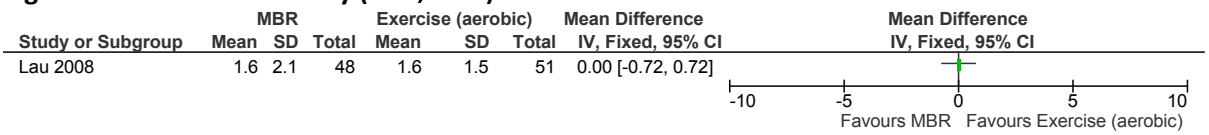
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1003: Pain severity (NRS, 0-10) ≤4 months



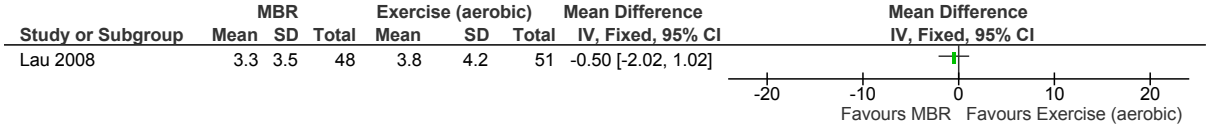
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1004: Pain severity (NRS, 0-10) > 4 months



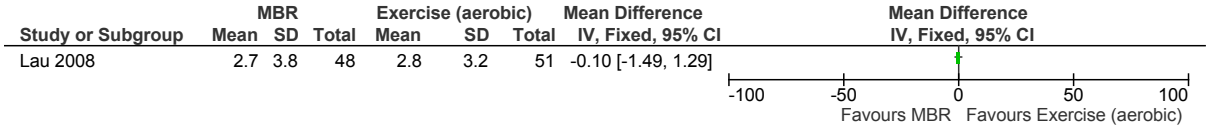
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1005: Function (RMDQ, 0-24) ≤4 months



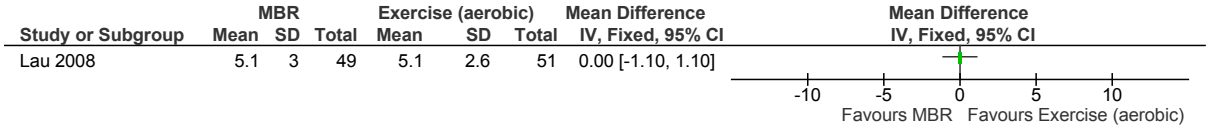
Lau 2008: MBR programme delivered by a unidisciplinary team

Figure 1006: Function (RMDQ, 0-24) > 4 months



Lau 2008: MBR programme delivered by a unidisciplinary team

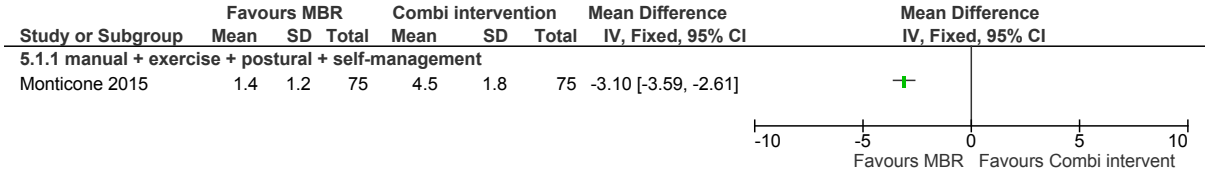
Figure 1007: Function (back performance scale, 0-15) ≤4 months



Lau 2008: MBR programme delivered by a unidisciplinary team

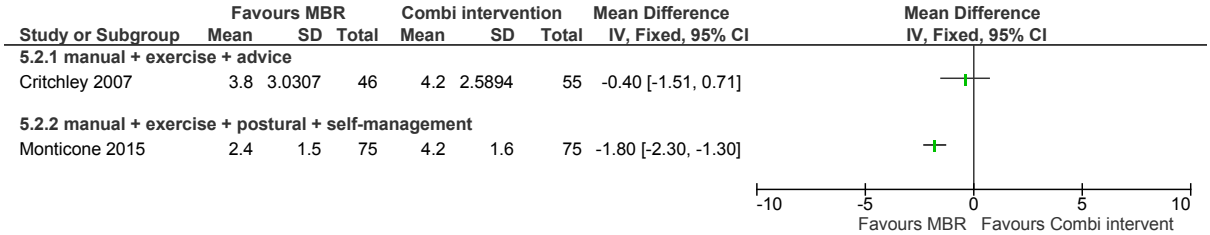
K.13.1.4 MBR programme 3 elements: physical + psychological + education vs. Combined intervention

Figure 1008: Pain severity (VAS, 0-10) ≤ 4 months



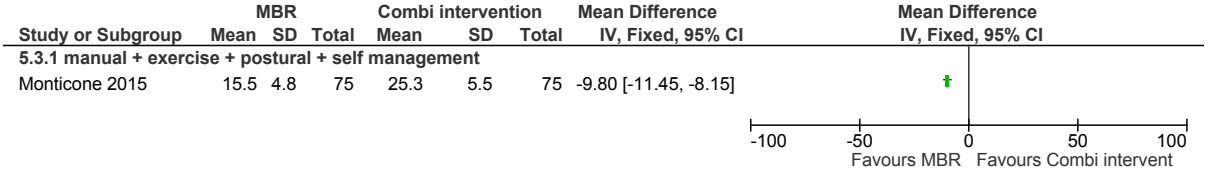
Monticone 2015: MBR programme delivered by a multidisciplinary team

Figure 1009: Pain severity (VAS/NRS, 0-10) > 4 months



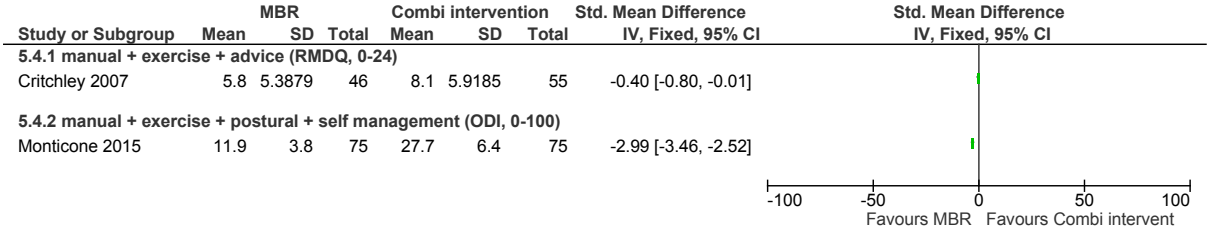
Critchley 2007: MBR programme delivered by a unidisciplinary team. Monticone 2015: MBR programme delivered by a multidisciplinary team

Figure 1010: Function (ODI, 0-100) ≤ 4 months



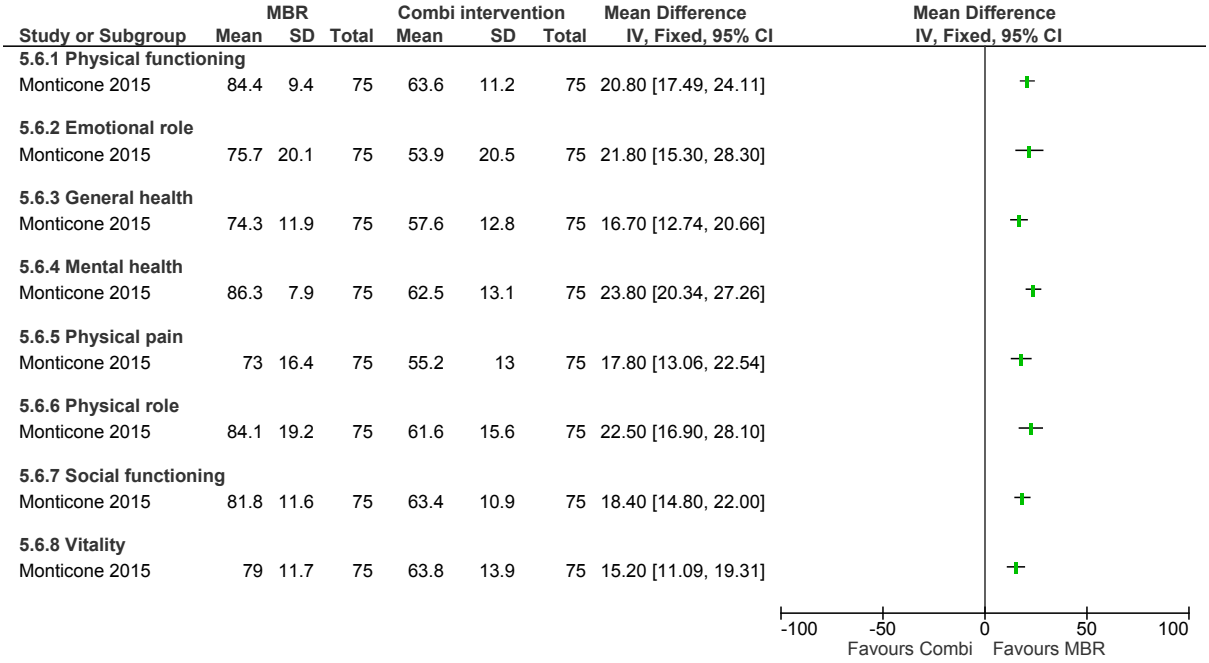
Monticone 2015: MBR programme delivered by a multidisciplinary team

Figure 1011: Function (ODI, 0-100/RMDQ, 0-24) > 4 months



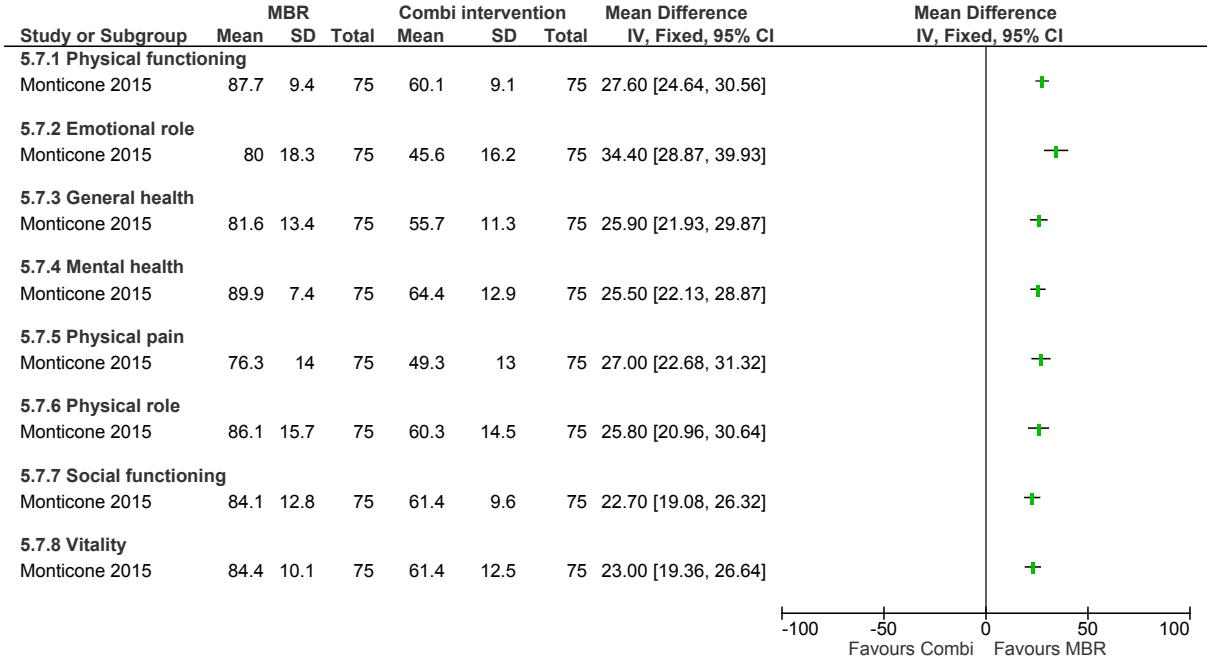
Critchley 2007: MBR programme delivered by a unidisciplinary team. Monticone 2015: MBR programme delivered by a multidisciplinary team

Figure 1012: Quality of life (SF-36, 0-100) ≤ 4 months



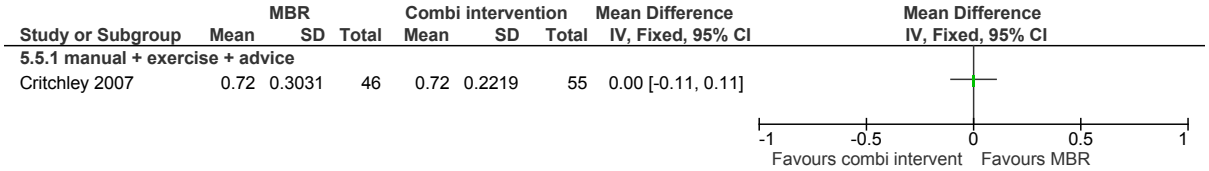
Monticone 2015: MBR programme delivered by a multidisciplinary team

Figure 1013: Quality of life (SF-36, 0-100) > 4 months



Monticone 2015: MBR programme delivered by a multidisciplinary team

Figure 1014: Quality of life (EQ-5D, 0-1) > 4 months



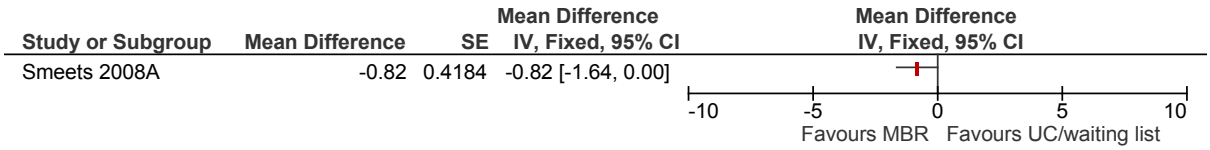
Critchley 2007: MBR programme delivered by a unidisciplinary team.

K.13.1.5 MBR programme 2 elements: physical + psychological vs. Placebo/sham

No studies

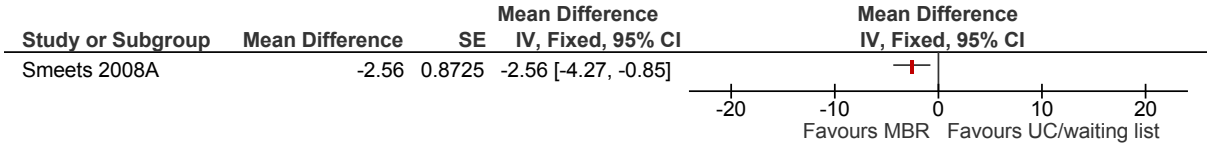
K.13.1.6 MBR programme 2 elements: physical + psychological vs. Usual care/waiting list control

Figure 1015: Pain severity (VAS, 0-10) ≤4 months



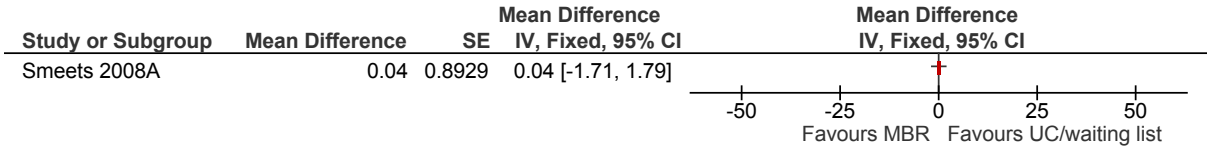
Smeets 2008A: waiting list control; MBR programme delivered by a multidisciplinary team

Figure 1016: Function (RMDQ, 0-24) ≤4 months



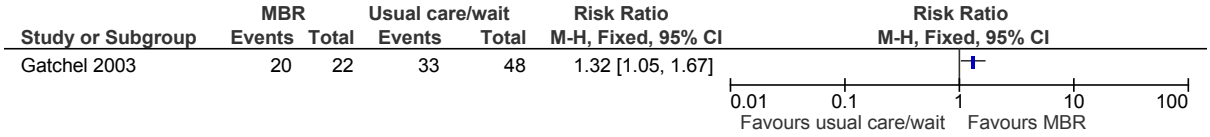
Smeets2008A: waiting list control; MBR programme delivered by a multidisciplinary team

Figure 1017: Psychological distress (BDI, 0-63) ≤4 months



Smeets 2008A: waiting list control; MBR programme delivered by a multidisciplinary team

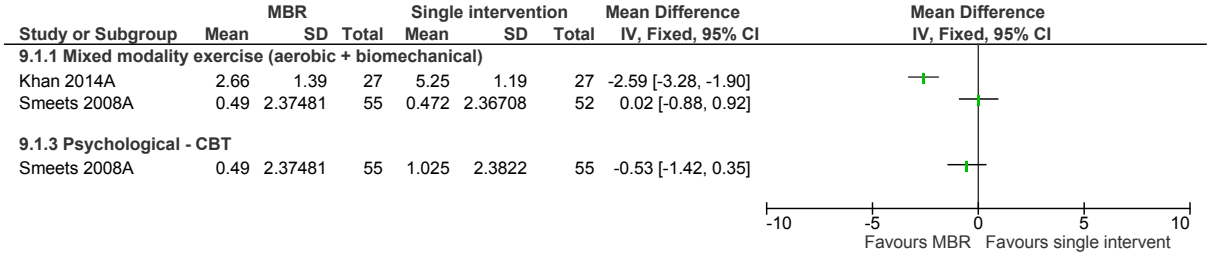
Figure 1018: Return to work > 4 months



Gatchel 2003: usual care comparison; MBR programme delivered by a multidisciplinary team

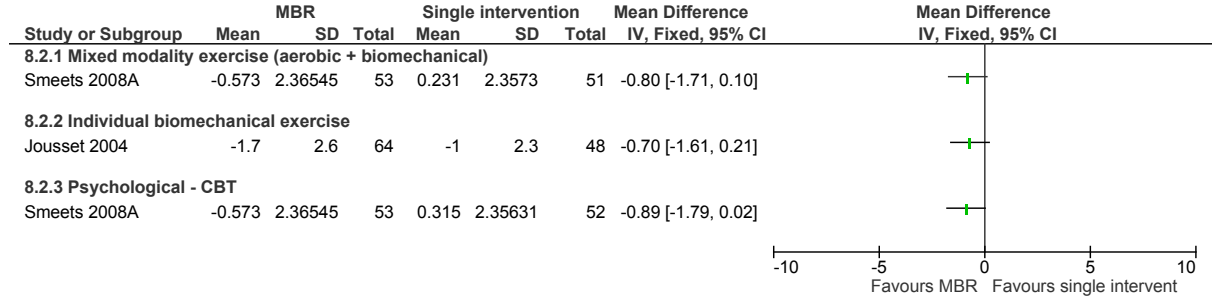
K.13.1.7 MBR programme 2 elements: physical + psychological vs. Single intervention

Figure 1019: Pain severity (VAS, 0-10) ≤4 months



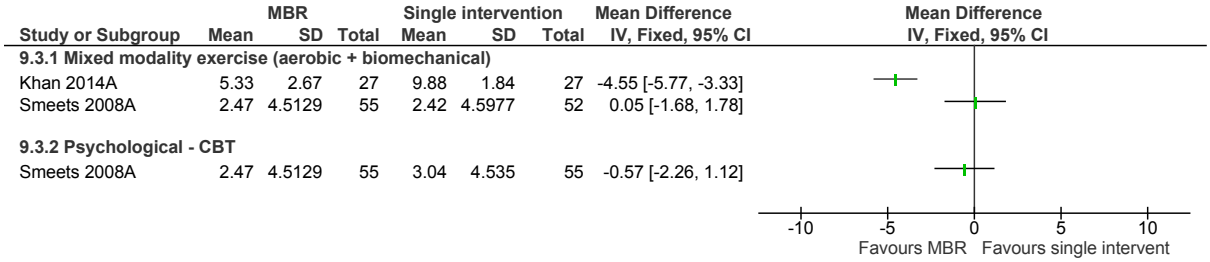
Khan 2014A: MBR programme delivered by a unidisciplinary team; Smeets 2008A: MBR programme delivered by a multidisciplinary team

Figure 1020: Pain severity (VAS, 0-10) > 4 months



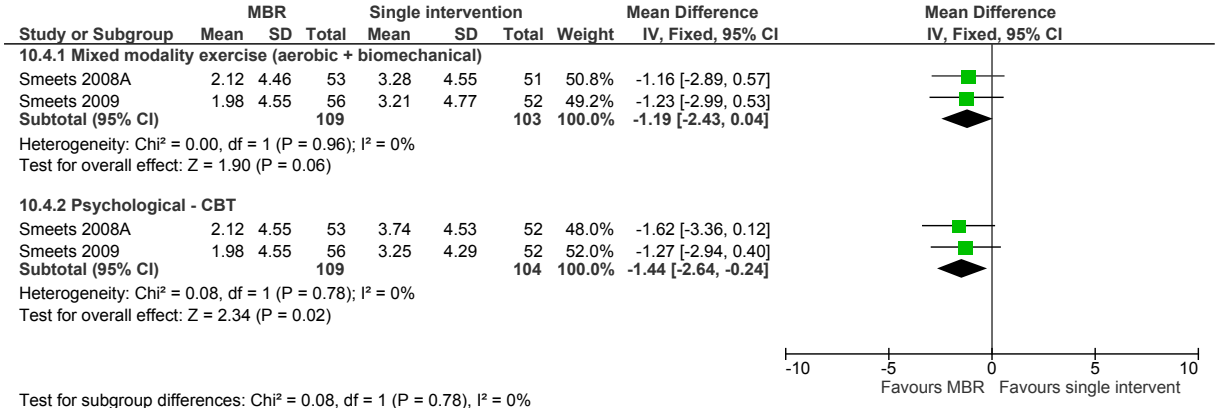
Jousset 2004 and Smeets 2008A: MBR programme delivered by a multidisciplinary team

Figure 1021: Function (RMDQ, 0-24) ≤4 months



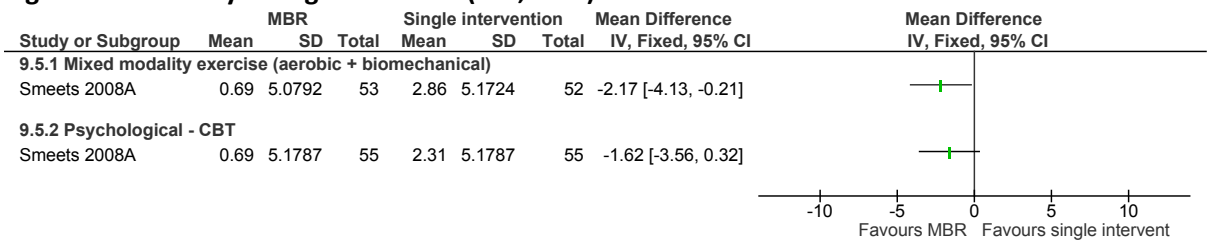
Khan 2014A: MBR programme delivered by a unidisciplinary team; Smeets 2008A: MBR programme delivered by a multidisciplinary team

Figure 1022: Function (RMDQ, 0-24) > 4 months



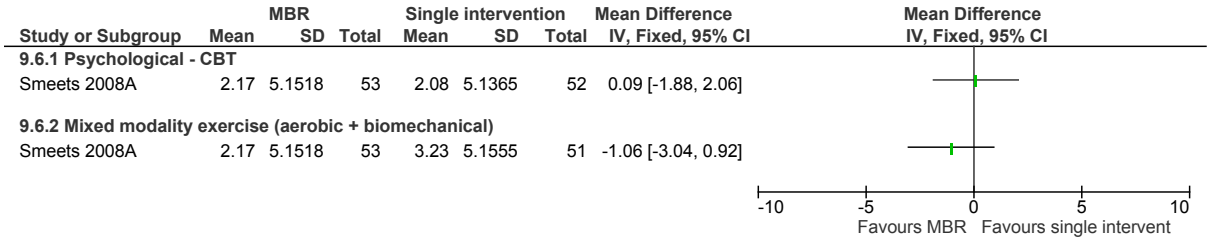
Smeets 2008A: MBR programme delivered by a multidisciplinary team

Figure 1023: Psychological distress (BDI, 0-68) ≤4 months



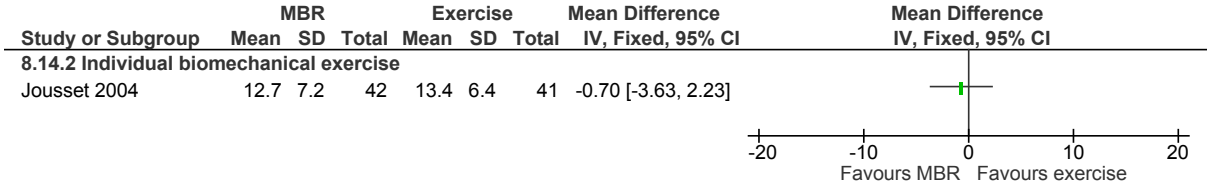
Smeets 2008A: MBR programme delivered by a multidisciplinary team

Figure 1024: Psychological distress (BDI, 0-68) > 4 months



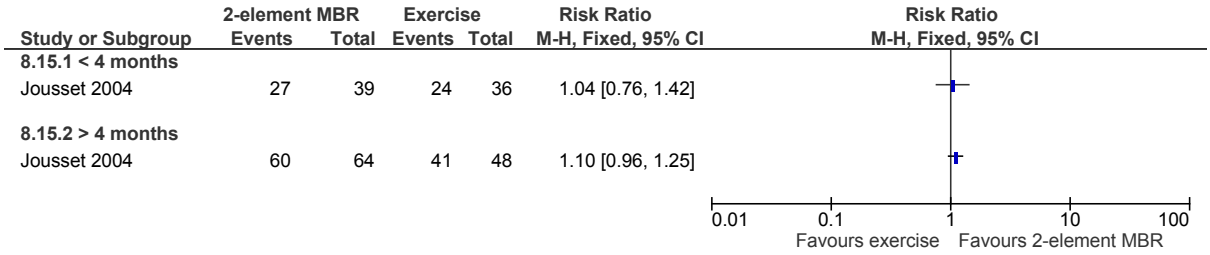
Smeets 2008A: MBR programme delivered by a multidisciplinary team

Figure 1025: Psychological distress (HADS, 0-21) > 4 months



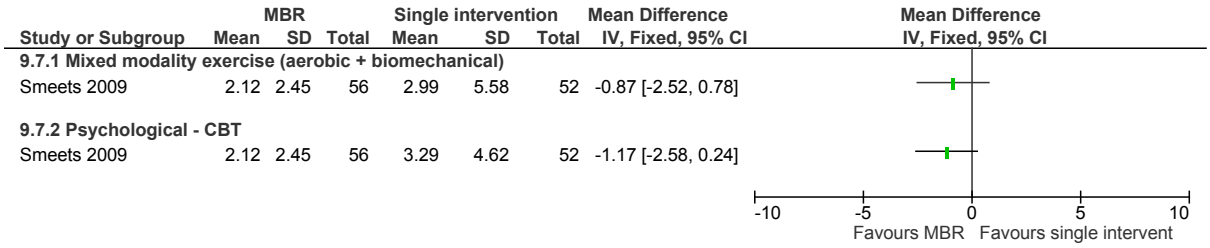
Jousset 2004: MBR programme delivered by a multidisciplinary team

Figure 1026: Return to work



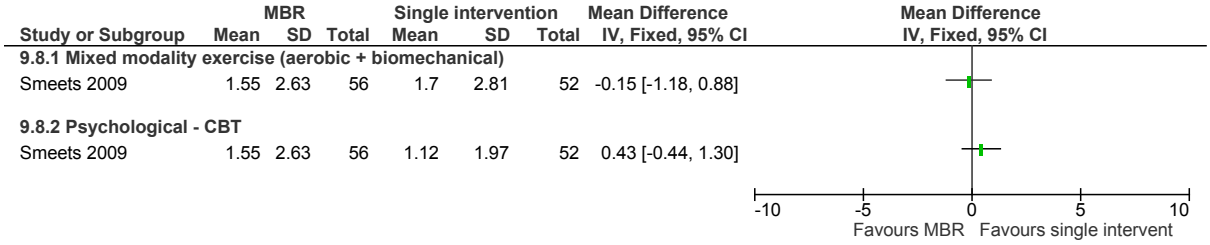
Jousset 2004: MBR programme delivered by a multidisciplinary team

Figure 1027: Healthcare utilisation (number of GP visits) > 4 months



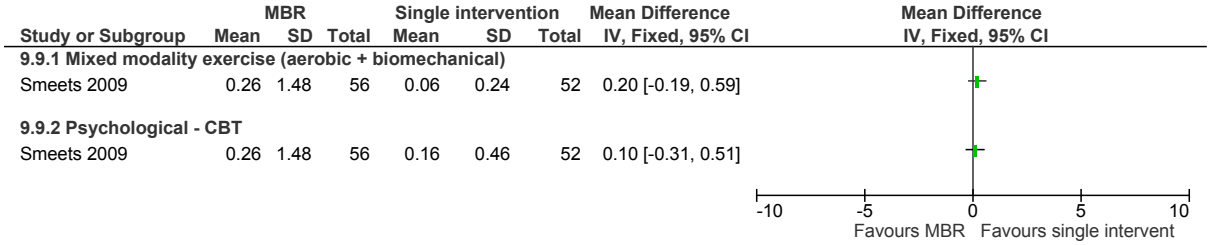
Smeets 2009: MBR programme delivered by a multidisciplinary team

Figure 1028: Healthcare utilisation (number of medical specialist care visits) > 4 months



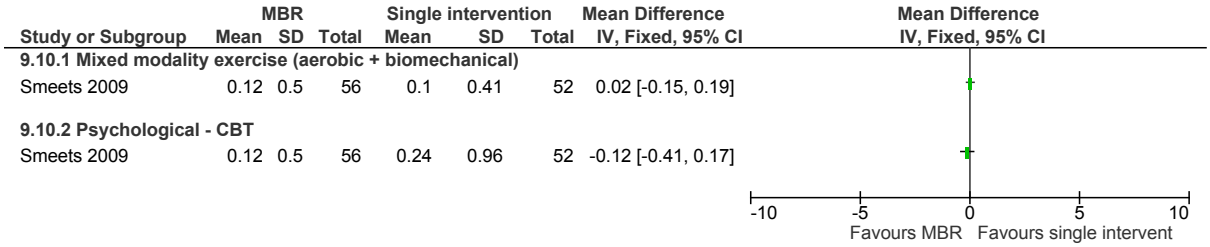
Smeets 2009: MBR programme delivered by a multidisciplinary team

Figure 1029: Healthcare utilisation (number of radiology visits) > 4 months



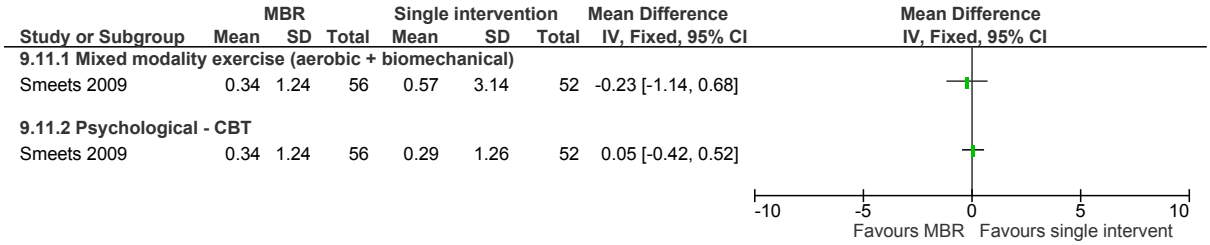
Smeets 2009: MBR programme delivered by a multidisciplinary team

Figure 1030: Healthcare utilisation (number of occupational physicians visits) > 4 months



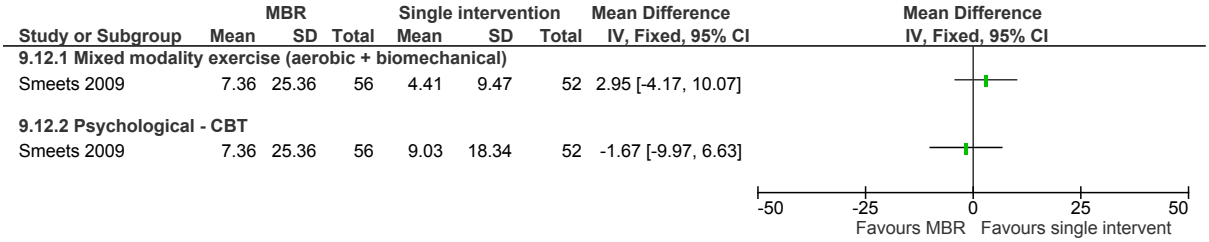
Smeets 2009: MBR programme delivered by a multidisciplinary team

Figure 1031: Healthcare utilisation (number of psychologist visits) > 4 months



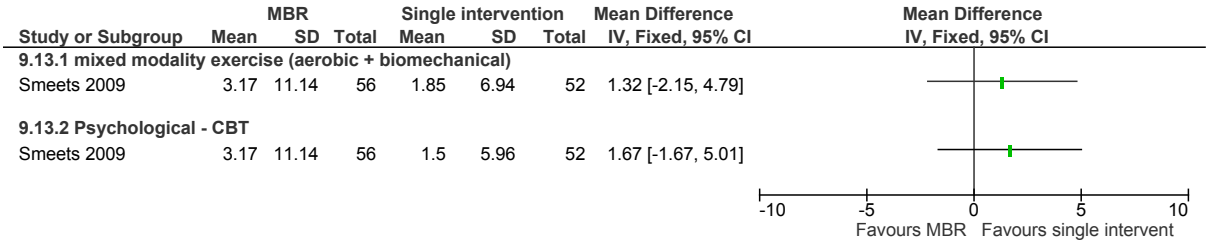
Smeets 2009: MBR programme delivered by a multidisciplinary team

Figure 1032: Healthcare utilisation (number of therapist sessions – physiotherapy, manual therapy, Cesar or Mendendieck) > 4 months



Smeets 2009: MBR programme delivered by a multidisciplinary team

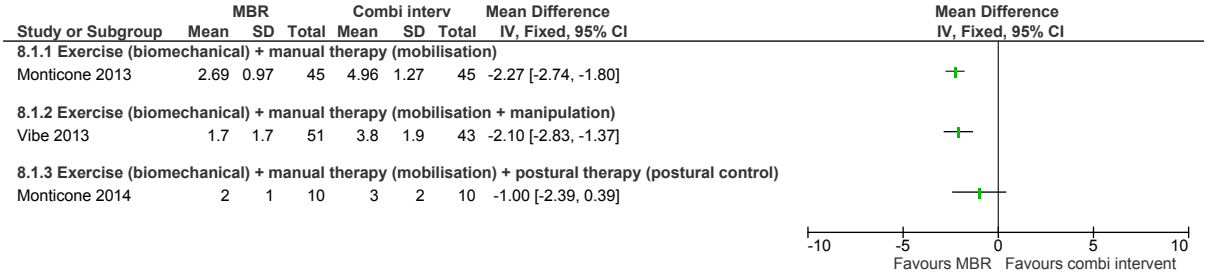
Figure 1033: Healthcare utilisation (number of alternative therapist visits) > 4 months



Smeets 2009: MBR programme delivered by a multidisciplinary team

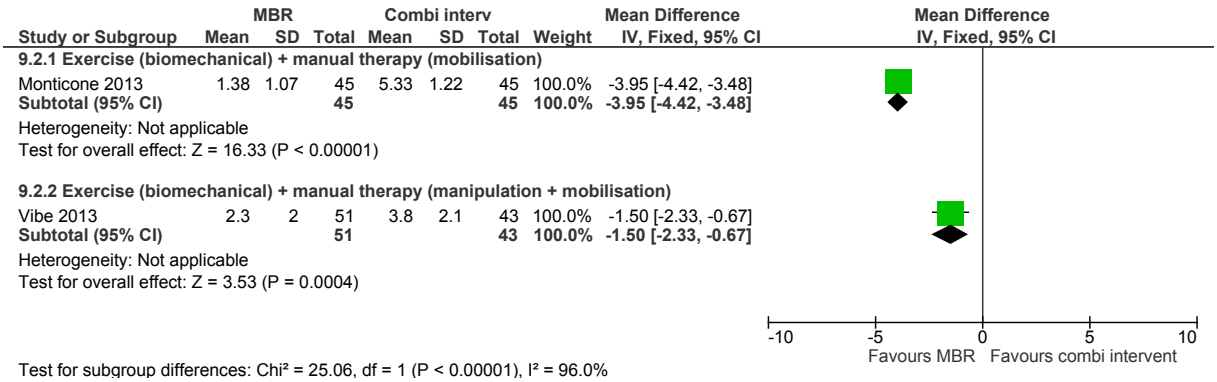
K.13.1.8 MBR programme 2 elements: physical + psychological vs. Combined intervention

Figure 1034: Pain severity (NRS, 0-10) ≤ 4 months



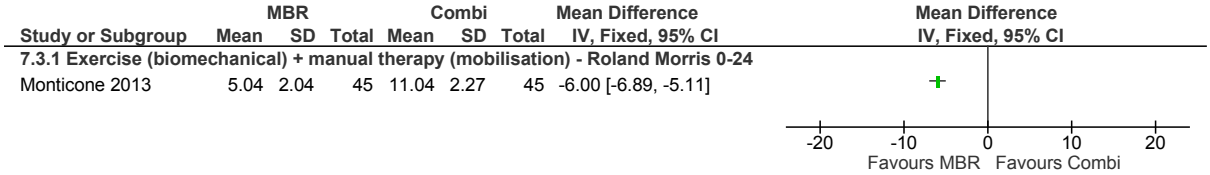
Monticone 2013 and Monticone 2014: MBR programme delivered by a multidisciplinary team. Vibe Fersum 2013: MBR programme delivered by a unidisciplinary team

Figure 1035 Pain severity (NRS, 0-10) >4 months



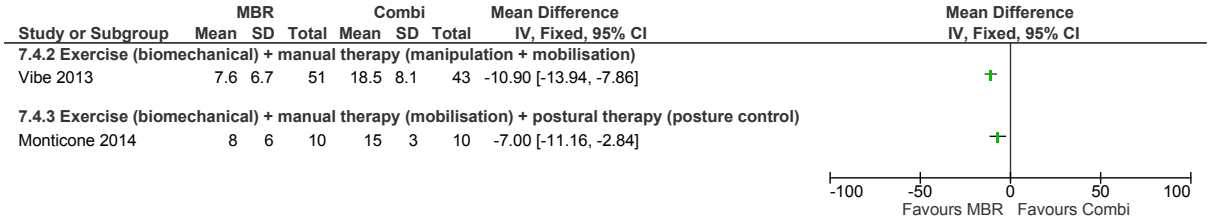
Monticone 2013: MBR programme delivered by a multidisciplinary team. Vibe Fersum 2013: MBR programme delivered by a unidisciplinary team

Figure 1036: Function (RMDQ, 0-24 and ODI, 0-100) ≤ 4 months



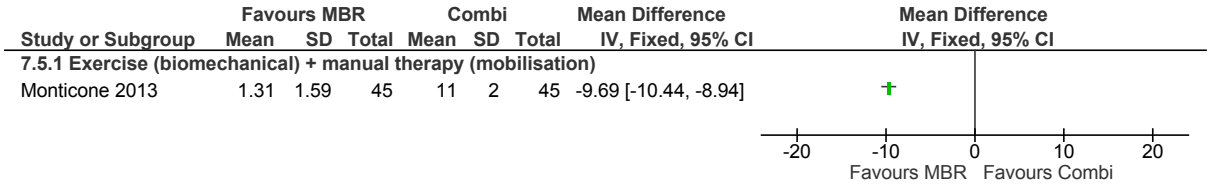
Monticone 2013 MBR programme delivered by a multidisciplinary team.

Figure 1037: **Function (ODI, 0-100) ≤ 4 months**



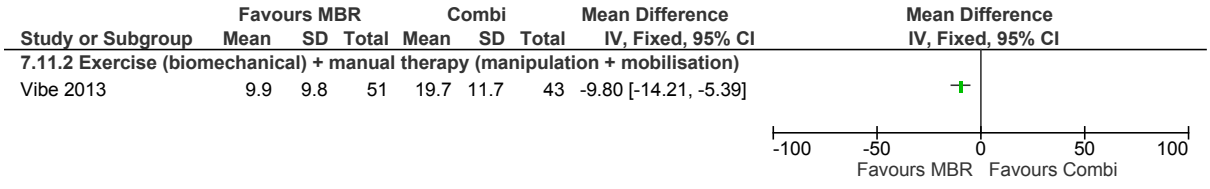
Source: Monticone 2014: MBR programme delivered by a multidisciplinary team. Vibe Fersum 2013: MBR programme delivered by a unidisciplinary team

Figure 1038: Function (RMDQ, 0-24) > 4 months



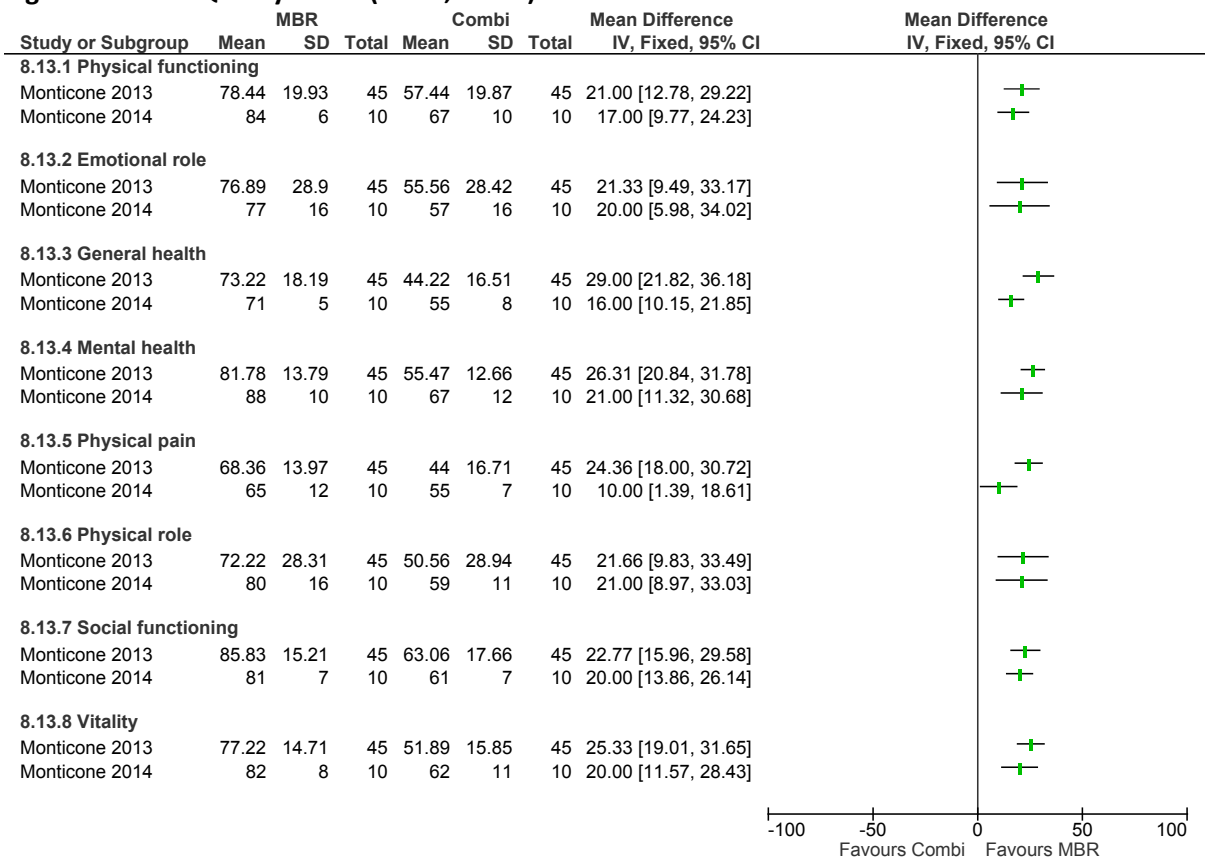
Monticone 2013: MBR programme delivered by a multidisciplinary team.

Figure 1039: Function (ODI, 0-100) > 4 months



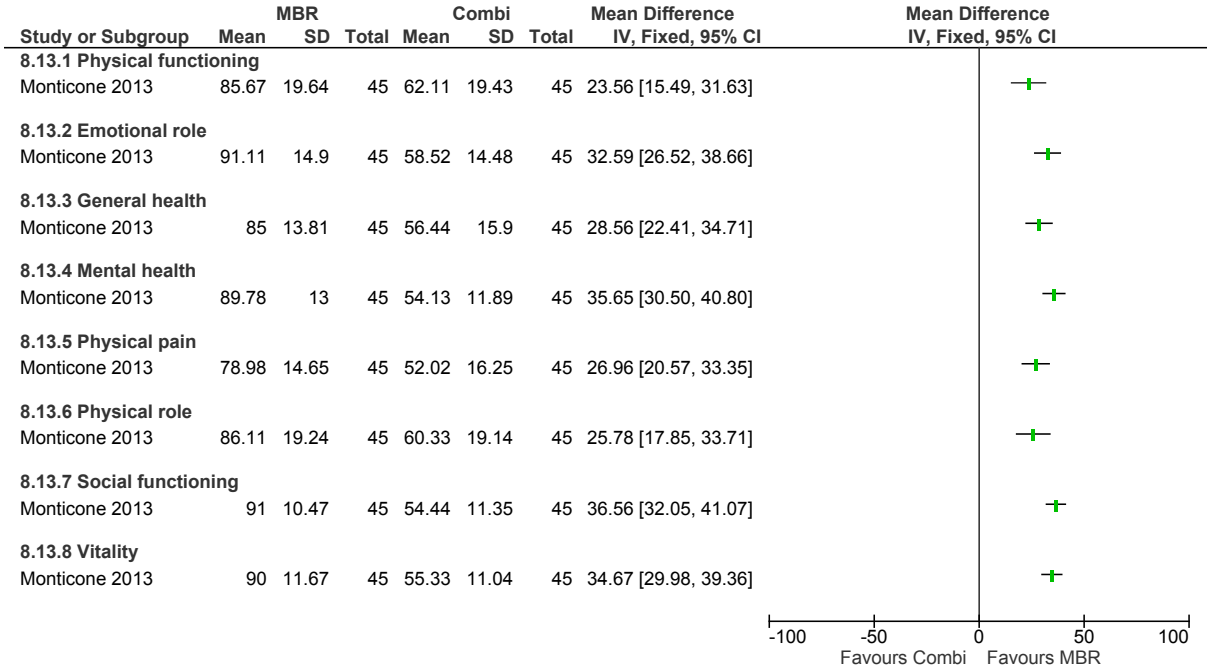
Source: Vibe Fersum 2013: MBR programme delivered by a unidisciplinary team

Figure 1040: Quality of life (SF-36, 0-100) ≤ 4 months



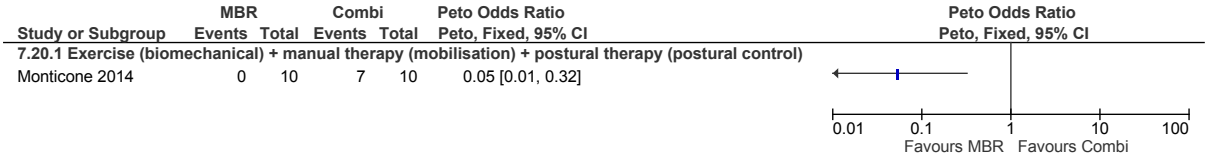
Monticone 2013: control group exercise (biomechanical) + manual therapy (manipulation); Monticone 2014 control group exercise (biomechanical) + manual therapy (manipulation) + postural therapy (postural control). In both studies MBR programme was delivered by a multidisciplinary team

Figure 1041: Quality of life (SF-36, 0-100) > 4 months



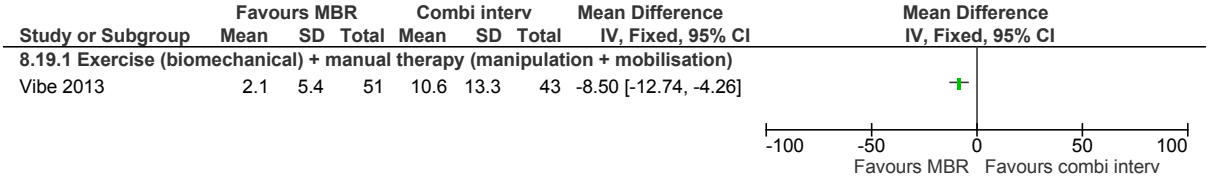
Monticone 2013: MBR delivered by a multidisciplinary team

Figure 1042: Healthcare utilisation (medication use) ≤ 4months



Monticone 2014: MBR delivered by a multidisciplinary team

Figure 1043: Healthcare utilisation (care-seeking after intervention) >4 months



Vibe Fersum 2013: MBR delivered by a unidisciplinary team

K.13.1.9 MBR programme 2 elements: physical + education vs. Placebo/sham

No studies

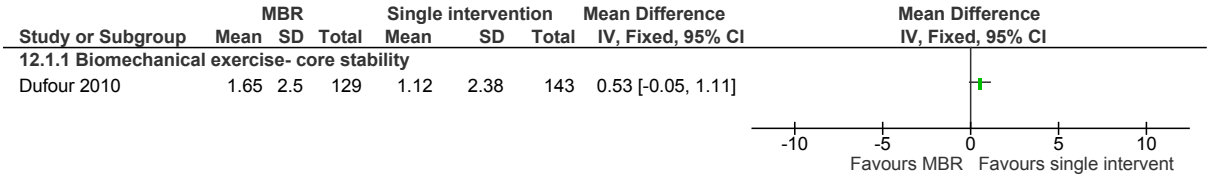
K.13.1.10 MBR programme 2 elements: physical + education vs. Usual care/waiting list control

No studies

K.13.1.11 MBR programme 2 elements: physical + education vs. Single intervention

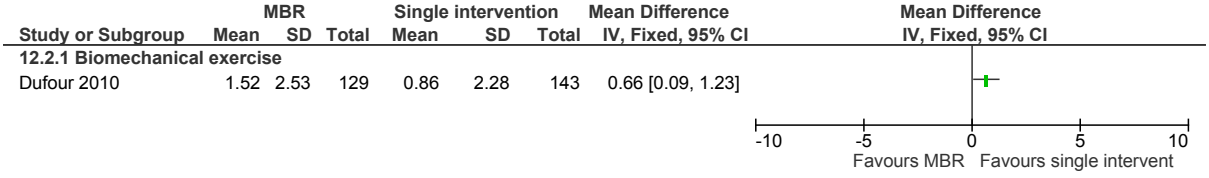
K.13.1.11.1 MBR programme 2 elements: physical + education vs exercise

Figure 1044: Pain severity (VAS, 0-10) ≤ 4 months



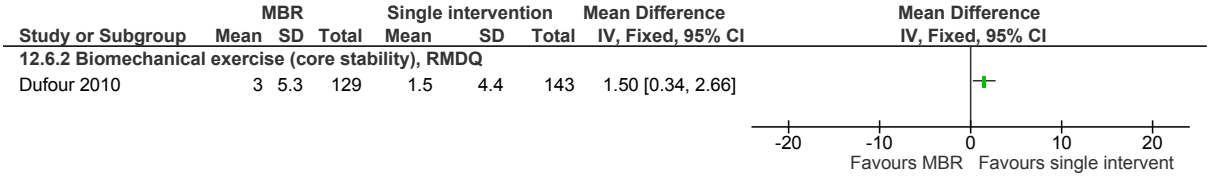
Dufour 2010: MBR programme delivered by a multidisciplinary team

Figure 1045: Pain severity (VAS, 0-10) >4 months



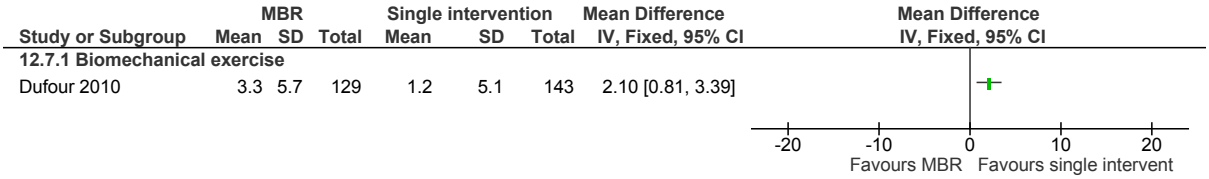
Dufour 2010: MBR programme delivered by a multidisciplinary team

Figure 1046: Function (RMDQ, 0-24) ≤ 4 months



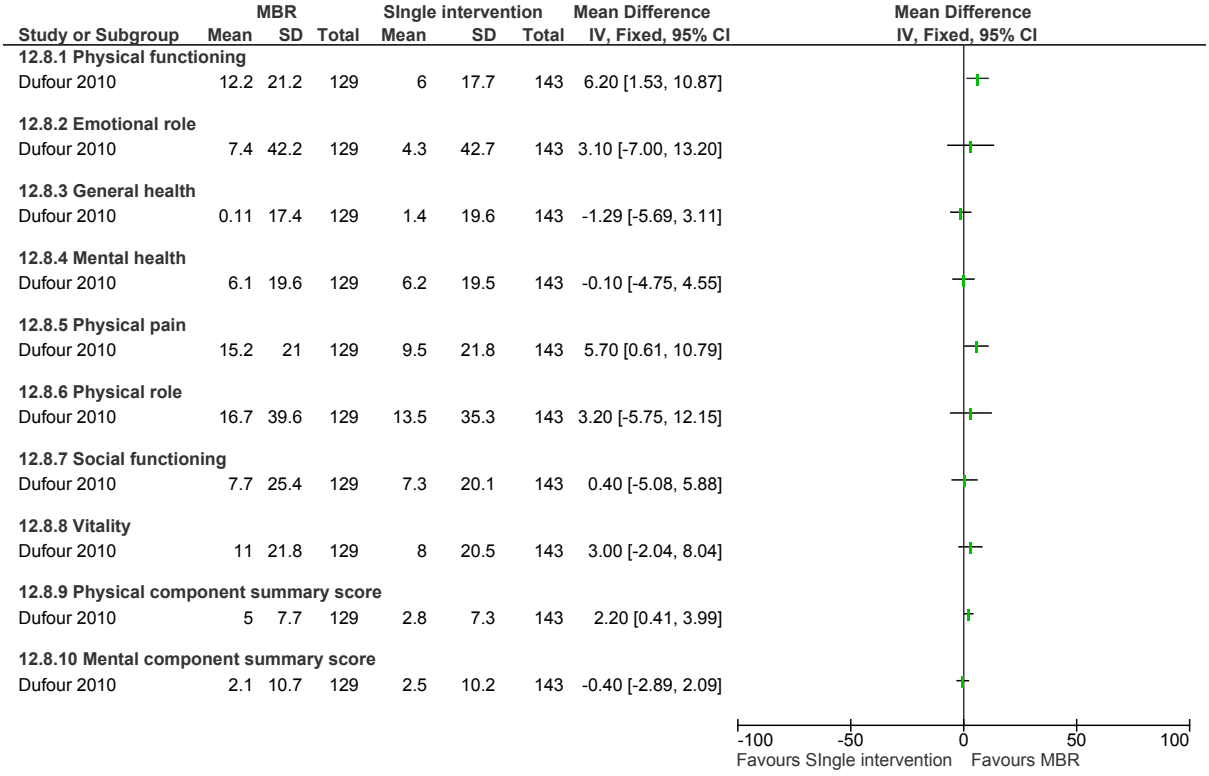
Dufour 2010: MBR programme delivered by a multidisciplinary team

Figure 1047: Function (RMDQ, 0-24) >4 months



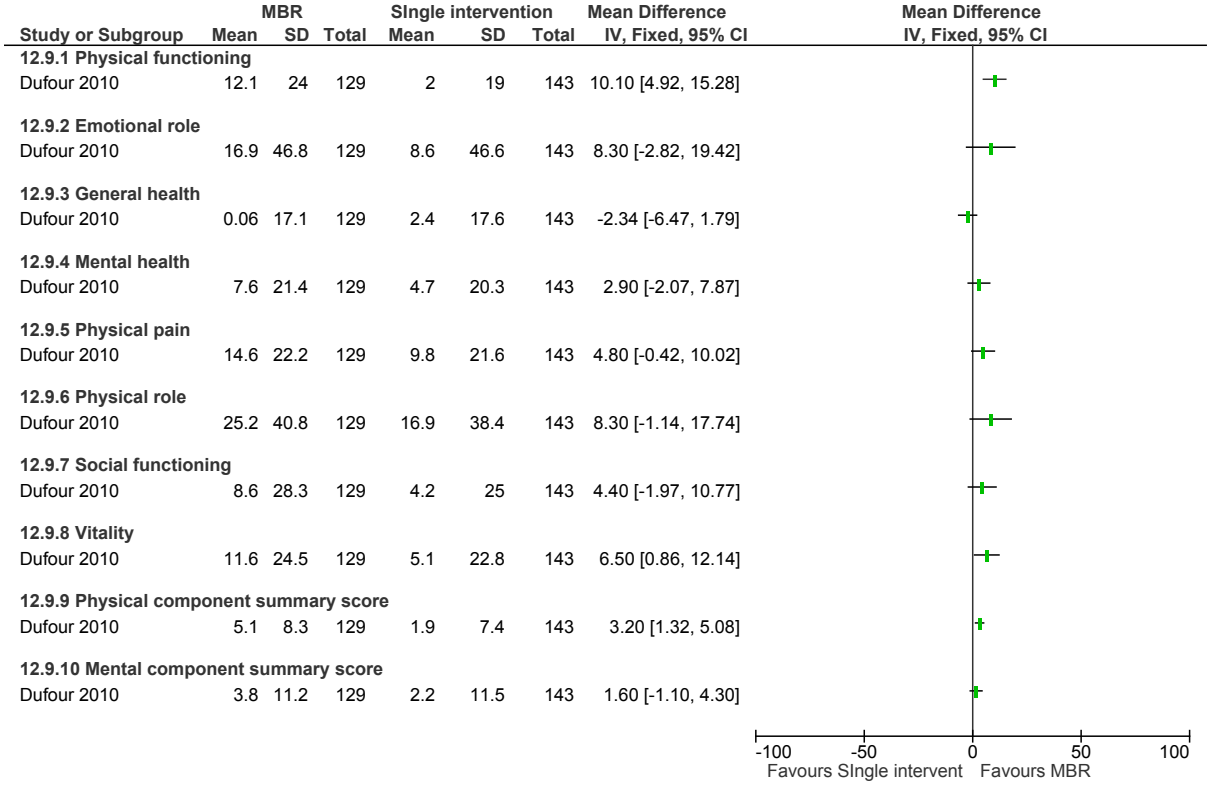
Dufour 2010: MBR programme delivered by a multidisciplinary team

Figure 1048: Quality of life (SF-36, 0-100) ≤ 4 months



Dufour 2010: MBR programme delivered by a multidisciplinary team

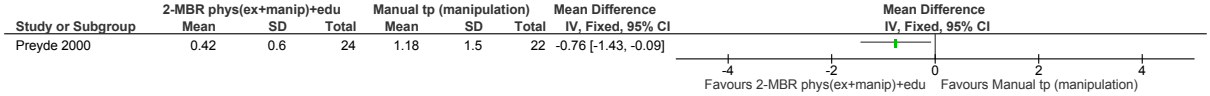
Figure 1049: Quality of life (SF-36, 0-100) > 4 months



Dufour 2010: MBR programme delivered by a multidisciplinary team

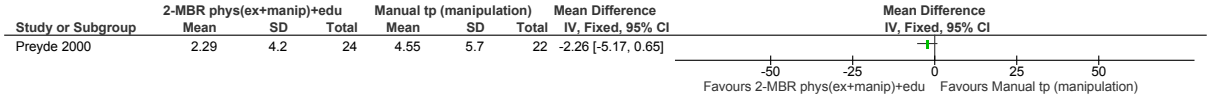
K.13.1.11.2 MBR programme 2 elements: physical (exercise + manipulation) + education vs manual therapy (manipulation)

Figure 1050: Pain severity (McGill Present Pain score, 0-5) ≤ 4 months



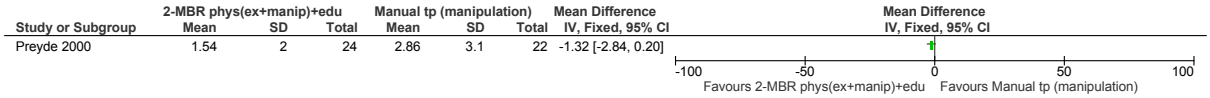
Preyde 2000: MBR programme delivered by a unidisciplinary team

Figure 1051: Pain severity (McGill Pain Rating Index, 0-79) ≤ 4 months



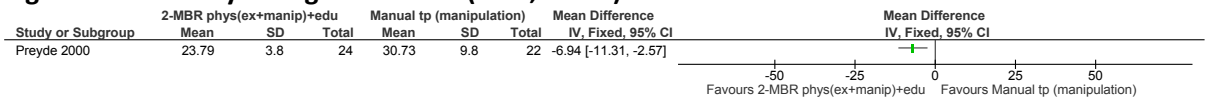
Preyde 2000: MBR programme delivered by a unidisciplinary team

Figure 1052: Function (RMDQ, 0-24) ≤ 4 months



Preyde 2000: MBR programme delivered by a unidisciplinary team

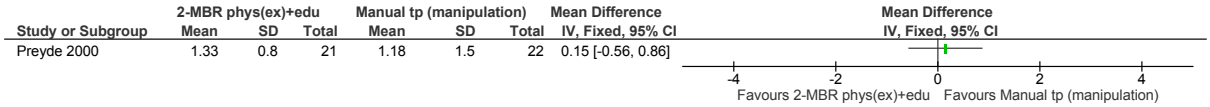
Figure 1053: Psychological distress (STAI, 20-80) ≤ 4 months



Preyde 2000: MBR programme delivered by a unidisciplinary team

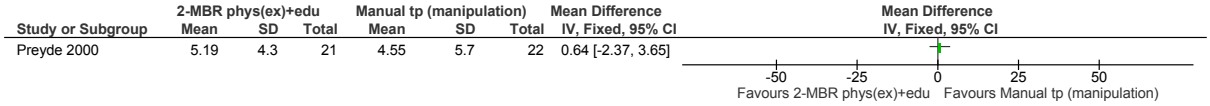
K.13.1.11.3 MBR programme 2 elements: physical (exercise) + education vs manual therapy (manipulation)

Figure 1054: Pain severity (McGill Present Pain score, 0-5) ≤ 4 months



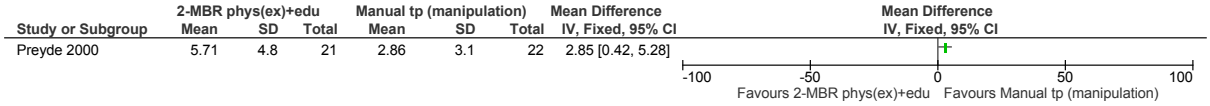
Preyde 2000: MBR programme delivered by a unidisciplinary team

Figure 1055: Pain severity (McGill Pain Rating Index, 0-79) ≤ 4 months



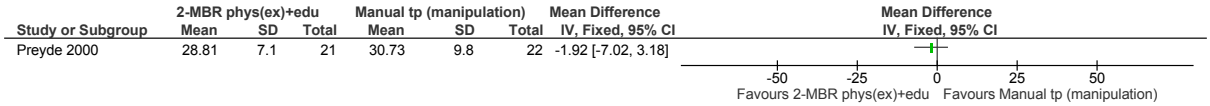
Preyde 2000: MBR programme delivered by a unidisciplinary team

Figure 1056: Function (RMDQ, 0-24) ≤ 4 months



Preyde 2000: MBR programme delivered by a unidisciplinary team

Figure 1057: Psychological distress (STAI, 20-80) ≤ 4 months



Preyde 2000: MBR programme delivered by a unidisciplinary team

K.13.1.12 MBR programme 2 elements: physical + education vs. Combined intervention

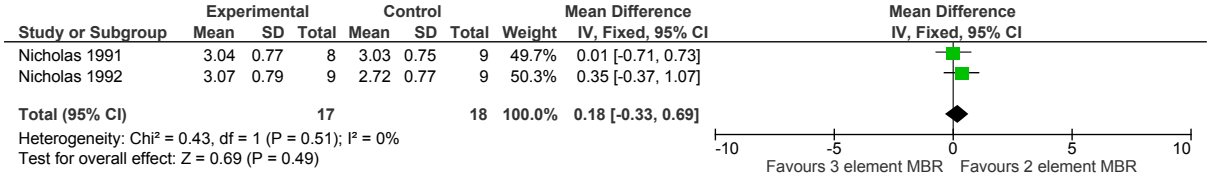
No studies

K.13.1.13 MBR programme 3 elements: physical + psychological + education vs. 2 elements: physical + psychological

No studies

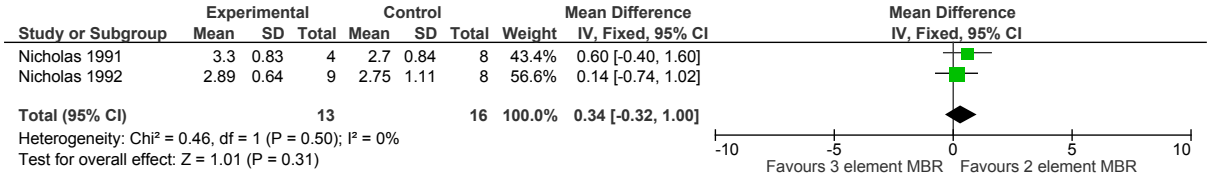
K.13.1.14 MBR programme 3 elements: physical + psychological (cognitive) + education vs. MBR programme 2 elements: physical + education. *NOTE: psychological element = cognitive therapy*

Figure 1058: Pain intensity (pain rating chart, 0-5) ≤4 months



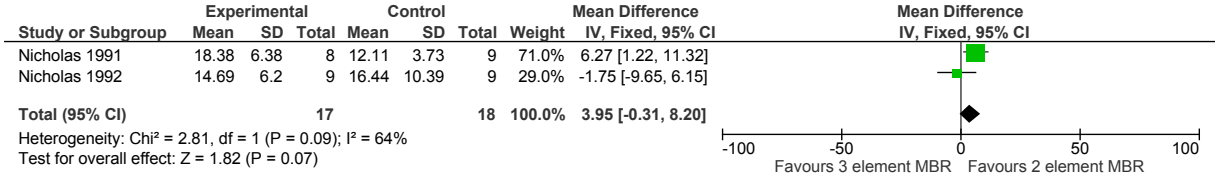
Nicholas 1991 and Nicholas 1992: MBR programme delivered by a multidisciplinary team

Figure 1059: Pain intensity (pain rating chart, 0-5) > 4 months



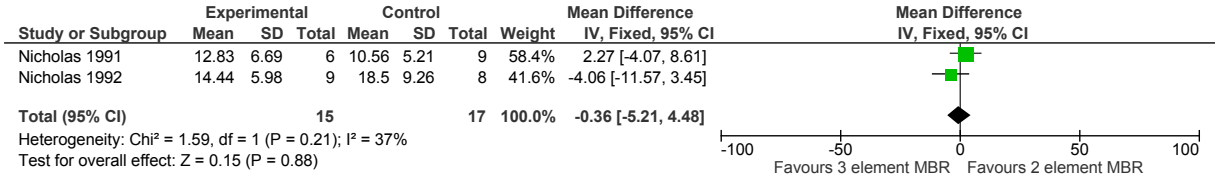
Nicholas 1991 and Nicholas 1992: MBR programme delivered by a multidisciplinary team

Figure 1060: Psychological distress (BDI, 0-63) ≤4 months



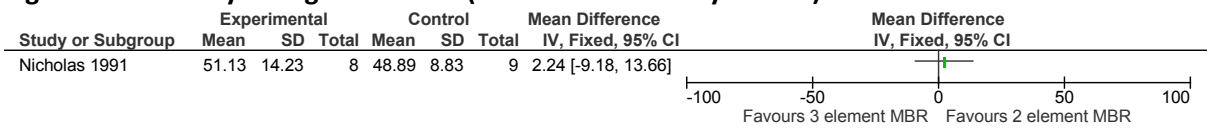
Nicholas 1991 and Nicholas 1992: MBR programme delivered by a multidisciplinary team

Figure 1061: Psychological distress (BDI, 0-63) > 4 months



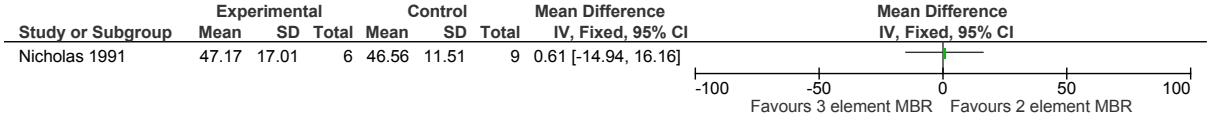
Nicholas 1991 and Nicholas 1992: MBR programme delivered by a multidisciplinary team

Figure 1062: Psychological distress (State trait inventory – state) ≤4 months



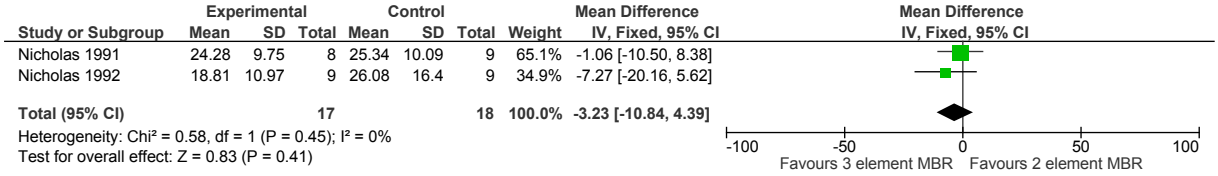
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1063: Psychological distress (state trait inventory – state) > 4 months



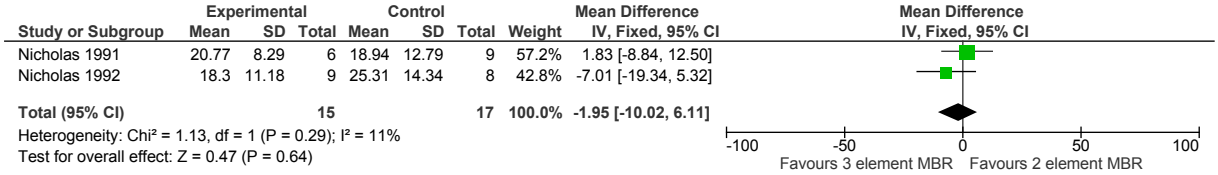
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1064: Function (Sickness impact profile, 0-100) ≤4 months



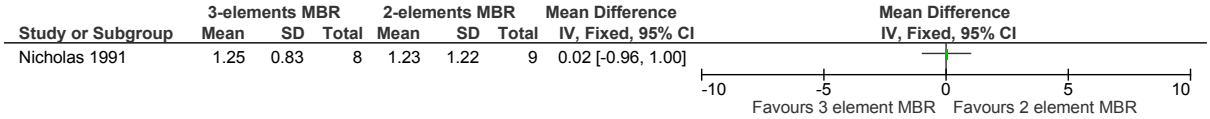
Nicholas 1991 and Nicholas 1992: MBR programme delivered by a multidisciplinary team

Figure 1065: Function (Sickness impact profile, 0-100) > 4 months



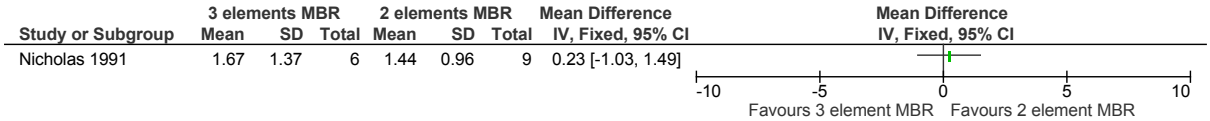
Nicholas 1991 and Nicholas 1992: MBR programme delivered by a multidisciplinary team

Figure 1066: Healthcare utilisation (medication use) ≤4 months



Nicholas 1991: MBR programme delivered by a multidisciplinary team

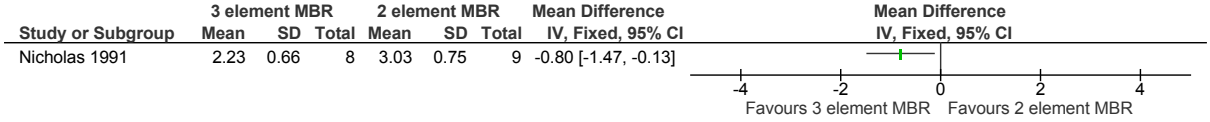
Figure 1067: Healthcare utilisation (medication use) > 4 months



Nicholas 1991: MBR programme delivered by a multidisciplinary team

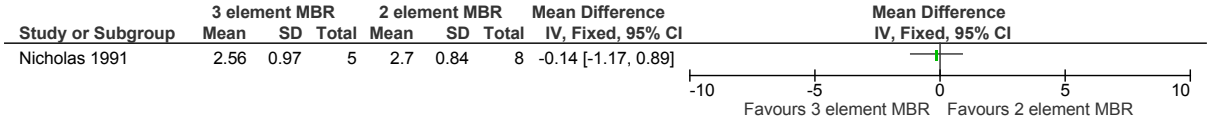
K.13.1.15 MBR programme 3 elements: physical + psychological (behavioural) + education vs. MBR programme 2 elements: physical + education. *NOTE: psychological element = behavioural therapy*

Figure 1068: Pain intensity (pain rating chart, 0-5) ≤4 months



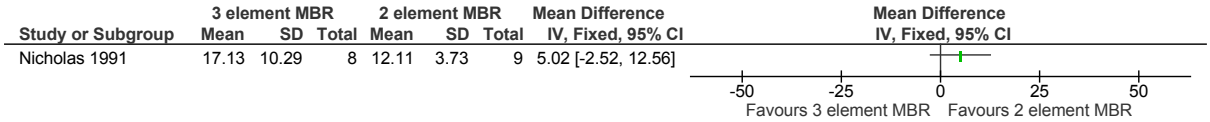
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1069: Pain intensity (pain rating chart, 0-5) >4 months



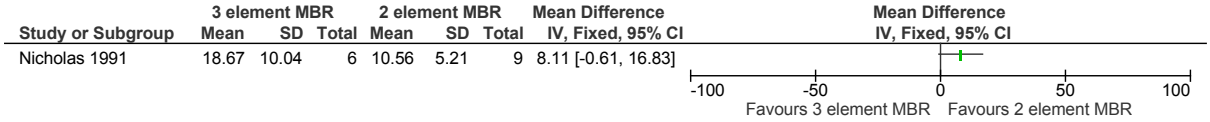
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1070: Psychological distress (BDI, 0-63) ≤4 months



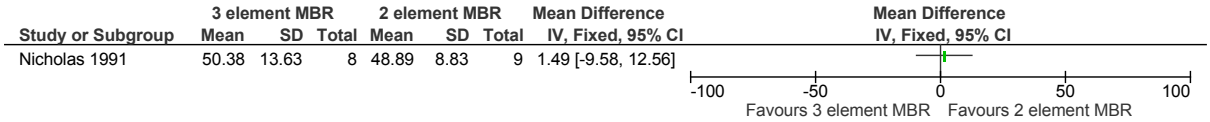
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1071: Psychological distress (BDI, 0-63) > 4 months



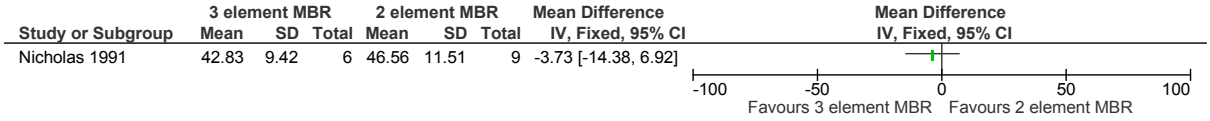
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1072: Psychological distress (State-trait inventory – state) ≤4 months



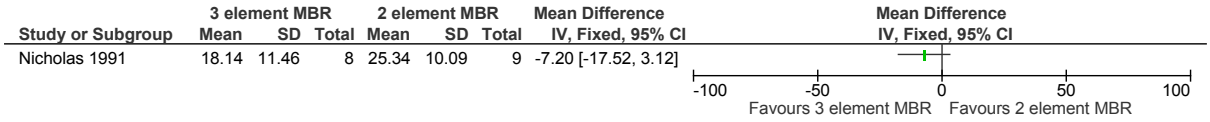
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1073: Psychological distress (State-trait inventory – state) > 4 months



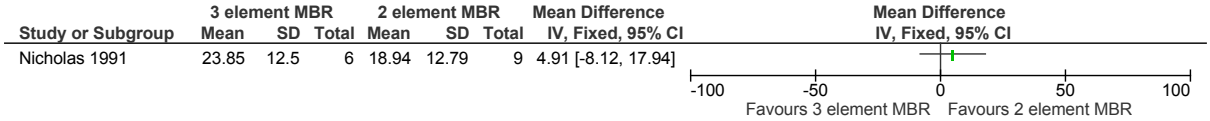
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1074: Function (Sickness impact profile, 0-100) ≤4 months



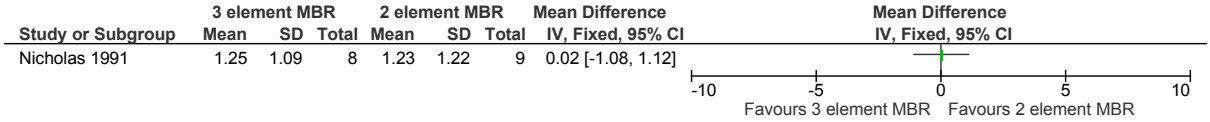
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1075: Function (Sickness impact profile, 0-100) > 4 months



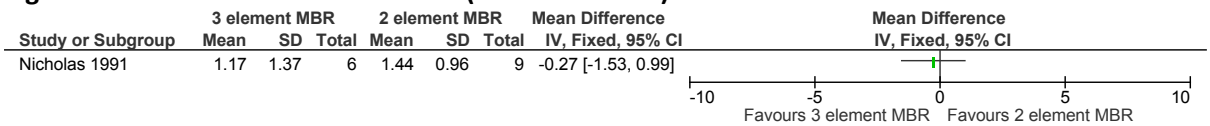
Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1076: Healthcare utilisation (medication use) ≤4 months



Nicholas 1991: MBR programme delivered by a multidisciplinary team

Figure 1077: Healthcare utilisation (medication use) > 4 months



Nicholas 1991: MBR programme delivered by a multidisciplinary team

K.13.1.16 MBR programme 2 elements: physical + psychological vs. 2 elements: physical + education

No studies

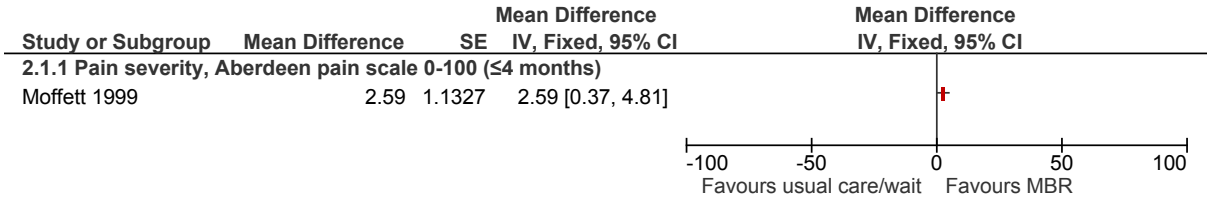
K.13.2 Population: low back pain without sciatica

K.13.2.1 MBR programme 3 elements: physical + psychological + education vs. Placebo/sham

No studies

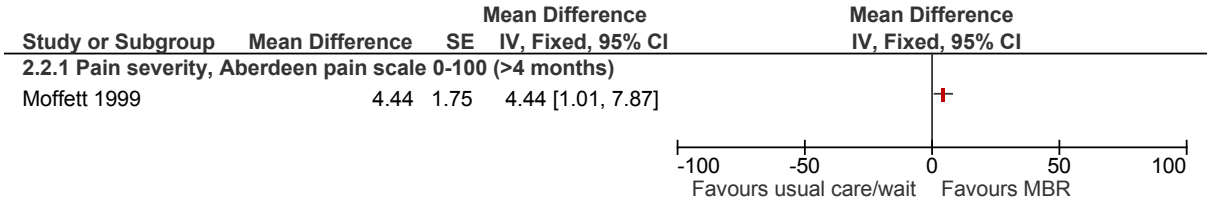
K.13.2.2 MBR programme 3 elements: physical + psychological + education vs. Usual care/waiting list control

Figure 1078: Pain severity (Aberdeen pain scale, 0-100) ≤4 months



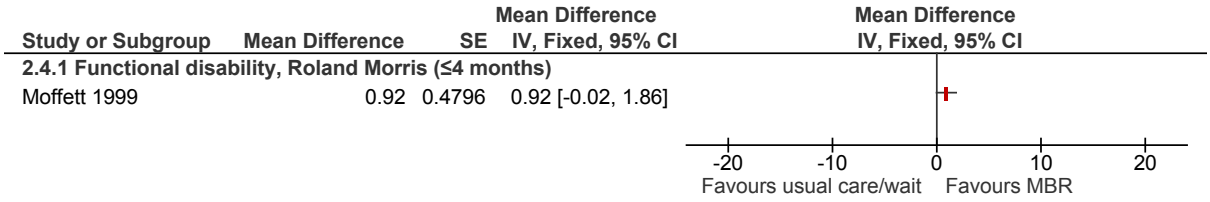
Moffett 1999: MBR programme delivered by a unidisciplinary team

Figure 1079: Pain severity (Aberdeen pain scale, 0-100) > 4 months



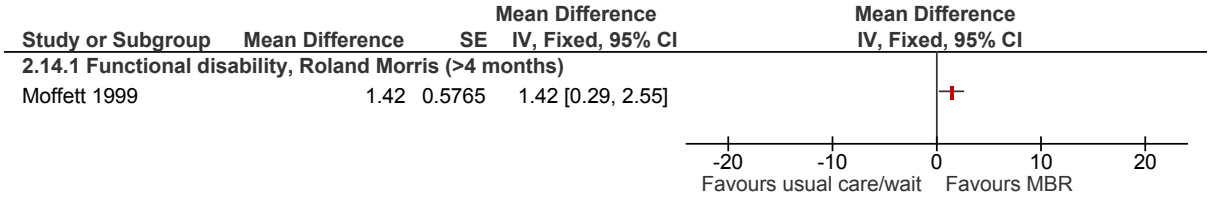
Moffett 1999: MBR programme delivered by a unidisciplinary team

Figure 1080: Function (RMDQ, 0-24) ≤4 months



Moffett 1999: MBR programme delivered by a unidisciplinary team

Figure 1081: Function (RMDQ, 0-24) > 4 months



Moffett 1999: MBR programme delivered by a unidisciplinary team

K.13.2.3 MBR programme 3 elements: physical + psychological + education vs. Single intervention

No studies

K.13.2.4 MBR programme 3 elements: physical + psychological + education vs. Combined intervention

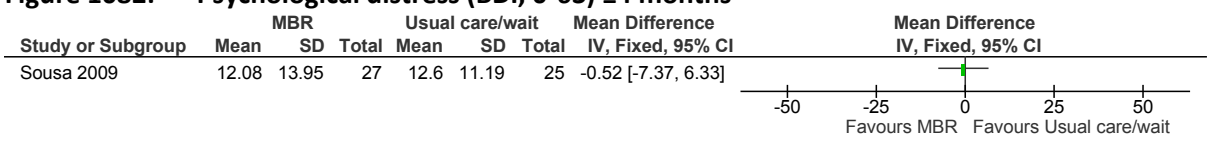
No studies

K.13.2.5 MBR programme 2 elements: physical + psychological vs. Placebo/sham

No studies

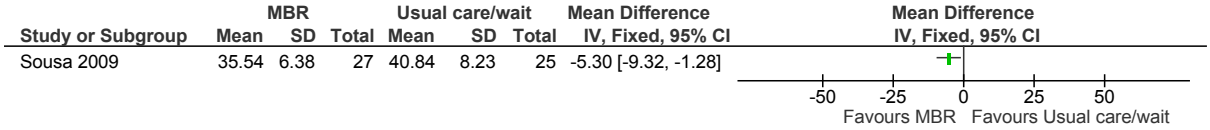
K.13.2.6 MBR programme 2 elements: physical + psychological vs. Usual care/waiting list control

Figure 1082: Psychological distress (BDI, 0-63) ≤4 months



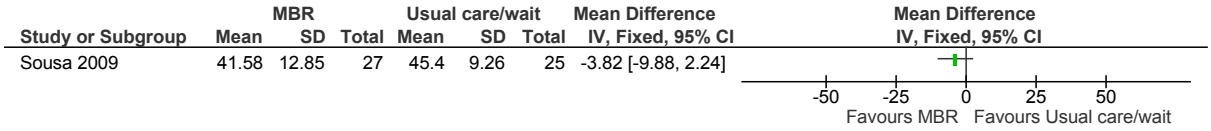
Sousa 2009: delivery of the programme was unclear

Figure 1083: Psychological distress (STAI state, 20-80) ≤4 months



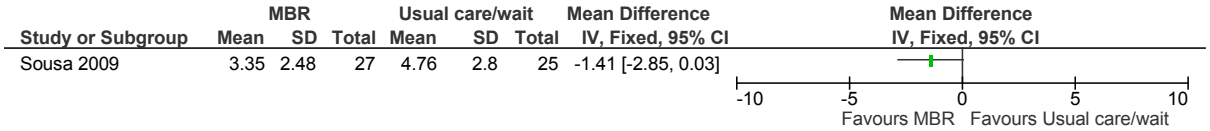
Sousa 2009: delivery of the programme was unclear

Figure 1084: Psychological distress (STAI trait) ≤4 months



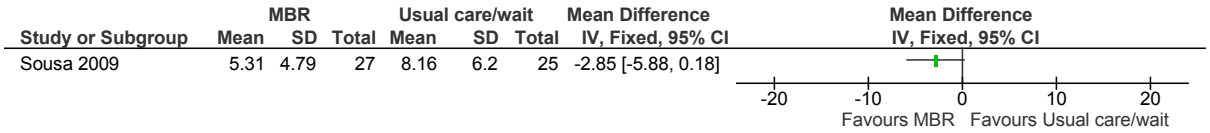
Sousa 2009: delivery of the programme was unclear

Figure 1085: Pain severity (VAS, 0-10) ≤4 months



Sousa 2009: delivery of the programme was unclear

Figure 1086: Function (RMDQ, 0-24) ≤4 months



Sousa 2009: delivery of the programme was unclear

K.13.2.7 MBR programme 2 elements: physical + psychological vs. Single intervention

No studies

K.13.2.8 MBR programme 2 elements: physical + psychological vs. Combined intervention

No studies

K.13.2.9 MBR programme 2 elements: physical + education vs. Placebo/sham

No studies

K.13.2.10 MBR programme 2 elements: physical + education vs. Usual care/waiting list control

No studies

K.13.2.11 MBR programme 2 elements: physical + education vs. Single intervention

No studies

K.13.2.12 MBR programme 2 elements: physical + education vs. Combined intervention

No studies

K.13.2.13 MBR programme 3 elements: physical + psychological + education vs. 2 elements: physical + psychological

No studies

K.13.2.14 MBR programme 3 elements: physical + psychological + education vs. 2 elements: physical + education

No studies

K.13.2.15 MBR programme 2 elements: physical + psychological vs. 2 elements: physical + education

No studies

K.14 Return to work programmes

K.14.1 Individually delivered return to work programme versus usual care

K.14.1.1 Multidisciplinary programme

K.14.1.1.1 Low back pain with or without sciatica population

Figure 1087: Quality of life (EQ-5D, 0-1 change score) ≤ 4 months

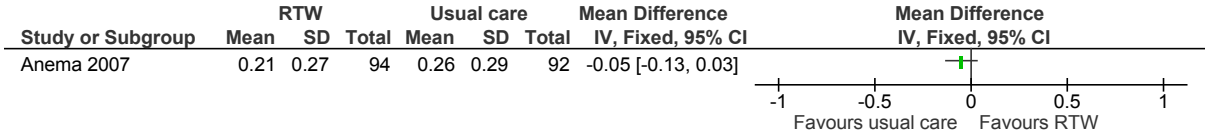
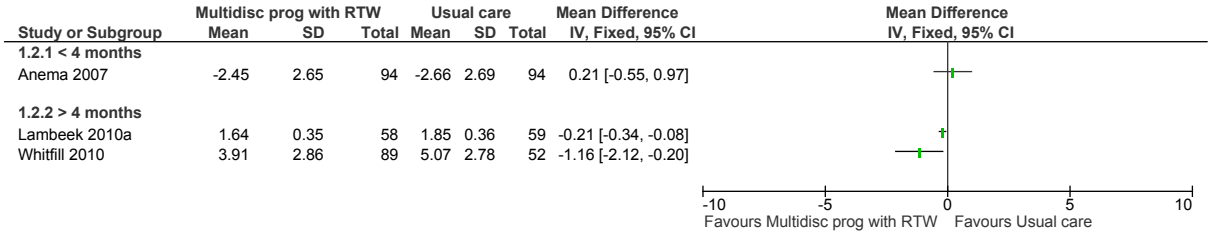


Figure 1088: Pain (VAS/NRS, 0-10)



Anema 2007 and Lambeek 2010a: change scores; Whitfill 2010: final value. Lambeek 2010a and Whitfill studies were not pooled because they featured different intervention.

Figure 1089: Function (RMDQ, 0-24)

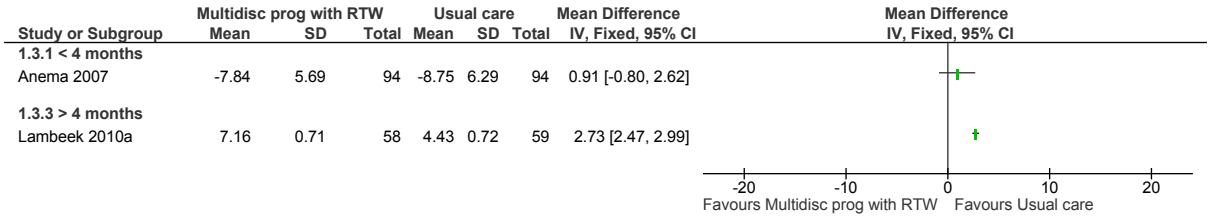


Figure 1090: Psychological distress (BDI, 0-63) > 4 months

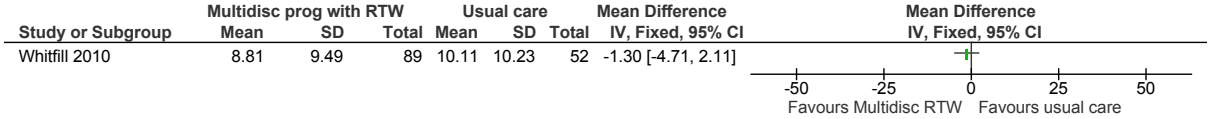


Figure 1091: Days to return to work ≤ 4 months

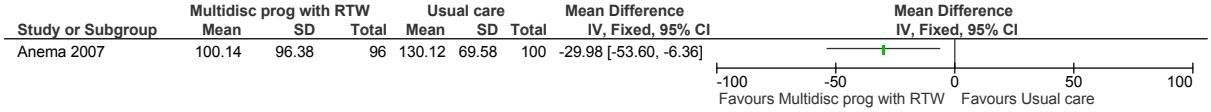


Figure 1092: Return to work > 4 months

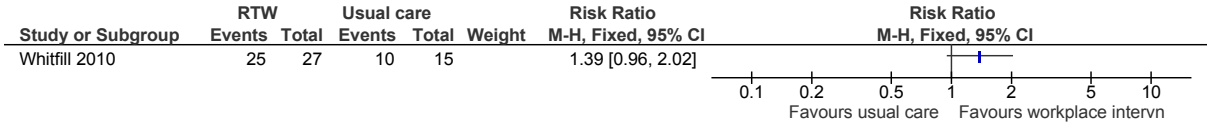


Figure 1093: Return to work > 4 months

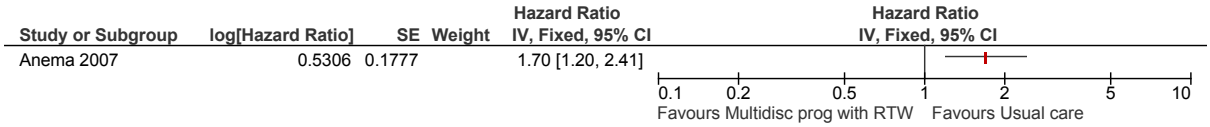


Figure 1094: Absenteeism from unpaid work (hours) > 4 months

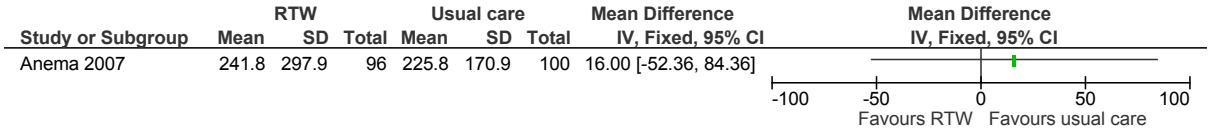


Figure 1095: Healthcare utilisation > 4 months

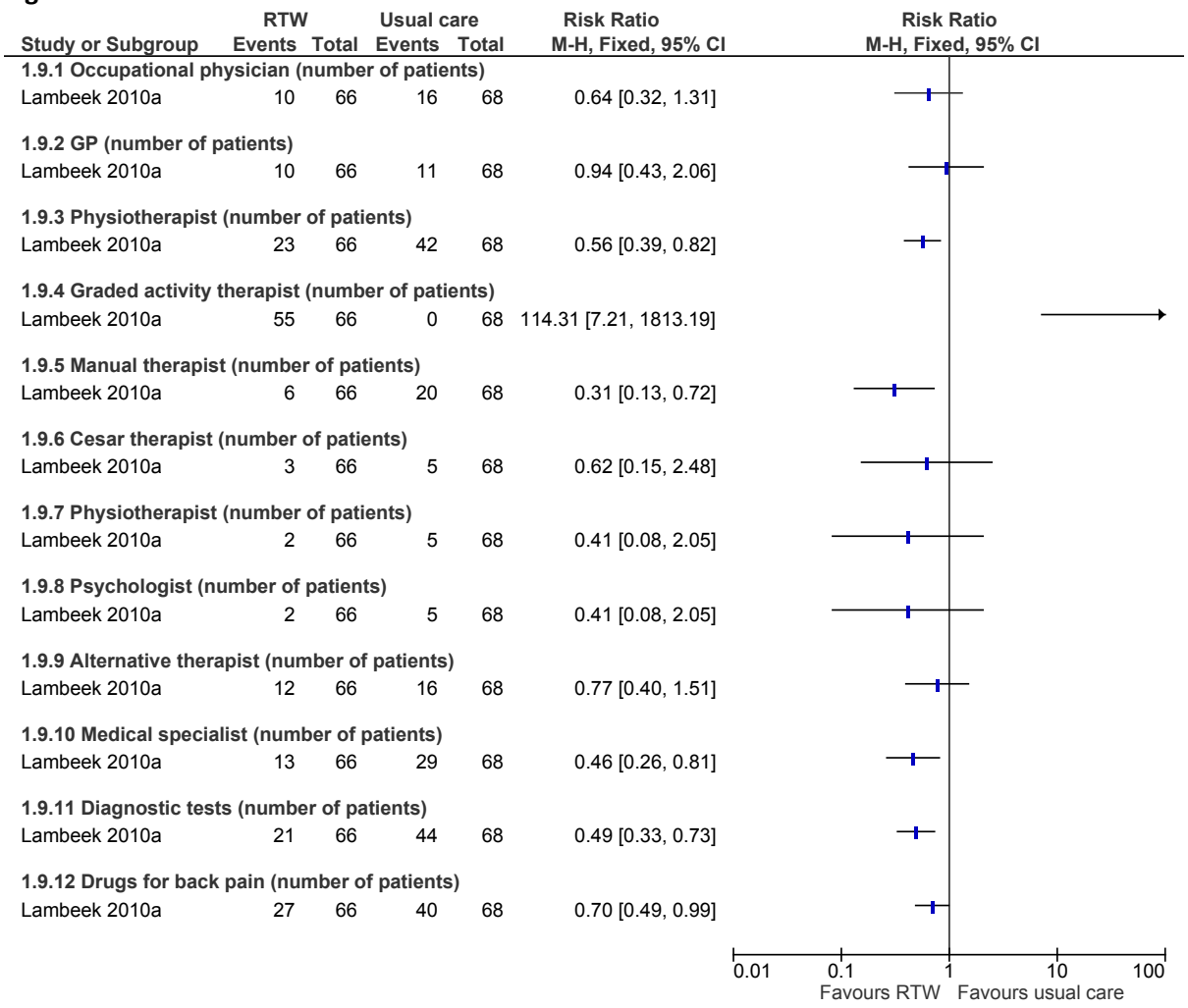
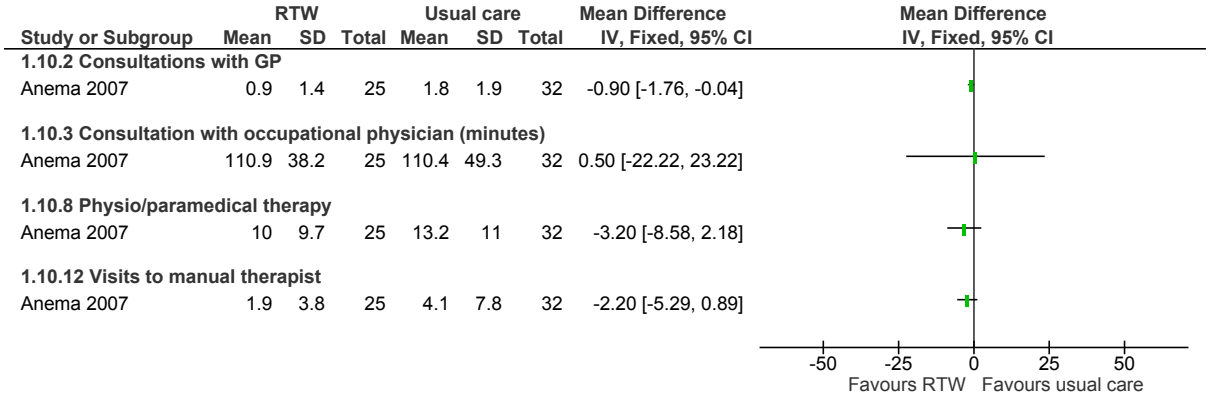


Figure 1096: Healthcare utilisation > 4 months



K.14.1.1.2 Low back pain without sciatica population

Figure 1097: Pain (NRS, 0-10, change score)

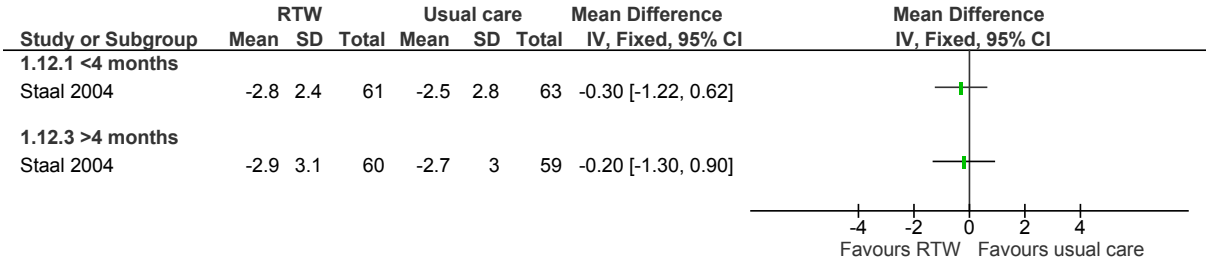


Figure 1098: Function (RMDQ, 0-24 change score)

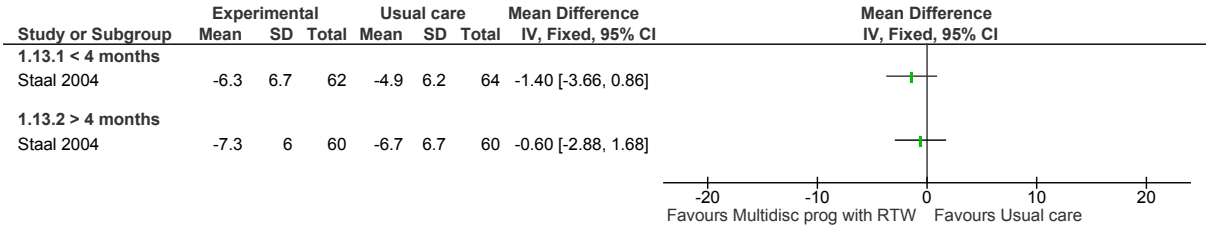
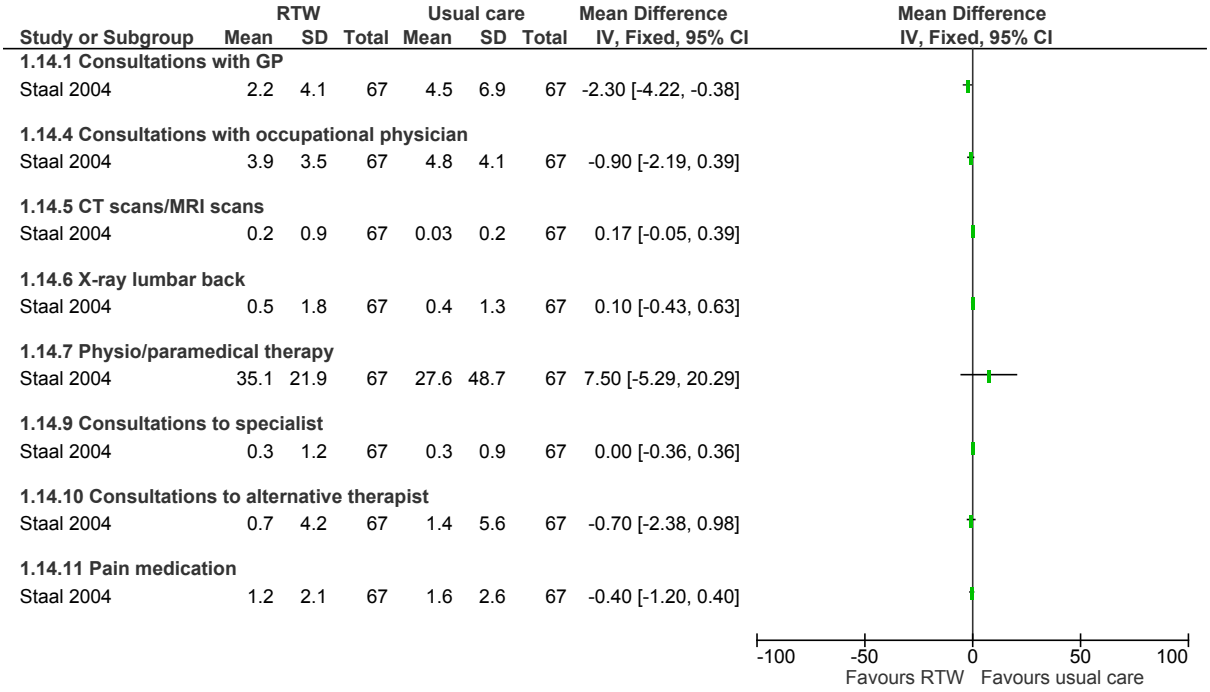


Figure 1099: Healthcare utilisation > 4 months



K.14.1.2 Unidisciplinary programme

K.14.1.2.1 Low back pain without sciatica

Figure 1100: Quality of life (SF-36 0-100, change score) ≤ 4 months

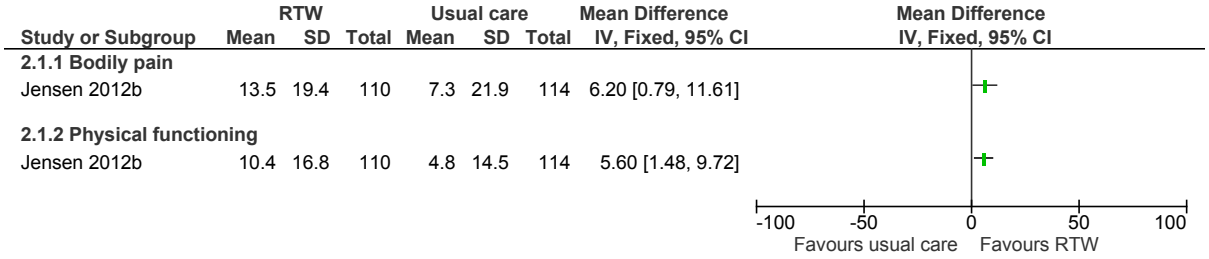


Figure 1101: Pain (NRS, 0-10 change score) ≤ 4 months

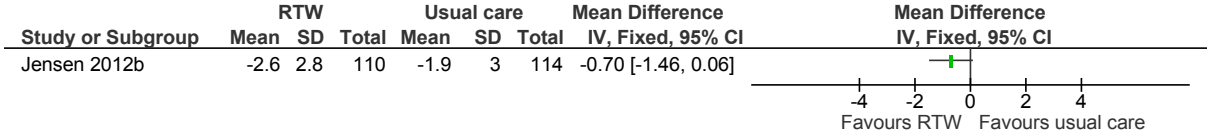


Figure 1102: Function (RMDQ, 0-24 change score) ≤ 4 months

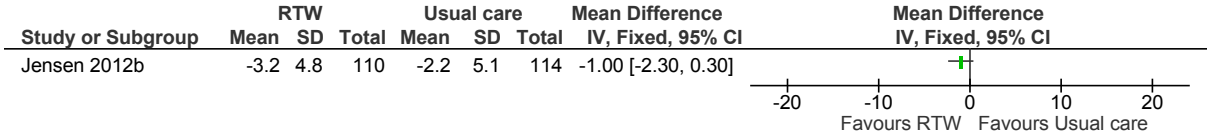
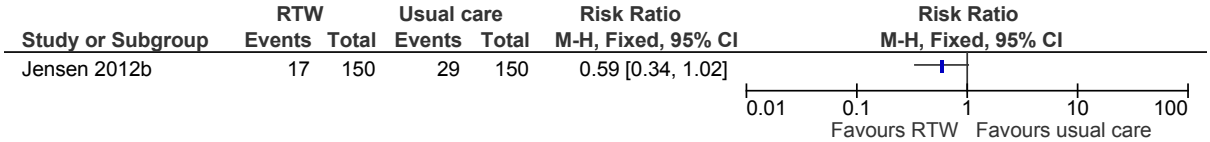


Figure 1103: Sick leave ≤ 4 months



K.14.2 Individually delivered return to work programme versus combination of interventions

K.14.2.1 Low back pain without sciatica

Figure 1104: Pain (Pain level 0-10, final values, ≤4 months)

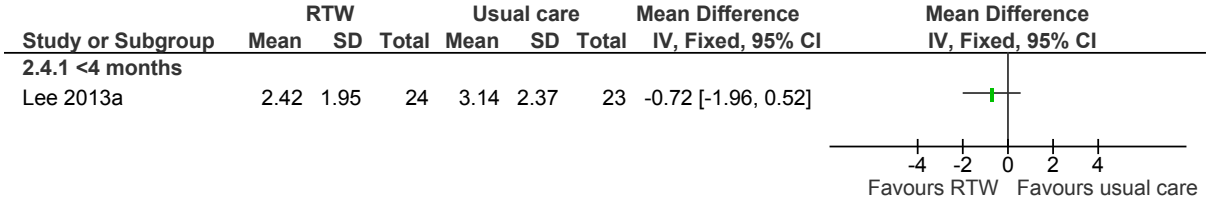
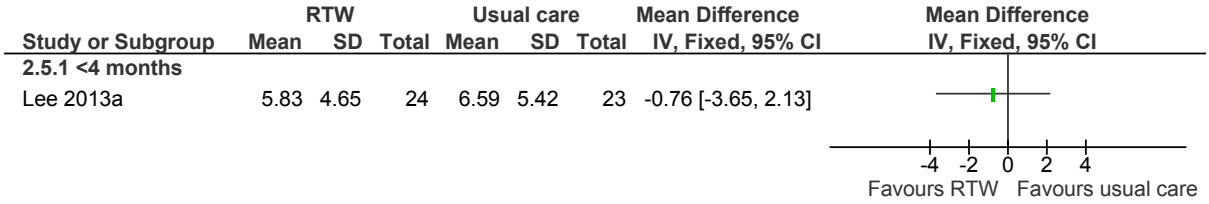


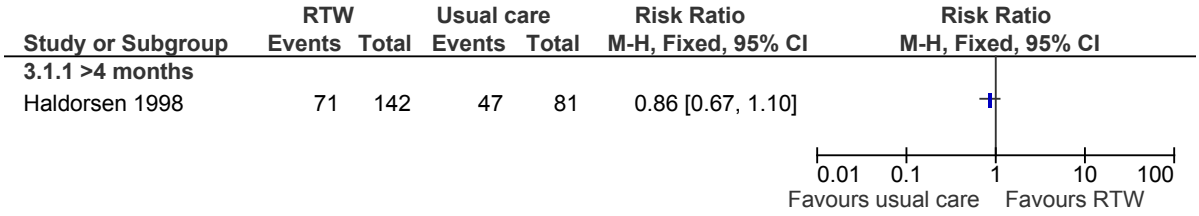
Figure 1105: Function (RMDQ 0-24, final value) ≤4 months



K.14.3 Mixed group and individually delivered return to work programme versus usual care

K.14.3.1 Low back pain with or without sciatica

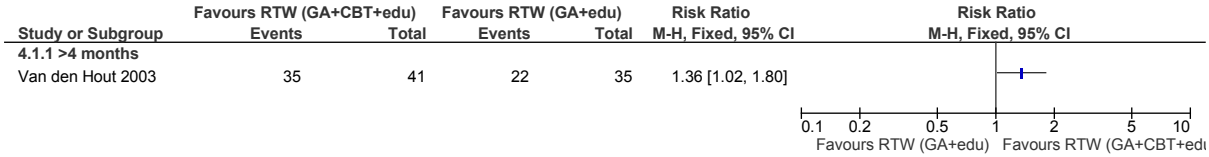
Figure 1106: Return to work (>4 months)



K.14.4 Mixed group and individually delivered return to work programme (graded activity, CBT and education) versus return to work programme (graded activity and education)

K.14.4.1 Low back pain without sciatica

Figure 1107: Return to work (>4 months)



K.15 Spinal injections

K.15.1 Image-guided facet joint injections

K.15.1.1 Steroid versus saline

Figure 1108: Pain Severity (VAS, 0-10) ≤4 months (Injections at facet joints L4-L5 and L5-SI)

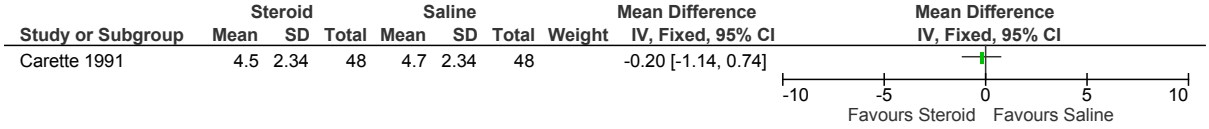


Figure 1109: Pain Severity (VAS, 0-10) >4 months (Injections at facet joints L4-L5 and L5-SI)

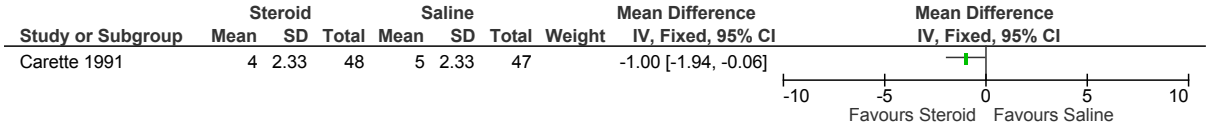


Figure 1110: Function (Mean Sickness Impact Profile(MSIP), 0-100) ≤4 months (Injections at facet joints L4-L5 and L5-SI)

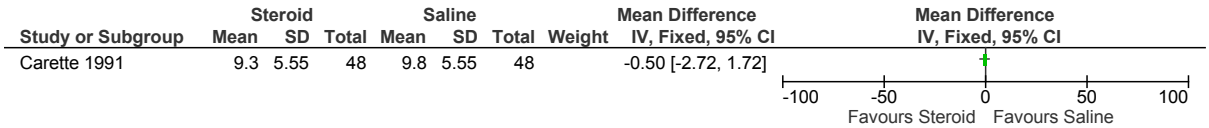
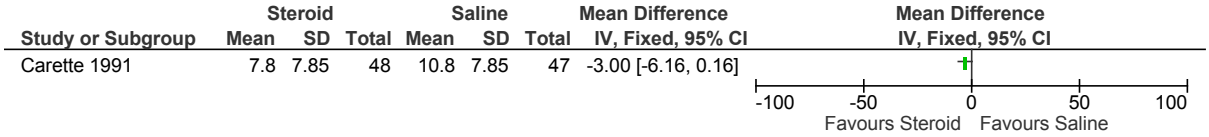


Figure 1111: Function (Mean Sickness Impact Profile(MSIP), 0-100) >4 months (Injections at facet joints L4-L5 and L5-SI)



K.15.1.2 Steroid versus hyaluronans

Figure 13: Pain Severity (VAS, 0-10) ≤4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)

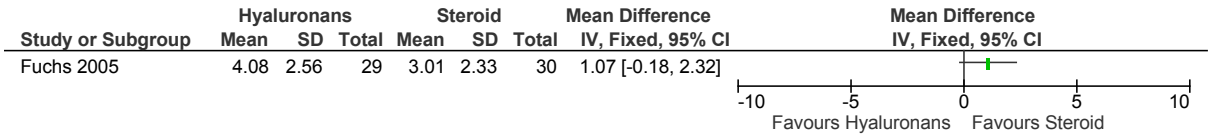


Figure14: Pain Severity (VAS, 0-10) >4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)

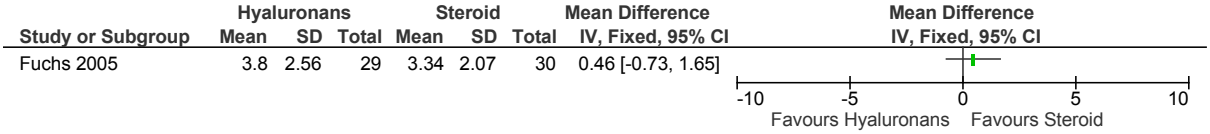
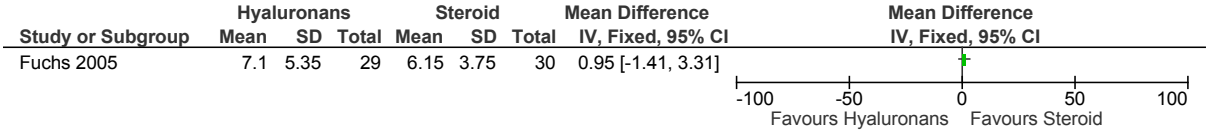


Figure 1112: Function (ODI, 0-100) ≤4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)



Note: Data taken from same study population

Figure 1113: Function (ODI,0-100) >4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)

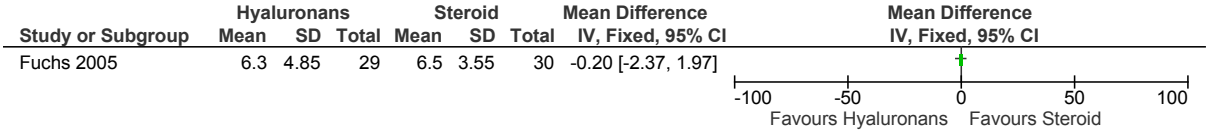


Figure 1114: Function (RMDQ,0-24) ≤4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)

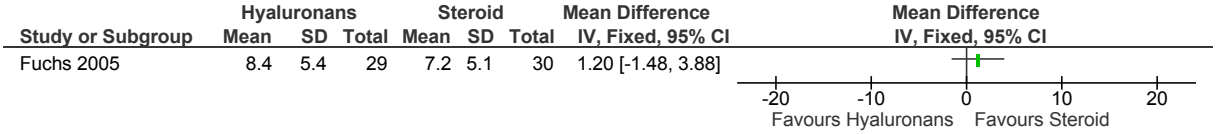


Figure 1115: Function (RMDQ, 0-24) >4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)

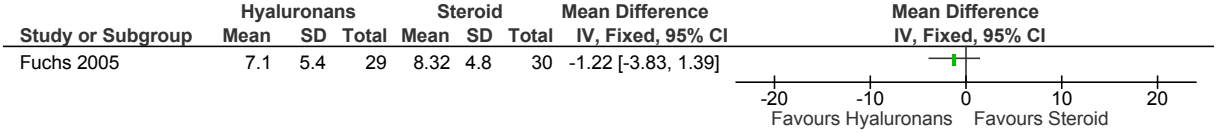
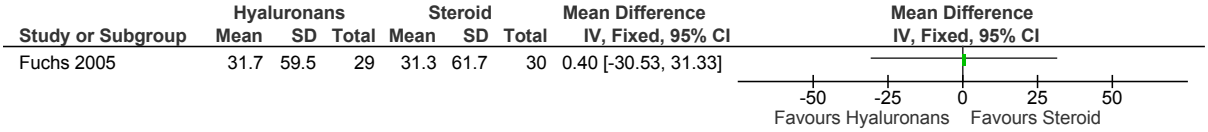
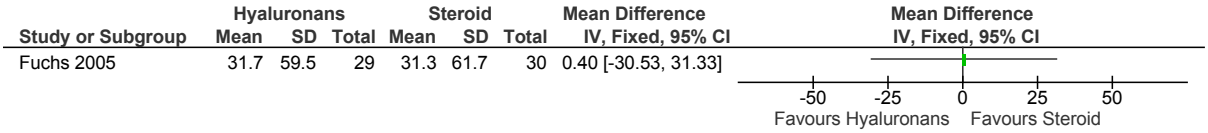


Figure 1116: Function (Low Back Outcome Score (LBOS), 0-75) ≤4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)



Note: High is poor outcome

Figure 1117: Function (Low Back Outcome Score (LBOS), 0-75) >4 months (Intra-articular injections at facet joints L4-L5,L5-L4 and L4-L3)



Note: High is poor outcome

K.15.1.3 Steroid plus biomechanical exercise versus Biomechanical exercise

Figure 1118: Pain Severity (VAS, 0-10) ≤4 months (Intra-articular injections at facet joints)

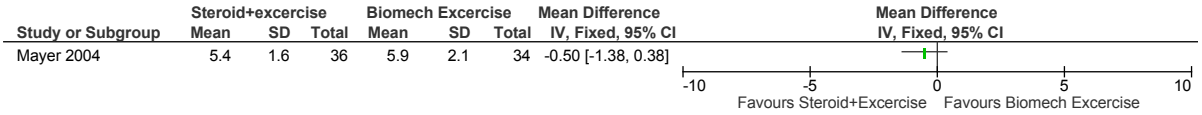


Figure 1119: Function (MVAS, 0-150) ≤4 months (Intra-articular injections at facet joints)

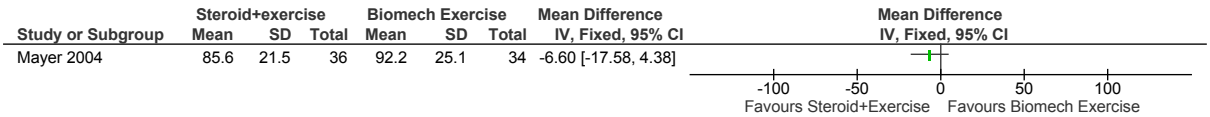


Figure 1120: Responder Criteria (pain improvement >50%) ≤4 months (Intra-articular injections at facet joints)

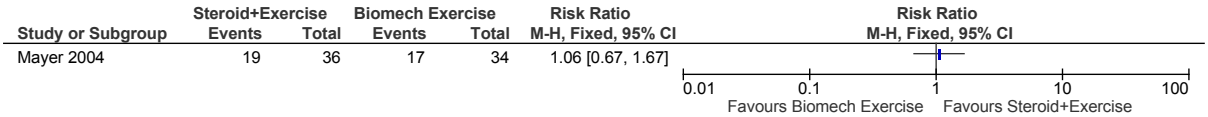
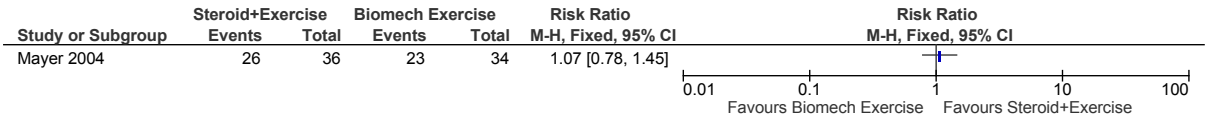


Figure 1121: Responder Criteria (disability >50%) ≤4 months (Intra-articular injections at facet joints)



K.15.1.4 Steroid plus anaesthetic versus Biomechanical Exercise (Cohort)

Figure 1122: Pain Severity (VAS, 0-10) ≤4 months (Injections at facet joints)

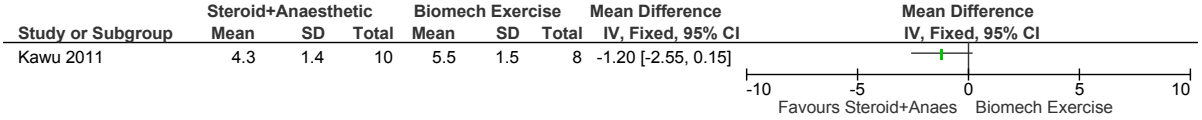


Figure 1123: Pain Severity (VAS, 0-10) >4 months (Injections at facet joints)

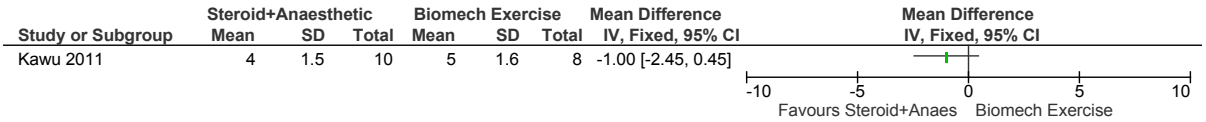


Figure 1124: Function (ODI, 0-100) ≤4 months (Injections at facet joints)

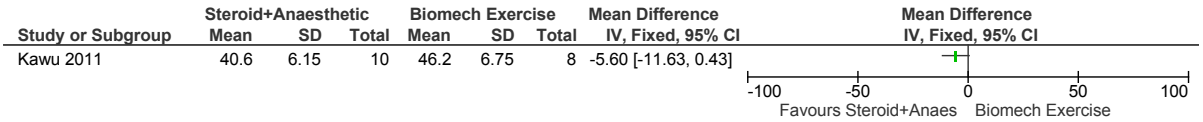
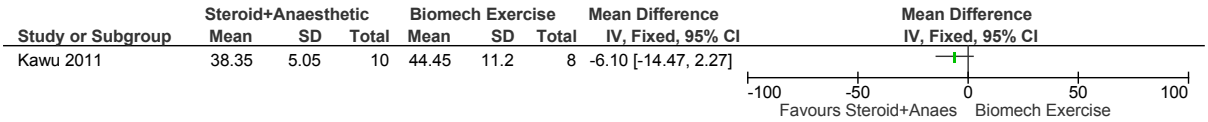


Figure 1125: Function (ODI, 0-100) >4 months (Injections at facet joints)



K.15.2 Other image guided injections

K.15.2.1 Steroid versus saline (intradiscal injections)

Figure 1126: Pain Severity (VAS, 0-10) ≤4 months

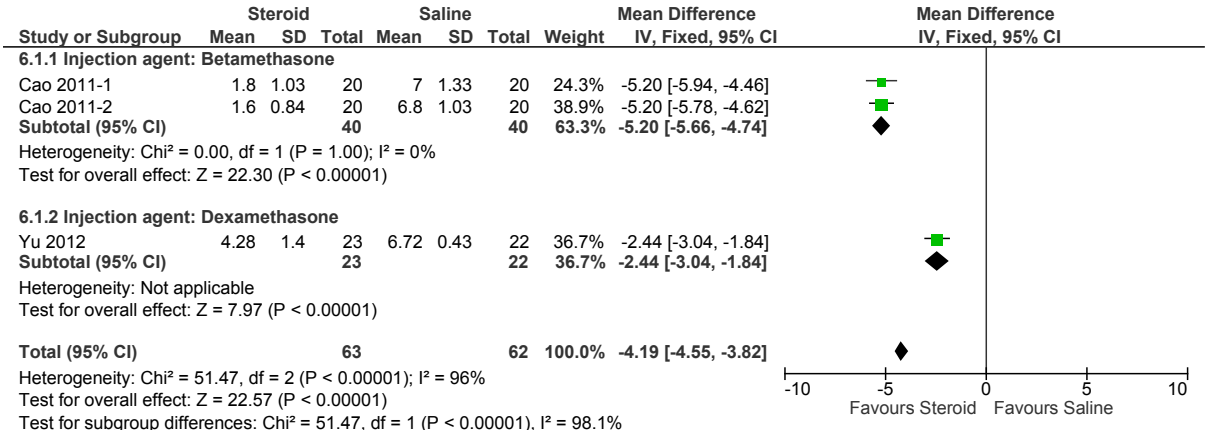
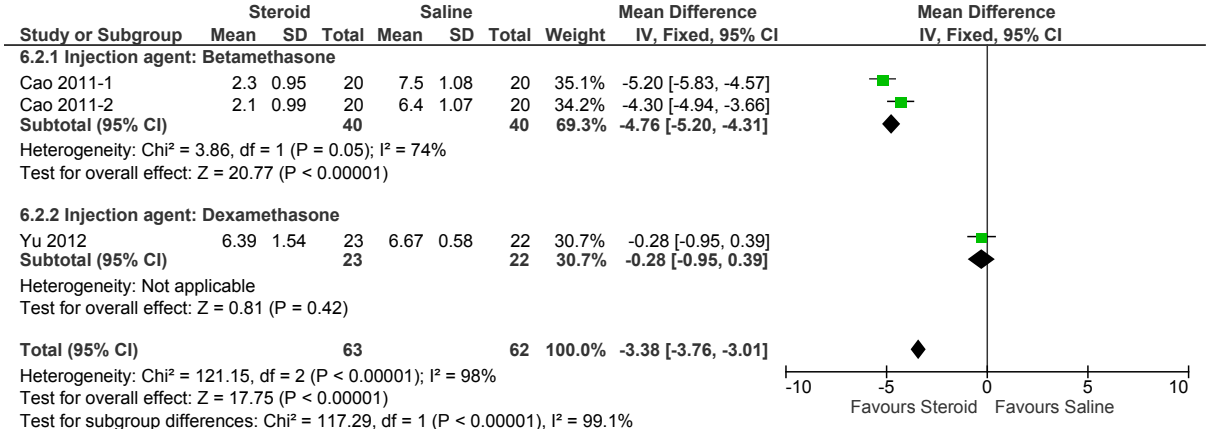
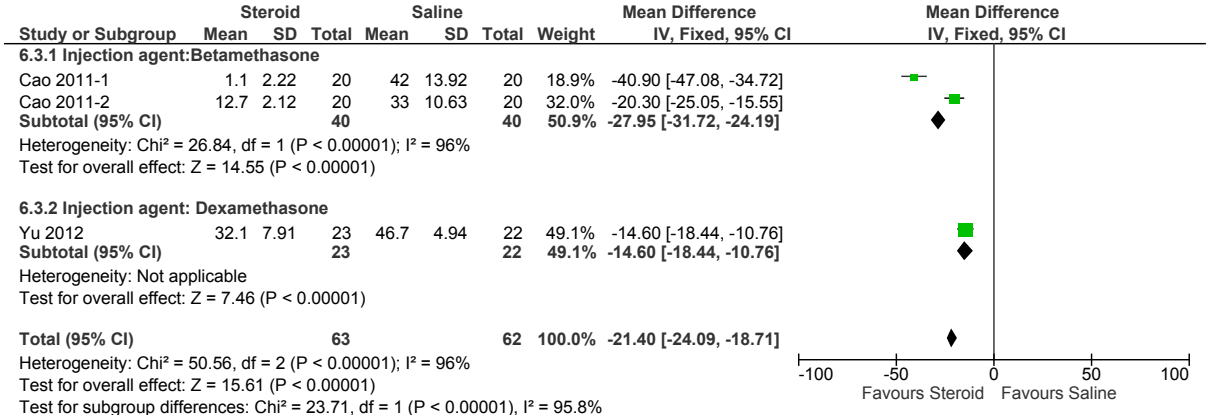


Figure 1127: Pain Severity (VAS, 0-10) >4 months (intradiscal injections)



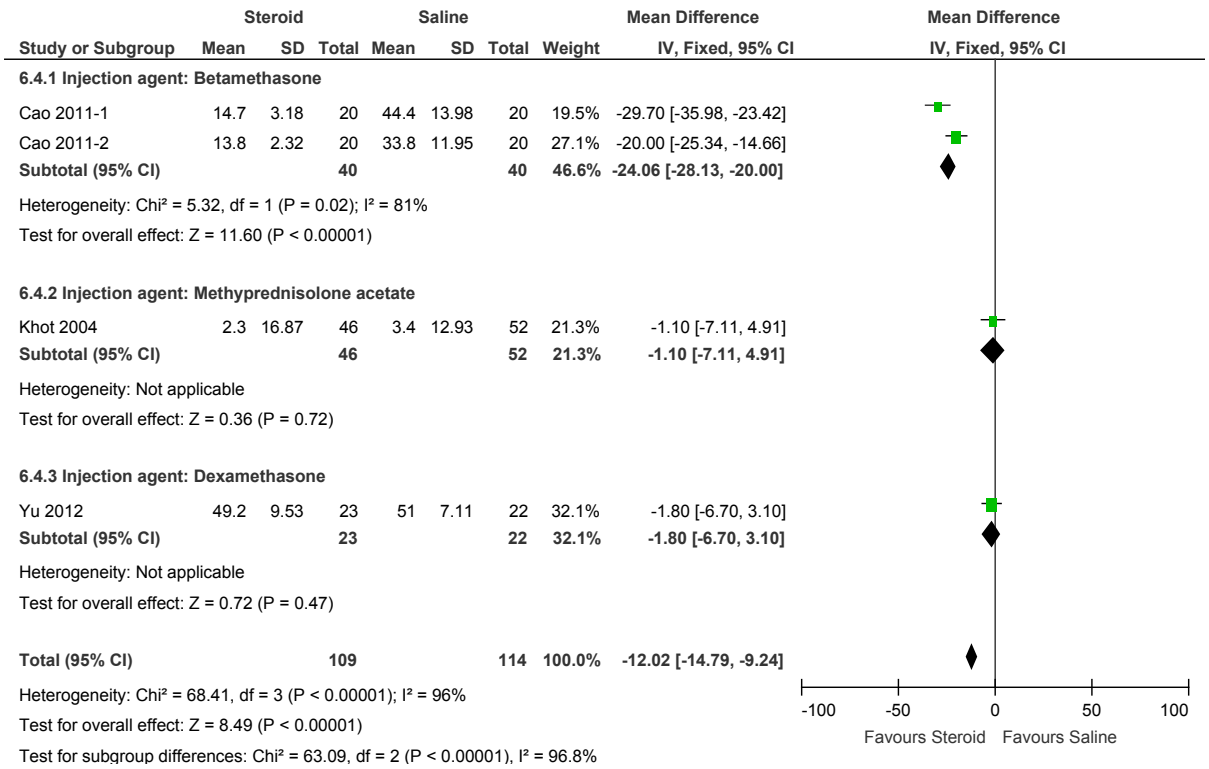
Note: The population in Cao 2011-1 included patients with end plate Modic Type 1 changes whereas the population of patients in Cao 2011-2 included patients with end plate Modic Type 2 changes (two distinct populations). The pre-specified sub-group analysis for heterogeneity was 'choice of agent' but the agent injected in both these studies was the same.

Figure 1128: Function (ODI, 0-100) ≤4 months (intradiscal injections)



Note: The population in Cao 2011-1 included patients with end plate Modic Type 1 changes whereas the population of patients in Cao 2011-2 included patients with end plate Modic Type 2 changes (two distinct populations). The pre-specified sub-group analysis for heterogeneity was 'choice of agent' but the agent injected in both these studies was the same.

Figure 1129: Function (ODI,0-100) >4 months (intradiscal injections)



Note: The population in Cao 2011-1 included patients with end plate Modic Type 1 changes whereas the population of patients in Cao 2011-2 included patients with end plate Modic Type 2 changes (two distinct populations). The pre-specified sub-group analysis for heterogeneity was 'choice of agent' but the agent injected in both these studies was the same.

K.15.2.2 Steroid plus anaesthetic versus anaesthetic (caudal, interlaminar and medial branch block)

Figure 1130: Pain Severity (NRS, 0-10) ≤4 months

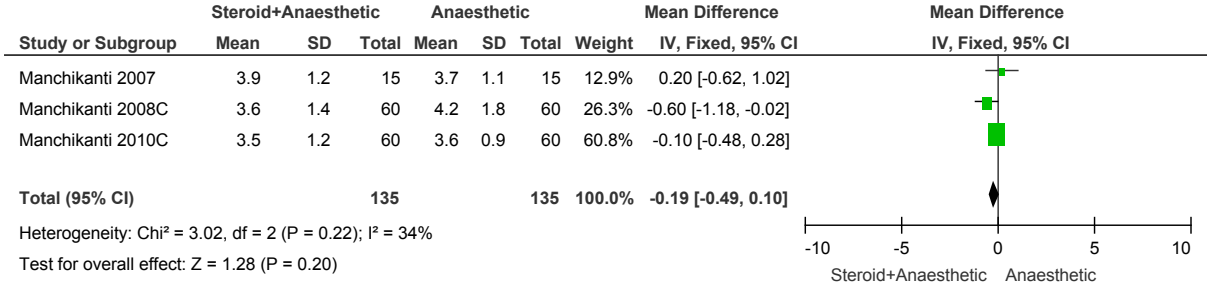


Figure 1131: Pain Severity (NRS, 0-10) >4 months

Study or Subgroup	Steroid+Anaesthetic Mean	SD	Total	Anaesthetic Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Manchikanti 2007	3.9	1.2	15	3.8	0.9	15	21.8%	0.10 [-0.66, 0.86]
Manchikanti 2008C	4	1.7	50	4.4	1.9	48	24.6%	-0.40 [-1.11, 0.31]
Manchikanti 2010C	3.6	1.4	60	3.9	1.3	60	53.7%	-0.30 [-0.78, 0.18]
Total (95% CI)			**125**			**123**	**100.0%**	**-0.24 [-0.59, 0.12]**

Heterogeneity: Chi² = 1.02, df = 2 (P = 0.60); I² = 0%
Test for overall effect: Z = 1.31 (P = 0.19)

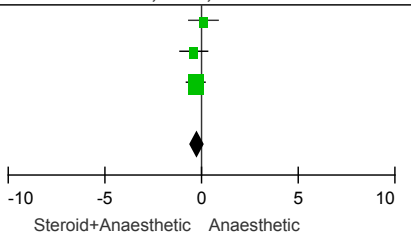


Figure 1132: Function (ODI, 0-100) ≤4 months

Study or Subgroup	Steroid+Anaesthetic Mean	SD	Total	Anaesthetic Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Manchikanti 2007	14.3	3.6	15	12.2	5.5	15	14.3%	2.10 [-1.23, 5.43]
Manchikanti 2008C	14.5	5.5	60	16.3	7.2	60	30.1%	-1.80 [-4.09, 0.49]
Manchikanti 2010C	14.6	5.1	60	14.9	4.3	60	55.6%	-0.30 [-1.99, 1.39]
Total (95% CI)			**135**			**135**	**100.0%**	**-0.41 [-1.67, 0.85]**

Heterogeneity: Chi² = 3.62, df = 2 (P = 0.16); I² = 45%
Test for overall effect: Z = 0.64 (P = 0.52)

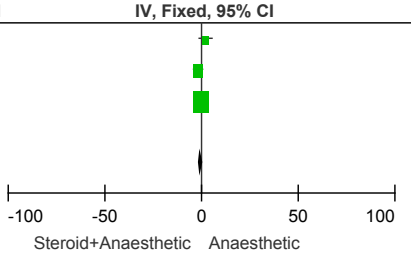


Figure 1133: Function (ODI,0-100) >4 month

Study or Subgroup	Steroid+Anaesthetic Mean	SD	Total	Anaesthetic Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Manchikanti 2007	13.9	4.2	15	11.3	5.1	15	17.5%	2.60 [-0.74, 5.94]
Manchikanti 2008C	14.5	6.05	60	15.4	6.46	48	34.3%	-0.90 [-3.28, 1.48]
Manchikanti 2010C	14.6	6.1	60	14.9	5.1	60	48.2%	-0.30 [-2.31, 1.71]
Total (95% CI)			**135**			**123**	**100.0%**	**0.00 [-1.40, 1.40]**

Heterogeneity: Chi² = 2.96, df = 2 (P = 0.23); I² = 32%
Test for overall effect: Z = 0.00 (P = 1.00)

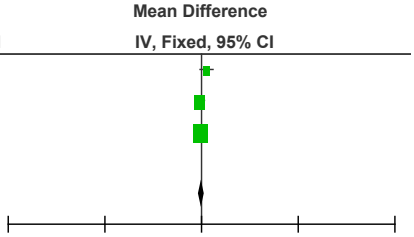


Figure 1134: Responder Criteria (pain Improvement >50%) ≤4 months

Study or Subgroup	Steroid+Anaesthetic Events	Total	Anaesthetic Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Manchikanti 2007	11	15	12	15	18.2%	0.92 [0.62, 1.36]
Manchikanti 2010C	52	60	54	60	81.8%	0.96 [0.85, 1.10]
Total (95% CI)		**75**		**75**	**100.0%**	**0.95 [0.84, 1.09]**
Total events	63		66			

Heterogeneity: Chi² = 0.06, df = 1 (P = 0.81); I² = 0%
Test for overall effect: Z = 0.71 (P = 0.48)

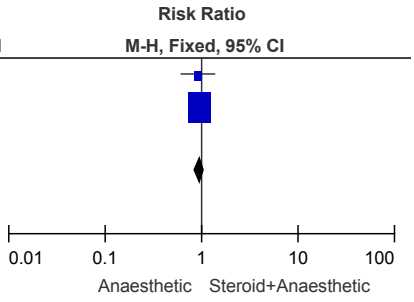
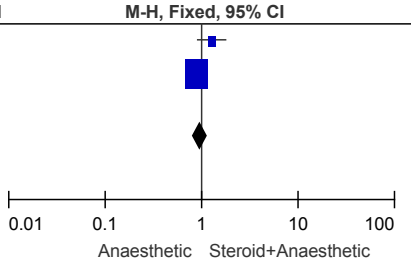


Figure 1135: Responder Criteria (pain Improvement >50%) >4 months

Study or Subgroup	Steroid+Anaesthetic Events	Total	Anaesthetic Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Manchikanti 2007	14	15	11	15	19.0%	1.27 [0.91, 1.78]
Manchikanti 2010C	42	60	47	60	81.0%	0.89 [0.72, 1.11]
Total (95% CI)		**75**		**75**	**100.0%**	**0.97 [0.81, 1.16]**
Total events	56		58			

Heterogeneity: Chi² = 3.14, df = 1 (P = 0.08); I² = 68%

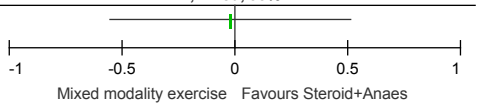
Test for overall effect: Z = 0.38 (P = 0.70)



K.15.2.3 Steroid plus anaesthetic versus mixed modality exercise

Figure 1136: Quality of life (EQ-5D,0-1) (Perifacet injections at L4/5 and L4/SI)

Study or Subgroup	Mixed modality exercise Mean	SD	Total	Steroid+Anaesthetic Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Kader 2012	0.3	0.82	17	0.32	0.81	19	-0.02 [-0.55, 0.51]



Note: High is good outocome

Figure 1137: Pain Severity (McGill,0-78) ≤4 months (Perifacet injections at L4/5 and L4/SI)

Study or Subgroup	Mixed modality exercise Mean	SD	Total	Steroid+Anaesthetic Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Kader 2012	23	15.1	17	15.4	10.6	19	7.60 [-1.02, 16.22]

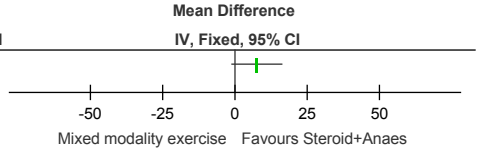


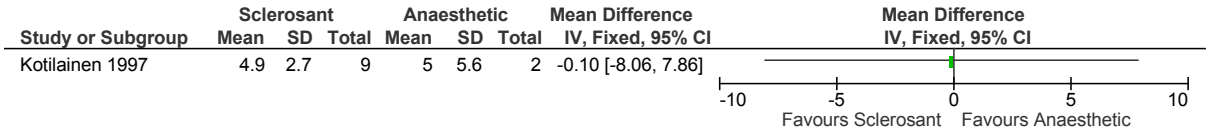
Figure 1138: Function (ODI, 0-100) ≤4 months (Perifacet injections at L4/5 and L4/SI)

Study or Subgroup	Mixed modality exercise Mean	SD	Total	Steroid+Anaesthetic Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Kader 2012	27.4	12.1	17	23.9	14.6	19	3.50 [-5.23, 12.23]

K.15.3 Prolotherapy injections

K.15.3.1 Sclerosant versus anaesthetic

Figure 1139: Pain Severity (VAS, 0-10) ≤4 months (Intradiscal injection)



K.15.3.2 Sclerosants plus anaesthetic versus saline

Figure 1140: Pain Severity (VAS, 0-7.5) ≤4 months (Injections at various sites)

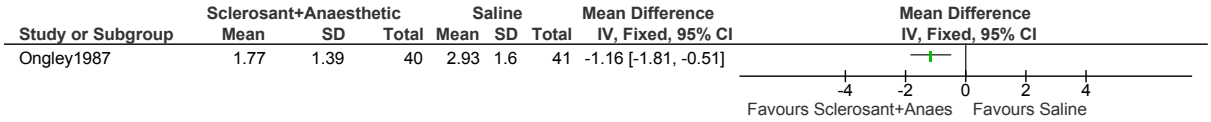


Figure 1141: Pain Severity (VAS, 0-7.5) >4 months (Injections at various sites)

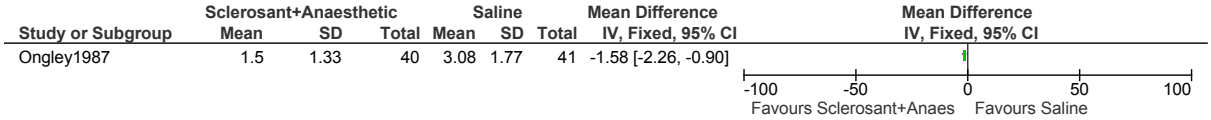


Figure 1142: Function (RMDQ, 0-33) ≤4 months (Injections at various sites)

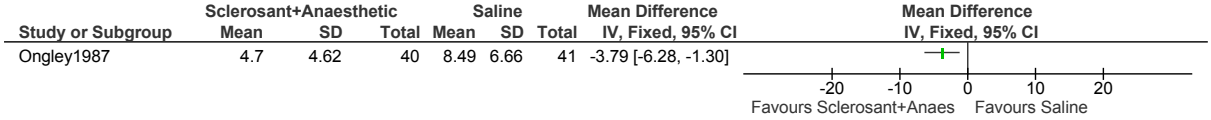
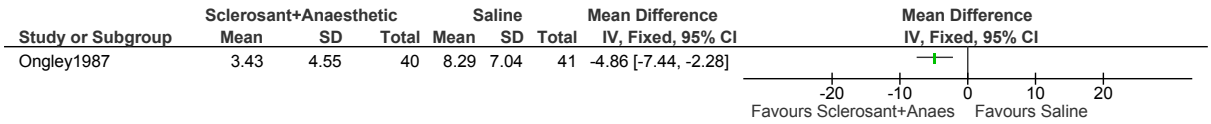


Figure 1143: Function (RMDQ, 0-33) >4 months (Injections at various sites)



K.15.3.3 Sclerosants plus anaesthetic versus anaesthetic

Figure 1144: Pain Severity (VAS, 0-8) >4 months (Injections at various sites)

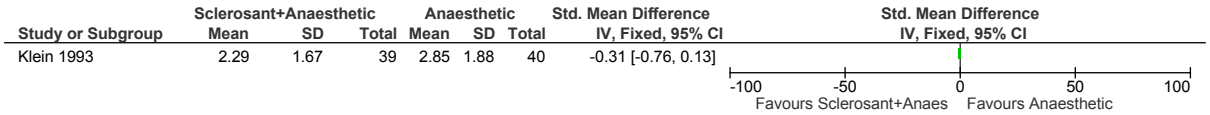
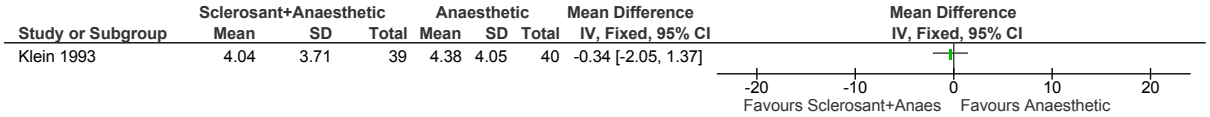


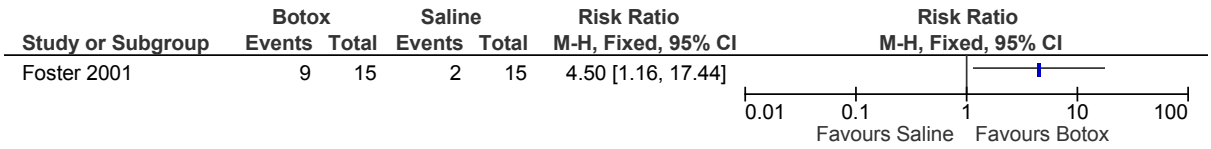
Figure 1145: Function (RMDQ,0-24) >4 months (Injections at various sites)



K.15.4 Other non-image-guided injections

K.15.4.1 Botulinum toxin versus saline

Figure 1146: Responder Criteria (pain Improvement >50%) ≤4 months (Injections at L1-L5 or L2-SI)



K.15.4.2 Steroid plus anaesthetic versus steroid

Figure 1147: Pain Severity (VAS, 0-10 (First Block) ≤4 month (Epidural Blocks)

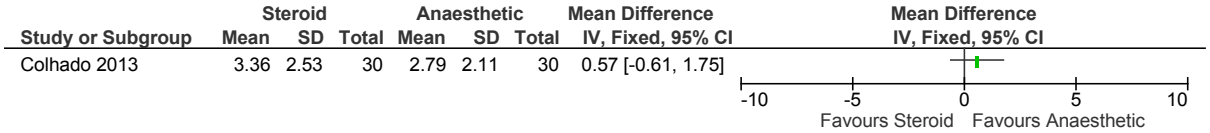


Figure 1148: Pain Severity (VAS, 0-10) (Second Block) ≤4 month (Epidural Blocks)

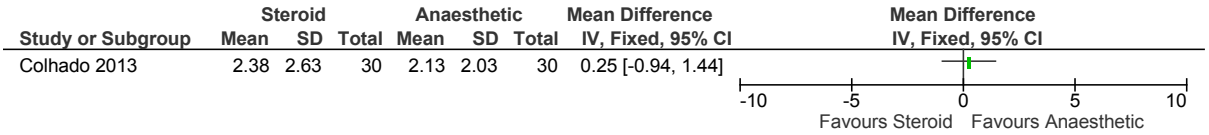


Figure 1149: Pain Severity (NRS, 0-10) (First Block) ≤4 month (Epidural Blocks)

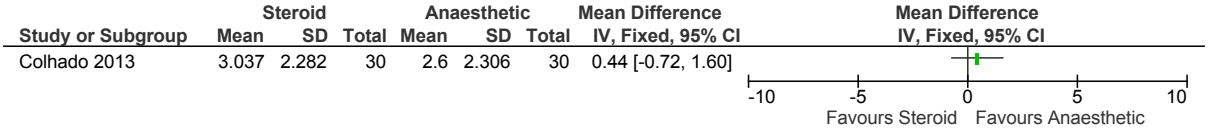
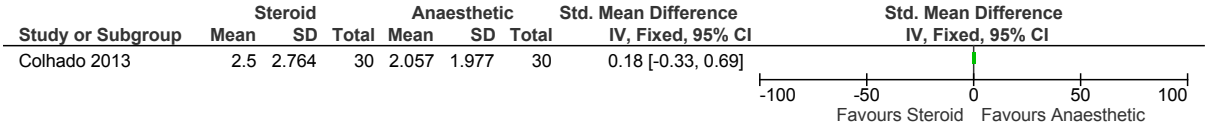


Figure 1150: Pain Severity (NRS, 0-10) (Second Block) ≤4 month (Epidural Blocks)



K.16 Radiofrequency denervation

K.16.1 Radiofrequency denervation versus placebo/sham

Figure 1151: Pain (VAS) 0-10

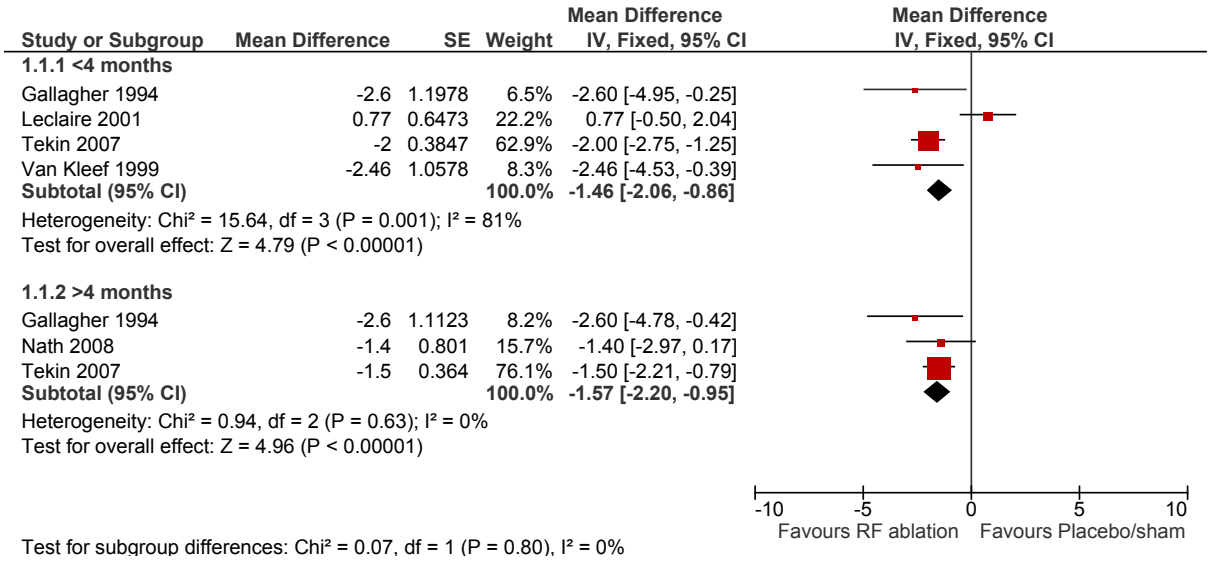


Figure 1152: Pain (McGill)

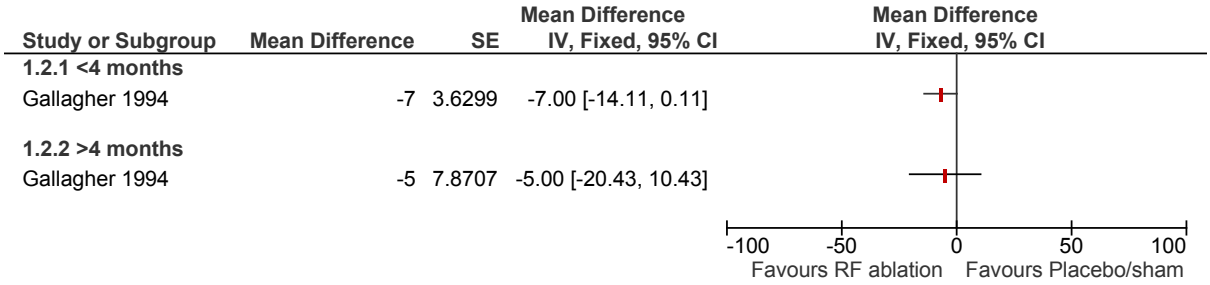


Figure 1153: Function (ODI) change and final values

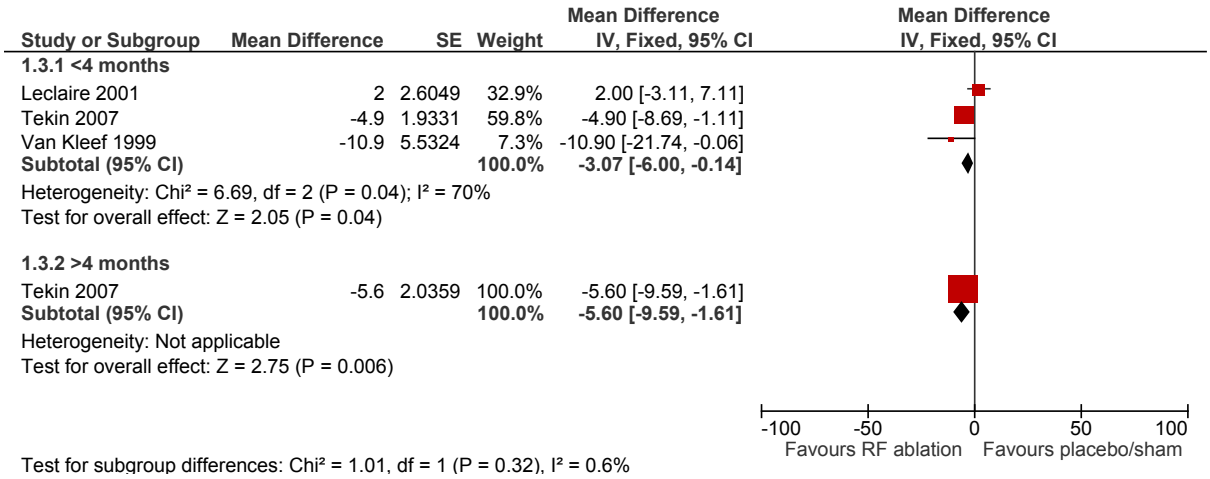


Figure 1154: Function (RMDQ) 0-100 change and final values study says positive value = improvement

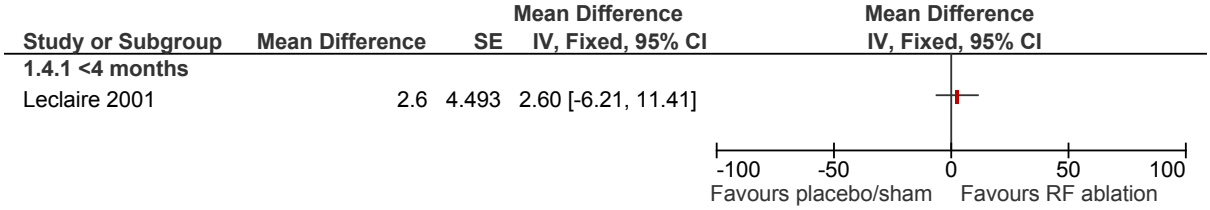


Figure 1155: Quality of life (SF-36) ≤ 4 months

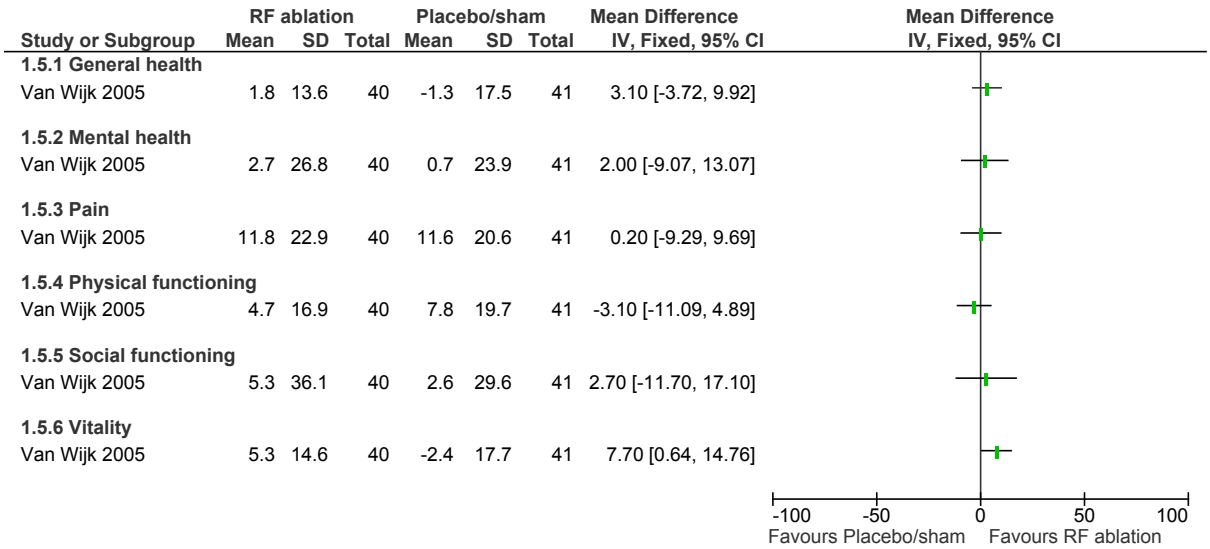


Figure 8: Adverse events: treatment related pain (moderate or severe) – no. of patients

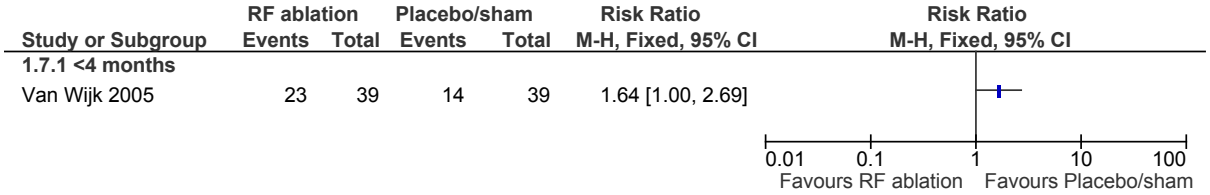


Figure 9: Adverse events: change of sensibility (irritating or evident dysaesthesia or allodynia) – no. of patients

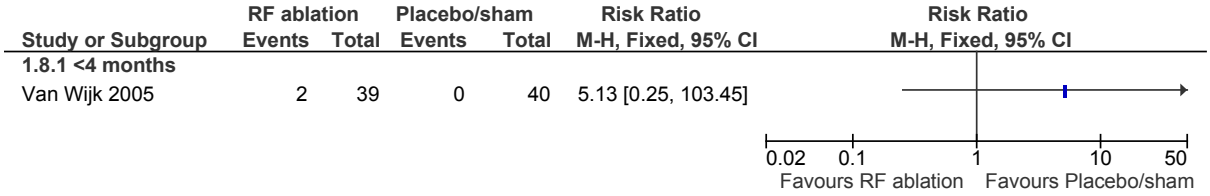


Figure 10: Adverse events: loss of motor function (irritating or evident motor loss) – no. of patients

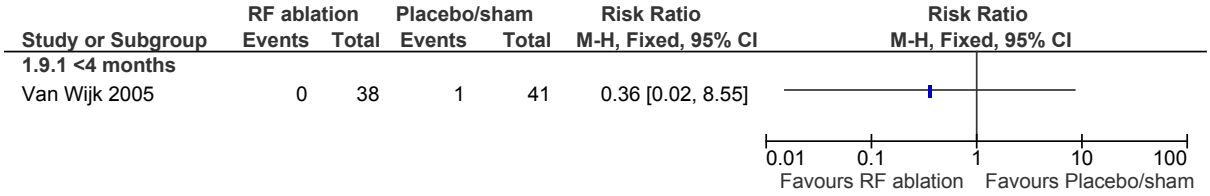


Figure 11: Healthcare utilisation (analgesics) no. of tablets/4 days

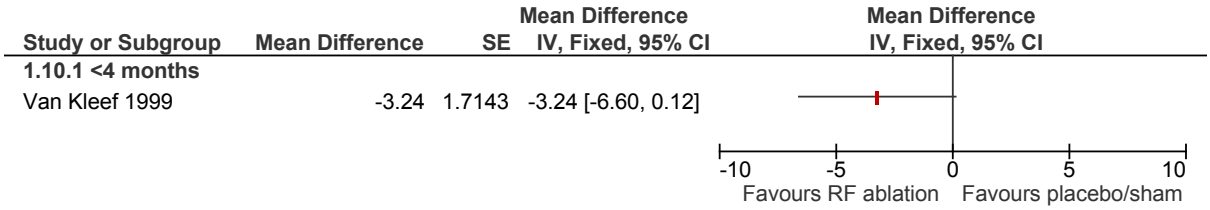


Figure 1156: HC utilisation: analgesic use: global perception of improvement 0-6

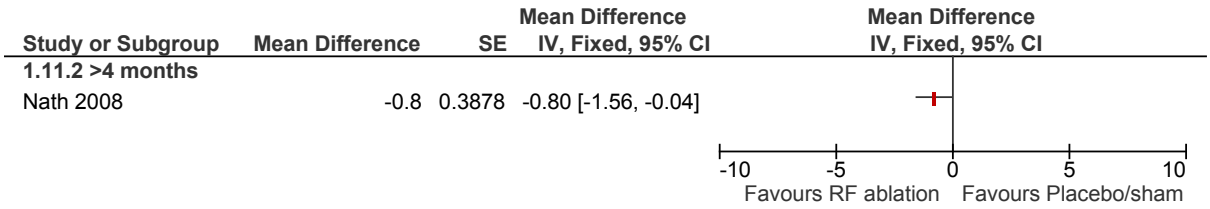


Figure 1157: Responder criteria (% of patients with more than 50% pain reduction – global perceived effect)

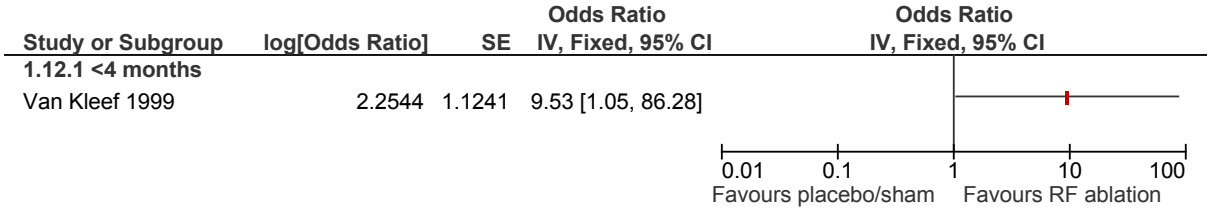


Figure 1158: Responder criteria (no. of patients with more than 50% back pain or pain reduction – global perceived effect)

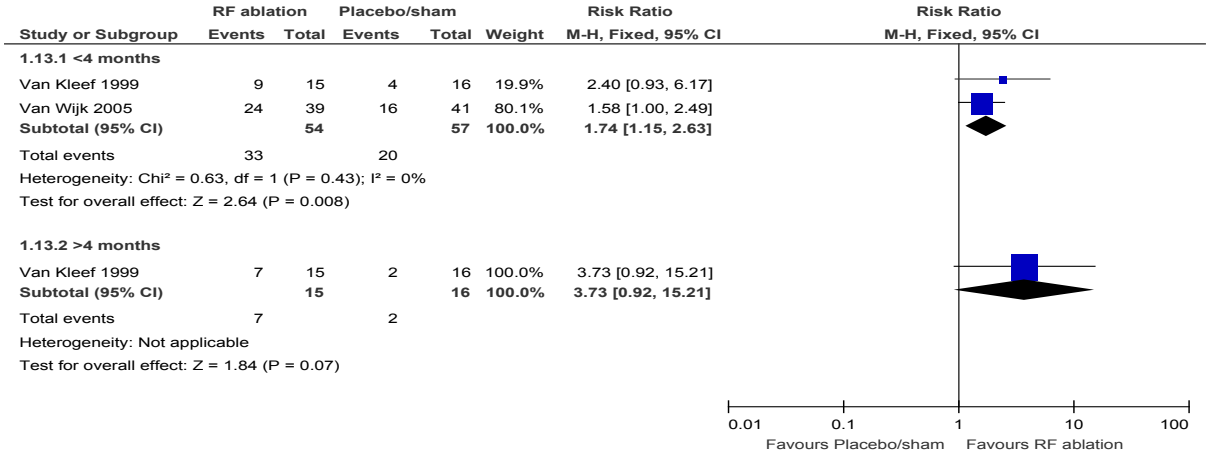
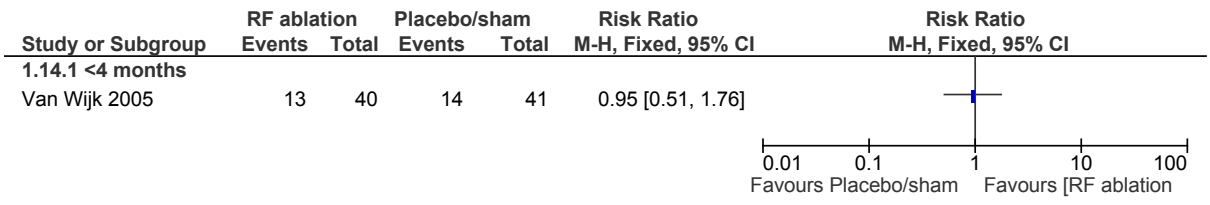


Figure 1159: Responder criteria (no. of patients with more than 50% back pain reduction – VAS)



K.16.2 Radiofrequency denervation versus medial branch block

Figure 1160: Pain (VNS) 0-10

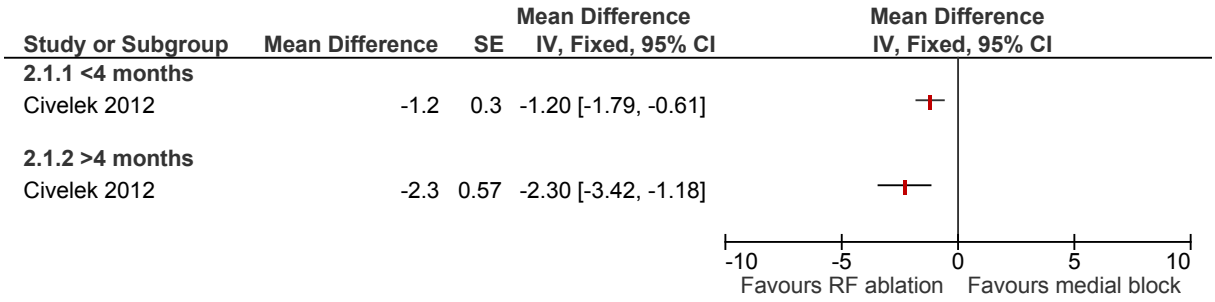
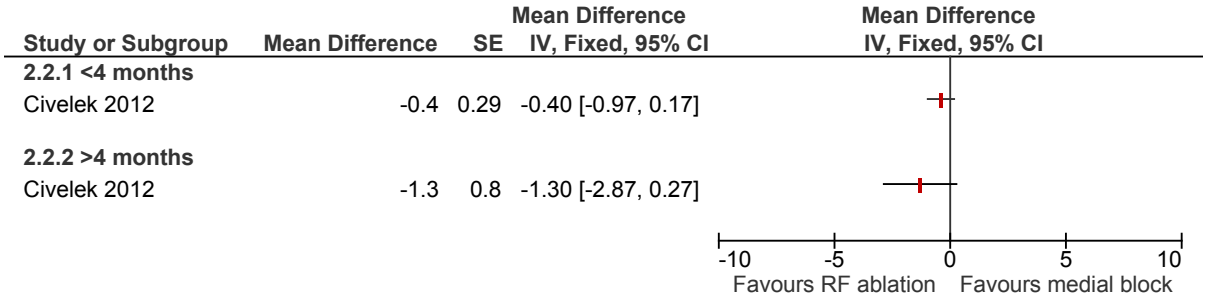


Figure 1161: Quality of life (EQ-5D) 5-15 scale (paper reports low score is better)



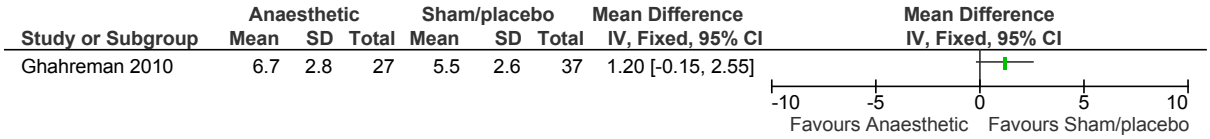
K.17 Epidural injections for sciatica

K.17.1 Image-guided: Steroid versus placebo/sham

No useable data found

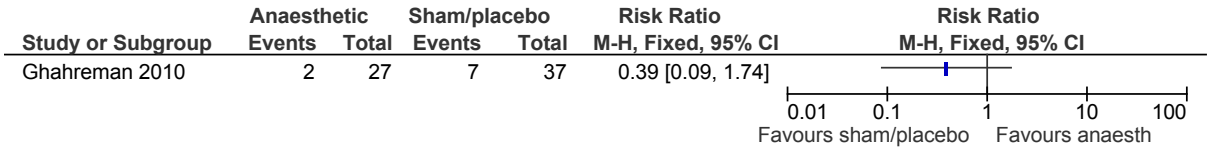
K.17.2 Image-guided: Anaesthetic versus placebo/sham (≥70% disc prolapse)

Figure 1162: Leg pain (0-10) at ≤4 months



Follow-up: 1 month

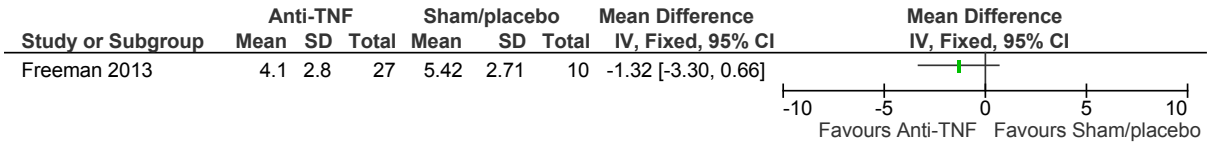
Figure 1163: Responder criteria (>50% reduction in pain) at ≤4 months



Follow-up: 1 month

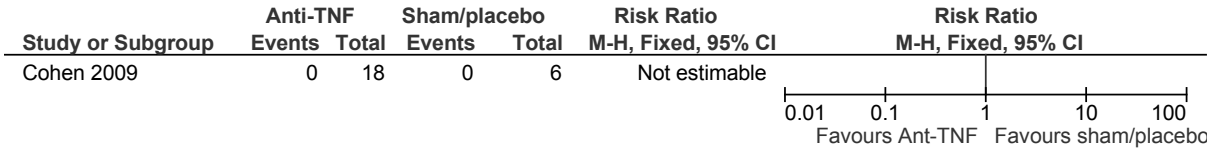
K.17.3 Image-guided: Anti-TNF versus placebo/sham (≥70% disc prolapse)

Figure 1164: Leg pain (mean daily worst pain, 0-10) at ≤4 months



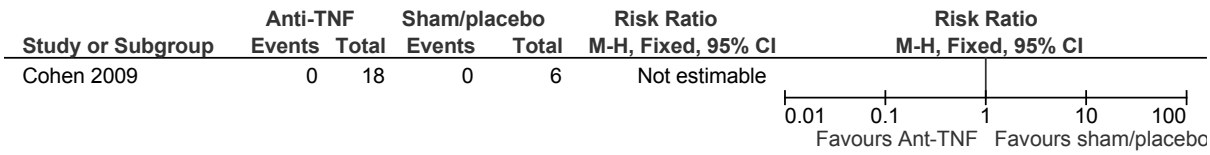
Follow-up: 5 weeks

Figure 1165: Adverse events at ≤4 months



Follow-up: 3 months

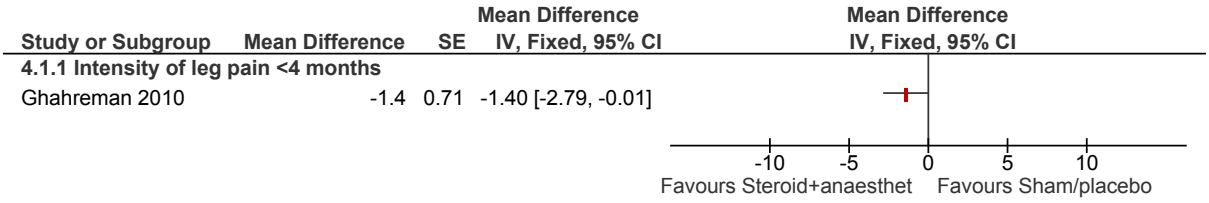
Figure 1166: Adverse events at > 4 months



Follow-up: 6 months

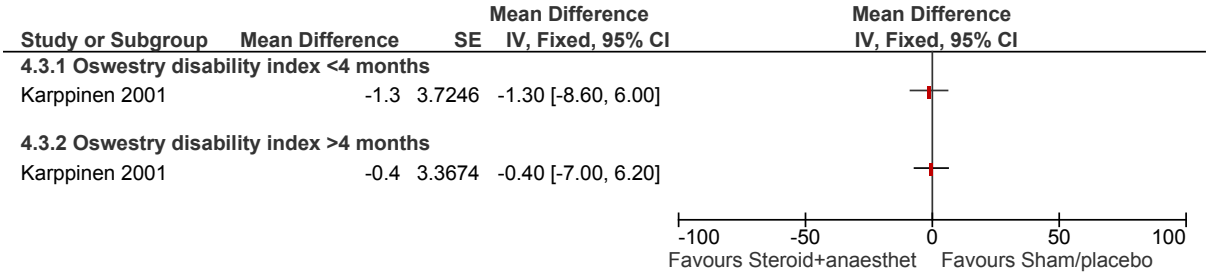
K.17.4 Image-guided: Steroid + anaesthetic versus placebo/sham (≥70% disc prolapse)

Figure 1167: Leg pain (0-10); final score at ≤4 months



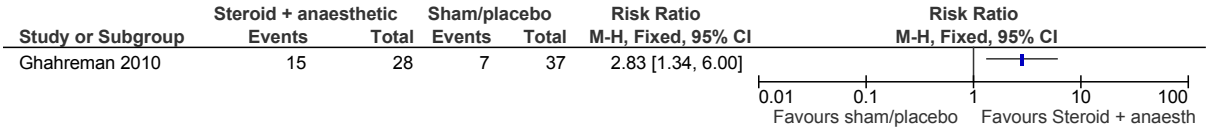
Follow-up: Ghahreman = 1 month

Figure 1168: Function: ODI at ≤4 months and >4 months



Follow-up: Karppinen = 3 months and 12 months

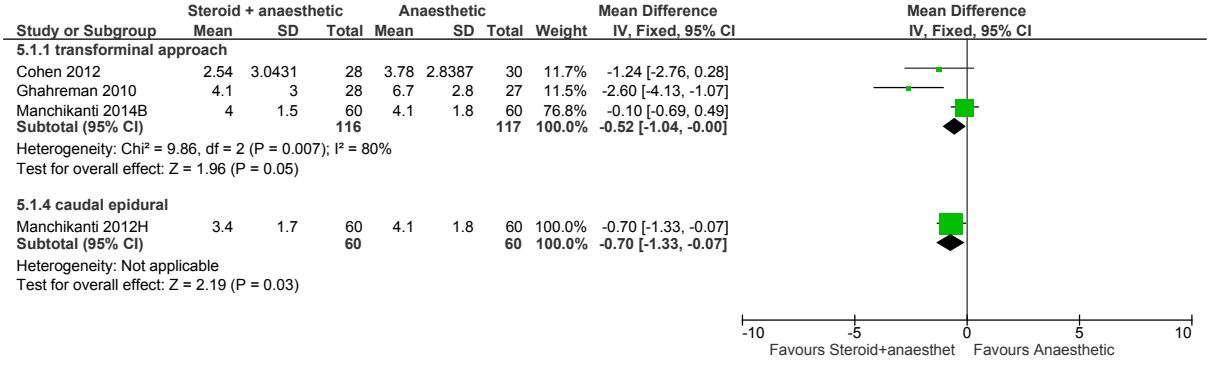
Figure 1169: Responder criteria (>50% reduction in pain) at ≤4 months



Follow-up: 1 month

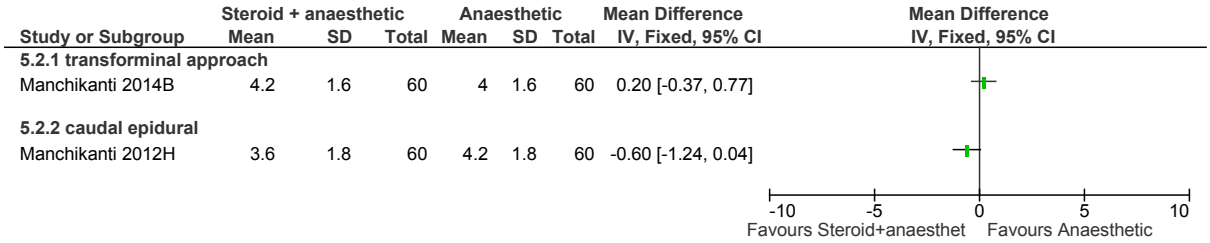
K.17.5 Image-guided: Steroid + anaesthetic versus anaesthetic (>70% disc prolapse)

Figure 1170: Pain (0-10) change and final scores at ≤ 4 months



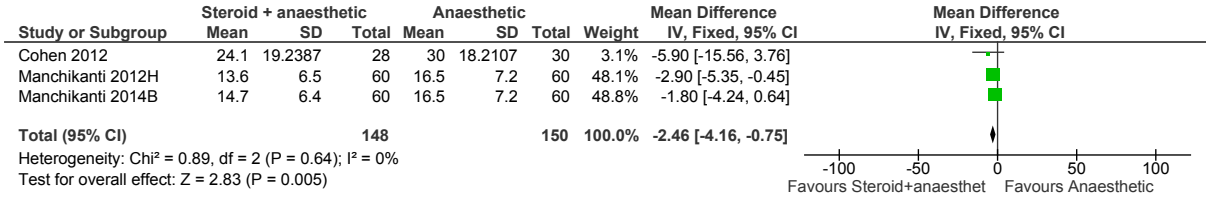
Follow-up: Cohen = 1 month; Ghahreman = 1 month; Manchikanti 2012H and 2014B = 3 months

Figure 1171: Pain (0-10) change and final scores at > 4 months



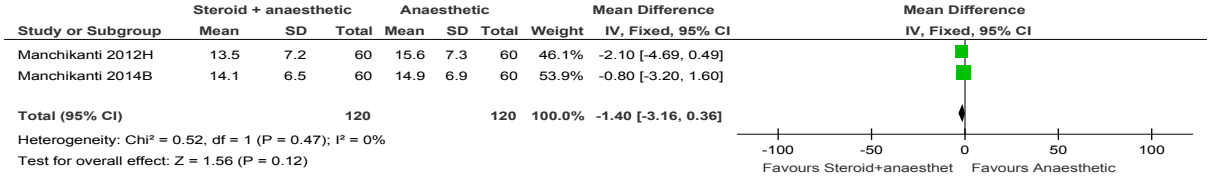
Follow-up: Manchikanti 2012H and 2014B = 2 years

Figure 1172: Function: ODQ (change and final score, 0-100) at ≤4 months



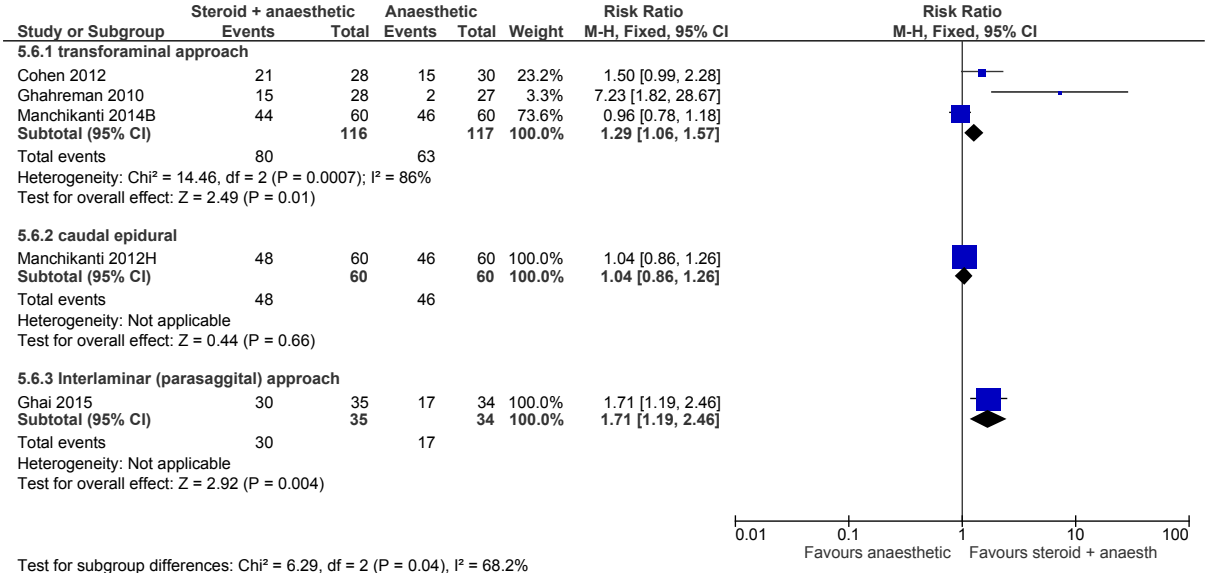
Follow-up: Cohen = 1 month; Manchikanti 2012H and 2014B = 3 months

Figure 1173: Function: ODQ (final score, 0-100) at >4 months



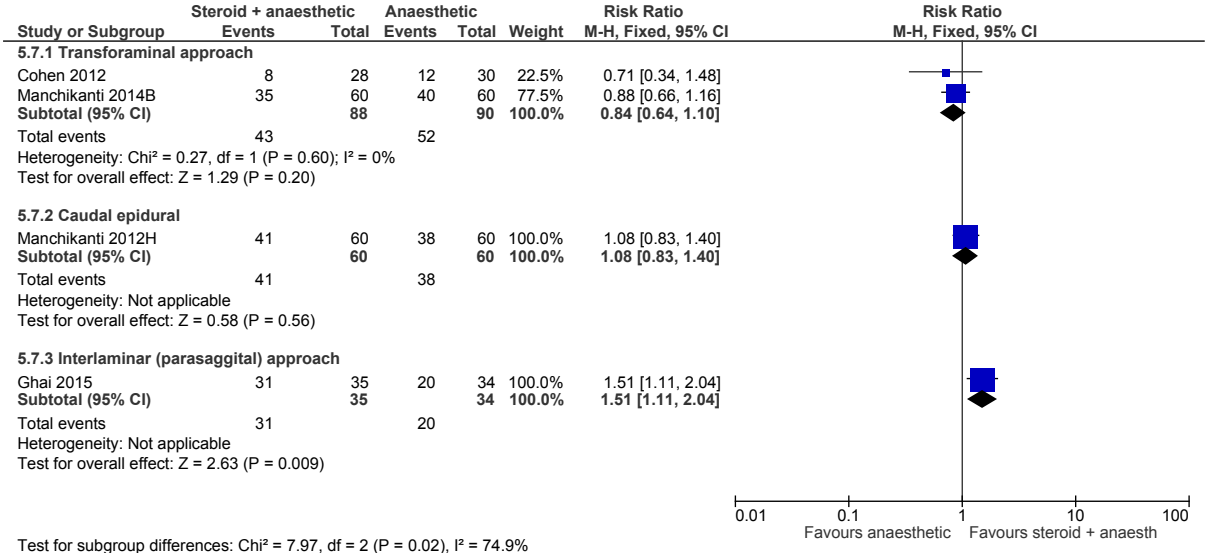
Follow-up: Manchikanti 2008, 2012H and 2014B = 2 years

Figure 1174: Responder criteria (>50% reduction in pain) at ≤4 months



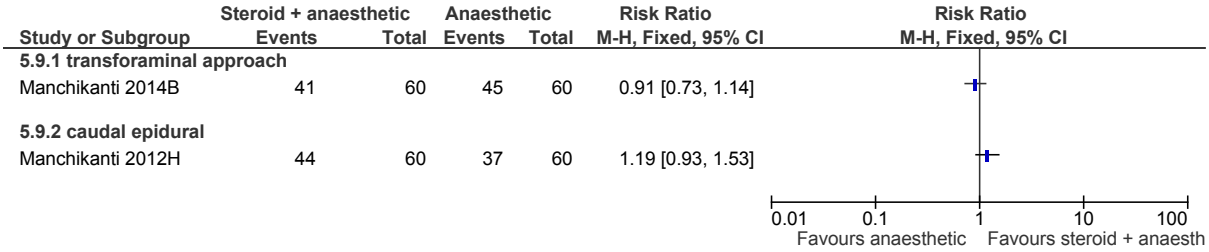
Follow-up: Cohen = 1 month; Ghahreman = 1 month; Ghai, Manchikanti 2012H and 2014B = 3 months

Figure 1175: Responder criteria (>50% reduction in pain) at >4 months



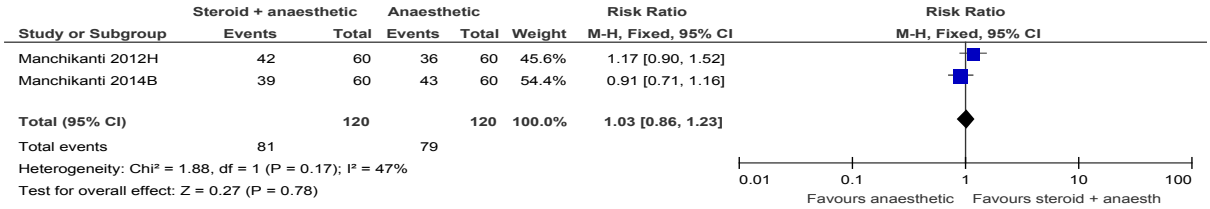
Follow-up: Cohen = 6 months; Ghai = 1 year; Manchikanti 2012H and 2014B = 2 years

Figure 1176: Responder criteria (>50% reduction in ODI) at ≤4 months



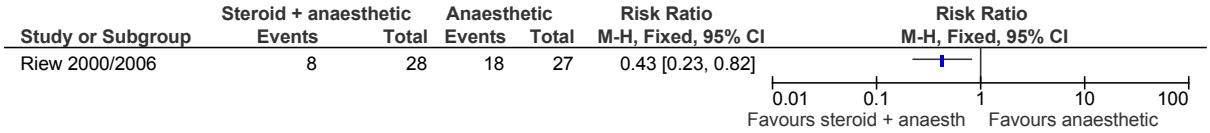
Follow-up: Manchikanti 2012H and 2014B = 3 months

Figure 1177: Responder criteria (>50% reduction in ODI) at >4 months



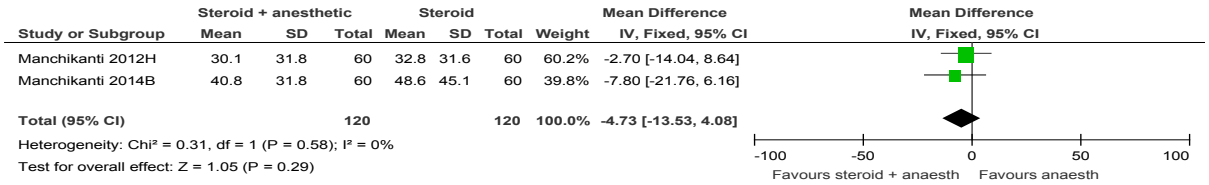
Follow-up: Manchikanti 2012H and 2014B = 2 years

Figure 1178: HC use: surgery at >4 months



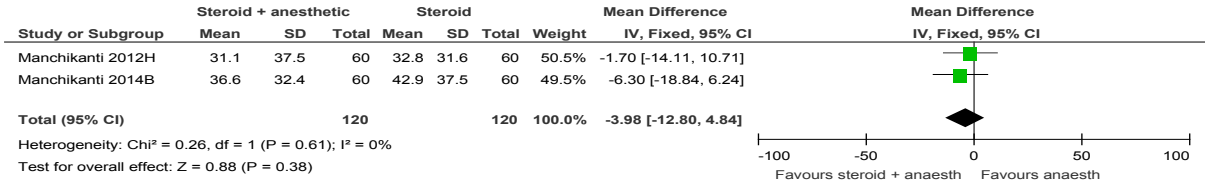
Follow-up: Riew = 23 months

Figure 1179: HC use: opioid intake, mg dose in last 12 months ≤4 months



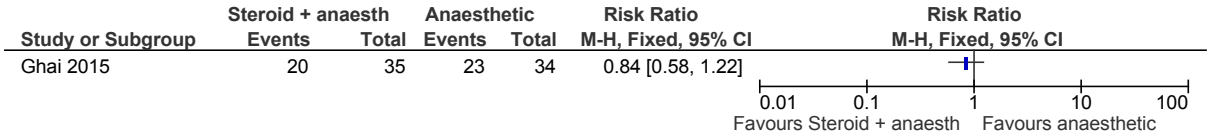
Follow-up: Manchikanti 2012H and 2014B = 3 months

Figure 1180: HC use: opioid intake, mg dose in last 12 months >4 months



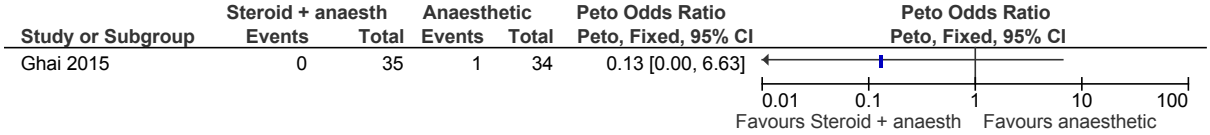
Follow-up: Manchikanti 2012H and 2014B = 2 years

Figure 1181: HC use: no. of patients having additional injections >4 months



Follow-up: Ghai = 1 year

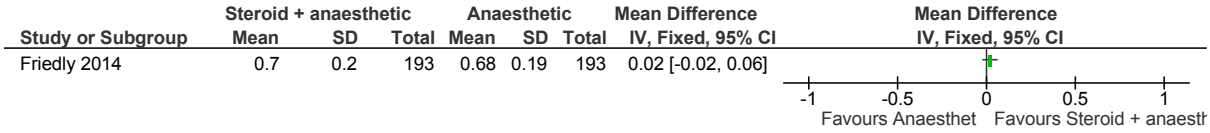
Figure 1182: Adverse events: complications >4 months – 1 year



Follow-up: Ghai = 1 year

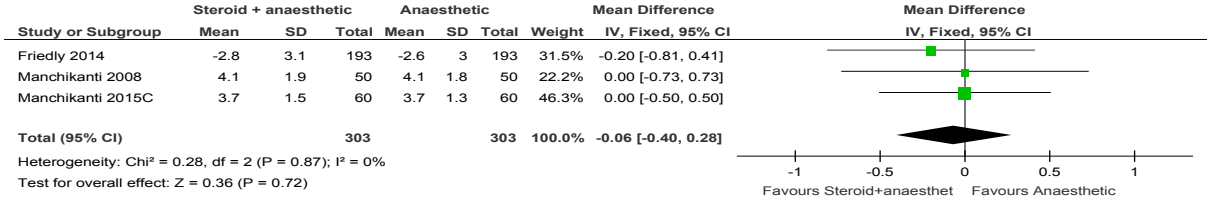
K.17.6 Image-guided: Steroid + anaesthetic versus anaesthetic (non disc lesion)

Figure 1183: Quality of life (EQ-5D) at ≤4 months



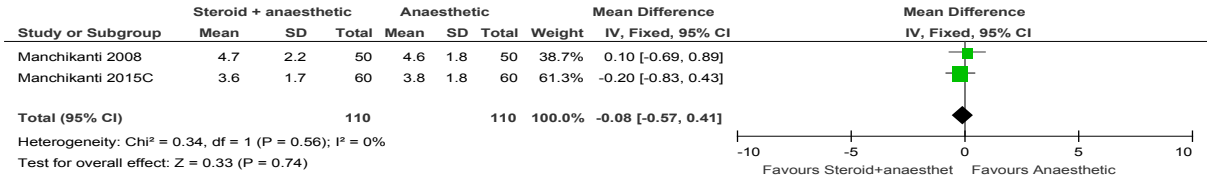
Follow-up: Friedly = 6 weeks

Figure 1184: Pain (0-10) change and final scores at ≤ 4 months



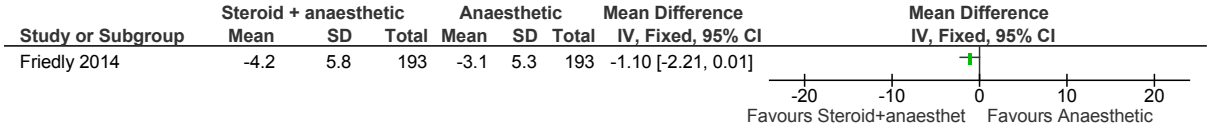
Follow-up: Friedly = 6 weeks, Manchikanti 2008and 2015C = 3 months

Figure 1185: Pain (0-10) change and final scores at > 4 months



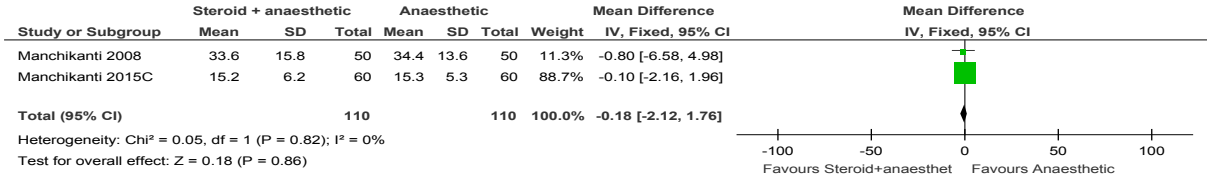
Follow-up: Manchikanti 2008 and 2015C = 2 years

Figure 1186: Function: RMDQ (change score, 0-24 scale) at ≤4 months



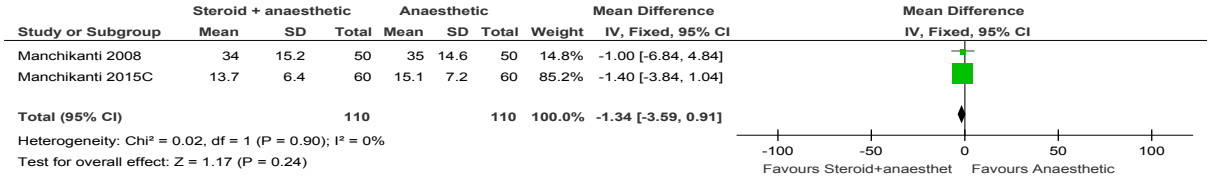
Follow-up: Friedly = 6 weeks

Figure 1187: Function: ODQ (change and final score, 0-100) at ≤4 months



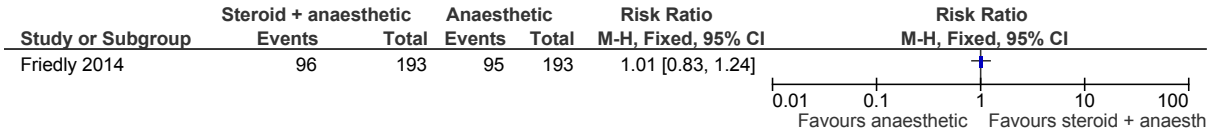
Follow-up: Manchikanti 2008and 2015C = 3 months

Figure 1188: Function: ODQ (final score, 0-100) at >4 months



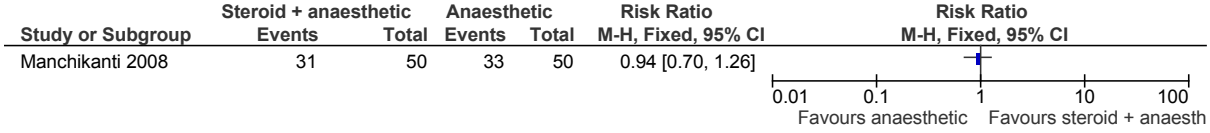
Follow-up: Manchikanti 2008 and 2015C = 2 years

Figure 1189: Responder criteria (>30% reduction in pain) at ≤4 months



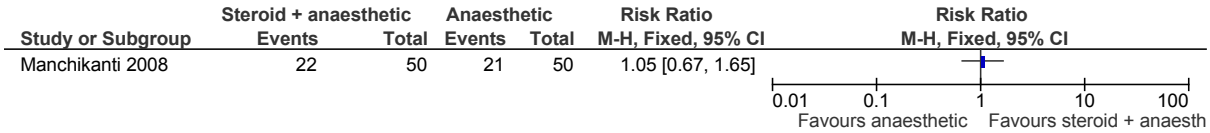
Follow-up: Friedly = 6 weeks

Figure 1190: Responder criteria (>50% reduction in pain) at ≤4 months



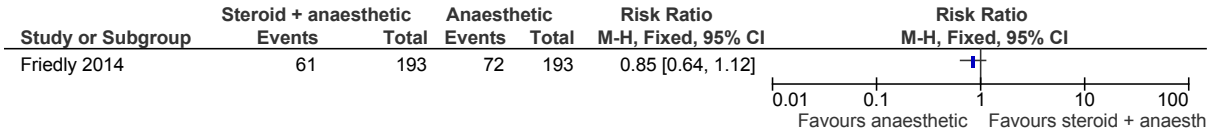
Follow-up: Manchikanti 2008 = 3 months

Figure 1191: Responder criteria (>50% reduction in pain) at >4 months – 1 year



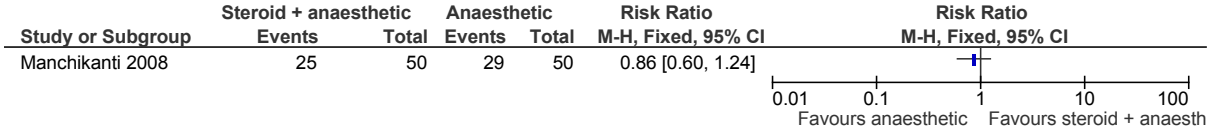
Follow-up: Manchikanti 2008 = 2 years

Figure 1192: Responder criteria (>30% reduction in RMDQ) at ≤4 months



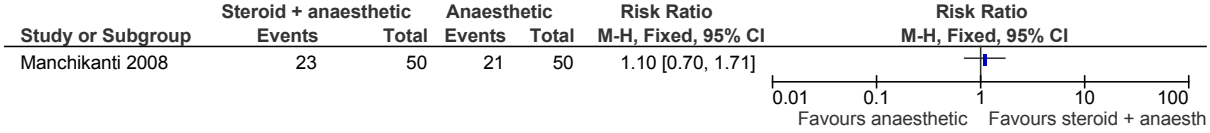
Follow-up: Friedly = 6 weeks

Figure 1193: Responder criteria (>50% reduction in ODI) at ≤4 months



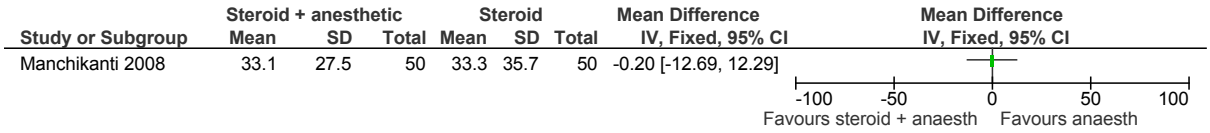
Follow-up: Manchikanti 2008 = 3 months

Figure 1194: Responder criteria (>50% reduction in ODI) at >4 months – 1 year



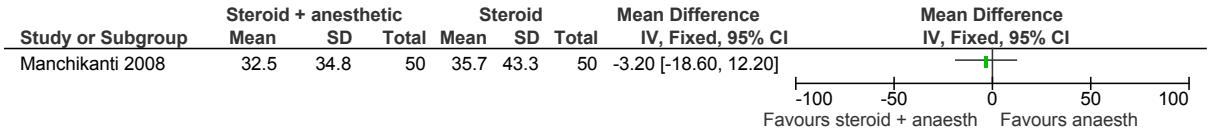
Follow-up: Manchikanti 2008 = 2 years

Figure 1195: HC use: opioid intake, mg dose in last 12 months ≤4 months



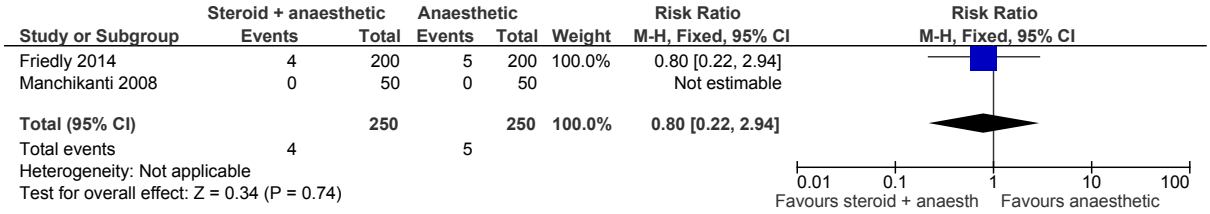
Follow-up: Manchikanti 2008 = 3 months

Figure 1196: HC use: opioid intake, mg dose in last 12 months >4 months – 1 year



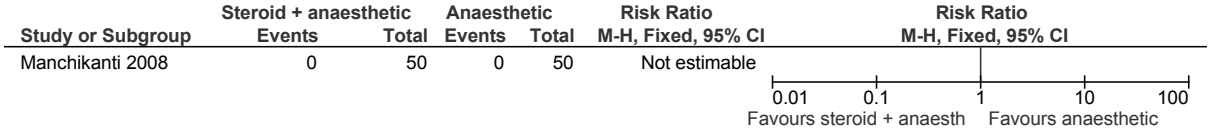
Follow-up: Manchikanti 2008 = 2 years

Figure 1197: Serious Adverse Events (SAE) at ≤4 months



Follow-up: Friedly = 6 weeks; Manchikanti 2008 = 3 months

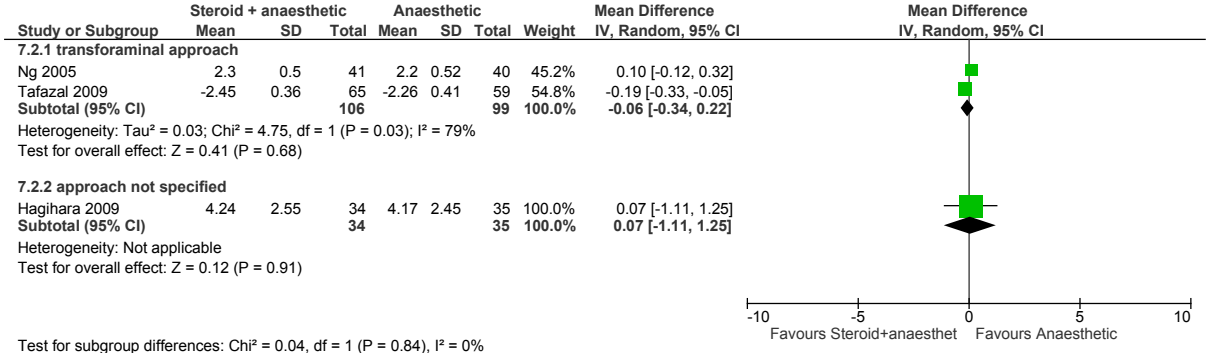
Figure 1198: SAEs at >4 months – 1 year



Follow-up: Manchikanti 2008 = 2 years

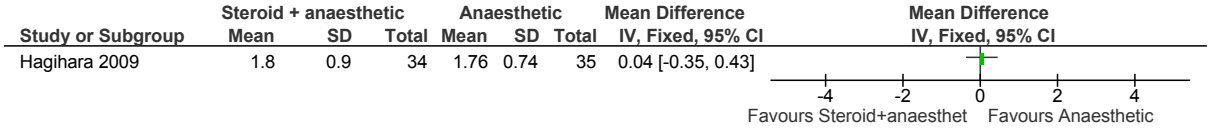
K.17.7 Image-guided: Steroid + anaesthetic versus anaesthetic (mixed population / unclear spinal pathologies)

Figure 1199: Pain (0-10) change and final scores at ≤ 4 months



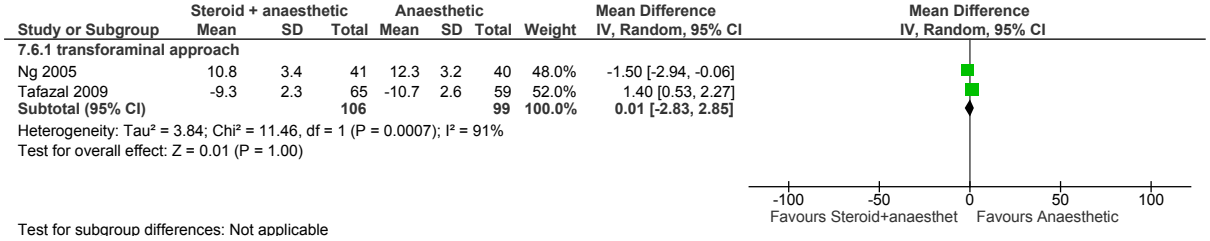
Follow-up: Hagihara = 1 week, Ng and Tafazal =12 weeks

Figure 1200: Pain, PPI (0-5) at ≤4 months



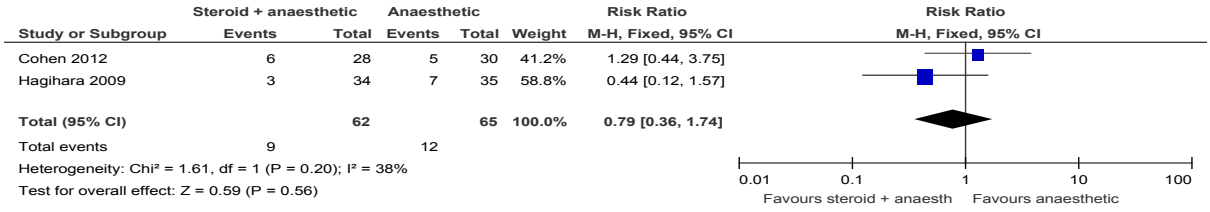
Follow-up: Hagihara = 1 week

Figure 1201: Function: ODQ (change and final score, 0-100) at ≤4 months



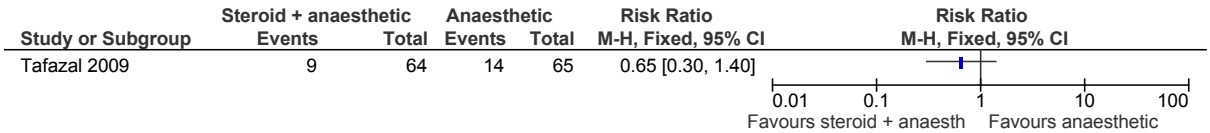
Follow-up: Ng and Tafazal = 12 weeks

Figure 1202: HC use: surgery at ≤4 months



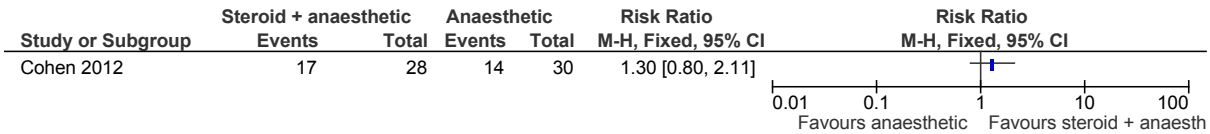
Follow-up: Cohen = 1 month; Hagihara = 1 week

Figure 1203: HC use: surgery at >4 months



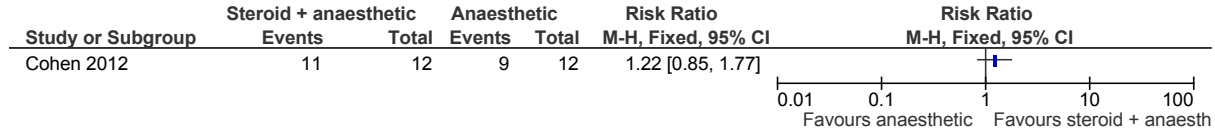
Follow-up: Tafazal = 1 year

Figure 1204: HC use: medication reduction (>20% opioid use or cessation non-opioids) ≤4 months



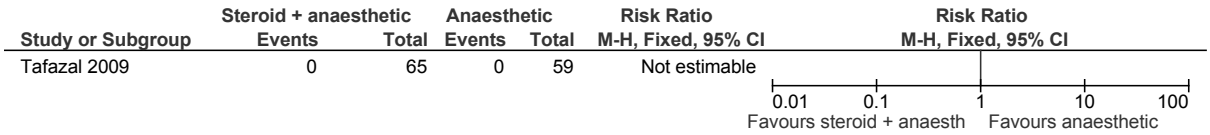
Follow-up: Cohen = 1 month

Figure 1205: HC use: medication reduction (>20% opioid use or cessation non-opioids) >4 months – 1 year



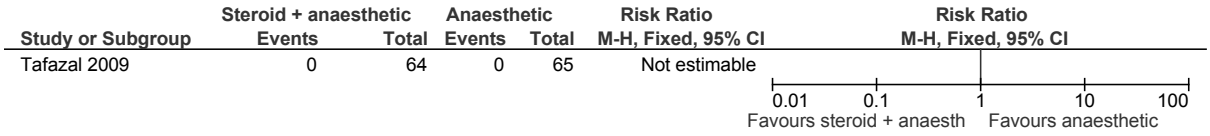
Follow-up: Cohen 2012 = 6 months

Figure 1206: Adverse events: complications at ≤4 months



Follow-up: Tafazal = 12 weeks

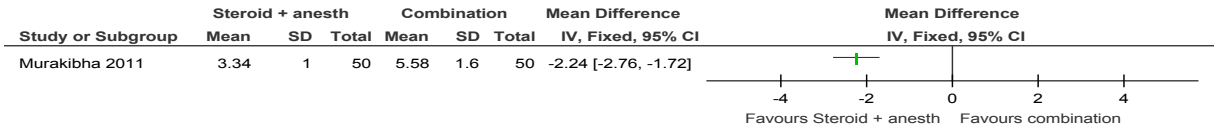
Figure 1207: Adverse events: complications at >4 months



Follow-up: Tafazal = 1 year

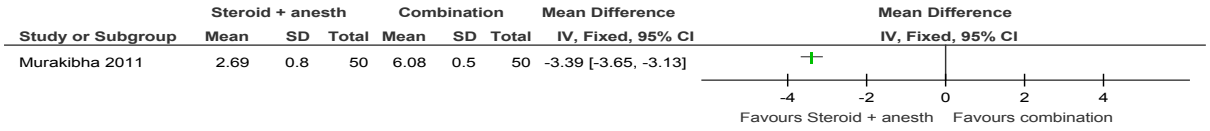
K.17.8 Image guided: Steroid + anaesthetic epidural versus combinations of non-invasive interventions (≥70%) disc prolapse)

Figure 1208: Quality of life (HRQoL) > 4 months (scale not given, just NPI)



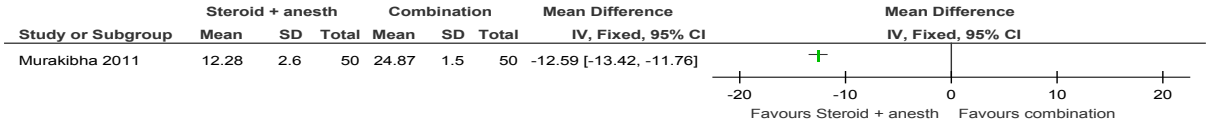
Follow-up = 6 months

Figure 1209: Pain (VAS- scale 1-10)



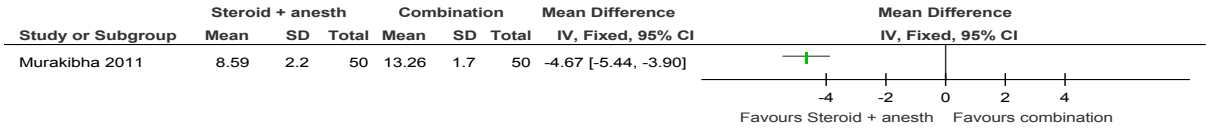
Follow-up = 6 months

Figure 1210: Disability (Oswestry disability questionnaire) > 4months (scale of 1-100)



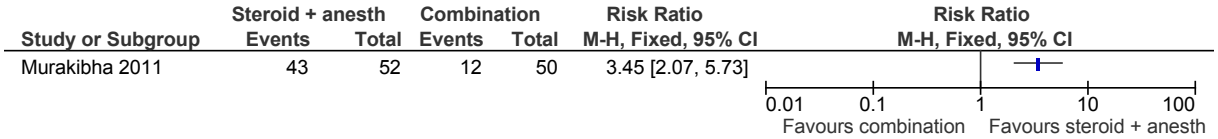
Follow-up = 6 months

Figure 1211: Psychological distress (Becks depression scale) > 4 months – 1 year (scale 0-63)



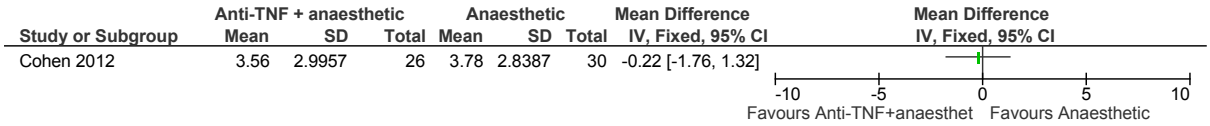
Follow-up = 6 months

Figure 1212: Responder criteria (complete relief of pain) > 4months



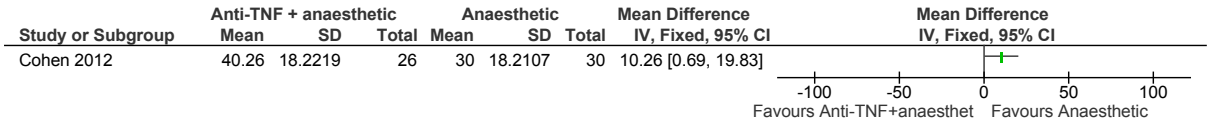
K.17.9 Image-guided: Anti-TNF + anaesthetic versus anaesthetic (>70% disc prolapse)

Figure 1213: Pain (0-10, change and final scores) at ≤4 months



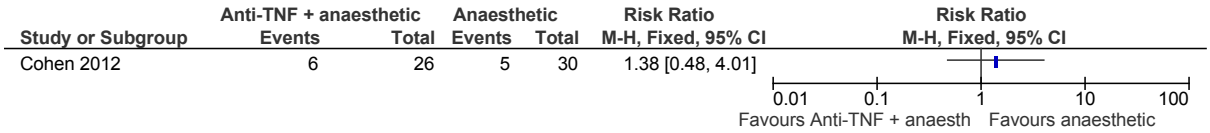
Follow-up: 1 month

Figure 1214: Function: ODQ at ≤4 months



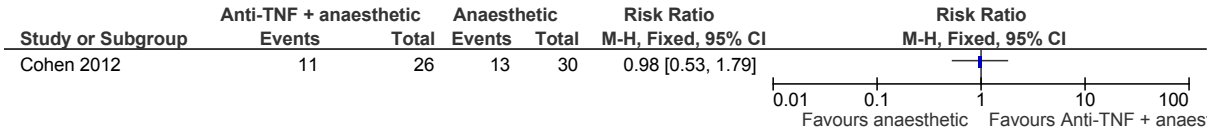
Follow-up: 1 month

Figure 1215: HC use: surgery at ≤4 months



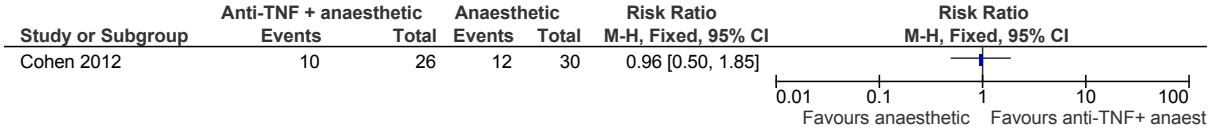
Follow-up: 1 month

Figure 1216: Responder criteria (>50% reduction in pain) at ≤4 months



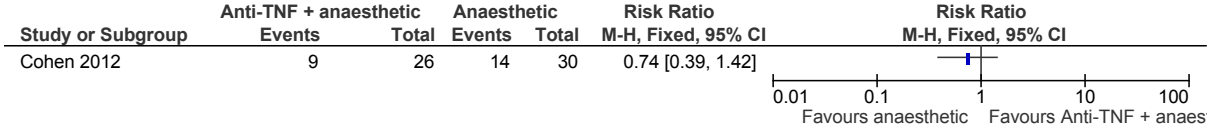
Follow-up: 3 months

Figure 1217: Responder criteria (>50% reduction in pain) at >4 months – 1 year



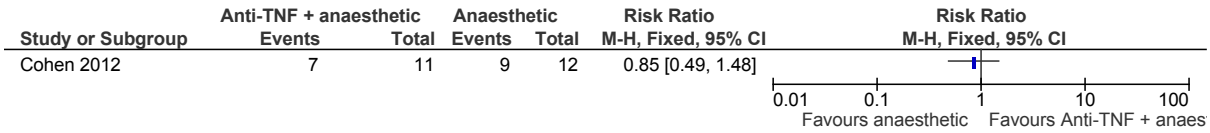
Follow-up: 6 months

Figure 1218: HC use: medication reduction (>20% opioid use or cessation non-opioids) ≤4 months



Follow-up: 1 month

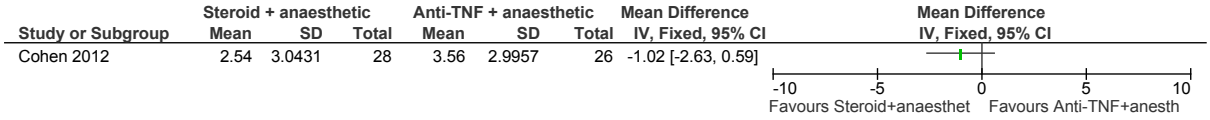
Figure 1219: HC use: medication reduction (>20% opioid use or cessation non-opioids) >4 months – 1 year



Follow-up: 6 months

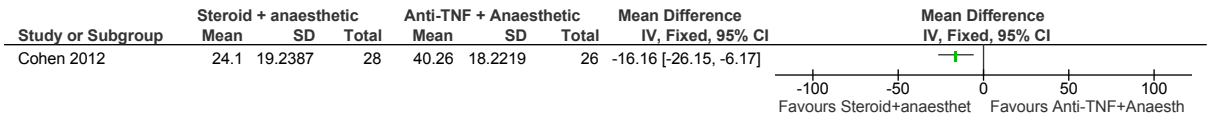
K.17.10 Image-guided: Steroid + anaesthetic versus Anti-TNF + anaesthetic (>70% disc prolapse)

Figure 1220: Pain (0-10) at ≤4 months



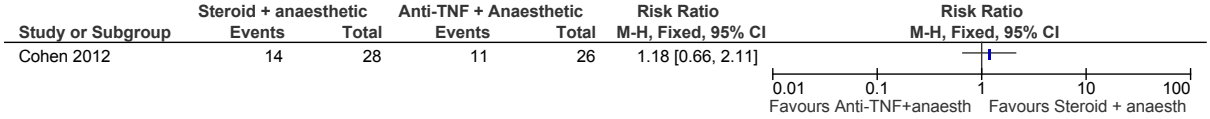
Follow-up: 1 month

Figure 1221: Function: ODI (0-100) final scores at ≤4 months



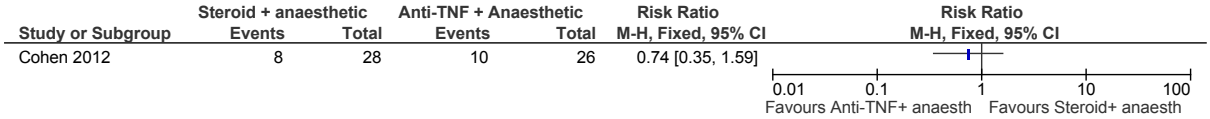
Follow-up: 1 month

Figure 1222: Responder criteria (>50% reduction in pain) at ≤4 months



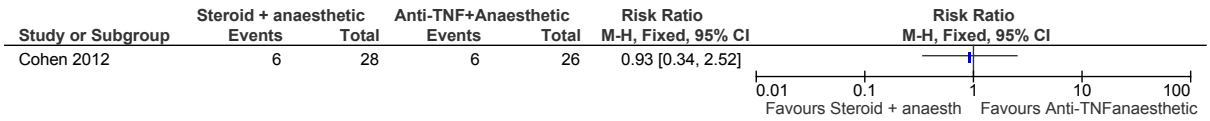
Follow-up: 3 months

Figure 1223: Responder criteria (>50% reduction in pain) at >4 months – 1 year



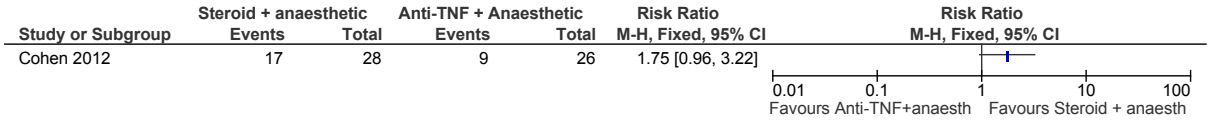
Follow-up: 6 months

Figure 1224: HC use: surgery at ≤4 months



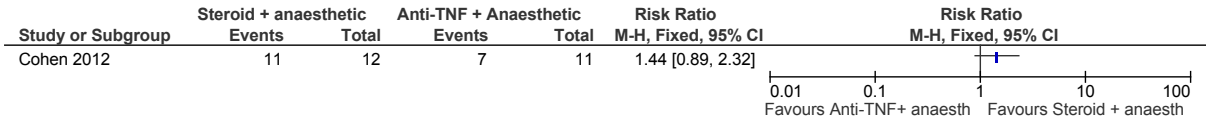
Follow-up: 1 month

Figure 1225: HC use: medication reduction (>20% opioid use or cessation non-opioids) ≤4 months



Follow-up: 1 month

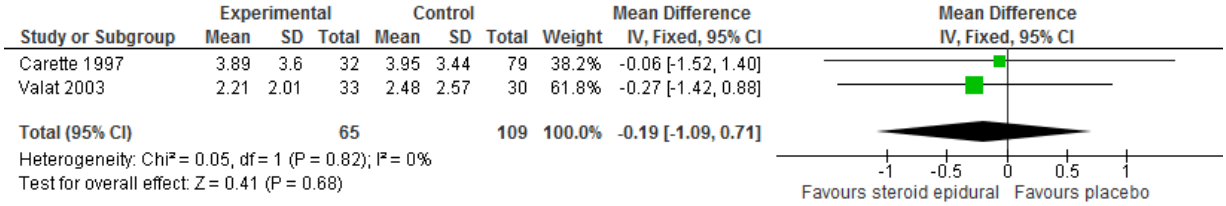
Figure 1226: HC use: medication reduction (>20% opioid use or cessation non-opioids) >4 months – 1 year



Follow-up: 6 months

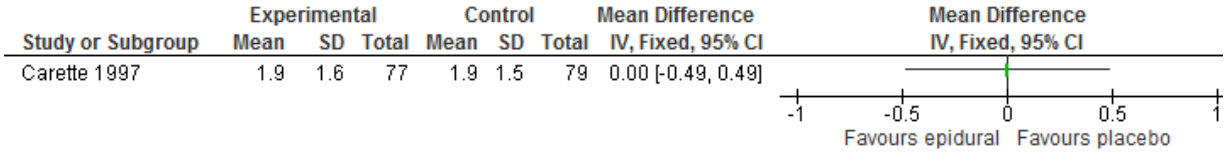
K.17.11 Non image guided: Steroid epidural versus placebo caused by (≥70%) disc prolapse

Figure 1227: Pain (VAS) change score≤ 4months (scale 1-10)



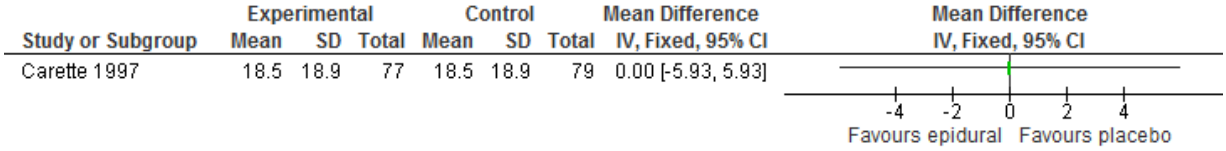
At (Range) 5 weeks-3 months

Figure 1228: Pain (McGill score: present pain intensity) ≤ 4months (scale 1-5)



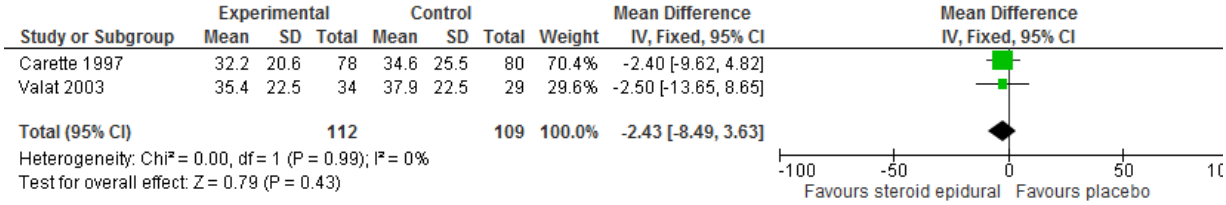
At 3 months

Figure 1229: Pain (McGill score: pain rating index) ≤ 4months (scale 0-50)



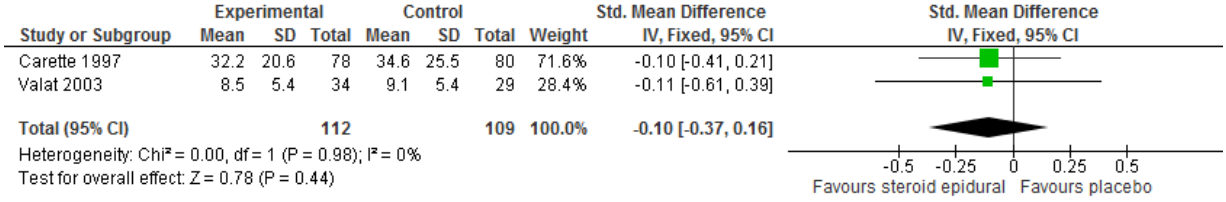
At 3 months

Figure 1230: Disability change scores (ODI/RMDQ) ≤ 4months (converted to scale 1-100 for GDG presentation)



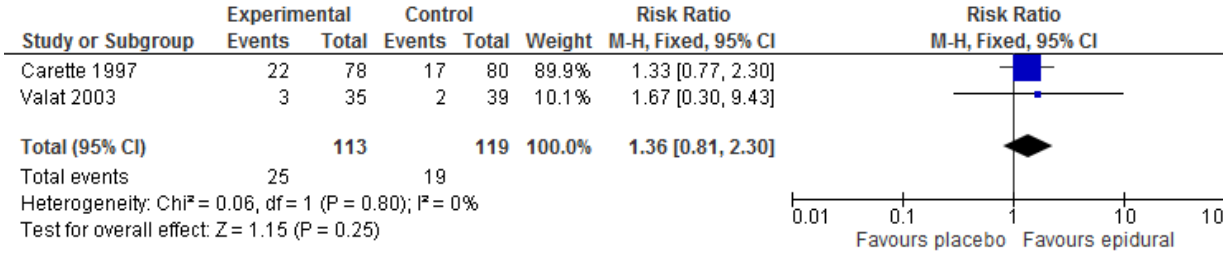
Range 5 weeks-3 months

Figure 1231: Disability change scores (ODI/RMDQ) ≤ 4months (pooled SMD)



Range 5 weeks-3 months

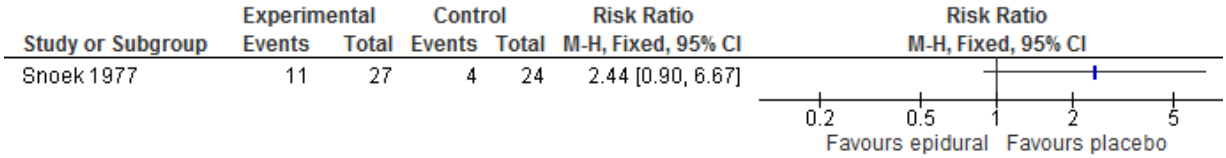
Figure 1232: Adverse events –morbidity (minor adverse events- dura accidentally puncture, transient headache or thoracic pain during procedure)



Range 5 weeks to 3 months –

K.17.12 Non image guided: Steroid epidural versus placebo in a population with unclear spinal pathology

Figure 1233: health care utilisation- discontinuation of analgesics



Range 8 months-20 months

K.17.13 Non image guided: Steroid epidural versus usual care in a population with unclear spinal pathology

Figure 1234: Quality of life (SF-36,0-100) at ≤4 months

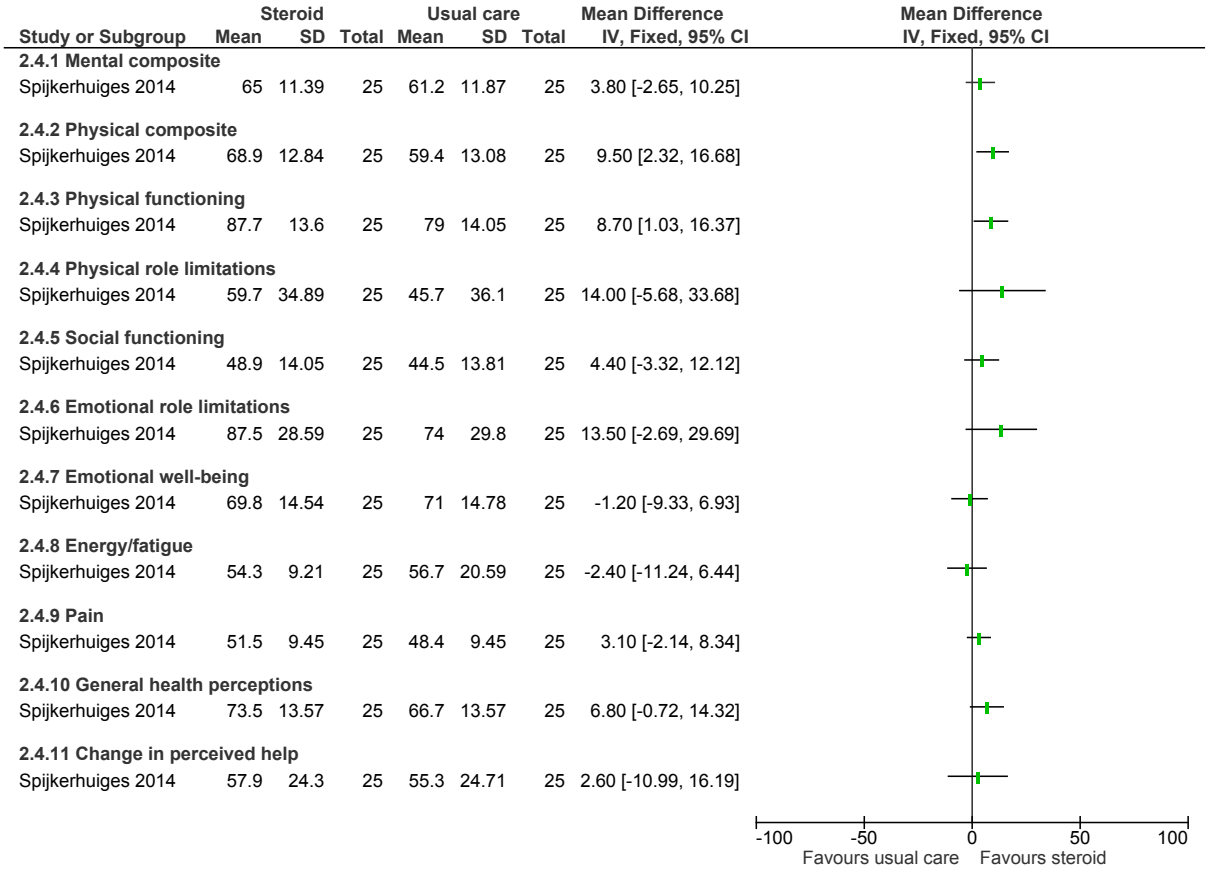


Figure 1235: Quality of life (SF-36,0-100) at >4 months

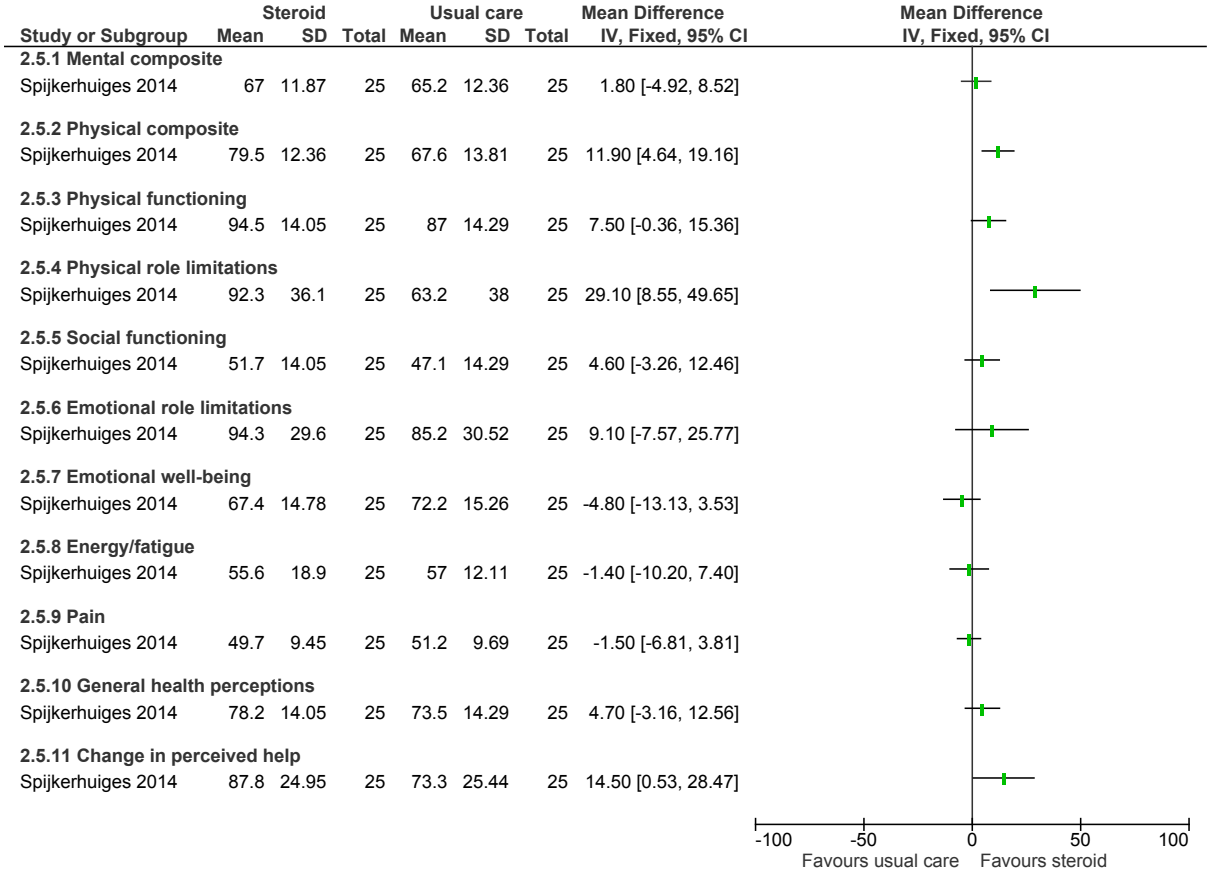
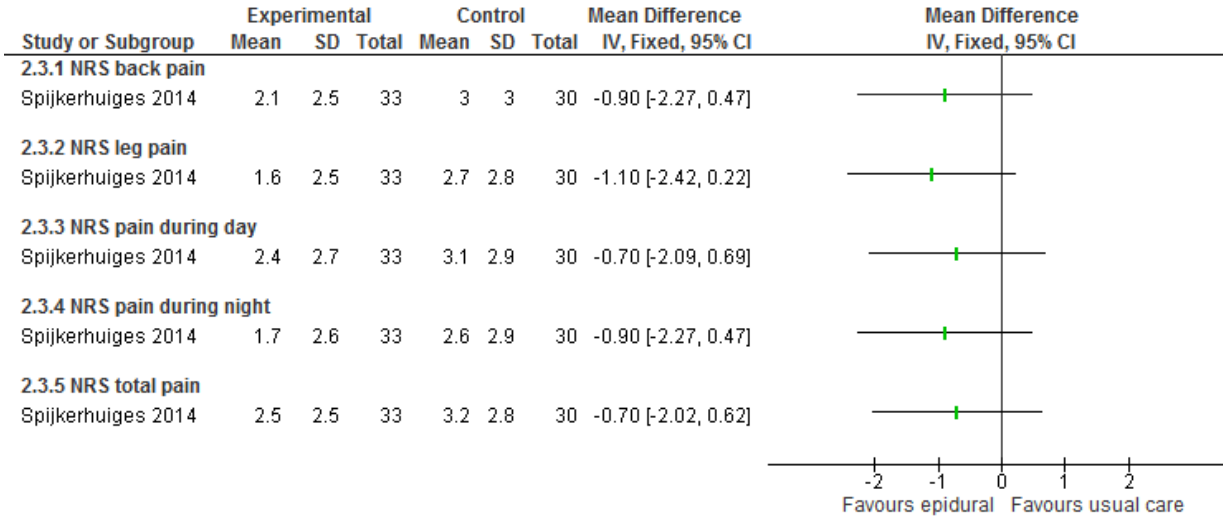


Figure 1236: Pain (NRS) ≤4 months (scale 1-10)



Disability ≤4 months = 13 weeks

Figure 1237: Pain (NRS) >4 months (scale 1-10)

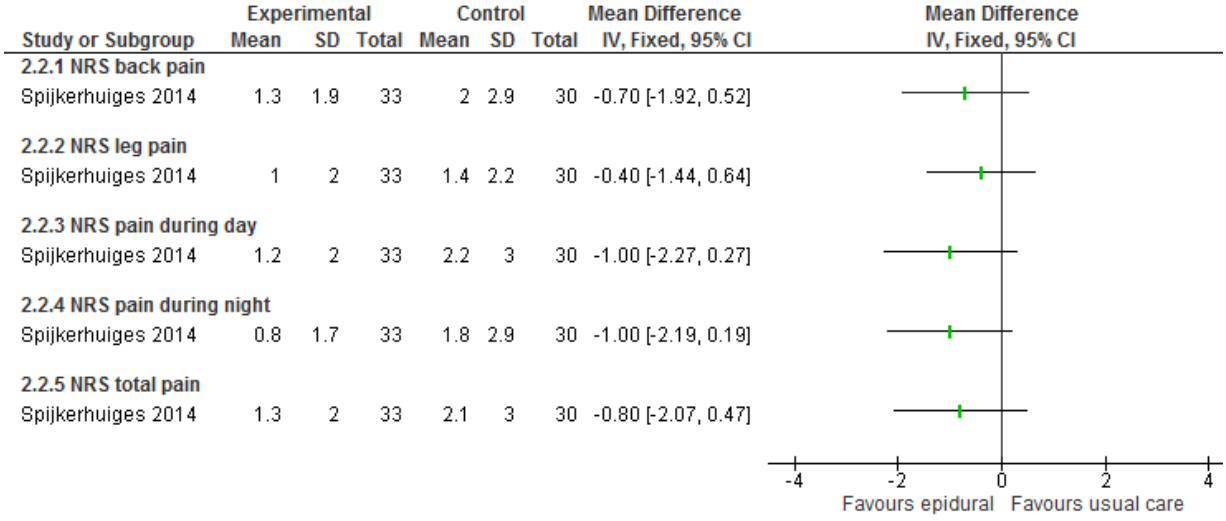
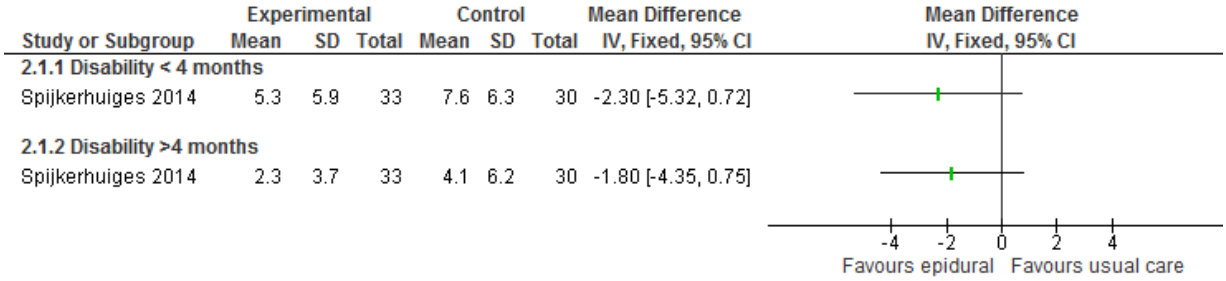


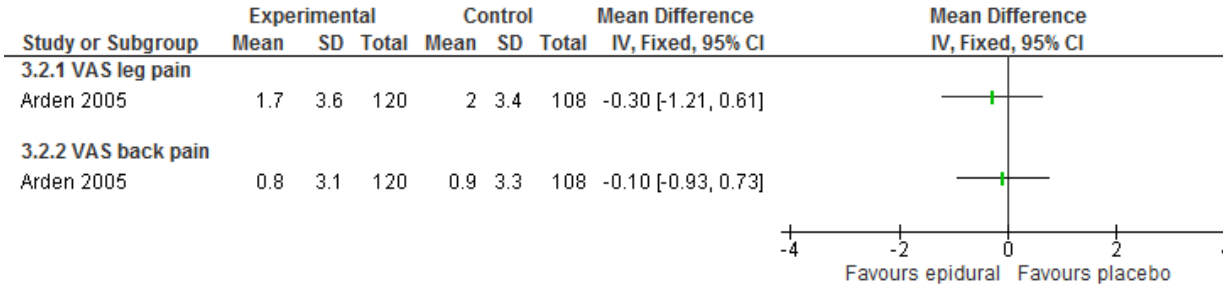
Figure 1238: Disability score (Roland Morris disability score- scale of 0-24)



Disability ≤4 months = 13 weeks, Disability >4 months- 1 year at 52 weeks
Disability >4 months- 1 year at 52 weeks

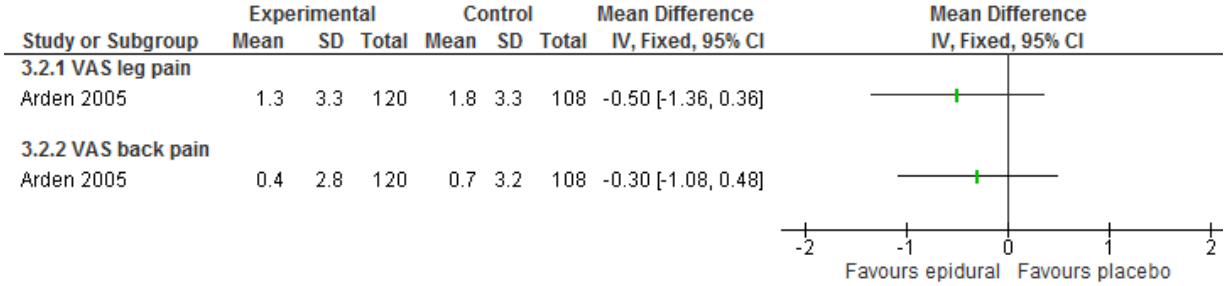
K.17.14 Non image guided: Steroid + anaesthetic epidural versus placebo in a population with unclear spinal pathology

Figure 1239: Pain (VAS)≤4 months (scale 1-10)



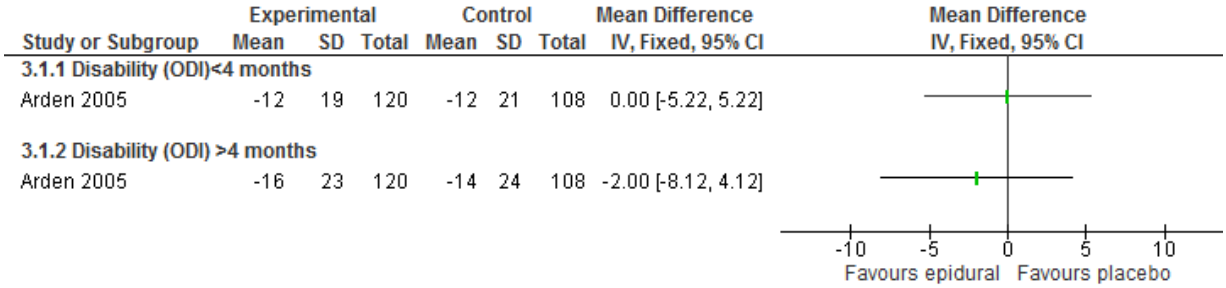
at ≤ 4 months=12 weeks

Figure 1240: Pain (VAS) >4 months (scale 1-10)



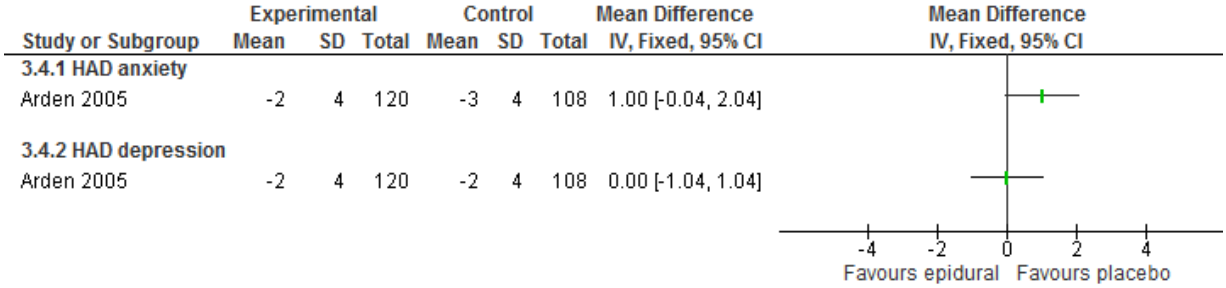
>4 months – 1 year =52 weeks

Figure 1241: Function score (Oswestry disability score- scale 1-100)



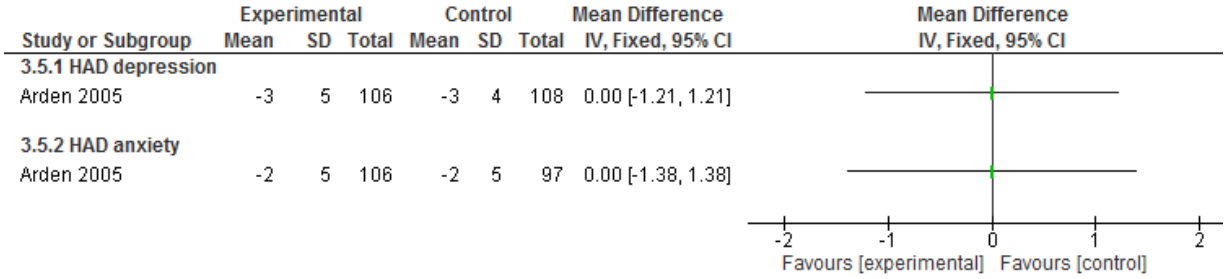
Disabilty at ≤ 4 months=12 weeks, disability >4 months =52 weeks

Figure 1242: Psychological distress ≤ 4 months (HAD- scale 0-21)



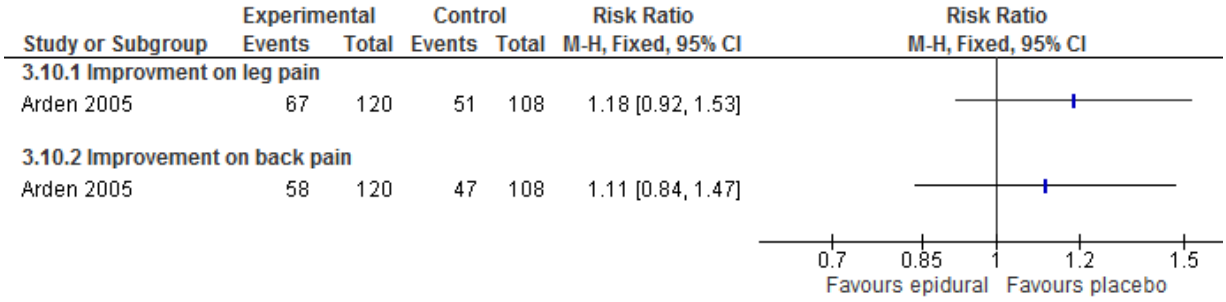
At ≤4 months=12 weeks

Figure 1243: Psychological distress (HAD)>4 months (HAD- scale 0-21)



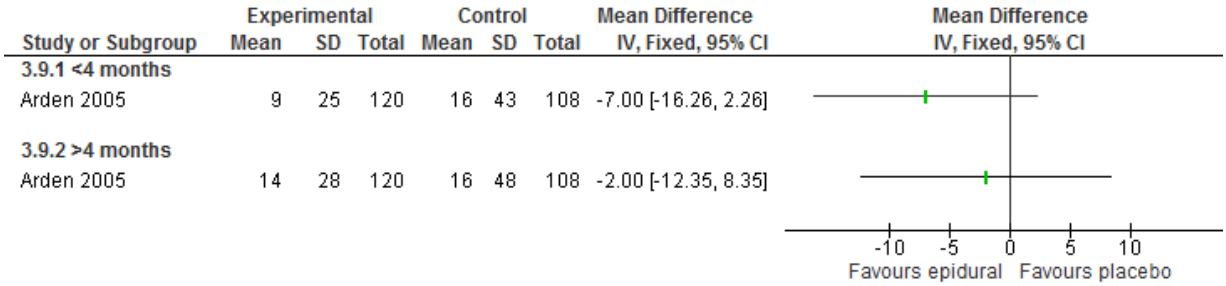
At >4 months – 1 year =52 weeks

Figure 1244: Responder criteria (>75% improvement on leg pain and back pain score/improvement in symptoms) > 4 months



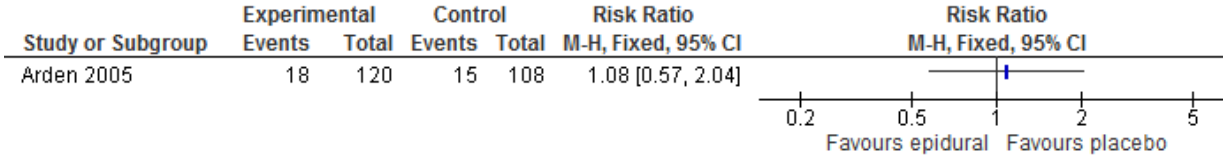
At 52 weeks

Figure 1245: Healthcare utilisation (mean analgesic use/week)



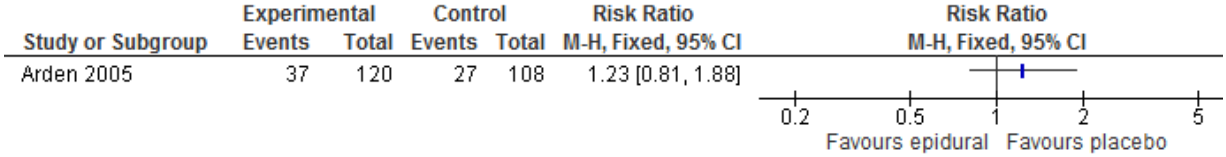
At ≤4 months=12 weeks >4 months – 1 year =52 weeks

Figure 1246: Healthcare utilisation (referred for surgery) > 4 months



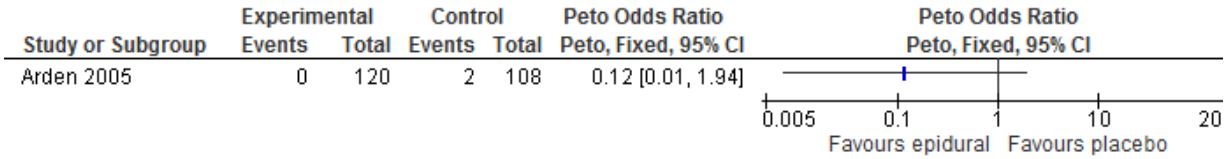
At 52 weeks

Figure 1247: Healthcare utilisation (further physiotherapy) > 4 months



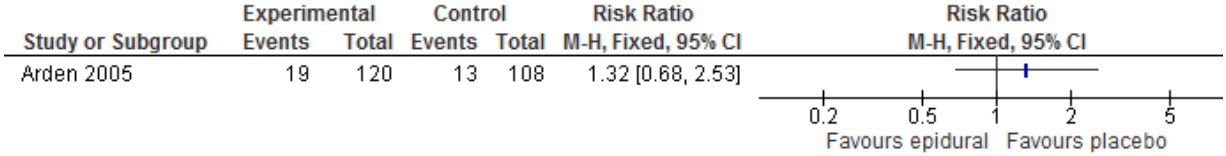
At 52 weeks

Figure 1248: Healthcare utilisation (referral to pain management services) > 4 months



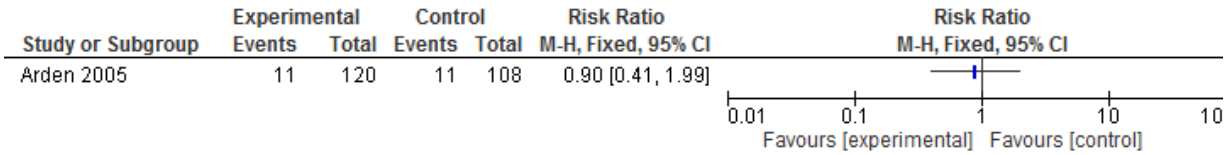
At 52 weeks

Figure 1249: Healthcare utilisation (further epidurals)> 4 months



At 52 weeks

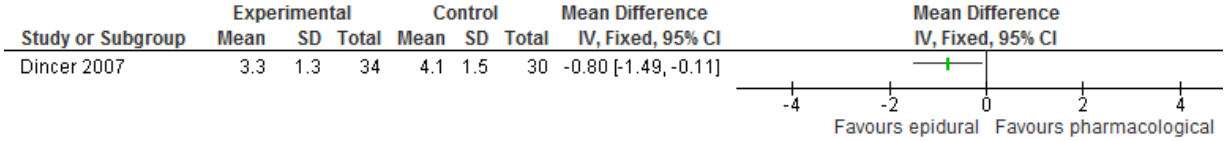
Figure 1250: Adverse events- morbidity (minor complications- defined as headache, nausea or other)



At 52 weeks

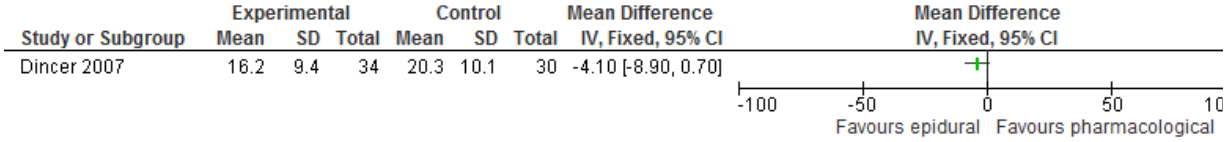
K.17.15 Non image guided: Steroid + anaesthetic epidural versus Pharmacological treatment (NSAIDs) caused by (≥70%) disc prolapse

Figure 1251: Pain (VAS) ≤ 4 months (scale 1-10)



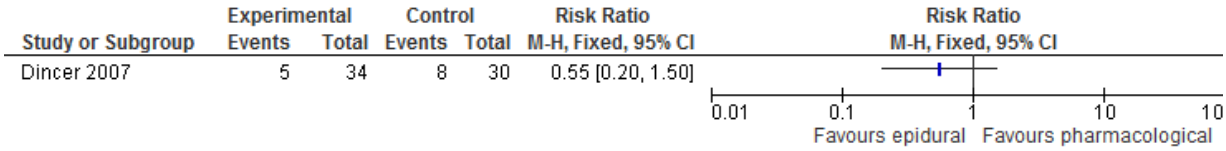
At 3 months

Figure 1252: Disability (Oswetry disability questionnaire) ≤ 4 months (scale 1-100)



At 3 months

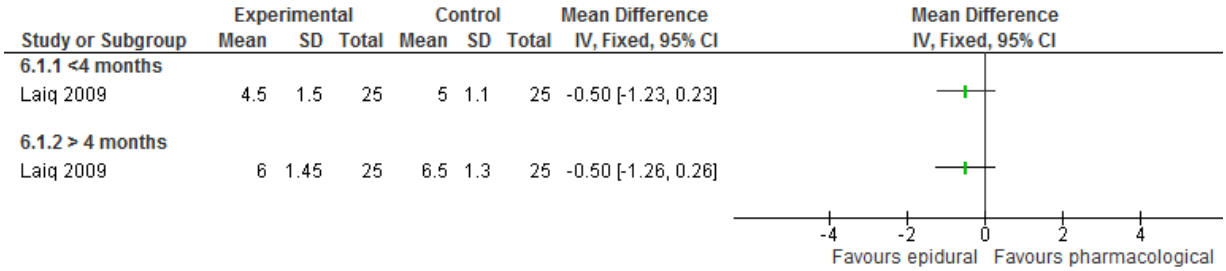
Figure 1253: Healthcare utilisation (no. using paracetamol at follow-up) ≤4 months



At 3 months

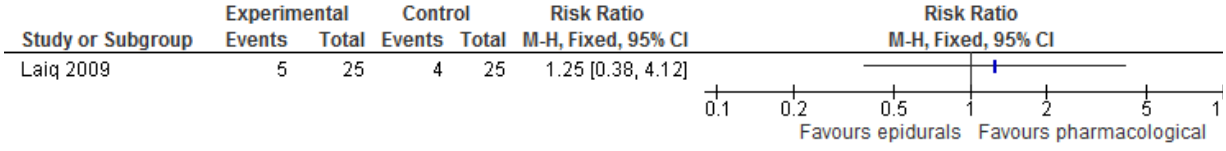
K.17.16 Non image guided: Steroid + anaesthetic epidural versus Pharmacological treatment (Combination NSAIDS+ Opioids+Muscle relaxants) in sciatica caused by (≥70%) disc prolapse

Figure 1254: Pain (VAS - scale 1-10)



At ≤4 months= 3 months,>4 months – 1 year =6 months

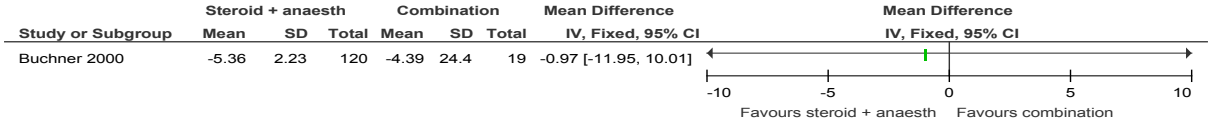
Figure 1255: Adverse events – morbidity (minor adverse events defined as flushing and headache, or back ache)



At ≤4 months= 3 months,

K.17.17 Image guided: Steroid + anaesthetic epidural versus combination of non-invasive interventions caused by (≥70%) disc prolapse

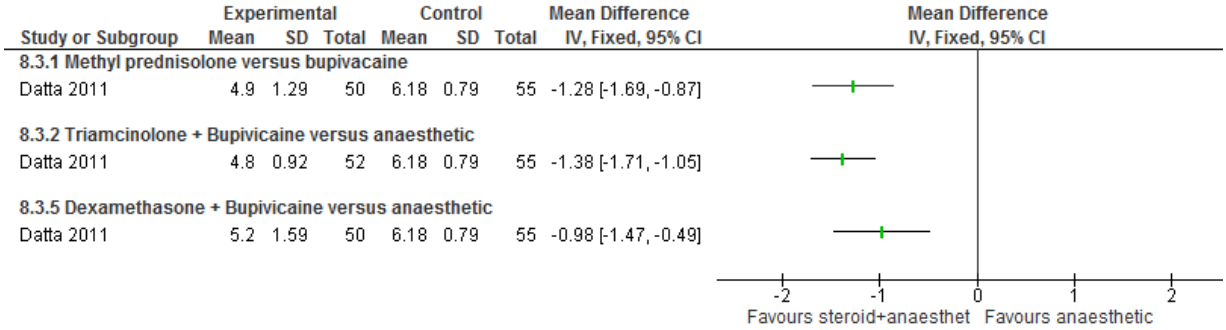
Figure 1256: Pain (VAS- scale 1-10)



At ≤4 months= 2 weeks

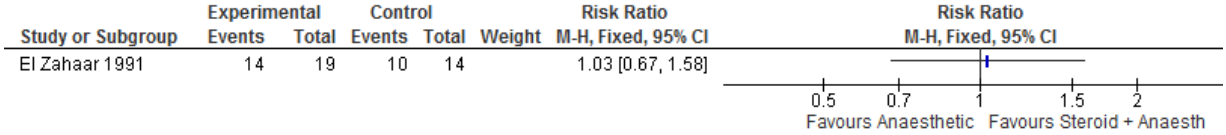
K.17.18 Non image guided: Steroid + anaesthetic epidural versus anaesthetic caused by (≥70%) disc prolapse

Figure 1257: Pain (VAS) ≤4 months (scale 1-10)



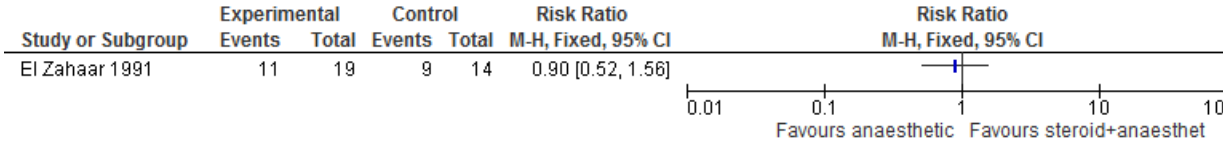
At ≤4 months=3 months

Figure 1258: Responder criteria (>75% improvement in pain) ≤4 months



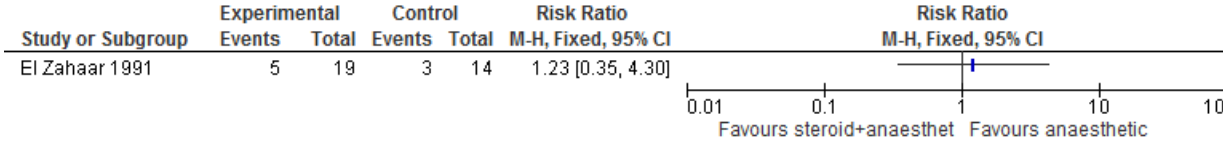
≤4 months= 1 day

Figure 1259: Responder criteria (>75% improvement in pain) >4 months – 1 year



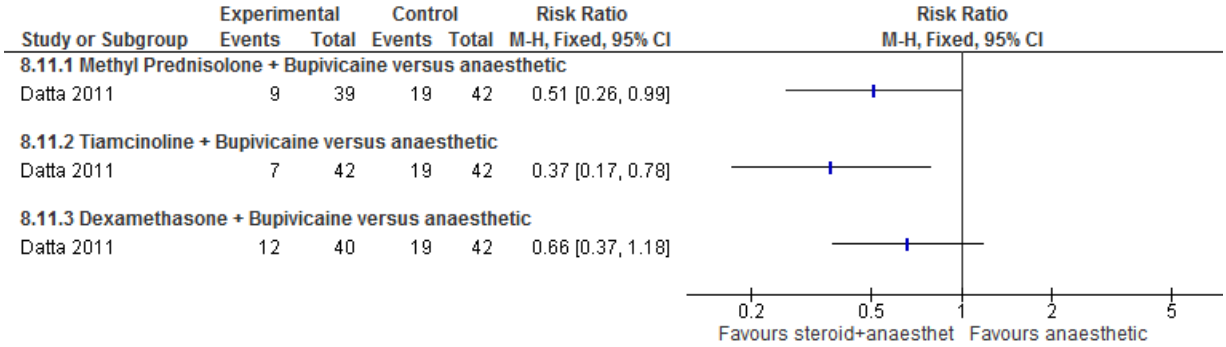
>4 months- 1 year mean follow p =20.85 months (range 13-36)

Figure 1260: Healthcare utilisation (patients undergoing surgery)>4months



>4 months- 1 year mean follow p =20.85 months (range 13-36)

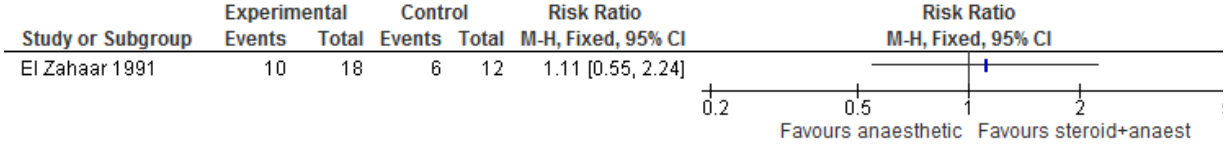
Figure 1261: Healthcare utilisation (use of physiotherapy at follow-up)≤ 4months



At ≤4 months=3 months

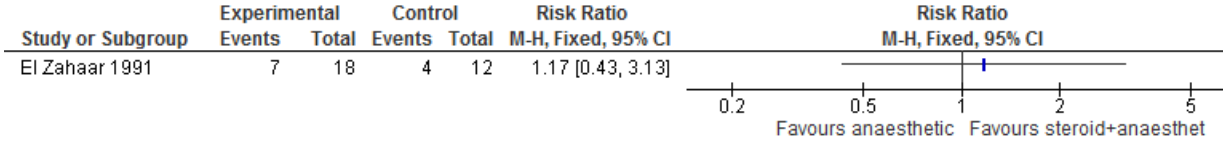
K.17.19 Non image guided: Steroid + anaesthetic epidural versus anaesthetic for sciatica caused by (≥70%) spinal stenosis

Figure 1262: Responder criteria (>75% improvement in pain) ≤4 months



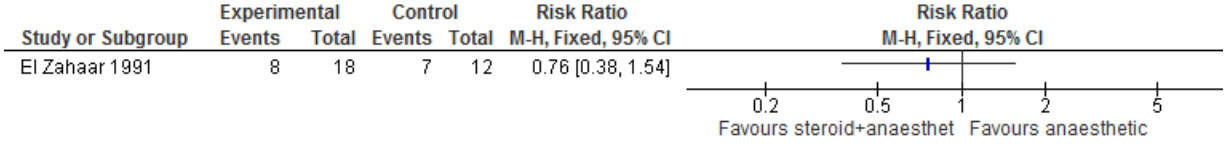
≤4 months= 1 day

Figure 1263: Responder criteria (>75% improvement in pain) >4 months – 1 year



>4 months – 1 year mean follow p =20.85 months (range 13-36)

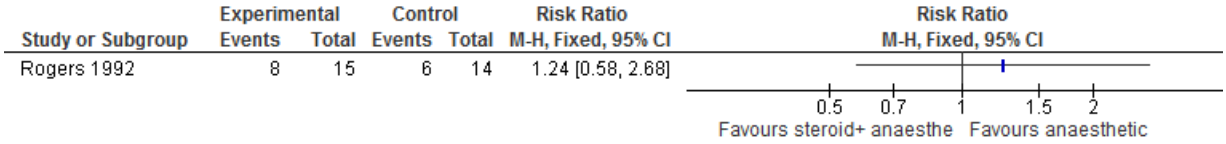
Figure 1264: Healthcare utilisation (patients undergoing surgery)>4months



>4 months – 1 year mean follow p =20.85 months (range 13-36)

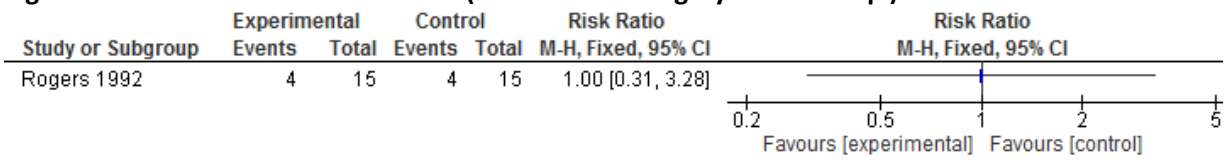
K.17.20 Non image guided: Steroid + anaesthetic epidural versus anaesthetic in a population with unclear spinal pathology

Figure 1265: Healthcare utilisation (no. of participants reporting reduced analgesics at follow-up) ≤ 4months



At ≤4 months=1 month

Figure 1266: Healthcare utilisation (no. had back surgery at follow-up)≤ 4months



Follow up time not defined

K.17.21 Non image guided: steroid epidural versus anaesthetic epidural in a population with unclear spinal pathology

Figure 1267: Healthcare use (no. had back surgery at follow-up)

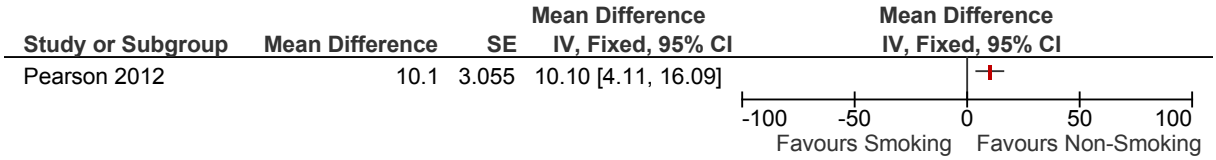
Follow-up: 1 month

K.18 Surgery and prognostic factors

K.18.1 Low back pain

K.18.1.1 Smoking

Figure 1268: Smoking as a prognostic factor for function (ODI) at 4 years (LBP or Sciatica population)- surgery: open decompressive laminectomy



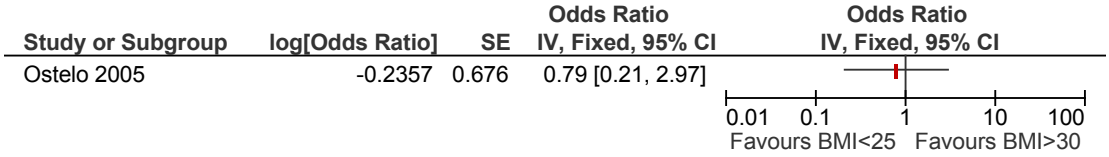
Forest plot reports the adjusted mean difference(by ANCOVA) of smoking versus non-smoking on the treatment effect (change in ODI) of receiving surgery rather than usual care.*

**Adjusted for centre, age, gender, baseline ODI, income, treatment preference, duration of symptoms, compensation, BMI,*

baseline stenosis bothersomeness, joint, and stomach and bowel problems.

K.18.1.2 BMI

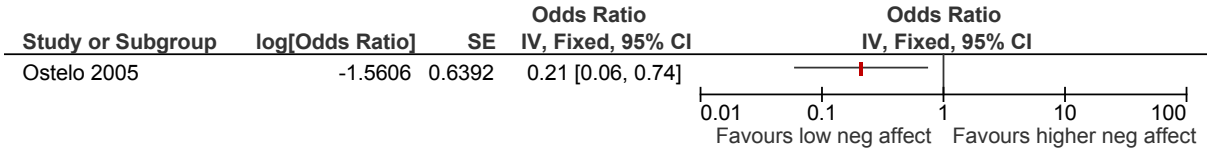
Figure 1269: BMI>30 as a prognostic factor for function(RDQ≤4)l at 3 months (LBP or Sciatica population) –surgery not defined



Forest plot reports the adjusted odds ratio of BMI>30 versus BMI<25 on function (assessed by RDQ ≤4) of receiving surgery rather than usual care.*
**Adjusted for duration of complaints before surgery, age, gender, whether or not pain medication was taken at baseline because the residual complaints, number of days in hospital following the surgery, severity of pain in back and leg (both on VAS), pain catastrophising (Pain Catastrophising Scale, PCS), fear of movement (Tampa scale for Kinesiophobia, TSK)*

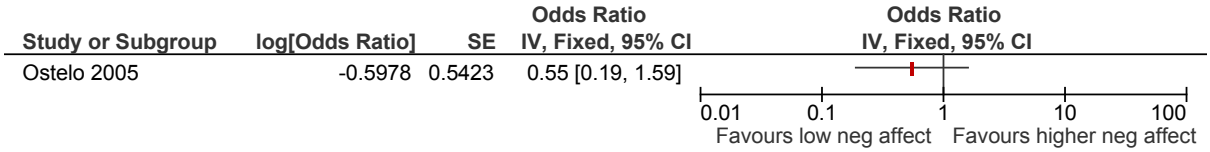
K.18.1.3 Psychological Distress

Figure 1270: Psychological Distress (Negative Affectivity [NEM >1-≤4 versus NEM ≤1]) as a prognostic factor for back pain (VAS ≤10) at 3 months (LBP or Sciatica population)-surgery not defined



Forest plot reports the adjusted odds ratio of psychological distress (NEM>1-≤4 versus NEM ≤1) on back pain (assessed by VAS ≤10) of receiving surgery rather than usual care.*
**Adjusted for duration of complaints before surgery, age, gender, BMI, whether or not pain medication was taken at baseline because the residual complaints, number of days in hospital following the surgery, severity of pain in back and leg (both on VAS), pain catastrophising (Pain Catastrophising Scale, PCS), fear of movement (Tampa scale for Kinesiophobia, TSK)*

Figure 1271: Psychological Distress (Negative Affectivity (NEM>4 versus NEM ≤1)) as a prognostic factor for back pain (VAS≤10) at 3 months (LBP or Sciatica population)- surgery not defined

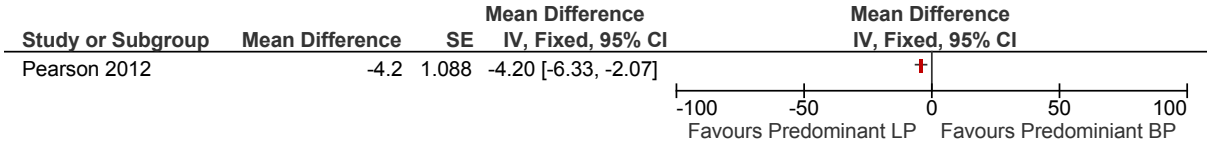


Forest plot reports the adjusted odds ratio of psychological distress (NEM>4 versus NEM ≤1 on back pain (assessed by VAS ≤10) of receiving surgery rather than usual care.*
**Adjusted for duration of complaints before surgery, age, gender, BMI, whether or not pain medication was taken at baseline because the residual complaints, number of days in hospital following the surgery, severity of pain in back and leg (both on VAS), pain catastrophising (Pain Catastrophising Scale, PCS), fear of movement (Tampa scale for Kinesiophobia, TSK)*

K.18.2 Sciatica

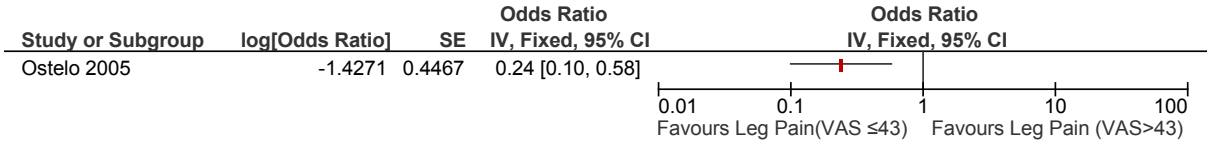
K.18.2.1 Radicular Symptoms

Figure 1272: Radicular symptoms as a prognostic factor for function (ODI) at 4 years - continuous outcome (LBP and/or Sciatica population)- surgery: open decompressive laminectomy



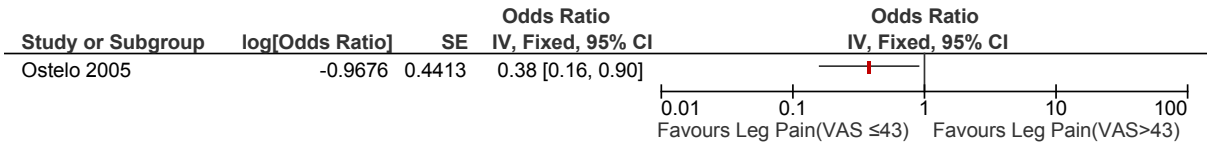
Forest plot reports the adjusted mean difference (by ANCOVA) of predominant leg pain versus predominant back pain on the treatment effect (change in ODI) of receiving surgery rather than usual care.*
**Adjusted for centre, age, gender, baseline ODI, income, treatment preference, duration of symptoms, compensation, smoking status, BMI, baseline stenosis bothersomeness, joint, and stomach and bowel problems.*

Figure 1273: Radicular symptoms as a prognostic factor for leg pain (VAS,0-100) at 3 months (LBP or Sciatica population)-surgery not defined



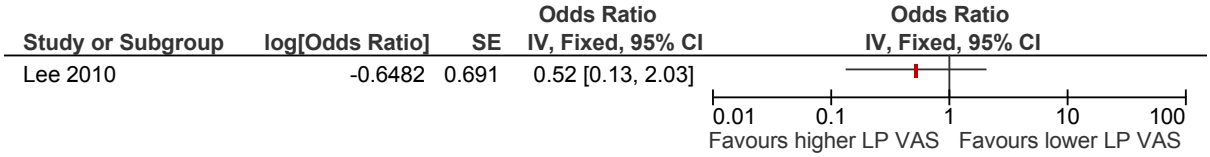
Forest plot reports the adjusted odds ratio of pre-op leg pain (VAS>43) versus pre-op leg pain (VAS≤ 43) on post-op leg pain) (assessed by recovery of VAS ≤10) of receiving surgery rather than usual care.*
**Adjusted for duration of complaints before surgery, age, gender, BMI, whether or not pain medication was taken at baseline because the residual complaints, number of days in hospital following the surgery, severity of pain in back and leg (both on VAS), pain catastrophising (Pain Catastrophising Scale, PCS), fear of movement (Tampa scale for Kinesiophobia, TSK)*

Figure 1274: Radicular symptoms as a prognostic factor for leg pain(VAS ≤10) at 12 months (LBP or Sciatica population)-surgery not defined



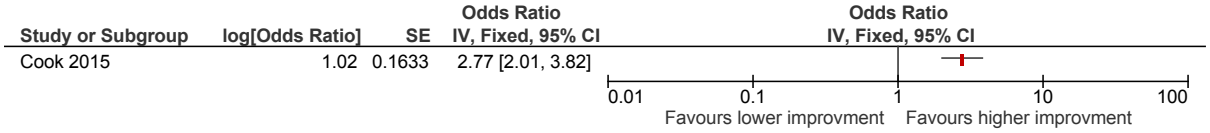
Forest plot reports the adjusted odds ratio of pre-op leg pain (VAS>43) versus pre-op leg pain (VAS≤ 43) on post-op leg pain) (assessed by VAS ≤10) of receiving surgery rather than usual care.*
**Adjusted for duration of complaints before surgery, age, gender, BMI, whether or not pain medication was taken at baseline because the residual complaints, number of days in hospital following the surgery, severity of pain in back and leg (both on VAS), pain catastrophising (Pain Catastrophising Scale, PCS), fear of movement (Tampa scale for Kinesiophobia, TSK)*

Figure 1275: Radicular symptoms as a prognostic factor for function (ODI>10) at 1 year- categorical outcome (Sciatica population) - surgery: dissection of the paravertebral muscles down to the laminae and resection of the interlaminar



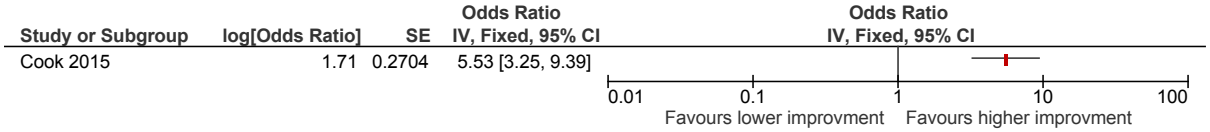
Forest plot reports the adjusted odds ratio of pre-op leg pain (VAS) on post-op leg pain (assessed by VAS >10) of receiving surgery rather than usual care.*
*Adjusted for *duration of pain, age, gender, BMI, smoking, surgical levels and whether the surgery was a revision operation or the primary operation*.

Figure 1276: Radicular symptoms as a prognostic factor for leg pain greater than back pain on 50% improvement in pain assessed by VAS in one year- dichotomous outcome (Sciatica population)-surgery: discectomy



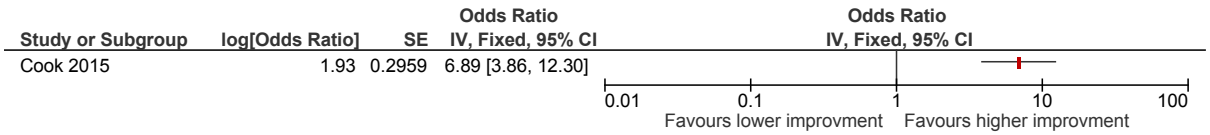
Forest plot reports the adjusted odds ratio of leg pain greater than back pain on 50% improvement in pain assessed by VAS in one year*
**Adjusted for* Age, BMI, gender, previous back surgery history, baseline ODI, baseline back pain VAS, baseline SF-12 PCS and MCS scores, presence/absence of complications, levels of surgery and diagnosis.

Figure 1277: Radicular symptoms as a prognostic factor for leg pain greater than back pain on 30% improvement in function assessed by ODI in one year- dichotomous outcome (Sciatica population)-surgery: discectomy



Forest plot reports the adjusted odds ratio of leg pain greater than back pain on 30% improvement in pain assessed by VAS in one year*
**Adjusted for* Age, BMI, gender, previous back surgery history, baseline ODI, baseline back pain VAS, baseline SF-12 PCS and MCS scores, presence/absence of complications, levels of surgery and diagnosis.

Figure 1278: Radicular symptoms as a prognostic factor for leg pain greater than back pain on 50% improvement in function assessed by ODI in one year- dichotomous outcome (Sciatica population)-surgery: discectomy



Forest plot reports the adjusted odds ratio of leg pain greater than back pain on 30% improvement in pain assessed by VAS in one year*
**Adjusted for* Age, BMI, gender, previous back surgery history, baseline ODI, baseline back pain VAS, baseline SF-12 PCS and MCS scores, presence/absence of complications, levels of surgery and diagnosis.

K.19 Disc replacement

K.19.1 Disc replacement vs spinal fusion in low back pain with/without sciatica

Figure 1279: Quality of life (SF-36, 0-100) ≤ 4 months

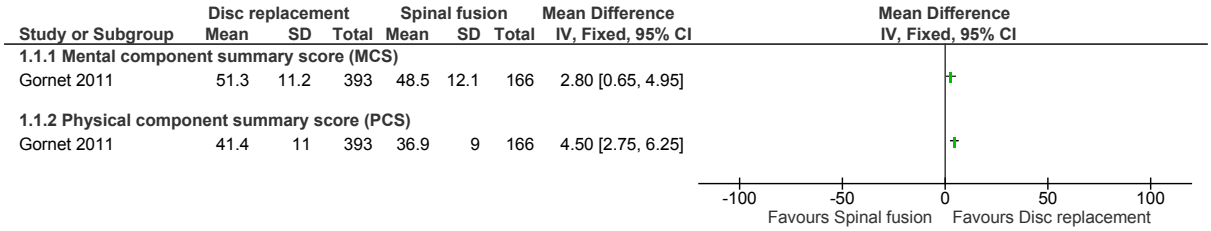


Figure 1280: Quality of life (SF-36, 0-100) >4 months (1 year)

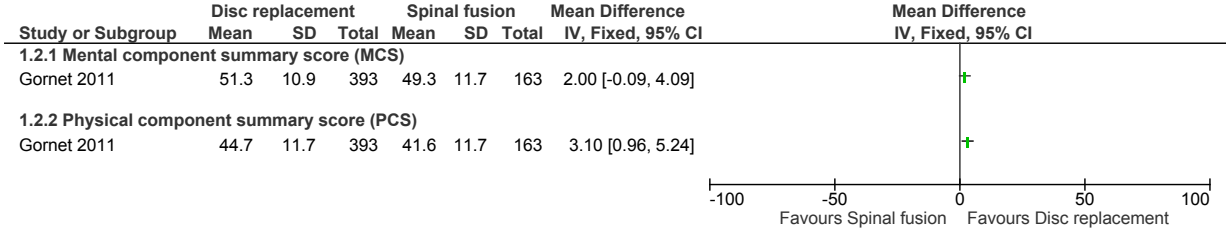


Figure 1281: Quality of life (SF-36, 0-100) > 4 months (2 years)

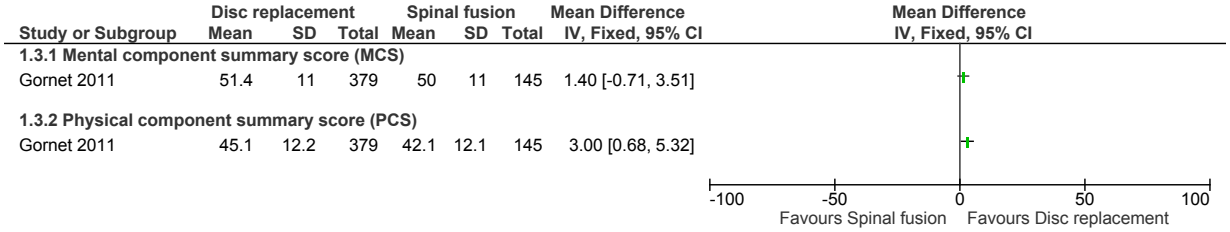


Figure 1282: Quality of life (EQ-5D, 0-1) >4 months (1 year)

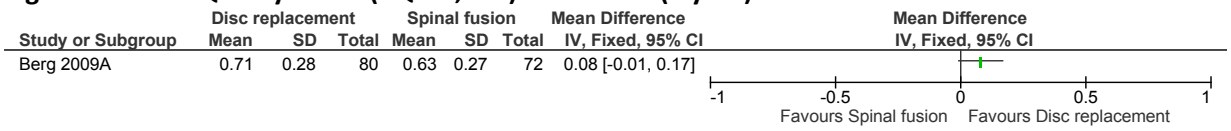


Figure 1283: Quality of life (EQ-5D, 0-1) > 4 months (2 years)

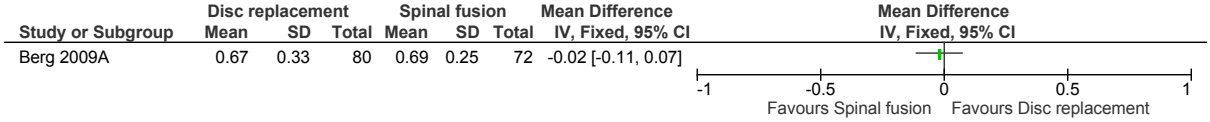


Figure 1284: Function (ODI, 0-100) ≤ 4 months

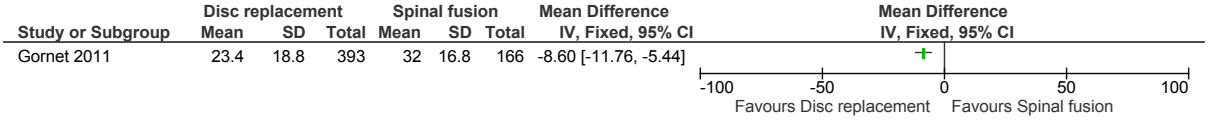


Figure 1285: Function (ODI, 0-100) >4 months (1 year)

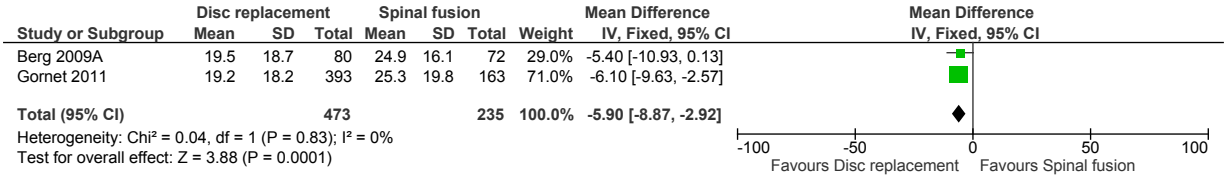


Figure 1286: Function (ODI, 0-100) > 4 months (2 years)

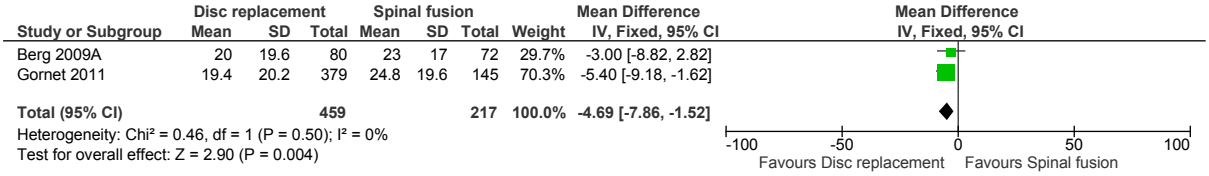


Figure 1287: Pain severity (Back pain NRS, 0-10) ≤ 4 months

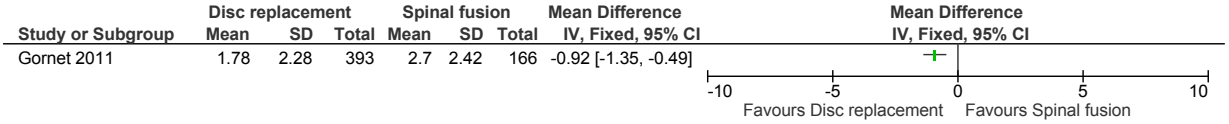


Figure 1288: Pain severity (Back pain VAS/NRS, 0-10) >4 months (1 year)

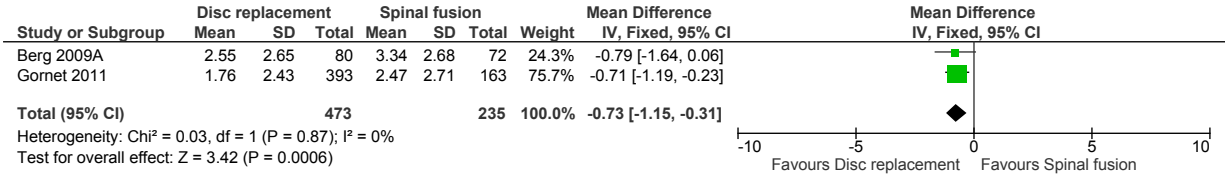


Figure 1289: Pain severity (Back pain VAS/NRS, 0-10) > 4 months (2 years)

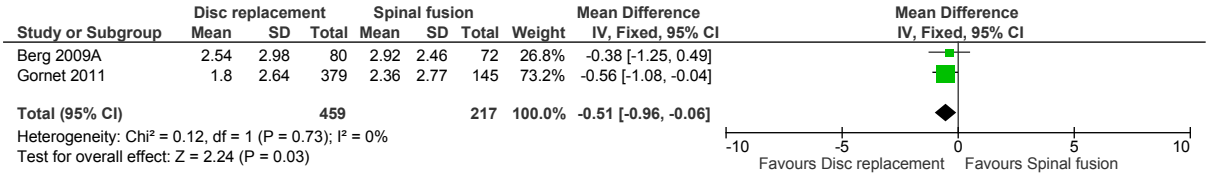


Figure 1290: Pain severity (Leg pain NRS, 0-10) ≤ 4 months

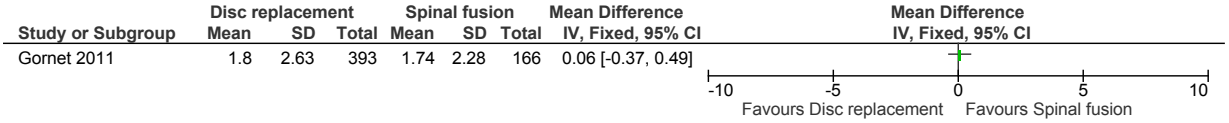


Figure 1291: Pain severity (Leg pain VAS/NRS, 0-10) >4 months (1 year)

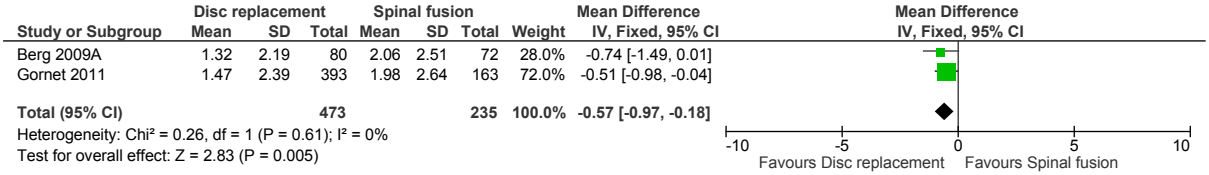


Figure 1292: Pain severity (Leg pain VAS/NRS, 0-10) > 4 months (2 years)

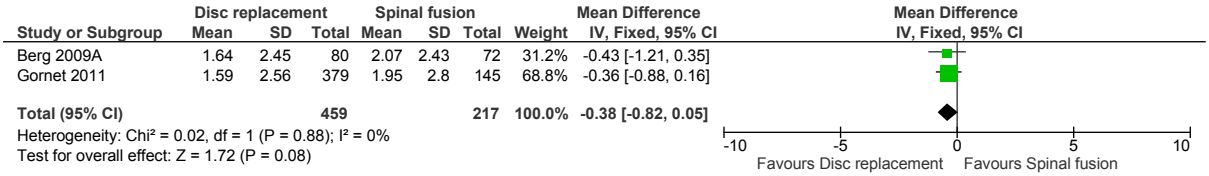
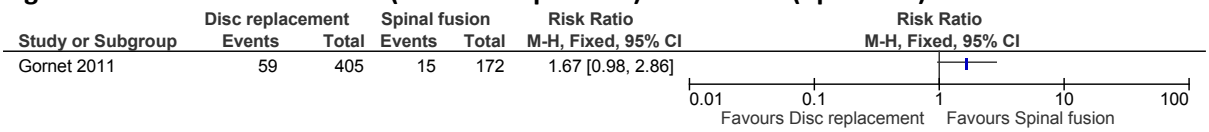
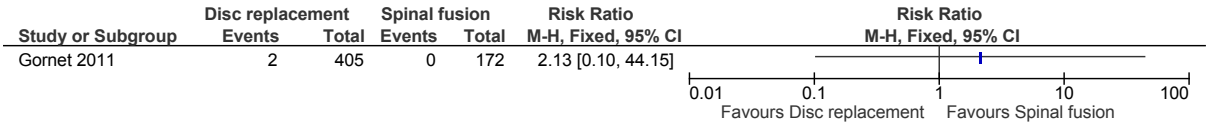


Figure 1293: Adverse events (number of patients) ≤ 4 months (operative)



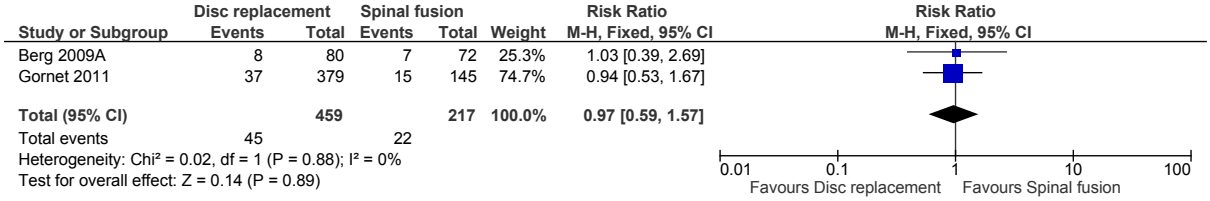
Adverse events in the DR group included: n=9 anatomic/technical difficulty, n=1 cardiovascular, n=7 gastrointestinal-ileus, n=4 gastrointestinal-other, n=1 incision-related, n=1 infection, n=9 neurologic, n=4 other, n=1 other pain, n=3 peritoneal tear, n=1 rash, n=1 respiratory, n=3 spinal events, n=2 urogenital, n=14 vascular injury-intraoperative (total n=61). Adverse events in the fusion 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).

Figure 1294: Adverse events (possibly device-related; number of patients) ≤ 4 months (operative)



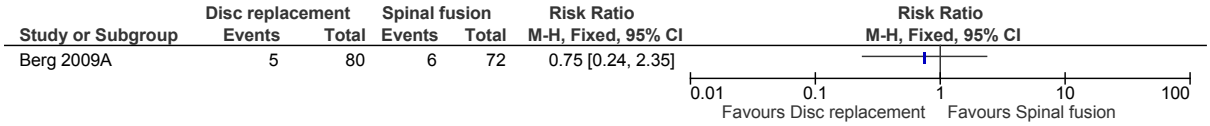
Possible device-related adverse events included 2 anatomic/technical difficulties in the control group.

Figure 1295: Reoperations (number of patients) > 4 months (2 years)



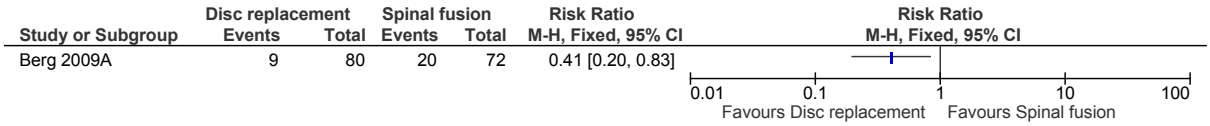
Gornet 2011 study: second surgeries included revisions (DR=0, fusion=0); removals (DR=2, fusion=0); supplemental fixations (DR=13, fusion=12); and reoperations (defined as surgical procedures at the treated spinal level that did not remove, modify or add any components: decompressions, removals of bone fragment, discectomies, others; DR=22, fusion=3). The Authors note that 59% of DR patients that underwent reoperations were among the first five surgeries performed by an individual operator.
Berg 2009A study: reoperations included decompression (DR=1, fusion=0), decompression together with extraction of pedicular screws (DR=0, fusion=1), fusion at TDR level (DR=4, fusion=0), TDR above fusion (DR=0, fusion=5, haematoma removal (DR=2,fusion=0), hernia repair (DR=1, fusion=0), repair of dural tear (DR=0, fusion=1).

Figure 1296: Reoperations (number of patients) > 4 months (5 years)



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.

Figure 1297: Reoperations (device-related reoperations; number of events) > 4 months (5 years)



Device-related reoperations included extraction of pedicle screws; fusion at total disc replacement level.

K.19.2 Disc replacement vs 3-element MBR in low back pain without sciatica

Figure 1298: Quality of life (EQ-5D, 0-1) >4 months (1 year)

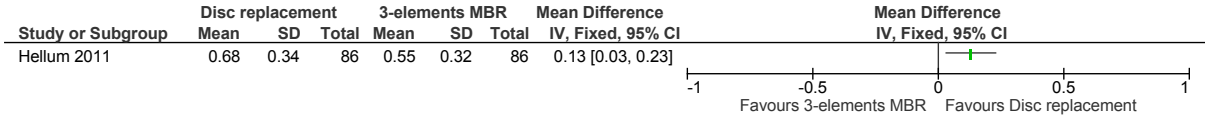


Figure 1299: Quality of life (EQ-5D, 0-1) > 4 months (2 years)

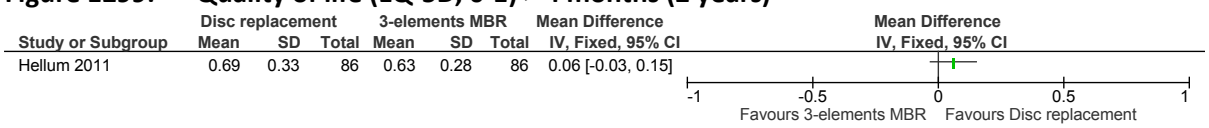
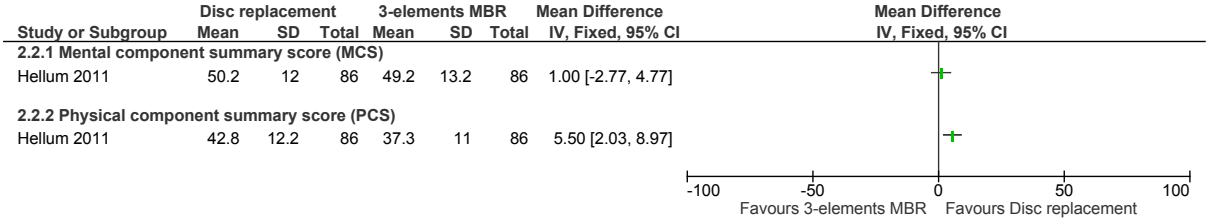
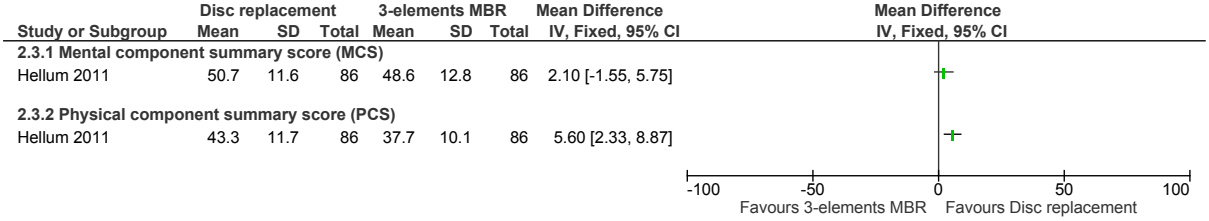


Figure 1300: Quality of life (SF-36, 0-100) >4 months (1 year)



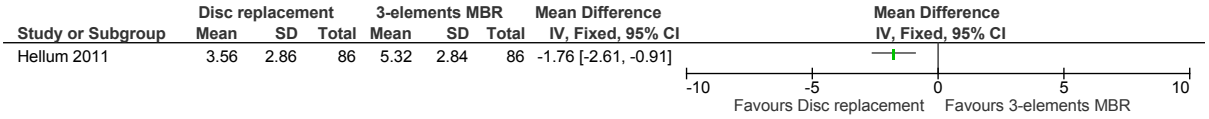
Mental component: values not adjusted for significantly different baseline scores (significantly worse in the 3-MBR group)

Figure 1301: Quality of life (SF-36, 0-100) > 4 months (2 years)



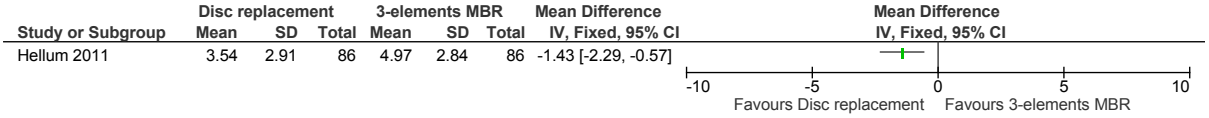
Mental component: values not adjusted for significantly different baseline scores (significantly worse in the 3-MBR group)

Figure 1302: Pain severity (Back pain VAS, 0-10) >4 months (1 year)



Values not adjusted for significantly different baseline scores (significantly worse in the 3-MBR group)

Figure 1303: Pain severity (Back pain VAS, 0-10) > 4 months (2 years)



Values not adjusted for significantly different baseline scores (significantly worse in the 3-MBR group)

Figure 1304: Function (ODI, 0-100) ≤ 4 months

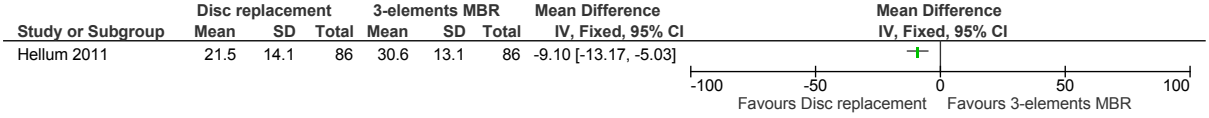


Figure 1305: Function (ODI, 0-100) >4 months (1 year)

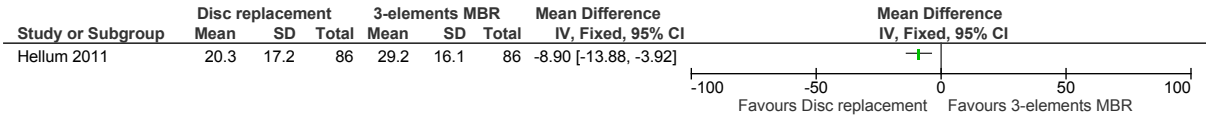
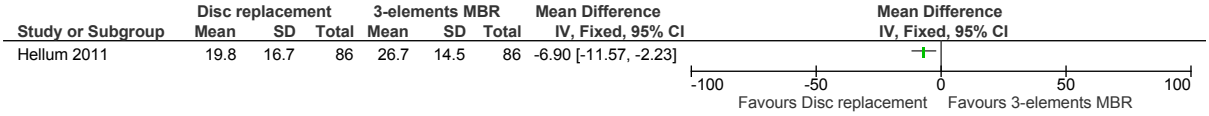


Figure 1306: Function (ODI, 0-100) > 4 months (2 years)



K.20 Spinal fusion

K.20.1 Spinal Fusion versus Usual Care

Figure 1307: Pain Severity(VAS,0-10) >4 months (2 years)

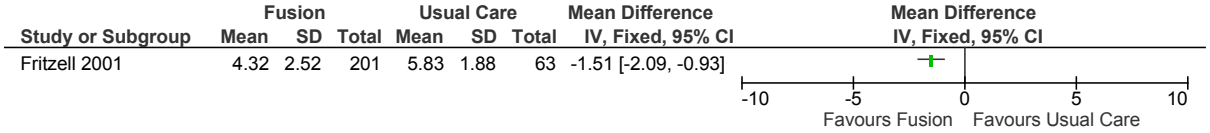


Figure 1308: Function (ODI, 0-100) >4 months (2 years)

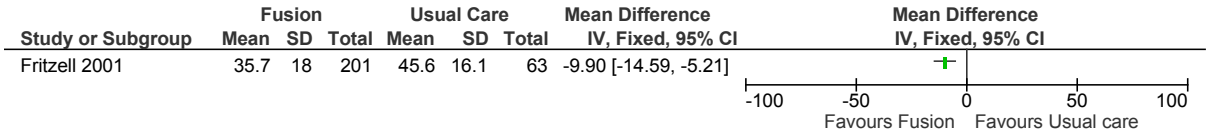


Figure 1309: Function (General Function Score, 0-100) >4 months (2 years)

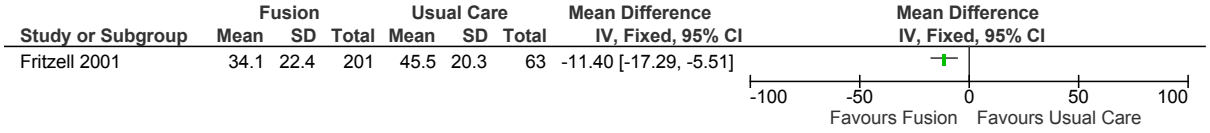


Figure 1310: Function (Million Visual Analogue Score (MVAS) 0-100) >4 months (2 years)

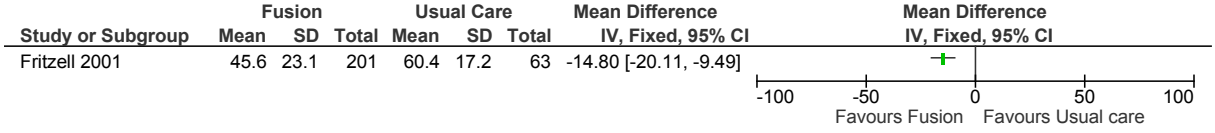


Figure 1311: Adverse Events-Complications (2 years)

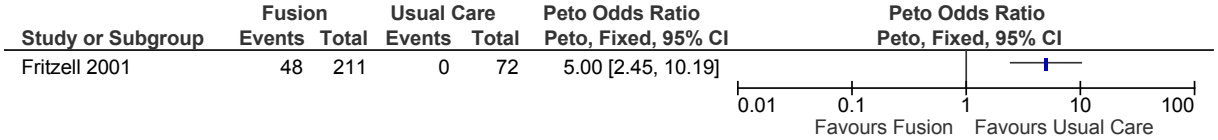
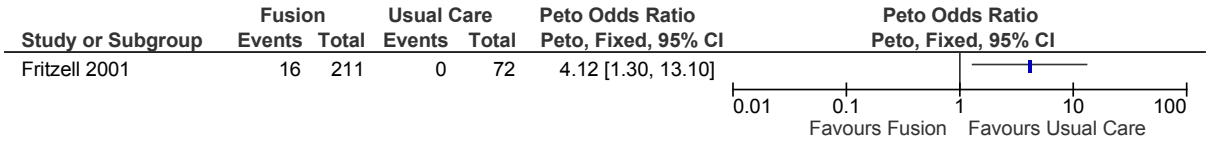


Figure 1312: Reoperations (2 years)



K.20.2 Spinal Fusion versus Usual Care (cohort)

Figure 1313: Quality of life(SF-12,PCS,0-100)>4 months (1 year)

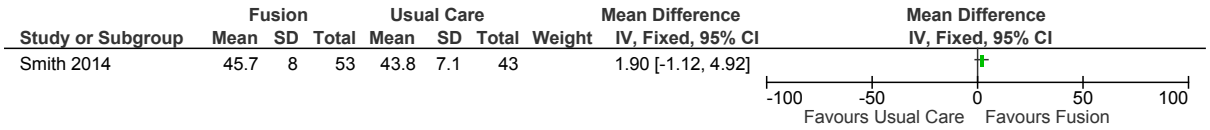


Figure 1314: Quality of life(SF-12,mCS,0-100)>4 months (1 year)

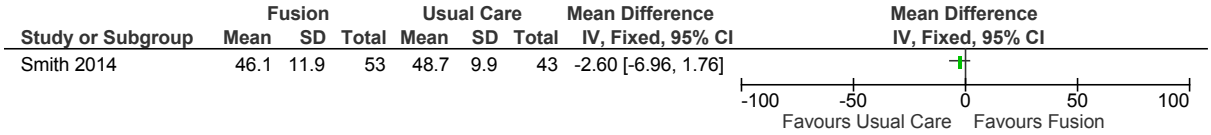


Figure 1315: Pain Severity(NRS,0-10) >4 months (1 year)

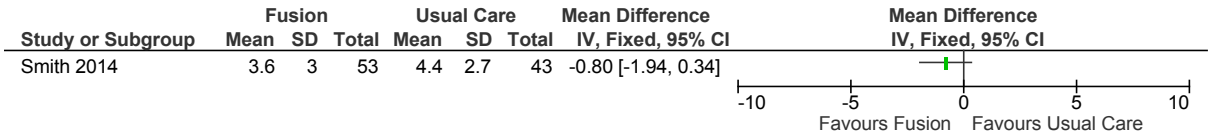
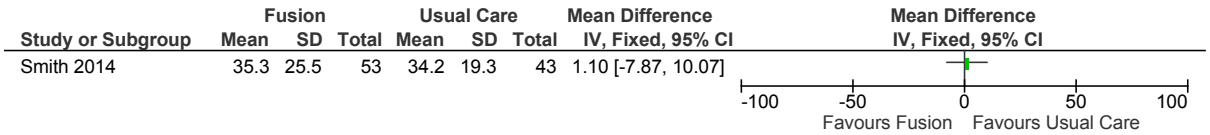


Figure 1316: Function (ODI, 0-100) >4 months (1 year)



K.20.3 Spinal Fusion versus Other Treatment

Figure 1317: Pain Severity(VAS,0-10) >4 months (1 year)

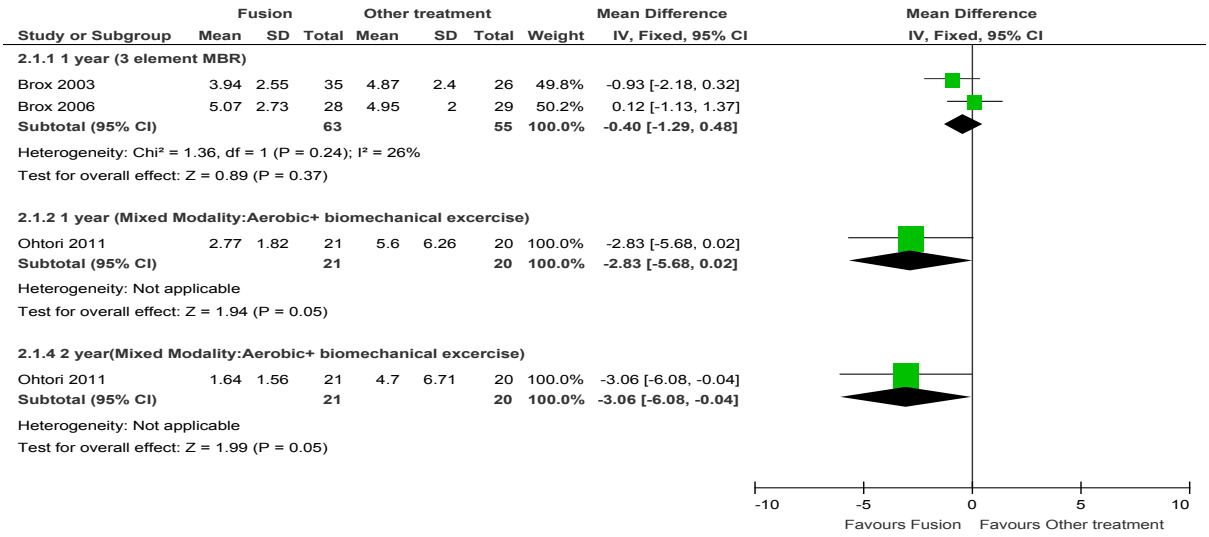


Figure 1318: Function (ODI,0-100) >4 months - 1 year

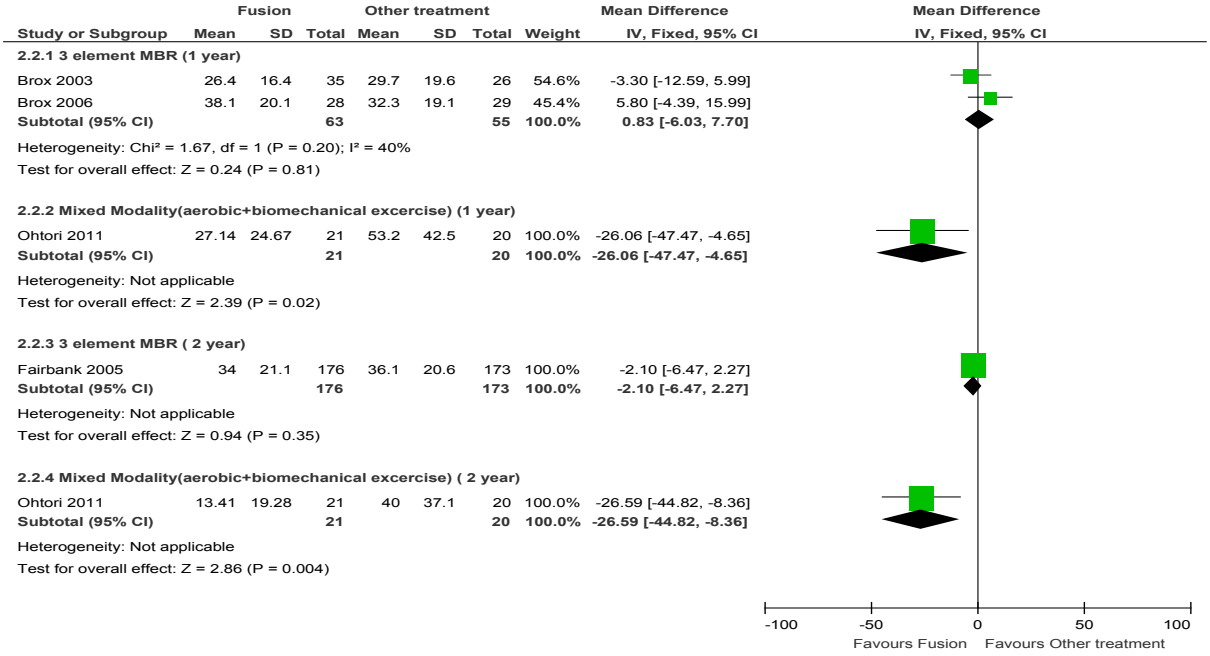


Figure 1319: Function (General Function Score,GFS,3 element MBR,0-100)> 4 months

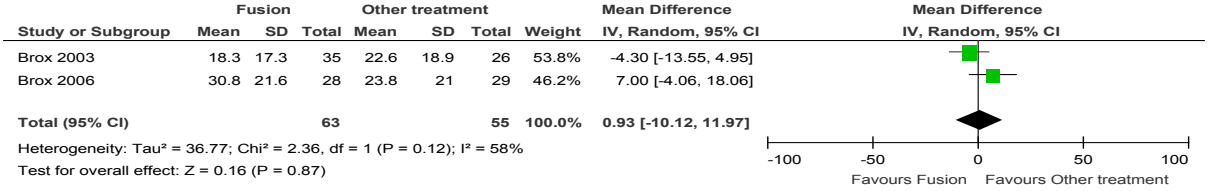


Figure 1320: Function (Japanese Orthopaedic Association Score (JOAS) ,0-3)> 4 months

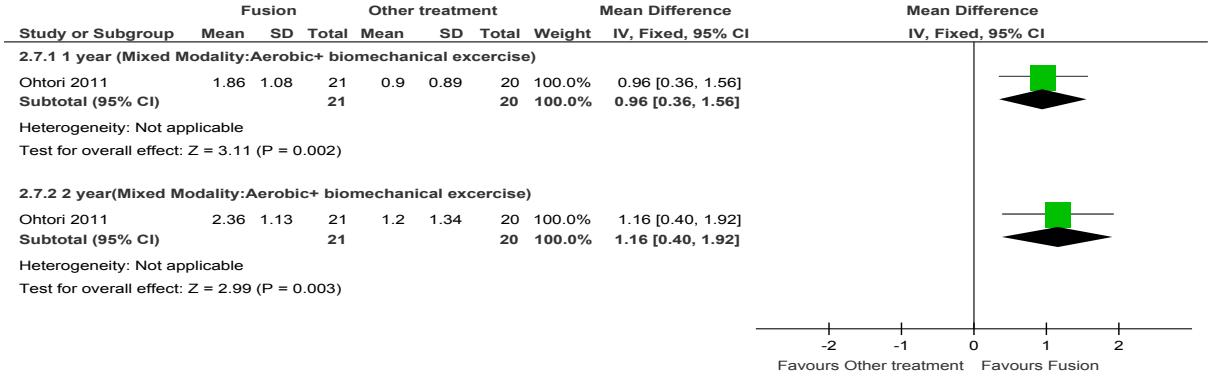


Figure 1321: Quality of life (SF-36, 0-100, 3 element MBR)> 4 months (2 years)

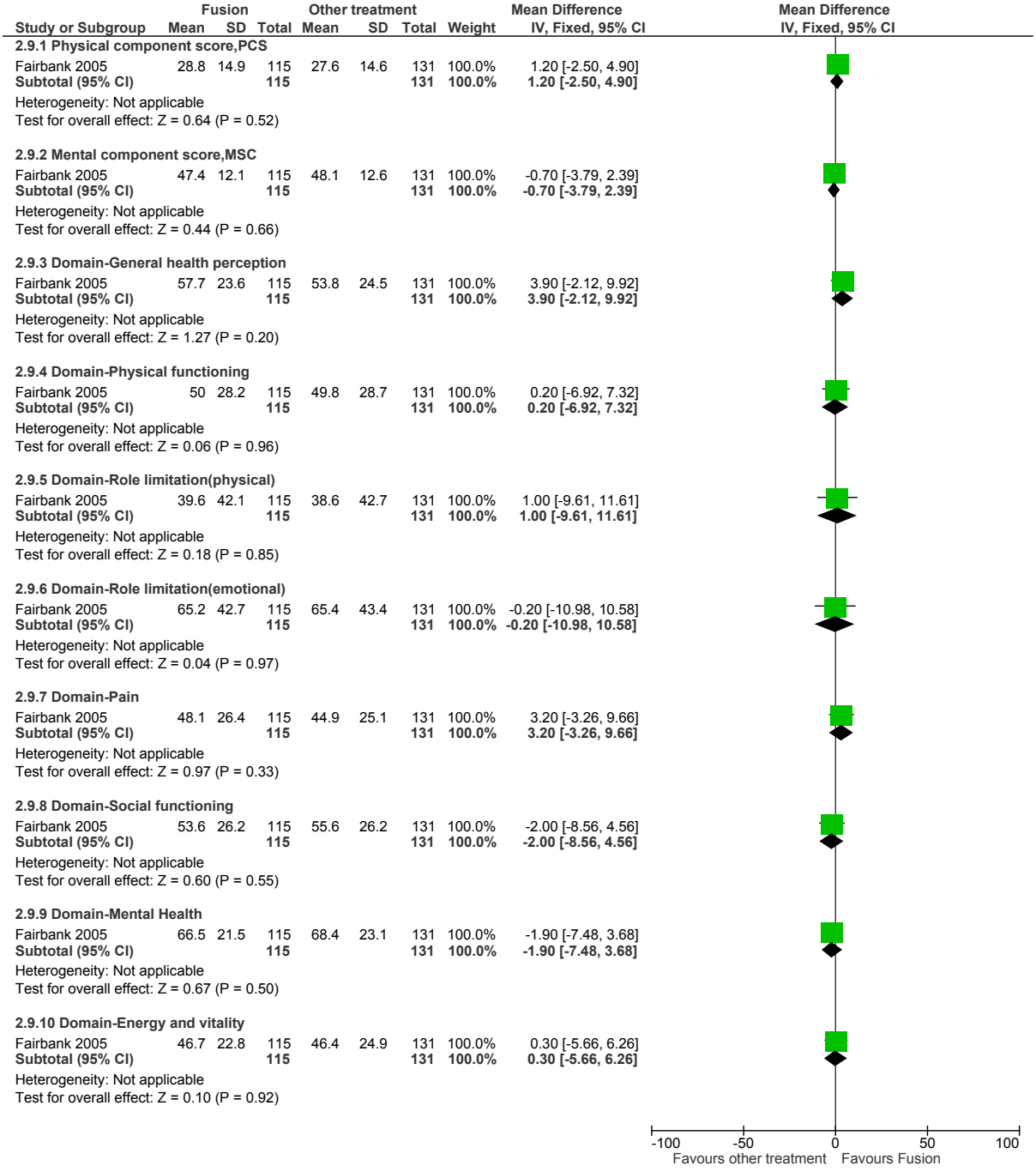


Figure 1322: Healthcare Utilisation(unplanned hospital admissions for spinal surgery, mean no. per patient 3 element MBR) (2 years)

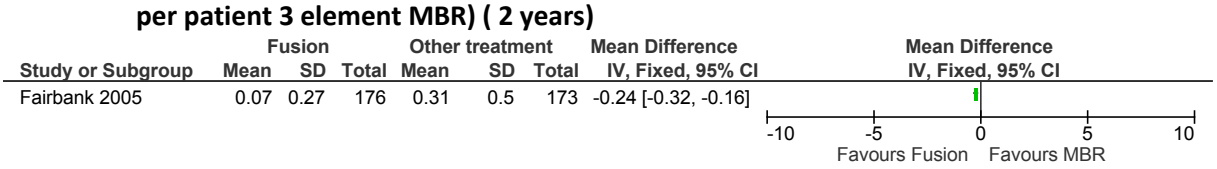


Figure 1323: Healthcare Utilisation(GP consultations, mean no. per patient, 3 element MBR) (2 years)

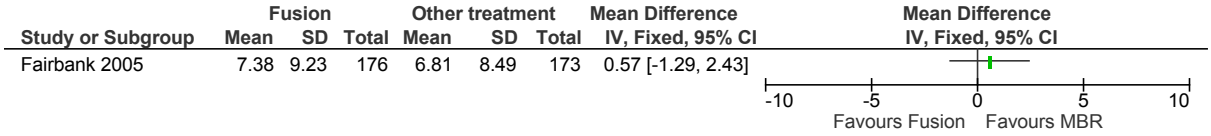


Figure 1324: Healthcare Utilisation(Practise nurse consultations, mean no. per patient, 3 element MBR) (2 year)

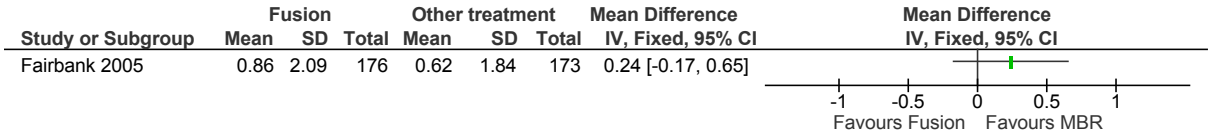


Figure 1325: Healthcare Utilisation (GP home visits, mean no. per patient, 3 element MBR) (2 year)

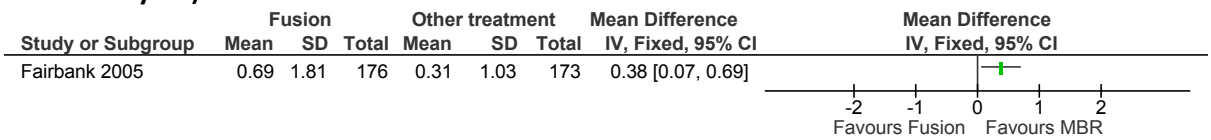
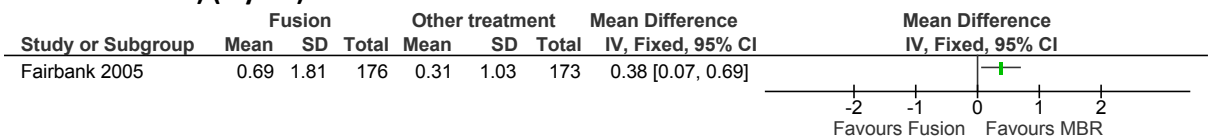


Figure 1326: Healthcare Utilisation(Practise nurse home visits, mean no. per patient, 3 element MBR) (2 year)



K.20.4 Spinal fusion versus Different types of surgery

Figure 1327: Pain Severity(VAS,0-10) ≤4 months (3 month)

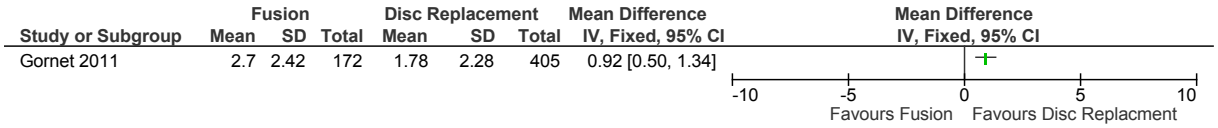


Figure 1328: Pain Severity(VAS,0-10) >4 months (1 year)

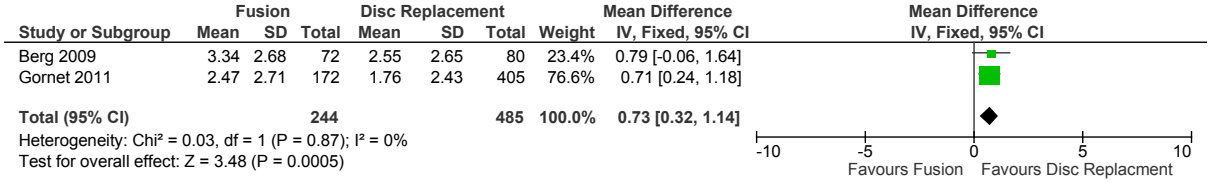


Figure 1329: Pain Severity(VAS,0-10) >4 months(2 year)

Study or Subgroup	Fusion Mean	SD	Total	Disc Replacement Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Berg 2009	2.92	2.46	72	2.54	2.98	80	41.2%	0.38 [-0.49, 1.25]
Gornet 2011	4.9	3.1	172	5.34	2.92	405	58.8%	-0.44 [-0.98, 0.10]
Total (95% CI)			**244**			**485**	**100.0%**	**-0.10 [-0.89, 0.69]**

Heterogeneity: Tau² = 0.20; Chi² = 2.47, df = 1 (P = 0.12); I² = 60%
Test for overall effect: Z = 0.25 (P = 0.80)

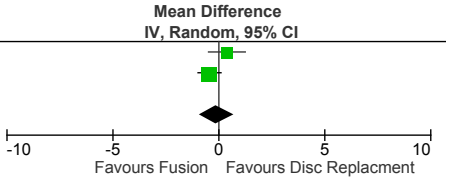


Figure 1330: Function(ODI,0-100) ≤4 months (3 months)

Study or Subgroup	Fusion Mean	SD	Total	Disc Replacement Mean	SD	Total	Mean Difference IV, Fixed, 95% CI
Gornet 2011	32	16.8	172	23.4	32	405	8.60 [4.60, 12.60]

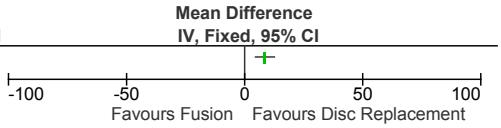


Figure 1331: Function(ODI,0-100) >4 months - 1 year (1 year)

Study or Subgroup	Fusion Mean	SD	Total	Disc Replacement Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Berg 2009	24.9	16.1	72	19.5	18.7	80	28.0%	5.40 [-0.13, 10.93]
Gornet 2011	25.3	19.8	172	19.2	18.2	405	72.0%	6.10 [2.65, 9.55]
Total (95% CI)			**244**			**485**	**100.0%**	**5.90 [2.98, 8.83]**

Heterogeneity: Chi² = 0.04, df = 1 (P = 0.83); I² = 0%
Test for overall effect: Z = 3.95 (P < 0.0001)

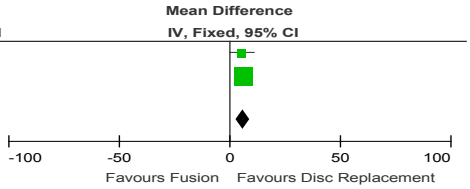


Figure 1332: Function(ODI,0-100) >4 months (2 year)

Study or Subgroup	Fusion Mean	SD	Total	Disc Replacement Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Berg 2009	23	17	72	20	19.6	80	26.9%	3.00 [-2.82, 8.82]
Gornet 2011	24.8	19.6	172	19.4	20.2	405	73.1%	5.40 [1.87, 8.93]
Total (95% CI)			**244**			**485**	**100.0%**	**4.75 [1.74, 7.77]**

Heterogeneity: Chi² = 0.48, df = 1 (P = 0.49); I² = 0%
Test for overall effect: Z = 3.09 (P = 0.002)

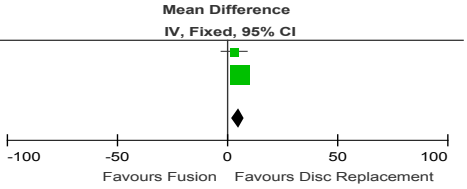


Figure 1333: Quality of life(SF-36, Physical Component Score,PCS,0-100)≤ 4 month (3 month)

Study or Subgroup	Fusion Mean	SD	Total	Disc Replacement Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Gornet 2011	36.9	9	172	41.4	11	405	100.0%	-4.50 [-6.22, -2.78]
Total (95% CI)			**172**			**405**	**100.0%**	**-4.50 [-6.22, -2.78]**

Heterogeneity: Not applicable
Test for overall effect: Z = 5.13 (P < 0.00001)

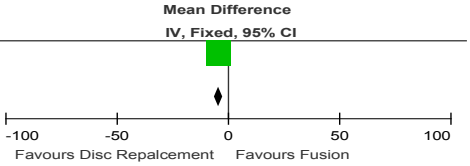


Figure 1334: Quality of life(SF-36, Physical Component Score,PCS,0-100)> 4 month

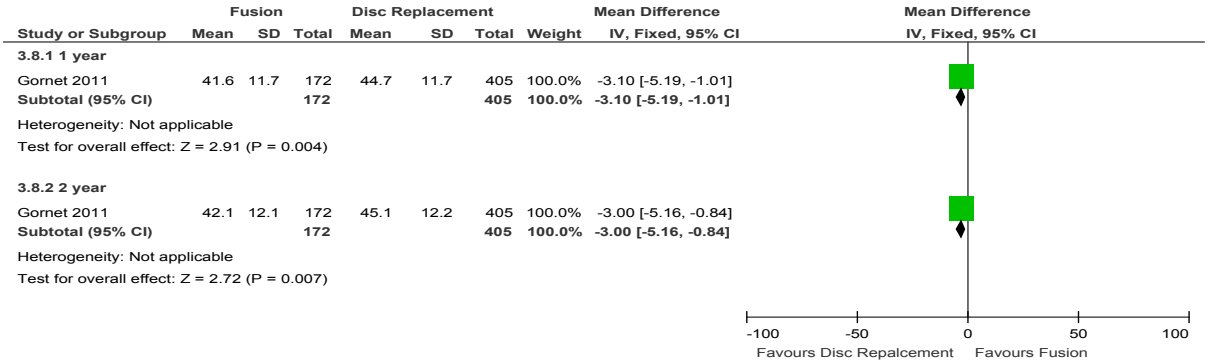


Figure 1335: Quality of life(SF-36, Mental Component Score, MCS,0-100)≤ 4 month (3 months)

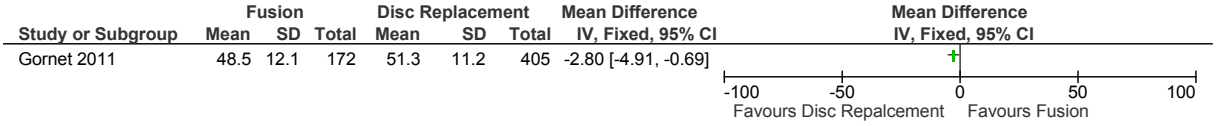


Figure 1336: Quality of life(SF-36, Mental Component Score, MCS,0-100)> 4 months

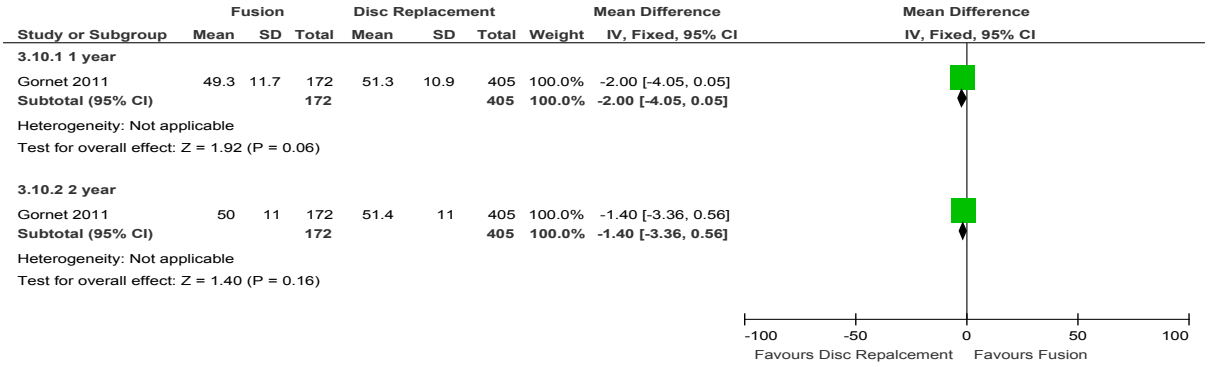


Figure 1337: Quality of life,EQ-5D, 0-1)>4 months - 1 year

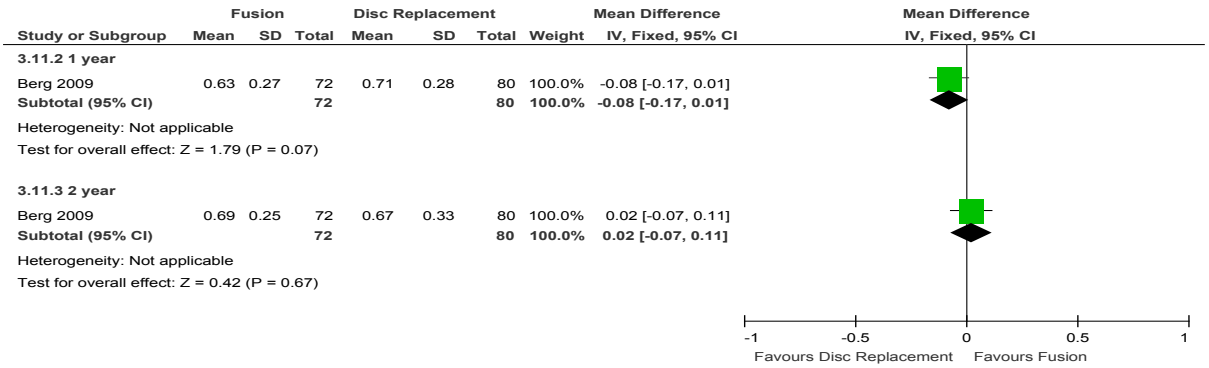


Figure 1338: Adverse Events-Mortality at 2 years

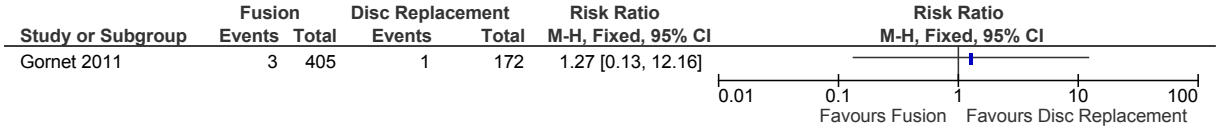


Figure 1339: Adverse Events-Complications

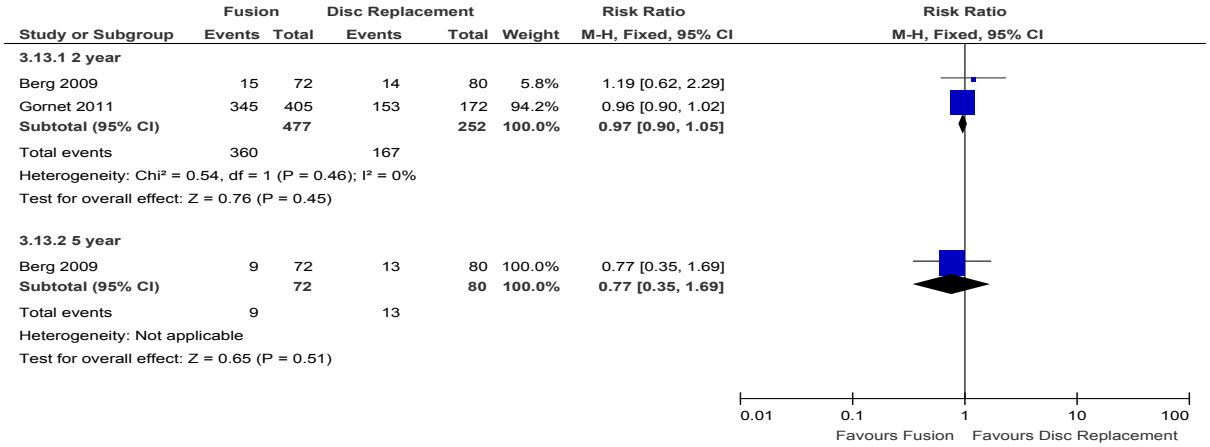


Figure 1340: Adverse Events-surgery at adjacent level at 2 years

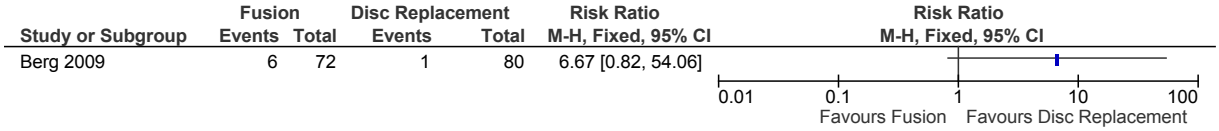
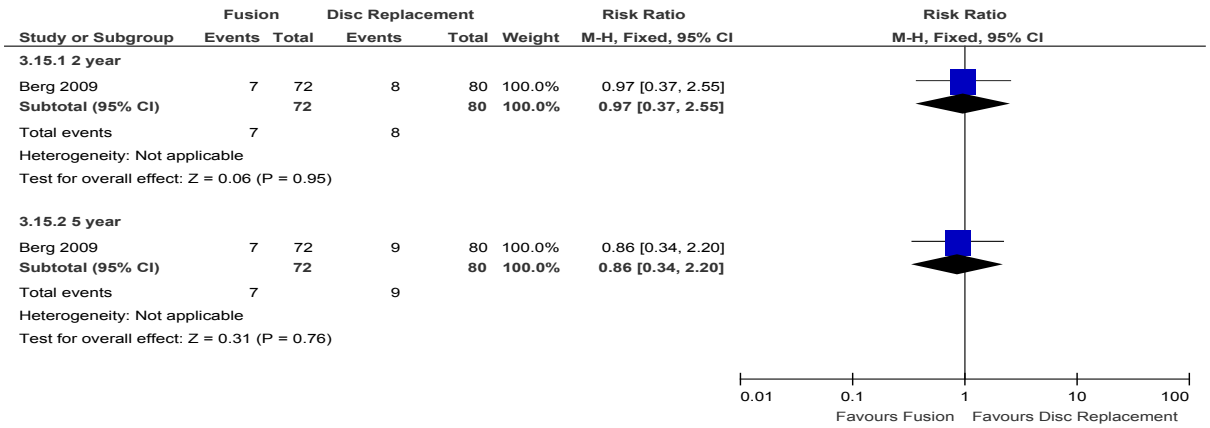


Figure 1341: Re-operations



K.21 Spinal decompression

K.21.1 Discectomy versus usual care

Figure 1342: Quality of life, SF-36, 0-100 ≤ 4 months

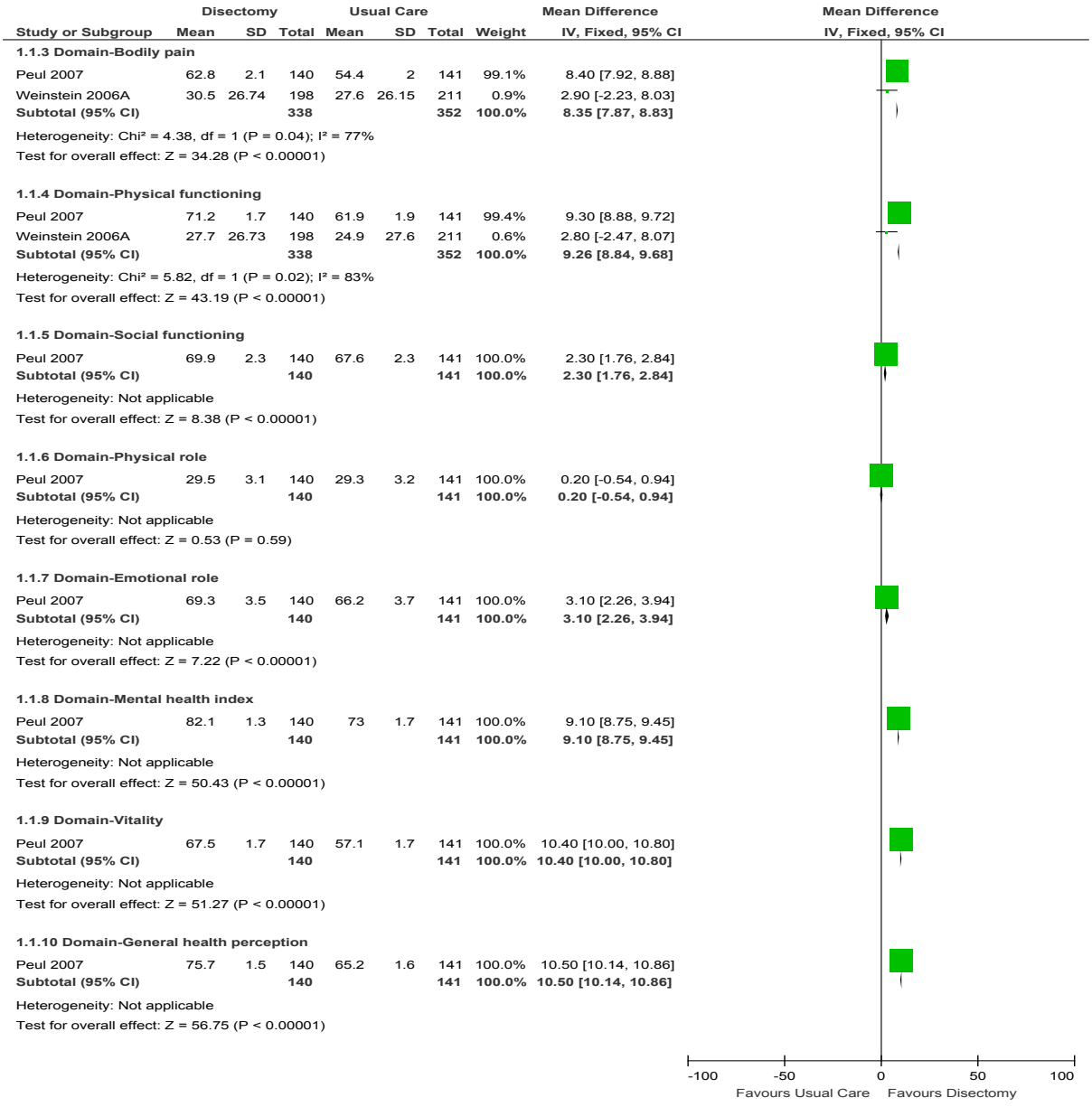


Figure 1343: Quality of life, SF-36, 0-100 >4 months (1 year)

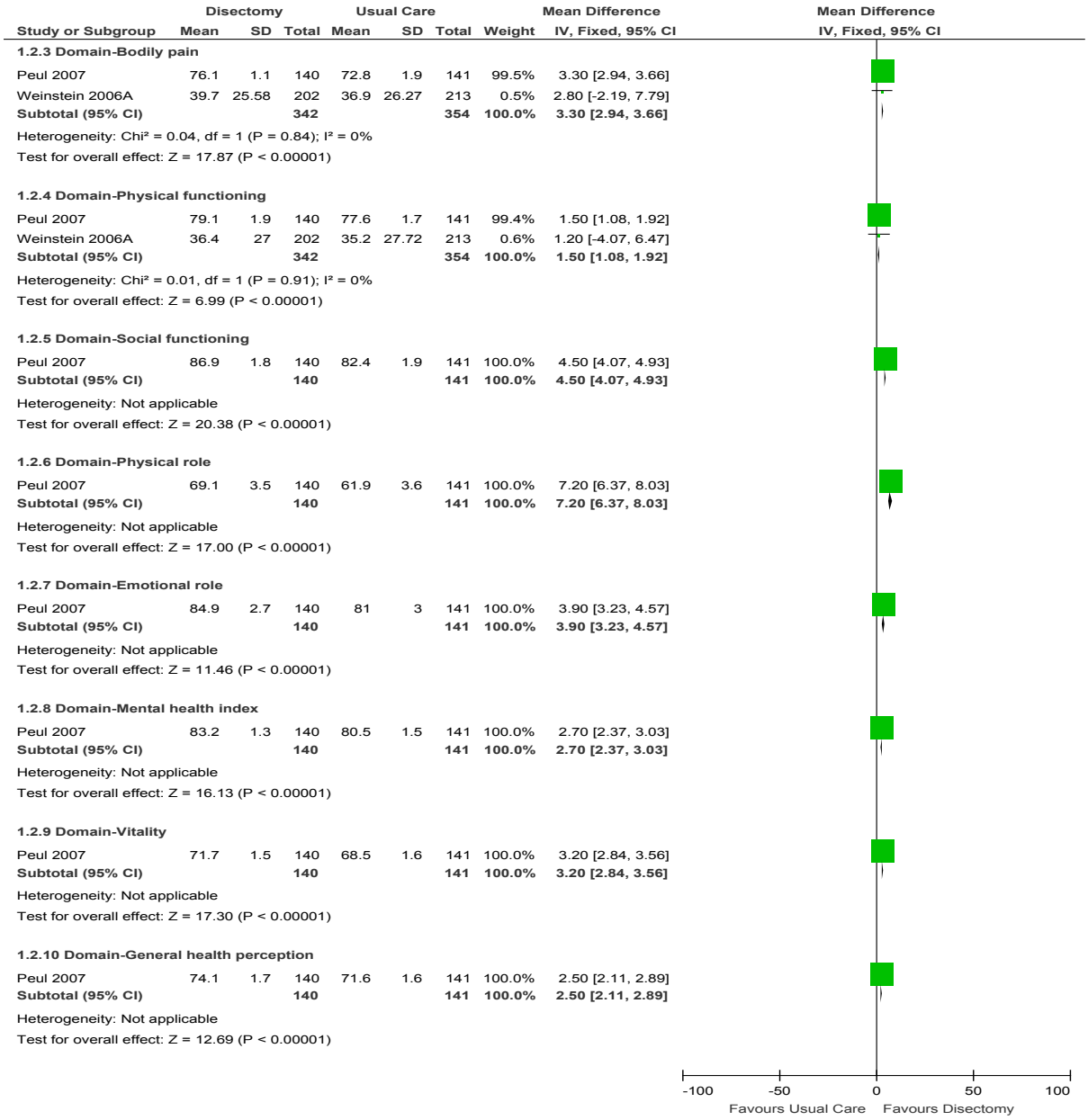


Figure 1344: Quality of life, SF-36, 0-100 >4 months (2 years)

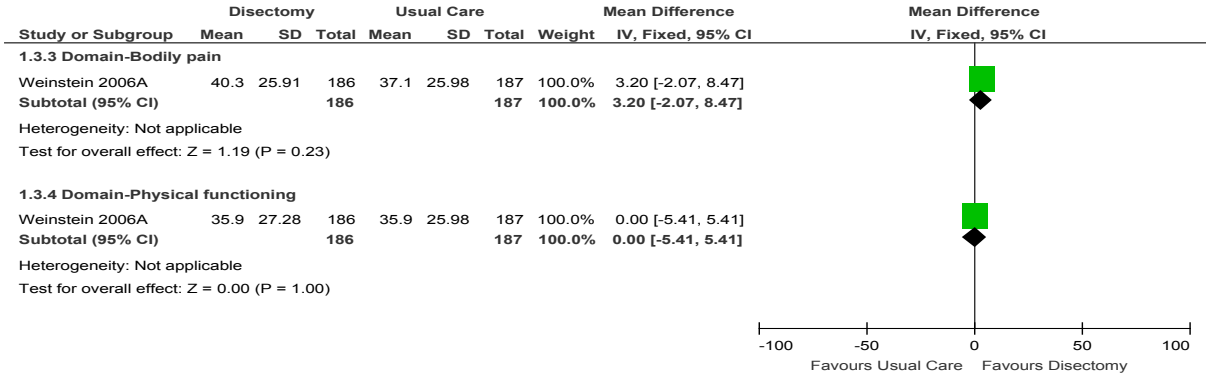


Figure 1345: Quality of life, EQ-5D, 0-1 ≤4 months(3 months)

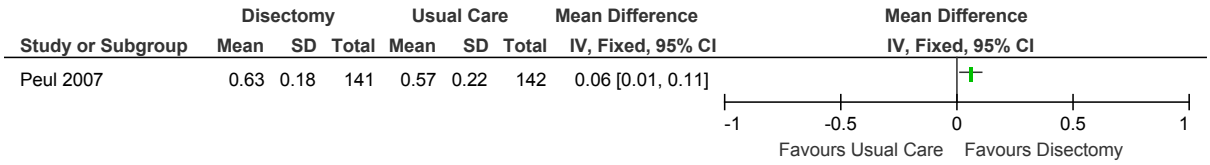


Figure 1346: Quality of life, EQ-5D, 0-1 >4 months (1 year)

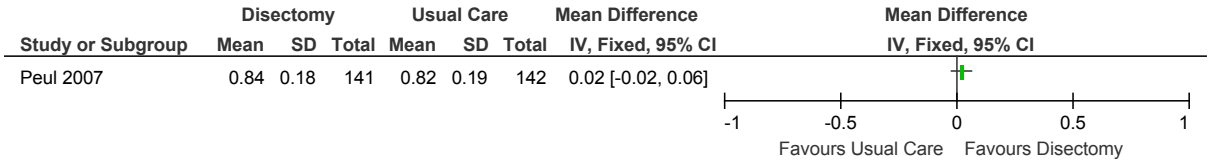
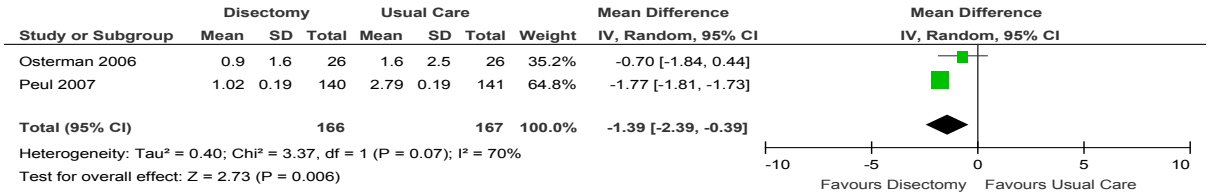


Figure 1347: Leg Pain Severity (VAS,0-10) ≤4 months (3 months)



Note: Random effects model used to address heterogeneity as subgroup analysis could not be carried out (see heterogeneity section in introduction)

Figure 1348: Leg Pain Severity (VAS,0-10) >4 months (1 year)

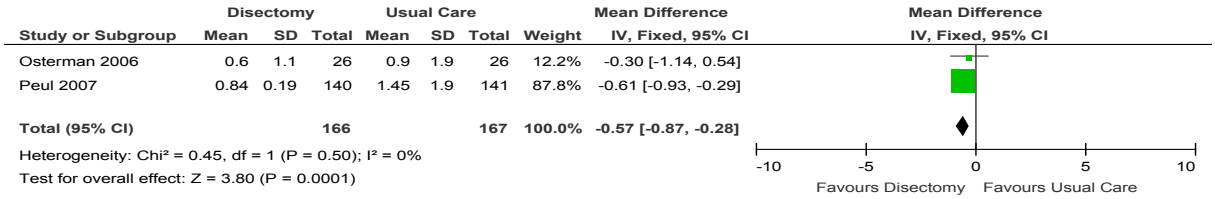


Figure 1349: Leg Pain Severity (VAS,0-10) >4 months (2 years)

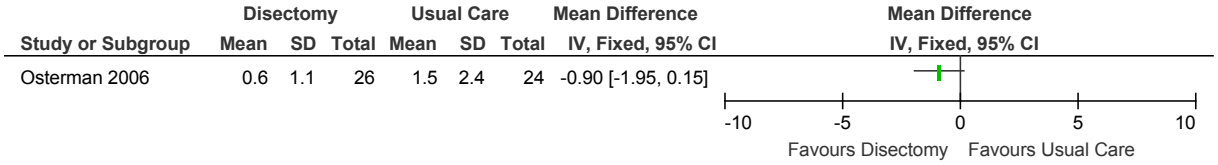


Figure 1350: Back Pain Severity (VAS,0-10) ≤4 months

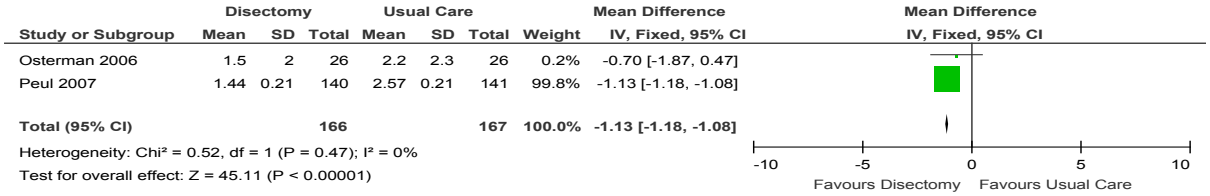


Figure 1351: Back Pain Severity (VAS, 0-10) >4 months - 1 year

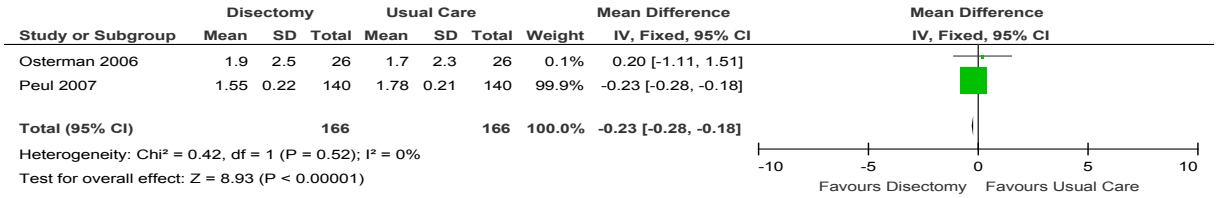


Figure 1352: Back Pain Severity (VAS, 0-10) >4 months (2 years)

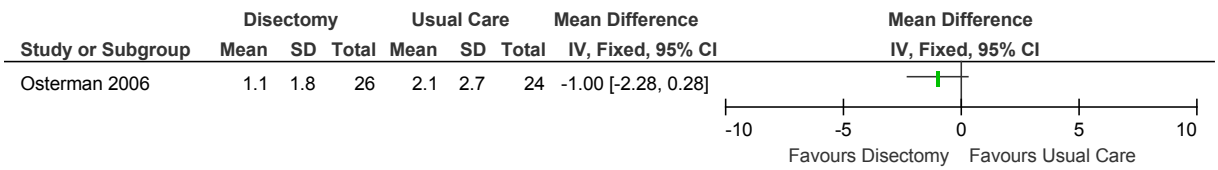


Figure 1353: Pain Severity (Sciatica bothersomeness index, 0-24) ≤4 months (3 months)

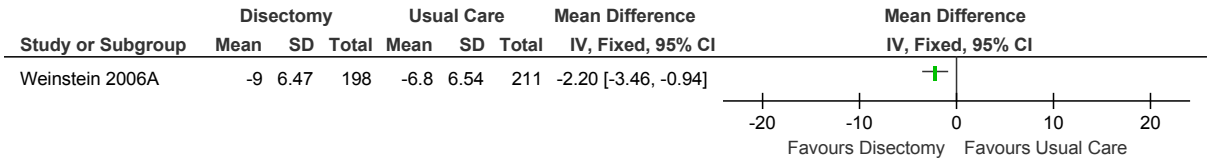


Figure 1354: Pain Severity (Sciatica bothersomeness index, 0-24) >4 months (1 year)

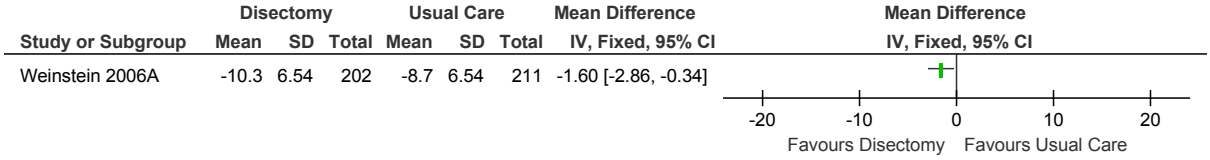


Figure 1355: Pain Severity (Sciatica bothersomeness index, 0-24) >4 months (2 year)

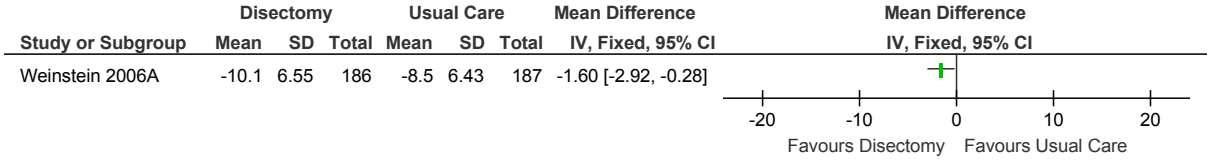


Figure 1356: Function (RMDQ, final score) ≤4 months

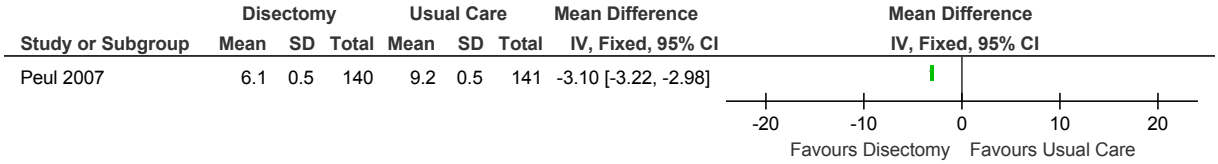


Figure 1357: Function (RMDQ, final score) >4 months (1 year)

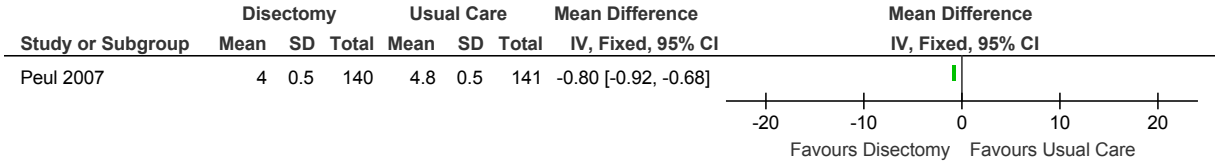


Figure 1358: Function (ODI, change scores) ≤ 4 months

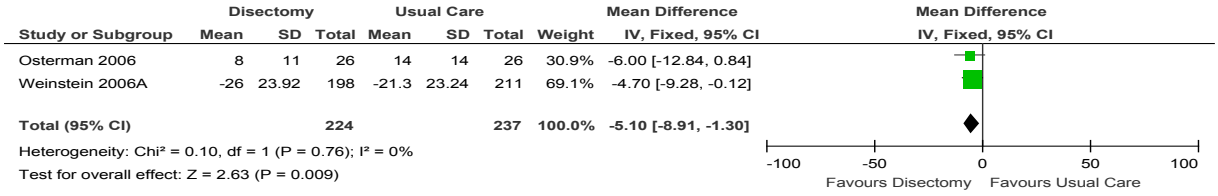


Figure 1359: Function (ODI, change score) >4 months (1 year)

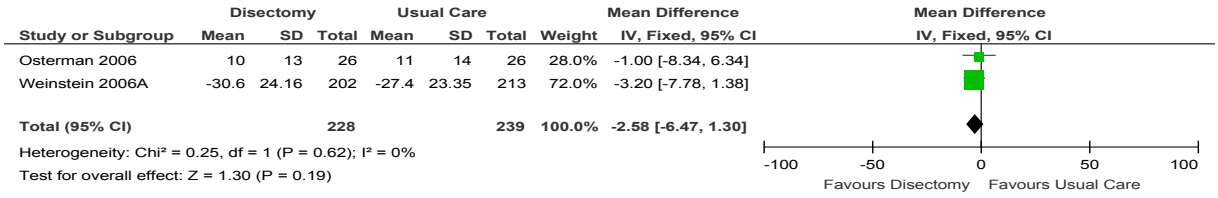


Figure 1360: Function (ODI, change scores) >4 months (2 years)

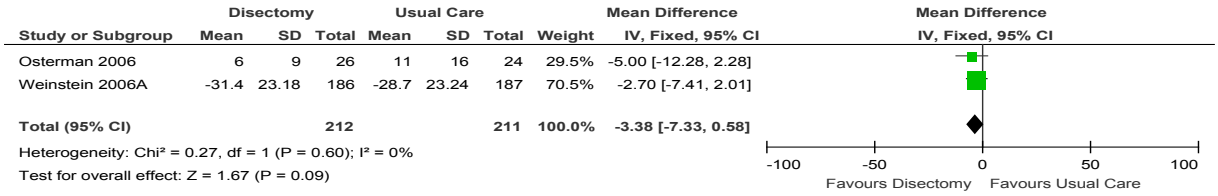


Figure 1361: Responder criteria (complete or nearly complete disappearance of symptoms) ≤ 4 months (8 weeks)

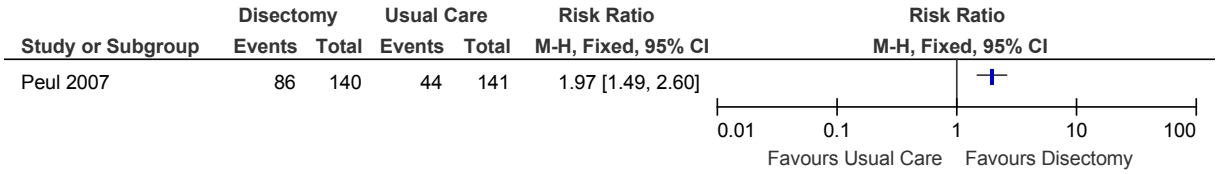


Figure 1362: Responder criteria (complete or nearly complete disappearance of symptoms) > 4 months (26 weeks)

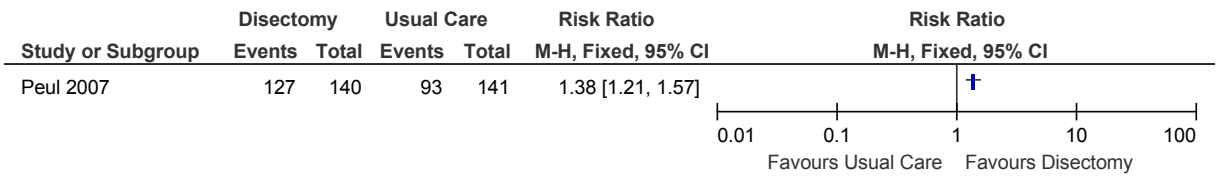
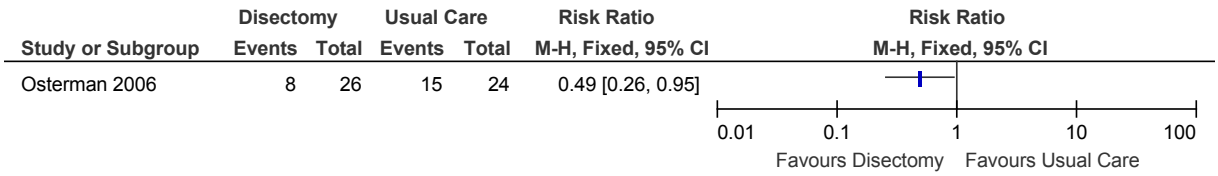


Figure 1363: Healthcare Utilisation (Number of patients with additional physical therapy visits)> 4 months (2 years)



K.21.2 Discectomy versus usual care (cohort and RCT+cohort)

Figure 1364: Quality of life, SF-36, 0-100 ≤ 4 months (3 months)

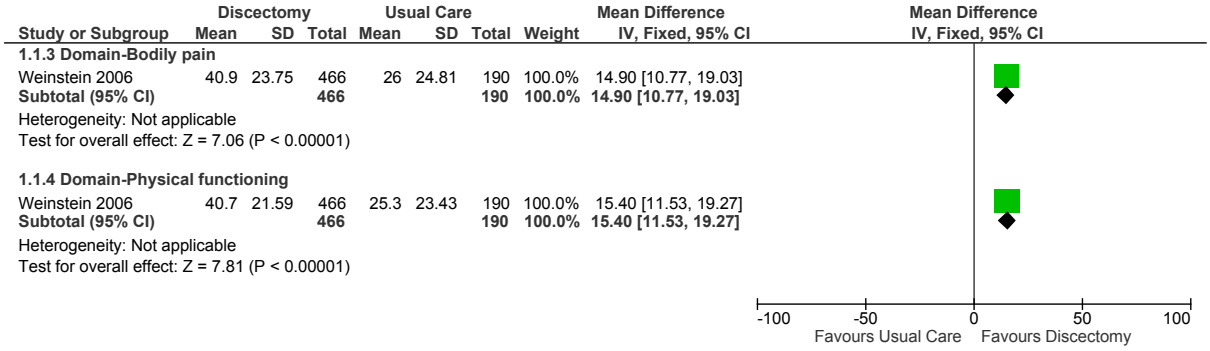


Figure 1365: Quality of life, SF-36, 0-100 ≤ 4 months (1 year)

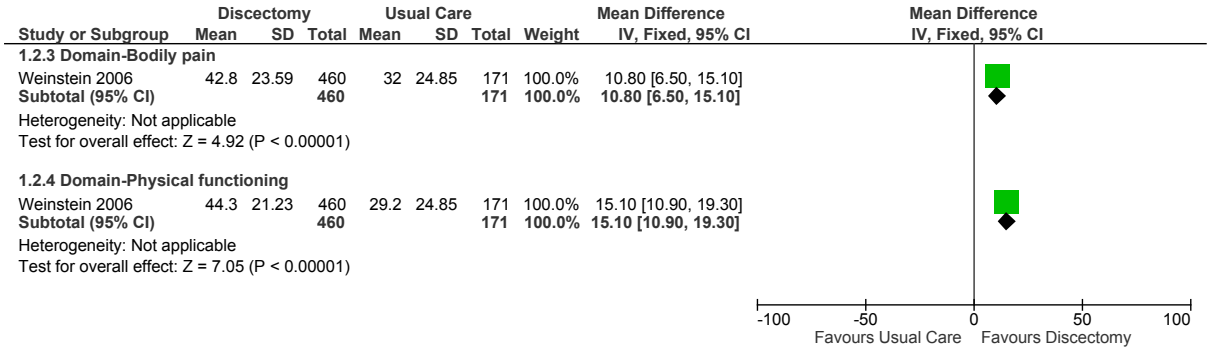


Figure 1366: Quality of life, SF-36, 0-100 ≤ 4 months (2 year)

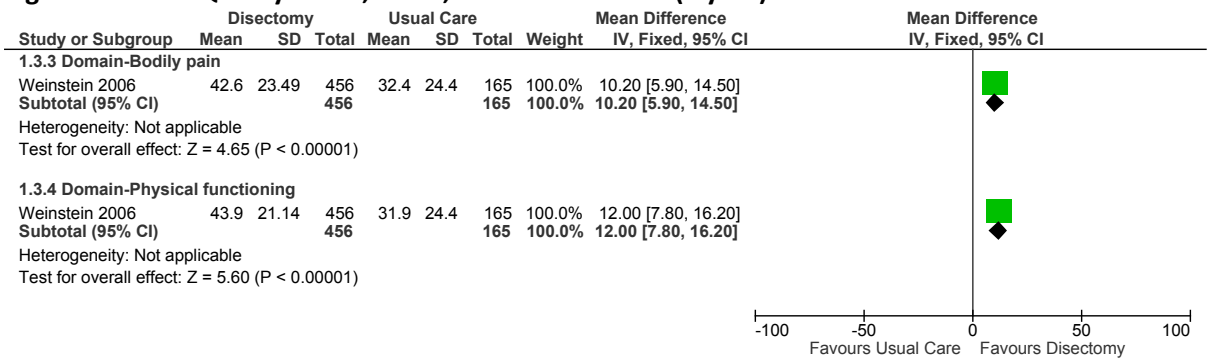


Figure 1367: Pain Severity (Sciatica bothersomeness index, 0-24) ≤4 months (3 months)

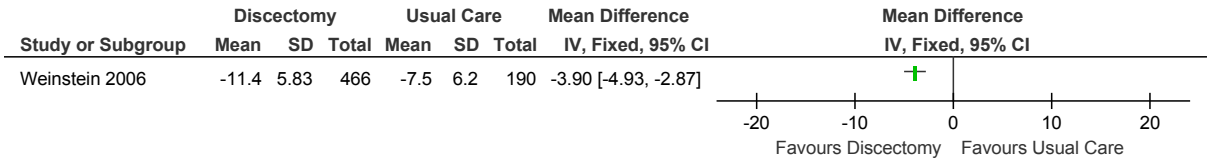


Figure 1368: Pain Severity (Sciatica bothersomeness index, 0-24) ≤4 months (1 year)

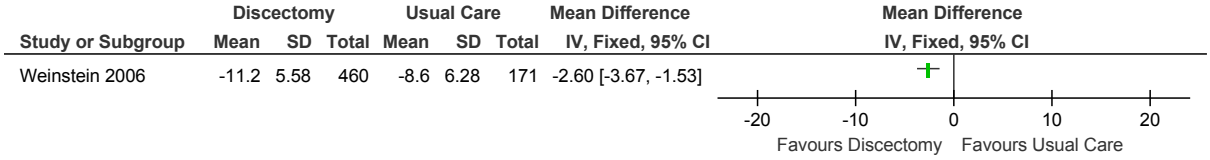


Figure 1369: Pain Severity (Sciatica bothersomeness index, 0-24) ≤4 months (2 year)

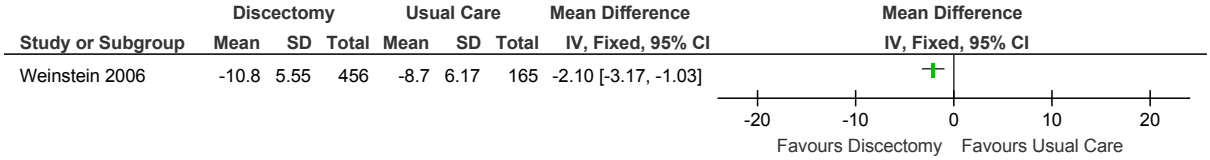


Figure 1370: Function (ODI, 0-100) ≤ 4 months (3 months)

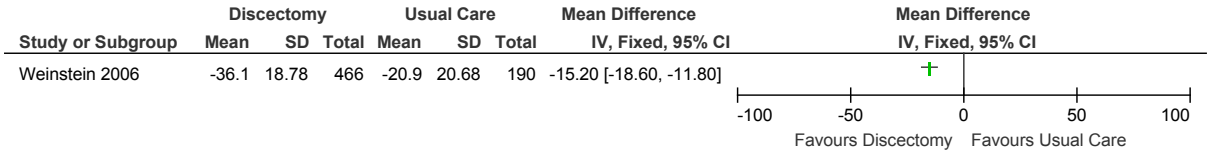


Figure 1371: Function (ODI,0-100) ≤ 4 months (1 year)

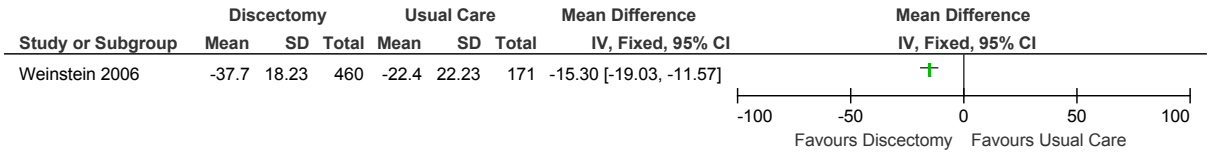


Figure 1372: Function (ODI, 0-100) ≤ 4 months (2 year)

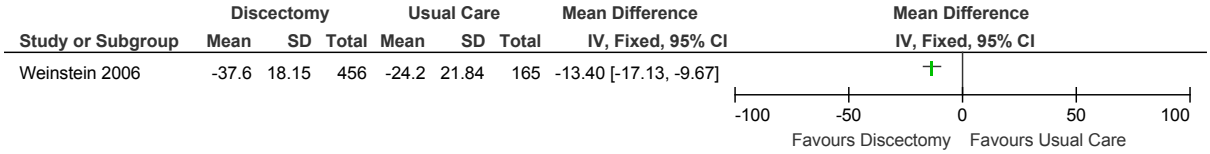
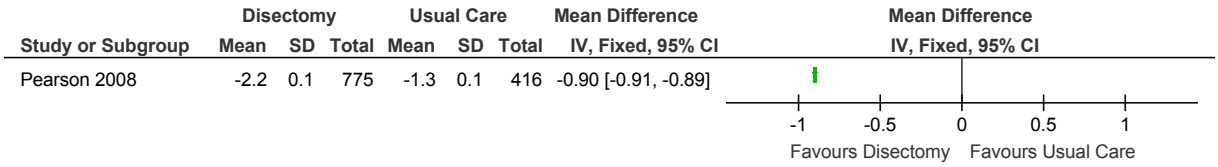
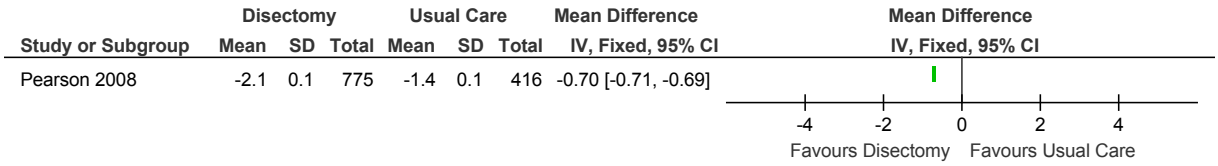


Figure 1373: Pain Severity (Back Pain bothersomeness, 0-6) ≤4 months



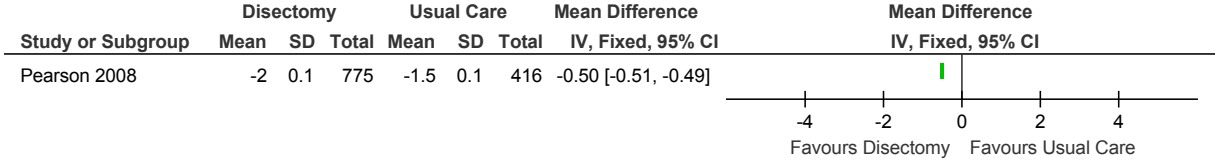
Note: adjusted for age, gender, center, race, marital status, smoking status, BMI, work status, health insurance status, compensation, joint problems, migraines, neurologic deficit, baseline back pain score, baseline satisfaction with symptoms, self-rated health trend, herniation (level, location, and morphology)

Figure 1374: Pain Severity (Back Pain bothersomeness, 0-6) >4 months (1 year)



Note: adjusted for age, gender, center, race, marital status, smoking status, BMI, work status, health insurance status, compensation, joint problems, migraines, neurologic deficit, baseline back pain score, baseline satisfaction with symptoms, self-rated health trend, herniation (level, location, and morphology)

Figure 1375: Pain Severity (Back Pain bothersomeness, 0-6) >4 months (2 year)



Note: adjusted for age, gender, center, race, marital status, smoking status, BMI, work status, health insurance status, compensation, joint problems, migraines, neurologic deficit, baseline back pain score, baseline satisfaction with symptoms, self-rated health trend, herniation (level, location, and morphology)

Figure 1376: Healthcare Utilisation (Number of patients with more reported diagnostic test use)> 4 months (2 years)

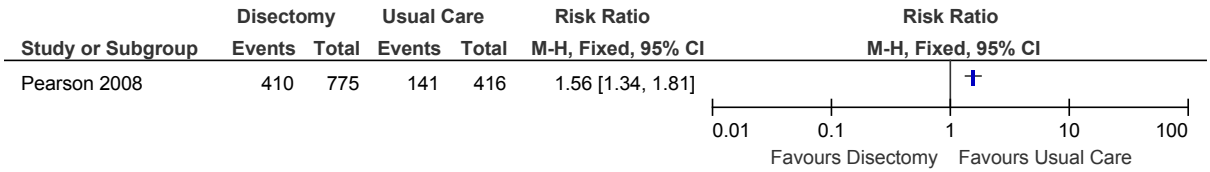


Figure 1377: Healthcare Utilisation (Number of patients with reported healthcare visits)> 4 months (2 years)

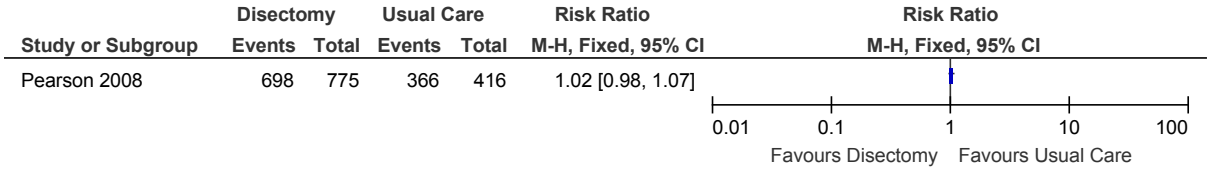


Figure 1378: Healthcare Utilisation (Number of patients with additional physical therapy visits)> 4 months (2 years)

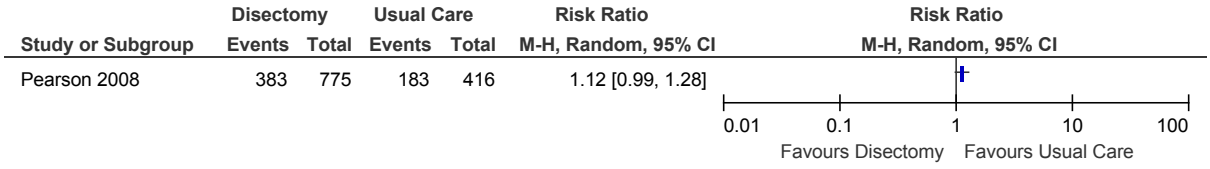
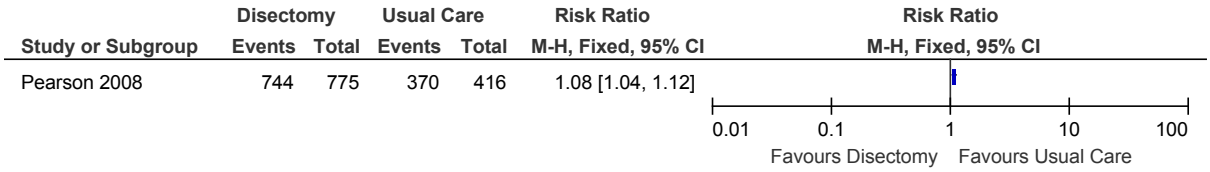


Figure 1379: Healthcare Utilisation (Medication use)> 4 months (2 years)



K.21.3 Discectomy versus combination treatment(manual therapy+ biomechanical exercise + self-management)

Figure 1380: Quality of life, SF-36, 0-100 ≤4 months (12 weeks)

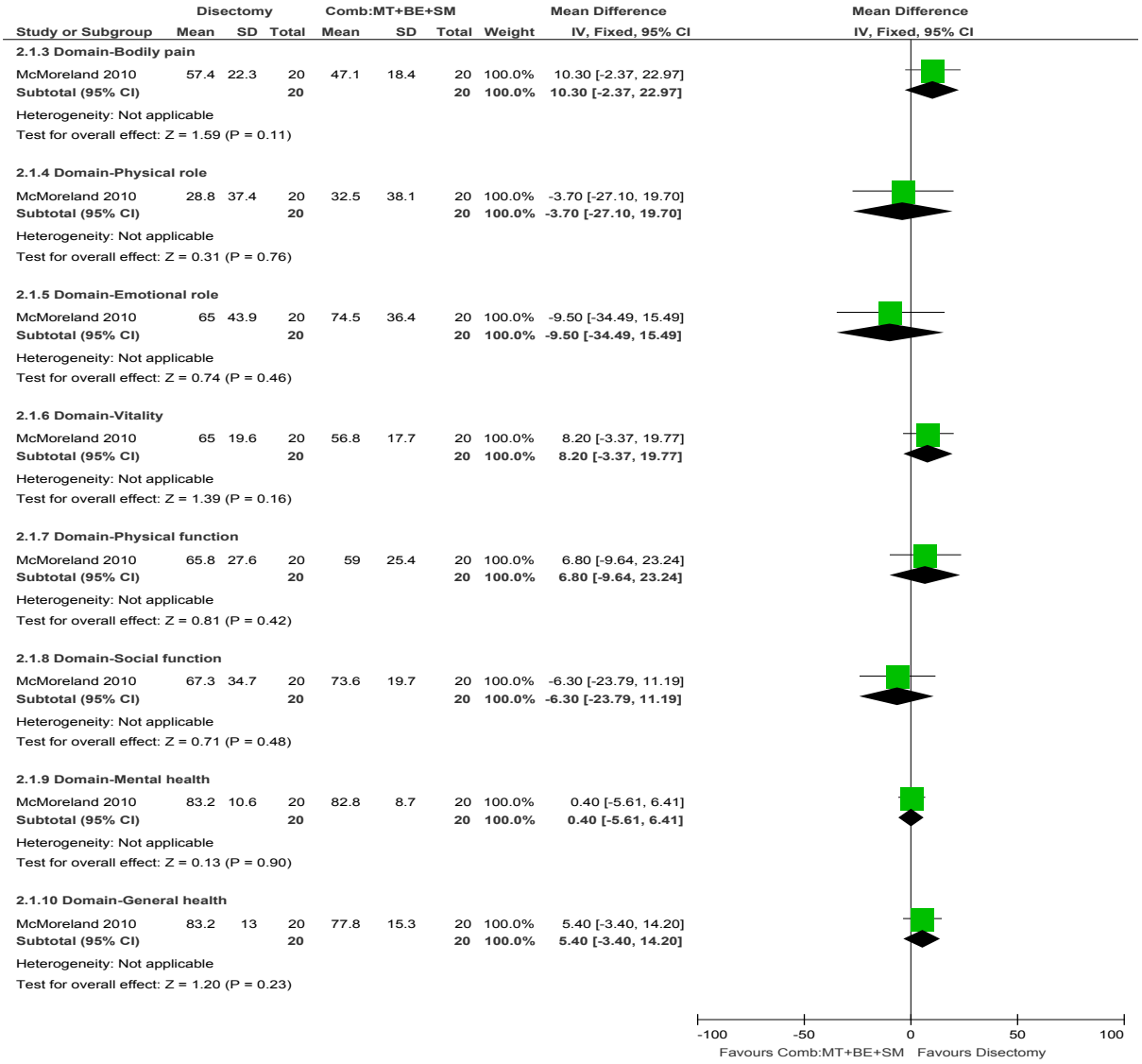
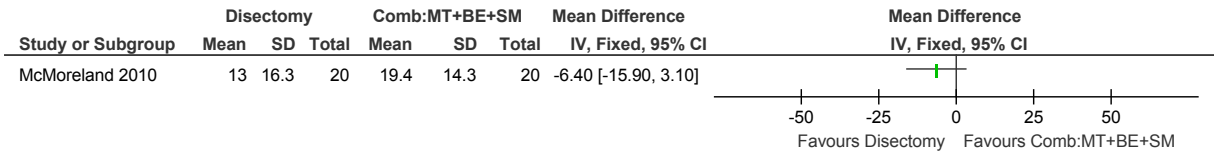
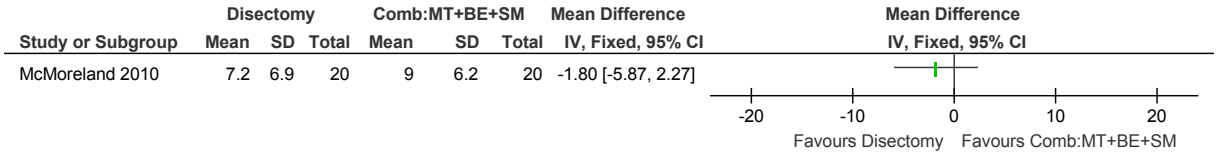


Figure 1381: Pain Severity (McGill, 0-78) ≤ 4 months (12 weeks)





K.21.4 Percutaneous decompression versus usual care

Figure 1383: Pain Severity (Leg Pain NVS, 0-10) ≤4 months (3 months)

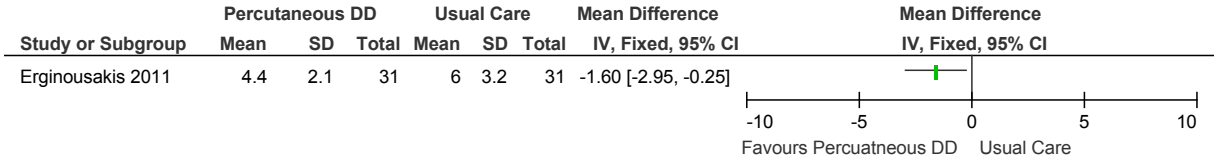


Figure 1384: Pain Severity (Leg Pain NVS, 0-10) >4 months (1 year)

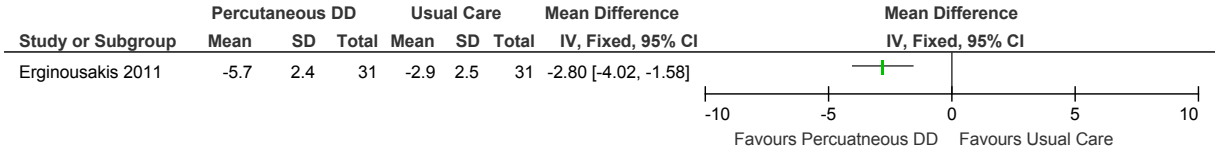
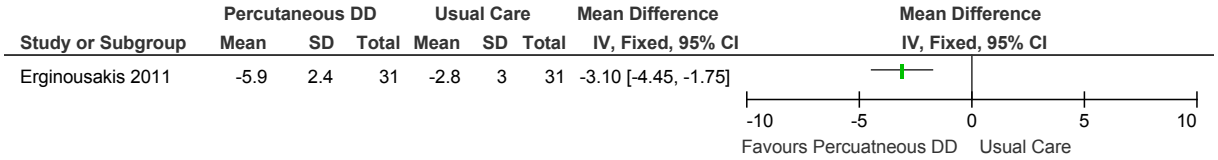


Figure 1385: Pain Severity (Leg Pain NVS, 0-10) >4 months (2 years)



K.21.5 Plasma disc decompression versus other treatment (epidural steroid)

Figure 1386: Pain Severity (Leg Pain VAS,0-10) ≤4 months(3 months)

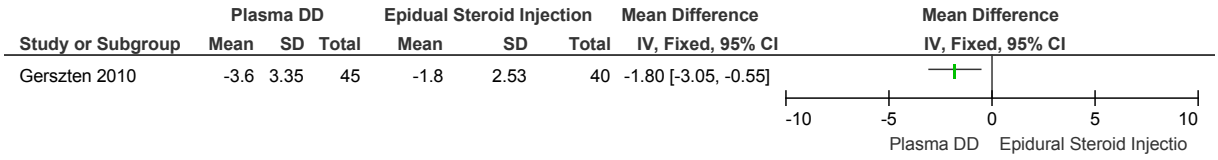


Figure 1387: Pain Severity (Leg Pain VAS,0-10) >4 months (6 months)

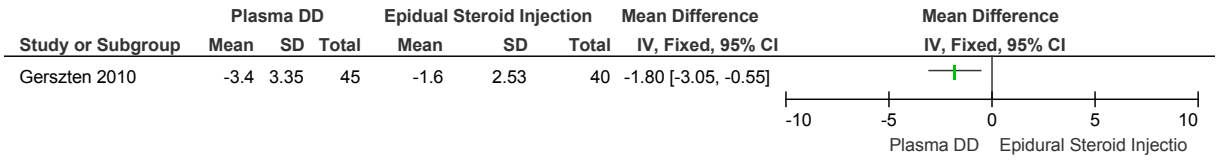


Figure 1388: Pain Severity (Back Pain VAS,0-10) ≤4 months(3 months)

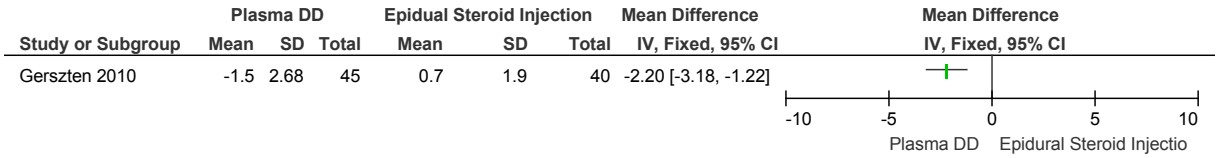


Figure 1389: Pain Severity (Back Pain VAS,0-10) >4 months (6 months)

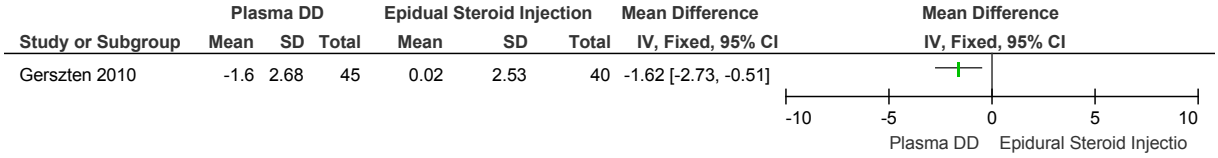


Figure 1390: FunctionODI,0-100 ≤4 months (3 months)

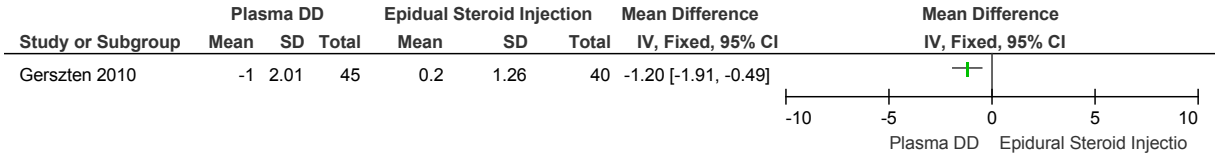


Figure 1391: Function (ODI,0-100) >4 months (6 months)

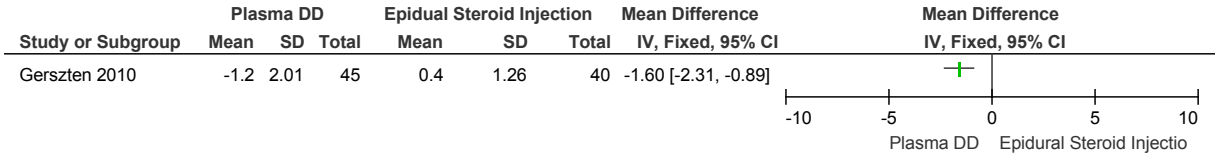


Figure 1392: Procedure related adverse events> 4 months (6 months)

K.21.6 Discectomy versus fusion

Figure 1393: Function (ODI 0-100) >4 months (1 year)

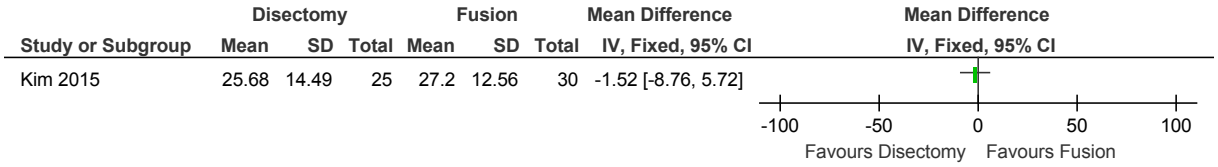
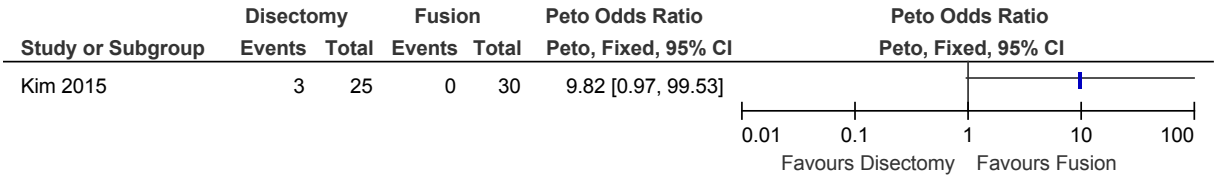
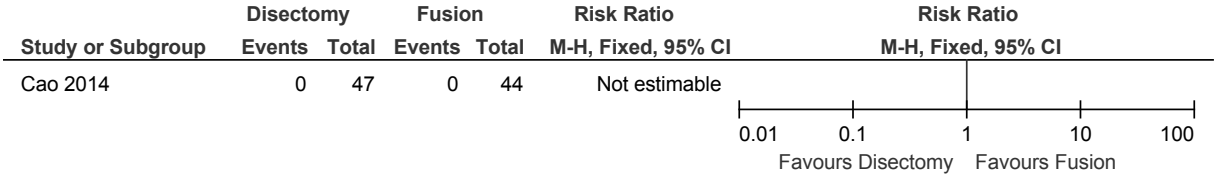


Figure 1394: Revision surgery >4 months (1 year)



K.21.7 Discectomy versus fusion

Figure 1395: Adverse events (complications) >4 months (1 year)



K.21.8 Laminectomy versus usual care

Figure 1396: Quality of life (SF-36, 0-100) ≤ 4 months (3months)

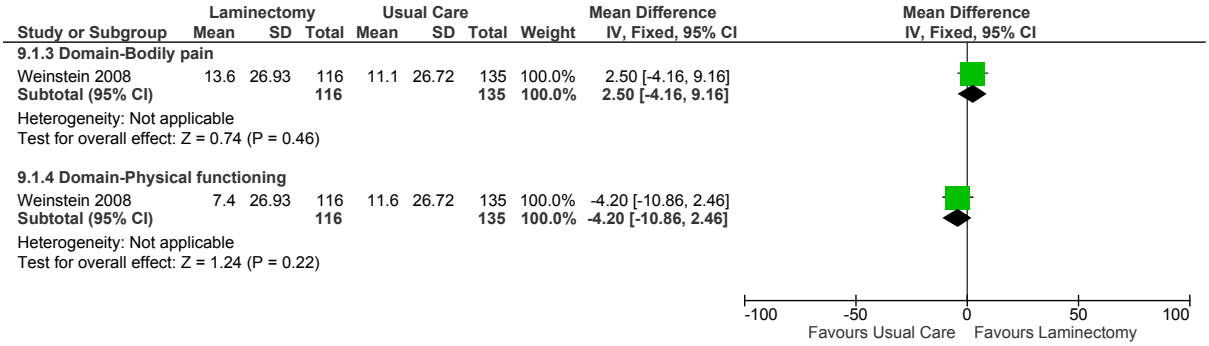


Figure 1397: Quality of life (SF-36, 0-100) > 4 months (1 year)

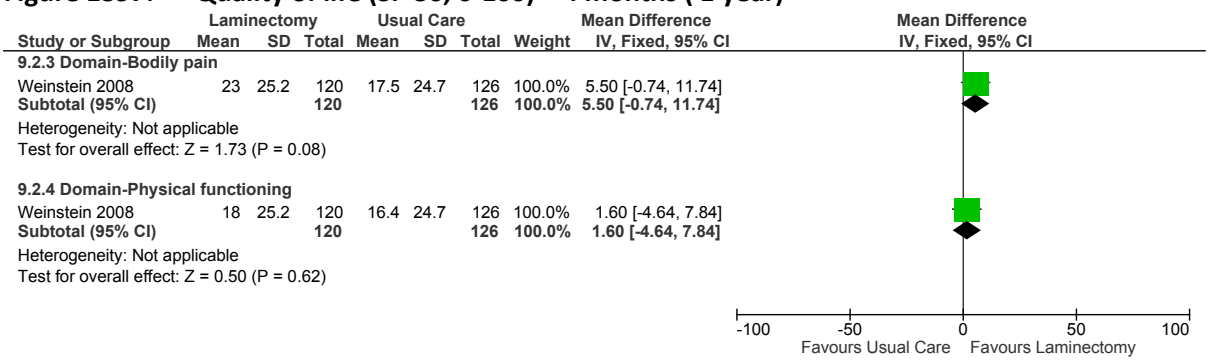


Figure 1398: Quality of life (SF-36, 0-100) > 4 months (2 year)

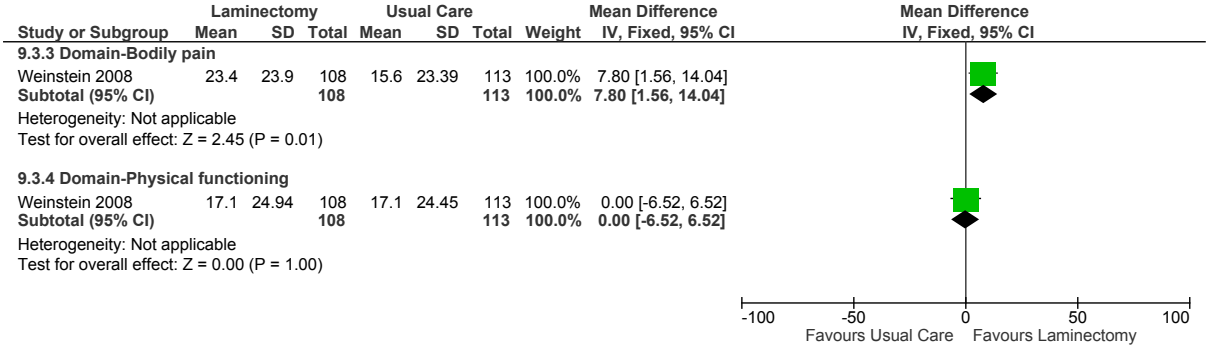


Figure 1399: Pain Severity (Low back pain bothersomeness index, 0-24) ≤4 months (3 months)

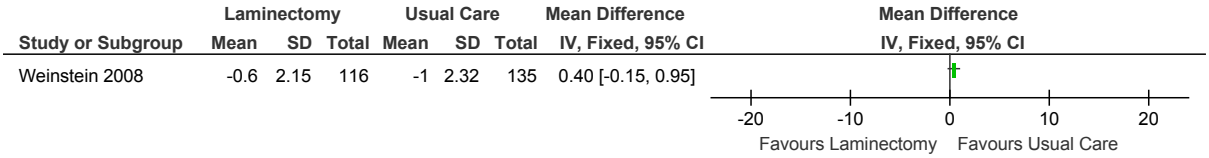


Figure 1400: Pain Severity (Low back pain bothersomeness index, 0-24) >4 months (1 year)

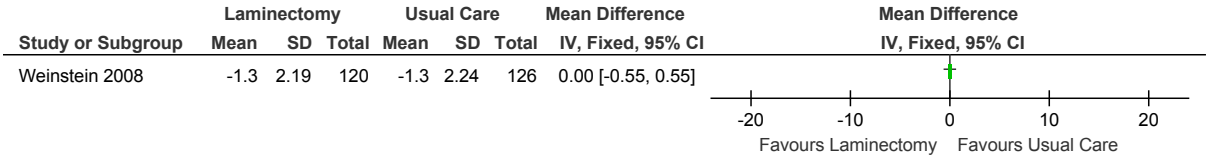


Figure 1401: Pain Severity (Low back pain bothersomeness index, 0-24) >4 months (2 year)

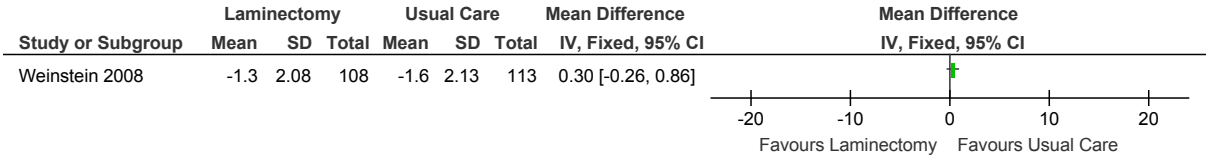


Figure 1402: Pain Severity (Sciatica bothersomeness index, 0-24) ≤4 months (3 months)

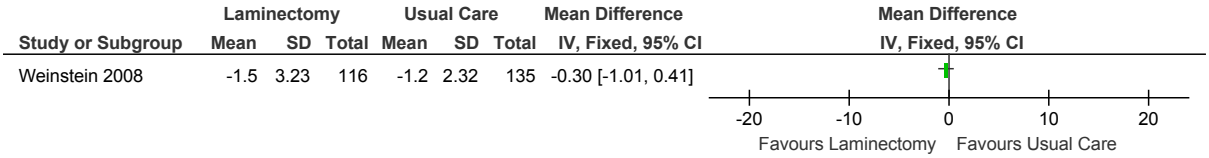


Figure 1403: Pain Severity (Sciatica bothersomeness index, 0-24) >4 months (1 year)

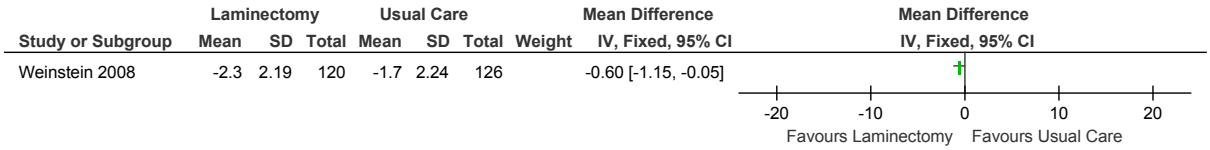


Figure 1404: Pain Severity (Sciatica bothersomeness index, 0-24) >4 months (2 year)

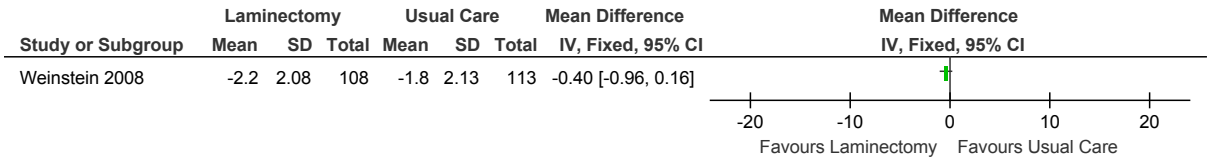


Figure 1405: Function (ODI, 0-100,change scores) ≤ 4 months (3 months)

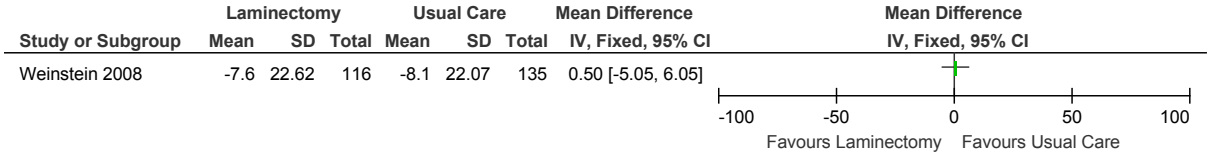


Figure 1406: Function (ODI, 0-100,change scores) > 4 months (1 year)

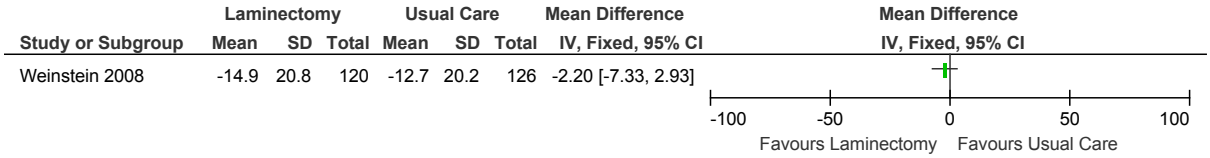
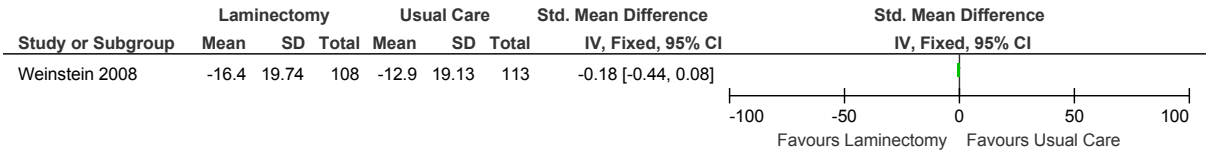


Figure 1407: Function (ODI, 0-100,change scores) > 4 months (2 year)



K.21.9 Laminectomy versus usual care (RCT+cohort)

Figure 1408: Quality of life (SF-36, 0-100) ≤ 4 months (3months)

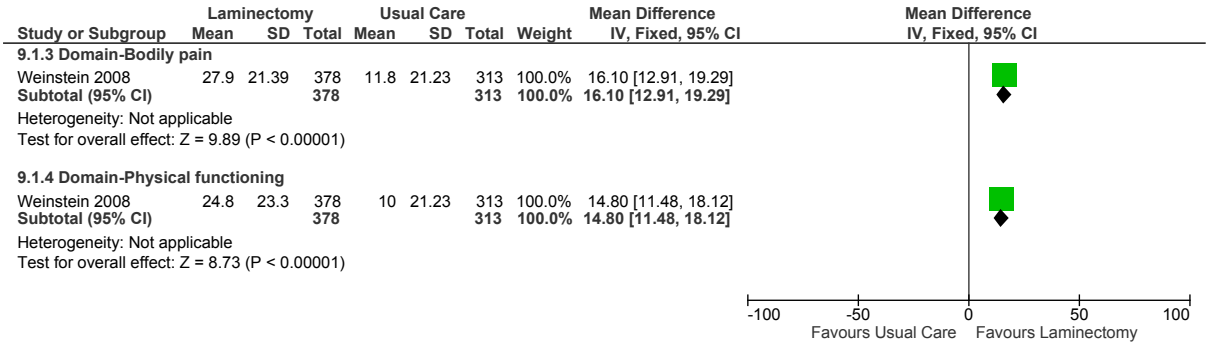


Figure 1409: Quality of life (SF-36, 0-100) > 4 months (1 year)

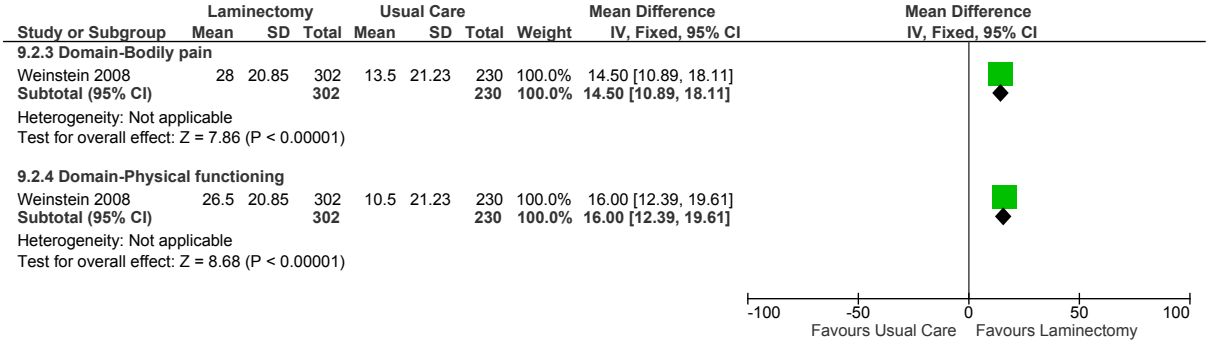


Figure 1410: Quality of life (SF-36, 0-100) > 4 months (2 year)

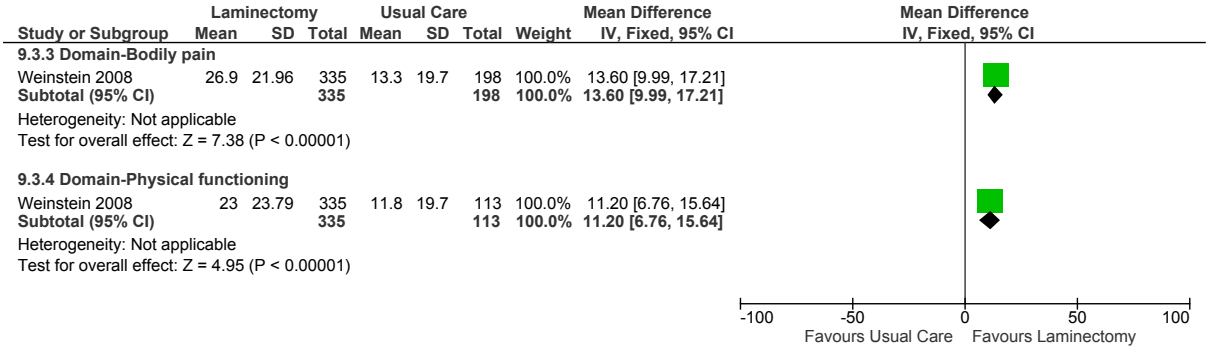


Figure 1411: Pain Severity (Low back pain bothersomeness index, 0-24) ≤4 months (3 months)

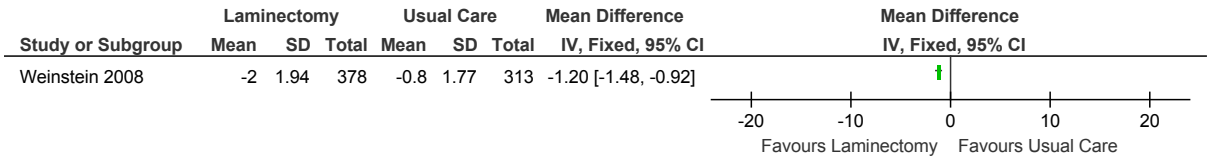


Figure 1412: Pain Severity (Low back pain bothersomeness index, 0-24) >4 months (1 year)

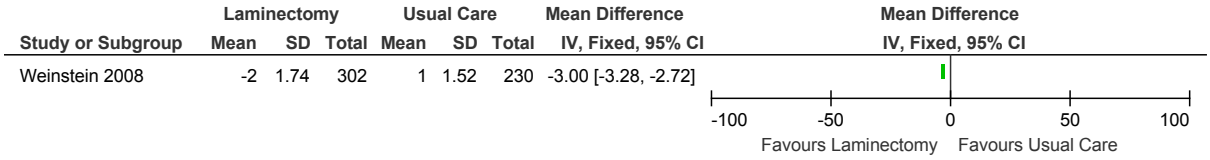


Figure 1413: Pain Severity (Low back pain bothersomeness index, 0-24) >4 months (2 year)

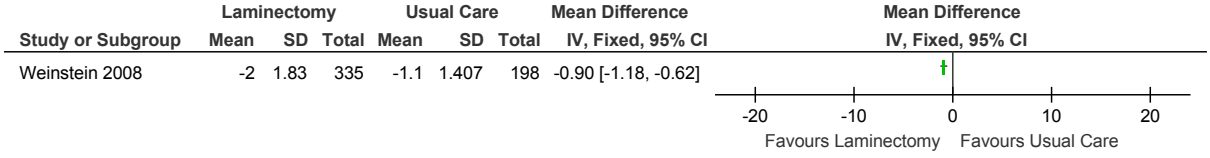


Figure 1414: Pain Severity (Sciatica bothersomeness index, 0-24) ≤4 months (3 months)

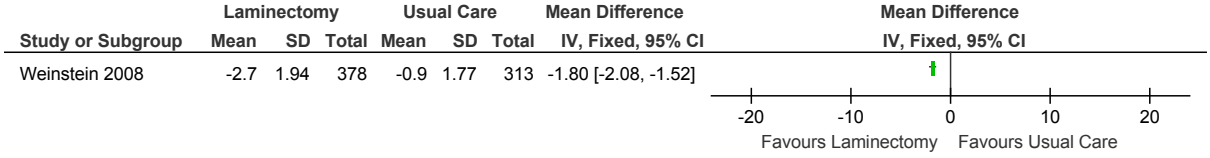


Figure 1415: Pain Severity (Sciatica bothersomeness index, 0-24) >4 months (1 year)

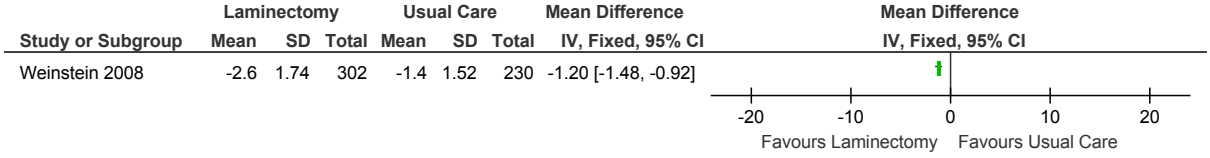


Figure 1416: Pain Severity (Sciatica bothersomeness index, 0-24) >4 months (2 year)

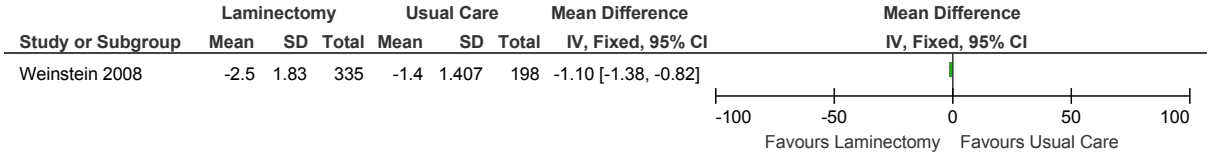


Figure 1417: Function (ODI, 0-100,change scores) ≤ 4 months (3 months)

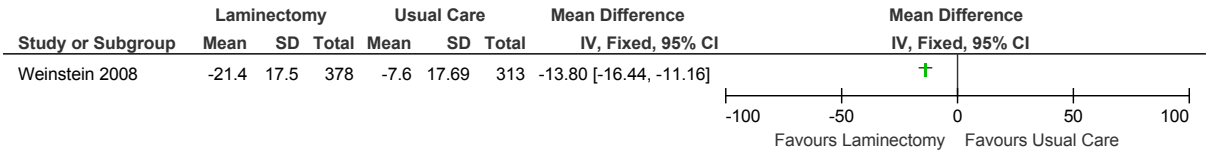


Figure 1418: Function (ODI, 0-100,change scores) > 4 months (1 year)

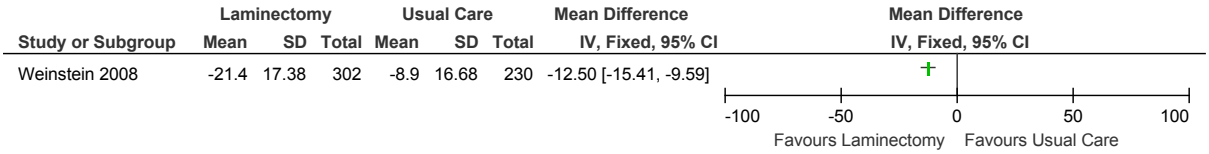
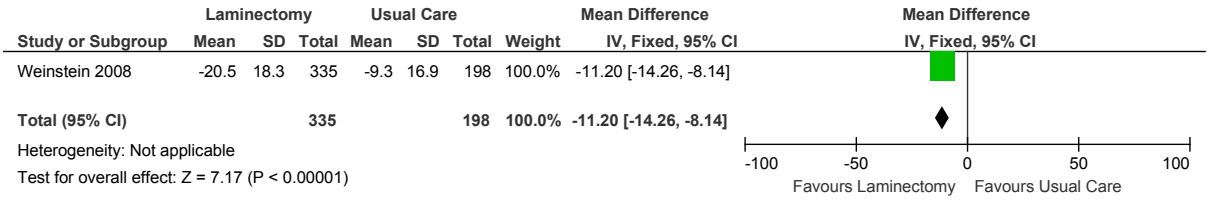


Figure 1419: Function (ODI, 0-100,change scores) > 4 months (2 year)



Appendix L: Excluded clinical studies

L.1 Clinical examination

Table 1: Studies excluded from clinical review

Study	Exclusion reason
Al nezari 2013[73]	Systematic review is not relevant to review question or unclear PICO
Ash 2008[145]	Non sciatica population. Mixed population of people with low back pain with or without sciatica (with sciatica: 58%). Incorrect interventions. Unclear if clinical examination results given in addition to imaging
Cook 2011[474]	Systematic review is not relevant to review question or unclear PICO
Ganesh 2015[748]	Incorrect interventions. Evaluation of a training programme
Modic 2005[1540]	Inappropriate comparison. Incorrect interventions
Rebain 2002[1835]	Systematic review is not relevant to review question or unclear PICO
Van der windt 2008[2198]	Systematic review is not relevant to review question or unclear PICO
Van der windt 2010[2199]	Systematic review is not relevant to review question or unclear PICO
Vroomen 1999[2261]	Systematic review is not relevant to review question or unclear PICO
Vroomen 2002[2262]	Incorrect study design
Wojtysiak 2014[2345]	Incorrect study design. Not review population. Inappropriate comparison. Non randomised study. Control group of healthy volounteer. Comparison of clinical evaluation pre- and post-operatively for the evaluation of surgical treatment
Yu 2012[2388]	Incorrect interventions. Provocative discography

L.2 Risk assessment tools and stratification

Table 2: Studies excluded from the clinical review

Reference	Reason for exclusion
Aebischer 2015[56]	Wrong study design: cross-sectional not cohort study
Barnes 1989[181]	No relevant outcomes and does not match review question
Beneciuk 2015[209]	Incorrect study design: cross-sectional study
Bergstrom 2014[219]	Population does not match protocol
Betten 2015[233]	No relevant outcomes and does not match review question
Borys 2015 [276]	Does not match review question

Reference	Reason for exclusion
Bruyere 2012[320]	No relevant outcomes and does not match review question
Bruyere 2014[319]	No relevant outcomes and does not match review question
Carragee 2005[361]	Incorrect study design
Chapman 1994[387]	No relevant comparator
Childs 2003A[411]	Population does not match protocol
Childs 2014[413]	Incorrect study design: letter
Childs 2015[414]	Incorrect population: no stratification
Cleland 2009[453]	No relevant comparator
Cuestavargas 2014B[499]	Wrong population (mixed musculoskeletal)
Cunningham 2009[500]	Incorrect study design: survey review
Cunningham 2013[501]	No relevant outcomes and does not match review question
Dankaert 2006A[517]	No relevant outcomes and does not match review question
Dankaerts 2009[518]	No relevant comparator
Delitto 1993[543]	No relevant comparator
Delitto 1995[544]	Incorrect study design: clinical perspective review
Derby 2008[554]	No relevant comparator
Dougherty 2014[593]	No relevant comparator :clinical prediction rule for responsiveness to manual therapy in which comparator group get different treatment
Downie 2013[594]	systematic review- used as reference list
Dunstan 2005[601]	Population does not match protocol
Elgueta-cancino 2015 [623]	Test not meet protocol criteria
Fersum 2011[666]	Systematic review- used as reference list
Field 2012[667]	No relevant comparator
Foster 2013[683]	Incorrect study design: narrative review
Freynhagen 2006[699]	No relevant outcomes and does not match review question
Fritz 2000[711]	No relevant outcomes and does not match review question
Fritz 2002[714]	No relevant outcomes and does not match review question
Fritz 2005[709]	No relevant comparator
Fritz 2007[713]	Incorrect study design: clinical commentary
Fritz 2010[716]	Incorrect study design: study protocol
Fritz 2011A[712]	No relevant outcomes and does not match review question
Frymoyer 1992[729]	Incorrect study design
Gabel 2012[740]	Population does not match protocol
Gabel 2013[739]	Population does not match protocol
Gatchell 1986[753]	Population does not match protocol; no relevant outcomes and does not match review question
Gatchell 1995[755]	No relevant outcomes and does not match review question
Gatchell 1995A[754]	No relevant outcomes and does not match review question
Gatchel 2003[756]	no relevant comparator
George 2005A[772]	No relevant outcomes and does not match review question
George 2015[770]	No relevant outcomes and does not match review question
George 2015A[771]	Wrong population (mixed neck, shoulder, back, musculoskeletal)
Gisla 2015[797]	Literature review
Grimmersomers 2008[835]	No relevant outcomes and does not match review question

Reference	Reason for exclusion
Grotle 2006 [838]	No relevant outcomes
Grovle 2008[840]	No relevant outcomes and does not match review question
Hagg 2002[871]	Incorrect study design
Hakkinen 2003[878]	No relevant outcomes and does not match review question
Hallegraeff 2009[887]	Incorrect study design
Hancock 2008[893]	Non-validated tool
Hancock 2008B[892]	Incorrect study design
Hancock 2009A[895]	No relevant outcomes and does not match review question
Hancock 2010[894]	Incorrect study design: letter to editor
Haskins 2015[910]	Systematic review used as source of references
Hay 2008[916]	Incorrect study design: study protocol
Hayashi 2015[917]	Does not match review question
Hazard 1991[919]	No relevant outcomes and does not match review question
Hebert 2008[925]	Incorrect study design
Hicks 2003[956]	Incorrect target condition
Hendler 1988[936]	No relevant outcomes and does not match review question
Hicks 2005[955]	No relevant outcomes and does not match review question
Hill 2010[962]	incorrect study design: narrative review
Hill 2010[961]	incorrect study design: cross-sectional survey
Hurley 2001 [996]	No relevant outcomes
Janwantanakul 2015[1050]	Incorrect population
Kamper 2010[1104]	Incorrect study design: narrative review
Karstens 2015[1115]	No relevant outcomes, does not match review question
Kent 2015[1139]	Unable to obtain article
Kim 2012A[1154]	Survey data. Does not answer the question (looks at predicting disc herniation)
Kongsted 2011[1215]	Incorrect study design
Lacasse 2015[1255]	Incorrect population: Includes non-LBP pain
Lacroix 1990[1256]	No relevant outcomes and does not match review question
Law 2013[1270]	No relevant outcomes and does not match review protocol
Linton 2003[1344]	Population does not match protocol
Mehling 2015 [1511]	Risk tool not validated
Mehling 2015A[1513]	Risk tool not validated
Millard 1989[1527]	No relevant outcomes and does not match review question
Morso 2011[1574]	No relevant outcomes and does not match review question
Newell 2015[1625]	Unable to obtain article
O'Sullivan 2014[1659]	Incorrect study design
Nonclerq 2012[1642]	No relevant outcomes and does not match review question
Polatin 1997[1778]	No relevant outcomes and does not match review question
Pollock 2012[1779]	No relevant outcomes and does not match review question
Pulliam 2001[1793]	No relevant outcomes and does not match review question
Rabey 2015[1805]	Incorrect study design cross-sectional study
Riley 1998[1853]	No relevant outcomes and does not match review question

Reference	Reason for exclusion
Sattelmayer 2012[1924]	Incorrect study design
Talo 1994[2103]	No relevant outcomes and does not match review question
Traeger 2015[2148]	Protocol for research of a new tool
Takekawa 2015[2101]	Incorrect population: identifying a subset of people without LBP
Trudellejackson 2008[2158]	No relevant outcomes and does not match review question
Turk 2015[2168]	No relevant outcomes
Vendrig 1999[2224]	No relevant outcomes and does not match review question
Vibe fersum 2009[2232]	No relevant outcomes and does not match review question
Vroomen 1999A[2261]	No relevant outcomes and does not match review question
Watkins 1986[2290]	No relevant outcomes and does not match review question
Wideman 2012[2315]	No relevant outcomes and does not match review question
Wilson 1999[2340]	No relevant outcomes and does not match review question
Yamada 2015[2363]	Incorrect comparison

L.3 Imaging

Table 3: Studies excluded from the clinical review

Study	Exclusion reason
Abrishamkar 2006[46]	Inappropriate comparison. Incorrect study design (cross sectional study)
Ackerman 1997[47]	Inappropriate comparison
Andersen 2011[108]	Incorrect study design. Systematic review: methods are not adequate/unclear
Ash 2008[145]	Incorrect interventions
Atalay 2001[151]	Incorrect study design (cross sectional study). Incorrect interventions
Bajpai 2013[170]	Incorrect interventions. Incorrect study design (cross sectional study)
Chou 2009[434]	Systematic review: methods are not adequate/unclear. Incorrect study design
Chou 2011[426]	Incorrect study design. Systematic review is not relevant to review question or unclear PICO. Inappropriate comparison. Incorrect interventions
El barzouhi 2013[618]	People referred for surgery (already planned)
El barzouhi 2013[619]	Post-operative imaging. Incorrect interventions
Eley 2006[622]	Incorrect interventions. Incorrect study design (cross sectional study)
Graves 2012[824]	No relevant outcomes
Grover 2003[839]	Narrative review
Haig 2006[874]	Incorrect study design. Incorrect interventions. Inappropriate comparison
Haldeman 1988[879]	Incorrect study design. Incorrect interventions. Inappropriate comparison
Indahl 1995[1015]	Inappropriate comparison. Incorrect interventions
Jarvik 1996[1053]	Incorrect interventions
Jarvik 1997[1055]	Incorrect interventions
Jarvik 2003[1054]	Incorrect interventions
Jenkins 2015[1064]	Incorrect study design. Systematic review is not relevant to review question or unclear PICO. Incorrect interventions

Study	Exclusion reason
Jensen 2010[1067]	Incorrect study design
Raastad 2015[1802]	Incorrect study design. Systematic review is not relevant to review question or unclear PICO. Incorrect interventions
Rankine 1998[1818]	Incorrect study design
Rockey 1978[1863]	Not review population. Not guideline condition
Van rijn 2012[2202]	Incorrect study design. Systematic review is not relevant to review question or unclear PICO
Wassenaar 2012[2287]	Incorrect study design. Systematic review is not relevant to review question or unclear PICO
Weiner 1999[2301]	Incorrect interventions. Incorrect study design (cross sectional study)
Wilson 2001[2339]	Incorrect study design

L.4 Self-management

Table 4: Studies excluded from the clinical review

Study	Exclusion reason
Abbasi 2012[37]	Incorrect interventions
Abdel shaheed 2014[39]	Systematic review: methods are not adequate/unclear
Albaladejo 2010[82]	Incorrect interventions
Allen 1999[94]	Not review population. Not guideline condition. Systematic review: methods are not adequate/unclear
Anon 1991[2]	Incorrect study design
Anon 2005[19]	Abstract only
Anon 2005[18]	Incorrect study design
Anon 2005[15]	Abstract only
Anon 2006[23]	Abstract only
Anon 2012[31]	Conference abstract
Anon 2012[29]	Abstract only
Basson 2011[192]	Incorrect study design
Bekkering 2005[198]	Incorrect interventions. Not review population
Ben salah frih 2009[203]	Incorrect interventions
Berwick 1989[231]	Incorrect interventions
Boden 2003[258]	Comment on an RCT
Bronfort 2004[295]	Inappropriate comparison. Pilot study of feasibility of recruitment to RCT; no comparison between groups
Brown 1992[306]	Incorrect interventions
Brox 2008[311]	Systematic review: methods are not adequate/unclear
Brox 2008[314]	Systematic review: methods are not adequate/unclear
Burton 1999[330]	Incorrect interventions
Busanich 2006[331]	Systematic review: methods are not adequate/unclear
Bush 1993[333]	Incorrect interventions. Not guideline condition. Intervention on physicians dealing with patients with low back pain
Cecchi 2010[373]	Incorrect interventions

Study	Exclusion reason
Cecchi 2012[372]	Incorrect interventions
Chang 1994[380]	Incorrect study design
Chapman 1997[384]	Incorrect study design
Chen 2012[396]	Not in English
Cherkin 1991[403]	Not review population. Not guideline condition
Cherkin 1996[407]	Unable to obtain
Cherkin 1996-1[405]	Duplicate of 1996B
Cherkin 2000[401]	Abstract only
Childs 2011[415]	Incorrect interventions
Chou 2007[436]	Systematic review: methods are not adequate/unclear
Chou 2010[431]	Systematic review - used as source of references
Clare 2004[449]	Systematic review: methods are not adequate/unclear
Cohen 1994[459]	Systematic review: methods are not adequate/unclear
Cooper 2013[478]	Incorrect study design
Cuesta-vargas 2012[496]	Incorrect interventions. Both group had self-management education
Dagenais 2010[504]	Systematic review: methods are not adequate/unclear
Dahm 2010[510]	Cochrane review - used as source of references
Damush 2002[512]	Incorrect interventions
Damush 2003[514]	Incorrect interventions
Damush 2003[513]	Incorrect interventions
Dayer-berenson 2011[529]	Thesis
De bruijn 2007[530]	Not guideline condition
Dehlin 1981[538]	Not guideline condition. Low back insufficiency, not low back pain
Demoulin 2006[547]	Incorrect interventions
Demoulin 2012[548]	Systematic review: methods are not adequate/unclear
Deutscher 2014[560]	Cohort study. Got sufficient RCT data. Wrong intervention: education for physiotherapists, not the pts
Deyo 1986[562]	Incorrect interventions
Deyo 1987[563]	Incorrect interventions
Di fabio 1995[569]	Incorrect interventions
Doherty 2004[582]	Abstract only
Doran 2014[590]	Unable to get hold of article
Du 2011[597]	Systematic review: methods are not adequate/unclear
Dupeyron 2011[602]	Systematic review: study designs inappropriate. Systematic review: methods are not adequate/unclear
Engers 2008[625]	Cochrane review - used as source of references
Evans 1996[640]	Thesis
Evans 2009[638]	Thesis chapter
Evans 2010[639]	Not guideline condition
Fernandez 2015[655]	Systematic review: study designs inappropriate. Systematic review used as source of references
Ferrell 1997[664]	Not review population
Fersum 2010[665]	Systematic review: methods are not adequate/unclear
Fitzpatrick 1995[674]	Systematic review: methods are not adequate/unclear

Study	Exclusion reason
Fritz 1998[706]	Thesis chapter
Frost 2004[727]	Incorrect interventions
Furlan 2002[733]	Systematic review: methods are not adequate/unclear
George 2009[773]	Incorrect interventions
Goffar 2005[810]	Thesis
Grunnesjo 2004[843]	Incorrect interventions
Gundewall 1993[847]	Not guideline condition. Mixed group of healthy volunteers and people with low back pain
Haas 1999[855]	Abstract only
Hagen 2000[865]	Systematic review: methods are not adequate/unclear
Hagen 2002[866]	Systematic review: methods are not adequate/unclear
Hagen 2005[867]	Systematic review: methods are not adequate/unclear
Hagen 2010[868]	Withdrawn
Harman 2011[904]	Incorrect interventions
Henrotin 2006[939]	Systematic review: methods are not adequate/unclear
Hilde 2006[959]	Withdrawn
Hofstee 2002[979]	Incorrect interventions
Jensen 2012[1070]	Incorrect interventions. Not review population
Kellett 1991[1134]	Not guideline condition. "back pain" not just low back pain
Kilpikoski 2009[1152]	Incorrect interventions
Kim 1999[1169]	Systematic review: methods are not adequate/unclear
Kinkade 2007[1179]	Incorrect study design
Koes 1994[1202]	Incorrect study design
Koes 2008[1195]	Commentary not primary study (1ry study = Pengel 2007)
Kogure 2015[1204]	Mixed chronic pain (not just low back pain). Not guideline condition. "Low back pain localized from 12th rib to inferior gluteal fold"
Kotoulas 2002[1225]	Systematic review: methods are not adequate/unclear. Incorrect study design
Kovacs 2007[1228]	Inappropriate comparison
Lee 2015[1287]	Unable to obtain article
Levin 1996[1309]	Incorrect study design
Liddle 2007[1326]	Systematic review: methods are not adequate/unclear
Linton 1997[1341]	Not guideline condition. Not all patients had back pain
Little 2001[1348]	Not review population
Lonn 1999[1365]	Incorrect interventions
Maher 1999[1403]	Systematic review: methods are not adequate/unclear
May 2010[1484]	Not guideline condition
Miller 2009[1529]	Systematic review: methods are not adequate/unclear. Not guideline condition
Moffett 2002[1542]	Systematic review: methods are not adequate/unclear
Morrison 1988[1573]	Inappropriate study design. All patients undergo intervention.
Newton 1995[1626]	Abstract only
Ney 2008[1628]	Narrative review
Nicholas 2013[1633]	Incorrect interventions

Study	Exclusion reason
Nilsson-wikmar 2005[1638]	Not guideline condition
Noone 1996[1643]	Unable to obtain article
Odeen 2013[1660]	Incorrect interventions
Olaya-contreras 2015[1675]	Inappropriate comparison. Intraclass comparison
Oliveira 2012[1677]	Systematic review: methods are not adequate/unclear
Otoo 2015[1687]	SR - used as source of references
Palacin-marin 2013[1698]	Crossover study
Pensri 2012[1745]	Crossover study
Pesco 2006[1754]	Not guideline condition. Wrong population: neck and shoulder pain
Postacchini 1988-1[1785]	Incorrect interventions. (Back school)
Postacchini 1988-2[1785]	Incorrect interventions. (Back school)
Postacchini 1988-2[1785]	Incorrect interventions. (Back school)
Postacchini 1988-2[1785]	Incorrect interventions. (Back school)
Postacchini 1988-2[1785]	Incorrect interventions. (Back school)
Postacchini 1988-2[1785]	Incorrect interventions. (Back school)
Rantonen 2014[1821]	Incorrect interventions
Reeser 2002[1836]	Conference abstract
Rivero-arias 2006[1857]	The intervention not meeting the protocol physio (joint mobilisation, manipulations,. Soft tissue techniques,, exercise programmes, heat/cold treatments, advice - but states that physios chose from a selection so excluded as per protocol) VS advice to stay active from physio - physio arm is excluded therefore study has no relevant comparisons
Roberts 2002[1859]	Not guideline condition. Low back pain defined as referred from 12th rib to inferior gluteal fold
Rozenberg 2002[1880]	Narrative review
Ryan 2010[1891]	Combined interventions. Included in combination treatment review.
Saper 2014[1915]	protocol only, no results
Saunders 2000[1926]	Incorrect study design
Schectman 2003[1932]	Not review population. Not guideline condition
Schenk 1996[1934]	Not guideline condition. Not review population. Healthy volunteers, not people with back pain
Schoo 2003[1948]	Systematic review: methods are not adequate/unclear
Schulz 2007[1955]	Incorrect study design. Not randomised
Schulz 2011[1954]	Protocol only
Selkowitz 2006[1966]	Not review population
Sherman 2011[1984]	Included in exercise review
Sorensen 2010[2045]	Loss of randomisation. Patients in exercise arm were split into 2 groups after randomised, to receive different exercise interventions, depending on whether they met specific diagnostic criteria or not.
Spinhoven 1989[2052]	Inappropriate comparison
Stevenson 2006[2073]	Not review population
Stevermer 1999[2074]	Narrative review
Strong 2006[2082]	Health Economic study. Subpopulation not meeting protocol because population is unclear. The RCTs are already excluded from the clinical review.
Taylor 1996[2114]	Not review population

Study	Exclusion reason
Thomas 2010[2125]	Dissertation
Udermann 2004[2177]	Incorrect study design
Verbeek 2011[2225]	Cochrane review - used as source of references
Vidal 2014[2238]	Incorrect age group
Von korff 1998[2254]	Incorrect interventions. Both groups received self-management education
Waddell 1997[2263]	Systematic review: methods are not adequate/unclear
Waddell 1998[2264]	Narrative review
Walsh 2013[2274]	Not guideline condition
Wand 2004[2277]	Wrong intervention/comparison: early vs. delayed treatment
Waterschoot 2014[2288]	Systematic review: methods are not adequate/unclear
Webb 1982[2292]	Incorrect study design
Werner 2010[2306]	Study design/protocol only, not results
Yildirim 2007[2379]	Not guideline condition
Yildirim 2010[2380]	Inappropriate comparison
Zahari 2014[2392]	Incorrect interventions

L.5 Exercise therapies

Table 5: Studies excluded from the clinical review

Study	Exclusion reason
Aboagye 2015[43]	Data not interpretable (data overall for both doses not given)
Adamczyk 2009[50]	Inappropriate comparison
Agnihotri 2015[61]	Incorrect study design. Conference abstract
Ahlqwist 2008[65]	Inappropriate comparison
Ahmed 2014[66]	Incorrect interventions
Aladro-gonzalvo 2013[76]	Systematic review: quality assessment is inadequate
Alayat 2014[81]	Incorrect interventions
Albaladejo 2010[82]	Incorrect interventions
Albert 2012[85]	Incorrect interventions
Aleksiev 2014[86]	Incorrect interventions
Alexandre 2001[87]	Not possible to obtain results
Ali 2002[90]	Unavailable
Ali 2006[91]	Unavailable
Allison 2012[97]	Unavailable
Alp 2011[99]	Abstract only
Anderson 2005[114]	Incorrect study design
Anderson 2006[115]	Abstract only
Andrusaitis 2011[124]	Inappropriate comparison
Anema 2007[126]	Incorrect interventions
Ann 2012[1794]	Duplicate of Sherman 2011
Anon 1991[2]	Incorrect study design

Study	Exclusion reason
Anon 2005[18]	Incorrect study design
Anon 2006[23]	Abstract only
Anon 2012[28]	Abstract only
Anon 2012[397]	Abstract only
Anon 2012[1006]	Incorrect interventions
Anon 2012[29]	Abstract only
Anon 2015[36]	Not review population
Aure 2003[160]	Inappropriate comparison
Azevedo 2015[163]	Protocol
Baekgaard 1996[167]	Abstract
Balthazard 2012[173]	Inappropriate comparison
Barone 2007[183]	Systematic review: methods are not adequate/unclear
Beattie 2010[194]	Incorrect study design
Beggs 2012[196]	Abstract only
Beladev 2011[199]	Incorrect study design
Bell 2009[200]	Systematic review: methods are not adequate/unclear
Bello 2010[202]	Inappropriate comparison
Ben salah frih 2009[203]	Incorrect interventions
Bendix 1995[205]	Inappropriate comparison
Bendix 2000[206]	Inappropriate comparison
Berman 1997[221]	Incorrect study design
Bertocco 2002[229]	Inappropriate comparison. Inappropriate outcomes
Bertozzi 2015[230]	Incorrect study design
Bi 2013[235]	Incorrect interventions
Blomberg 1993[251]	Incorrect interventions
Blomberg 1994[247]	Incorrect interventions
Boah 2012[256]	Abstract only
Bodack 2001[257]	Incorrect study design
Borges 2014[273]	Not guideline condition
Borman 2003[274]	Inappropriate comparison
Brennan 2006[287]	Inappropriate comparison
Brinton 1999[289]	Unavailable
Bronfort 1996[293]	Incorrect interventions
Brooks 2012[299]	Inappropriate comparison
Brox 2003[313]	Inappropriate comparison. A combination of interventions
Brox 2006[312]	Inappropriate comparison. A combination of interventions
Bruce-low 2012[316]	Unavailable
Busanich 2006[331]	Systematic review: methods are not adequate/unclear
Bussing 2012[334]	Systematic review: methods are not adequate/unclear
Bystrom 2013[340]	Systematic review: methods are not adequate/unclear
Cairns 2006[348]	Inappropriate comparison
Callaghan 1994[351]	Incorrect interventions
Cambron 2005[353]	Unavailable

Study	Exclusion reason
Cambron 2006[354]	Inappropriate comparison
Carr 2005[360]	Incorrect interventions
Carter 2002[366]	Incorrect study design
Cerrada 2012[375]	Abstract only
Chang 1994[380]	Incorrect study design
Chatzitheodorou 2008[391]	Inappropriate comparison
Chen 2012[398]	Incorrect interventions
Cherkin 1996[407]	Unable to obtain - abstract?
Cherkin 1996-1[405]	Unavailable
Cherkin 1999[404]	abstract only
Cherkin 2000[401]	Abstract only
Cho 2015[418]	Incorrect study design
Cho 2015[419]	Incorrect study design
Chown 2008[438]	Inappropriate comparison. Incorrect interventions
Cleland 2006[454]	Inappropriate comparison
Cleland 2007[452]	Inappropriate comparison
Cleland 2009[453]	Incorrect interventions
Collazo 2012[469]	Language - Spanish
Costa 2009[481]	Inappropriate comparison
Coxhead 1974[486]	Factorial design but outcomes for each arm not reported separately
Coxhead 1981[487]	Factorial design but outcomes for each arm not reported separately
Cruzdiaz 2015[494]	Incorrect interventions (both groups received the same combination of interventions)
Cuesta-vargas 2009[497]	Incorrect interventions
Cuesta-vargas 2011[498]	Incorrect interventions
Da fonseca 2009[503]	Incorrect interventions
Del pozo-cruz 2013[540]	Incorrect interventions
Demoulin 2006[547]	Incorrect study design
Descarreaux 2002[557]	Inappropriate comparison
Descarreaux 2002[556]	Abstract only
Dettori 1995[558]	Incorrect interventions
Diab 2013[571]	Incorrect interventions
Diaz 2013[572]	Abstract only
Diaz-arribas 2015[573]	Inappropriate comparison. intraclass comparison
Dimaggio 1987[575]	Incorrect study design
Donzelli 2006[587]	Inappropriate comparison
Dufour 2010[599]	Inappropriate comparison
Durmus 2014[605]	Incorrect interventions. Back school
Eadie 2010[608]	Abstract only
Ezzati 2011[642]	Abstract only
Fernandez 2015[655]	Systematic review: study designs inappropriate
Fernando 1991[656]	Incorrect study design
Ferreira 2007[662]	Incorrect interventions

Study	Exclusion reason
Ferreira 2010[663]	Incorrect interventions
Fink 2012[671]	Abstract only
Fontana 2005[681]	Not guideline condition
Franca 2012[687]	Inappropriate comparison
Franke 2000[691]	Language - German
Freburger 2008[693]	Incorrect study design. (abstract)
Friedrich 2005[705]	Inappropriate comparison
Fritz 2015[715]	Not review population
Frost 1995[725]	Inappropriate comparison
Frost 1998[726]	Inappropriate comparison
Frost 2004[727]	Incorrect interventions
Gagnon 2005[743]	Inappropriate comparison
Garcia 2013[749]	Inappropriate comparison
Garcia 2015[750]	Protocol for a RCT
Gatti 2011[757]	Inappropriate comparison
Geisser 2005-1[767]	Inappropriate comparison
George 2010[769]	Inappropriate comparison
Ghoname 1999[784]	Crossover study
Giggey 2009[791]	Abstract only
Gladkowski 2014[798]	Systematic review: methods are not adequate/unclear
Gram 2012[822]	Not guideline condition
Graves 2004[825]	Incorrect study design
Groessl 2008[836]	Incorrect study design
Gudavalli 2006[845]	Inappropriate comparison
Gur 2003[853]	Incorrect interventions
Hagen 2000[864]	Incorrect interventions
Hahne a.j. 2015[872]	Conference abstract
Handa 2000[897]	Incorrect study design
Hartfiel 2012[907]	Not guideline condition
Helmhout 2004[931]	Inappropriate comparison
Helmhout 2008[932]	Incorrect interventions
Hemmila 2002[933]	Incorrect interventions
Henry 2014[940]	Incorrect interventions
Hides 1996[958]	Inappropriate comparison
Hides 2001[957]	Inappropriate comparison
Hildebrandt 2000[960]	language - Dutch
Hofstee 2003[978]	Not English
Hollinghurst 2008[980]	Incorrect interventions
Homayouni 2015[982]	Incorrect interventions
Hurley 2015[997]	Incorrect interventions
Hurwitz 2002[1002]	Incorrect interventions
Iahin 2011[1007]	Abstract only
Inani 2013[1014]	Inappropriate comparison

Study	Exclusion reason
Ismail 2013[1021]	Conference abstract
Iversen 2003[1029]	Incorrect study design
Iversen 2010[1028]	Systematic review: methods are not adequate/unclear
Jackson 2002[1036]	Systematic review: methods are not adequate/unclear
Jans 2006[1049]	Language - Dutch
Jarrett 2012[1052]	Systematic review: methods are not adequate/unclear
Javadian 2012[1058]	Inappropriate comparison
Javadian 2015[1057]	Incorrect interventions. intraclass comparison
Jensen 2009[1066]	Not guideline condition
Jensen 2012[1070]	unclear interventions
Jensen 2015[1068]	unclear interventions
Johannsen 1995[1079]	Inappropriate comparison
Johnson 2007[1082]	Incorrect interventions
Johnson 2010[1081]	Incorrect interventions
Jones 2007[1088]	Incorrect age group
Jones 2007[1087]	Incorrect age group
Kamali 2014[1102]	Incorrect interventions
Kankaanpaa 1999[1107]	Inappropriate comparison
Kell 2011[1132]	Incorrect interventions. Unclear comparator
Kendall 2015[1135]	COMBI. Incorrect interventions
Kennedy 2012[1137]	Abstract only
Khalil 1992[1147]	Not guideline condition. (myofascial pain syndrome)
Khalil 1994[1146]	Incorrect study design. (non-comparative)
Khan 2014[1151]	Incorrect interventions
Kim 2013[1156]	Incorrect interventions
Koc 2009[1193]	Incorrect interventions
Kool 2005[1218]	Incorrect interventions
Kool 2007[1217]	Incorrect interventions
Koumantakis 2005[1226]	Inappropriate comparison
Koumantakis 2005[1227]	Inappropriate comparison
Krein 2013[1232]	Inappropriate comparison
Kuck 2005[1238]	Incorrect study design
Kumar 2009[1245]	Incorrect interventions
Kumar 2010[1247]	Incorrect interventions
Kumar 2011[1242]	abstract only
Kumar 2012[1246]	Incorrect study design
Kuukkanen 1998[1249]	Incorrect outcomes
Kuukkanen 2007[1250]	Incorrect outcome
La touche 2008[1254]	Systematic review: methods are not adequate/unclear
Lau 2008[1268]	Incorrect interventions
Lee 2011[1300]	Inappropriate comparison
Lee 2014[1283]	Incorrect interventions. intraclass comparison
Leibetseder 2007[1304]	Incorrect interventions

Study	Exclusion reason
Leonard 2015[1306]	Not available
Lewis 2005[1315]	Incorrect interventions
Lewis 2008[1313]	Systematic review: methods are not adequate/unclear
Lewis 2011[1314]	Inappropriate comparison
Lindstrom 1992[1336]	Incorrect interventions
Lindstrom 1992[1337]	Incorrect interventions
Lindstrom 2003[1335]	Incorrect study design
Linton 1984[1339]	Incorrect interventions
Linton 1996[1340]	Incorrect interventions
Liu 2013[1349]	Review protocol
Liu-ambrose 2005[1352]	Inappropriate comparison
Ljunggren 1992[1354]	Inappropriate comparison
Ljunggren 1997[1355]	Incorrect interventions
Lomond 2014[1361]	Incorrect interventions. Intraclass comparison
Long 2004[1363]	Inappropriate comparison
Long 2006[1362]	Abstract only
Luijsterburg 2008[1378]	Unclear exercise class
Lumpkin 2007[1379]	Unavailable
Luomajoki 2010[1380]	Incorrect study design. (non-comparative)
Macedo 2008[1386]	Incorrect interventions
Macedo 2012[1387]	Inappropriate comparison
Machado 2012[1390]	Review protocol
Machado 2012[1389]	Review protocol
Macrae 2013[1394]	Incorrect interventions
Magalhaes 2015[1401]	Incorrect interventions
Maher 2005[1405]	Inappropriate comparison
Malmivaara 1995[1414]	Inappropriate comparison
Malmivaara 2007[1416]	Incorrect interventions
Malmros 1998[1417]	Not guideline condition. Serious spinal pathology (for example, neoplasms, infections or osteoporotic collapse)
Manca 2004[2180]	Incorrect interventions
Manca 2007[1420]	Inappropriate comparison
Manniche 1988[1459]	Inappropriate comparison
Manniche 1991[1460]	Inappropriate comparison
Manniom 1999[1463]	Inappropriate comparison
Mannion 2013[1464]	Incorrect interventions
Mannion 2013[1461]	Abstract only
Marshall 2008-1[1473]	Incorrect interventions
Marshall 2008-2[1473]	Unclear interventions
Matsudaira 2015[1481]	Not review population
Mayer 2003[1486]	Incorrect study design
Mckenzie 2001[1507]	Incorrect study design
Miller 2005[1528]	Inappropriate comparison

Study	Exclusion reason
Milosavljevic 2015[1532]	Protocol for RCT
Moffatt 2014[1541]	Not guideline condition
Moffett 1999[1544]	Incorrect interventions
Moffett 2006[1545]	Not guideline condition
Mohseni-bandpei 2011[1547]	Incorrect interventions
Montero 2011[1550]	Abstract only
Monticone 2013[1553]	Incorrect interventions
Monticone 2014[1552]	Incorrect interventions
Moon 2013[1557]	Inappropriate comparison
Mooney 2004[1559]	Incorrect study design
Morone 2011[1569]	Incorrect interventions
Morone 2012[1570]	Incorrect interventions
Moseley 2002[1577]	Incorrect interventions
Mostagi 2015[1579]	Unclear intervention
Moustafa 2015[1583]	Incorrect interventions
Murtezani 2011[1597]	Inappropriate comparison
Murtezani 2015[1598]	Incorrect interventions
Nagrale 2012[1603]	Inappropriate comparison
Natour 2011[1613]	Abstract only
Nazzal 2013[1616]	Inappropriate comparison
Nelson 1995[1619]	Incorrect study design
Niemisto 2003[1637]	Incorrect interventions
Noori 2011[1644]	Unavailable
Nwuga 1985[1650]	Inappropriate comparison
O'brien 2006[1655]	Inappropriate comparison
O'donoghue 2008[1657]	Abstract only
Oesch 2010[1661]	Systematic review: methods are not adequate/unclear
Ohtori 2011[1669]	Incorrect interventions
Olah 2008[1673]	Incorrect interventions
Olaya-contreras 2015[1675]	Incorrect interventions
Oldervoll 2001[1676]	Incorrect study design. A non-randomised comparative study
Ostelo 2000[1686]	Abstract only
Overman 1988[1689]	Inappropriate comparison
Ozdemir 2015[1693]	Not guideline condition
Pattanasin 2012[1731]	Inappropriate comparison
Pengel 2007[1741]	Incorrect interventions
Petersen 2002[1757]	Inappropriate comparison
Petersen 2007[1758]	Inappropriate comparison
Petersen 2015[1756]	Incorrect interventions. Combination therapy (manual therapy with massage vs McKenzie)
Peterson 2011[1761]	Incorrect interventions. Combination therapy (manual therapy with massage vs McKenzie)
Petrofsky 2008[1762]	Incorrect interventions
Ponte 1984[1780]	Incorrect study design

Study	Exclusion reason
Posadzki 2011[1782]	Systematic review: methods are not adequate/unclear
Posadzki 2011[1783]	Systematic review: methods are not adequate/unclear
Preyde 2000[1790]	Incorrect interventions. Combination of interventions
Puntumetakul 2013[1795]	Inappropriate comparison
Rantonen 2012[1820]	Incorrect interventions
Rittweger 2002[1856]	Incorrect interventions
Roche-leboucher 2011[1862]	Incorrect interventions
Rondoni 2009[1871]	Language - Italian
Ryan 2010[1891]	Incorrect interventions
Saner 2015[1910]	Incorrect interventions. intraclass comparison
Sansonnens 2013[1911]	Language - French
Saper 2013[1914]	Inappropriate comparison. (dosing study)
Schenk 2003[1935]	Incorrect interventions
Schrepfer 2000[1950]	Incorrect interventions. Single 20 minute intervention with pre and post scores
Sculco 2001[1958]	Incorrect study design
Searle 2015[1959]	Systematic review: methods are not adequate/unclear
Seferlis 1998[1964]	Inappropriate comparison. Not possible to extract results for each intervention seperately to make comparison
Selhorst 2015[1965]	Cancelled
Sertpoyraz 2009[1971]	Inappropriate comparison
Shamsi 2015[1975]	Incorrect interventions. intraclass comparison
Sjogren 1997[2010]	Inappropriate comparison
Sjogren 2006[2011]	Crossover study
Skikic emuji 2004[1587]	Inappropriate comparison
Smith 2001[2027]	Incorrect intervention
Smith 2011[2027]	Incorrect interventions
Sorensen 2010[2045]	Incorrect interventions
Soukup 1999[2048]	Not review population. some participants not in pain at time of trial
Spanos 2002[2049]	Incorrect outcomes (correction of sciatic scoliosis deformity)
Staal 2004[2059]	Incorrect interventions
Standaert 2007[2063]	Abstract only
Standaert 2011[2064]	Incorrect interventions
Stankovic 1990[2065]	Inappropriate comparison
Stankovic 1995[2066]	Inappropriate comparison
Steefel 2012[2069]	Systematic review: methods are not adequate/unclear
Sung 2013[2085]	Inappropriate comparison
Sweet 1995[2090]	Unavailable
Sweetman 1993[2092]	Incorrect age group. Mixed adult and children population
Taylor 2011[2110]	Incorrect study design
Tekur 2008[2117]	Incorrect interventions. residential yoga course
Tekur 2010[2116]	Incorrect interventions. residential yoga course
Tekur 2012[2115]	Unlikely to be used as part of current practice
Trampas 2015[2149]	Incorrect study design

Study	Exclusion reason
Tritilanunt 2001[2153]	A combination of interventions
Tygiel 1996[2174]	Incorrect study design
Unsgaard-tondel 2010[2182]	Inappropriate comparison
Vallone 2014[2188]	Incorrect interventions
Van der roer 2008[2194]	Incorrect interventions
Van dyke 1994[2201]	Incorrect study design
Vincent 2012[2243]	Abstract only
Vincent 2013[2244]	Abstract only
Wajswelner 2012[2268]	Inappropriate comparison
Walter 2004[2275]	Incorrect study design
Weifen 2013[2299]	Incorrect interventions
Wiesinger 1997[2318]	Incorrect study design. (non-comparative)
Winters 2004[2342]	Inappropriate comparison
Xueqiang 2012[2359]	Inappropriate comparison
Yaghoubi 2014[2360]	Not in english language
Yamato 2015[2366]	Systematic review: methods are not adequate/unclear
Ye 2015[2372]	Incorrect interventions. intraclass comparison
Yelland 2004[2377]	Incorrect interventions
Yeung 2003[2378]	Inappropriate comparison
Yozbatiran 2002[2386]	language - Turkish
Yozbatiran 2004[2387]	Unavailable
Zhang 2015[2403]	Incorrect interventions

L.6 Postural therapies

Table 6: Studies excluded from the clinical review

Study	Exclusion reason
Anon 1999[4]	Incorrect study design
Aronow 1986[140]	Incorrect study design. Article
Bonetti 2010[270]	Incorrect study design
Brinton 1999[289]	Unavailable
Cacciatore 2005[344]	Incorrect study design
Cacciatore 2011[343]	Inappropriate outcomes “muscle tone”
Costa 2009[481]	Incorrect interventions
Curnow 2009[502]	Incorrect interventions. Possibly relevant to exercise
Dettori 1995[558]	Incorrect interventions. Possibly relevant to exercise
Diciaccio 2012[568]	Incorrect study design
Dimulescu 2013[576]	Abstract only
Dos Santos 2010[591]	Abstract only
Ernst 2003[631]	Systematic review: methods are not adequate/unclear. Used to cross-check references
Gatti 2011[757]	Incorrect interventions

Study	Exclusion reason
Hall 1993[886]	Incorrect interventions
Jaromi 2012[1051]	Incorrect interventions. "ergonomics training"
Khan 2008[1150]	Incorrect study design
Kim 2013[1163]	Incorrect interventions. "neurac sling exercise"
Lawand 2013[1271]	Abstract only
McClean 2015[1500]	Not a RCT or cohort study, no comparator group.
Norris 2008[1646]	Incorrect interventions. Possibly relevant to exercise
Nwuga 1982[1651]	Incorrect interventions
Oostendorp 1988[1682]	Incorrect interventions. "propriosensory facilitation"
Oyarzo 2014[1691]	Incorrect population – not everyone had low back pain
Paolucci 2012[1705]	Unavailable
Pesco 2006[1754]	Not guideline condition
Sheeran 2013[1978]	Intraclass comparison
Sofi 2011[2039]	Incorrect study design
Tsao 2008[2160]	Incorrect study design
Williams 1991[2330]	Incorrect interventions
Woodman 2012[2349]	Systematic review is not relevant to review question or unclear PICO. Used to cross-check references

L.7 Orthotics

Table 7: Studies excluded from the clinical review

Study	Exclusion reason
Ahlgren 1978[64]	incorrect study type
Alaranta 1988[78]	Inappropriate comparison
Aleksiev 2014[86]	Intraclass exercise comparison
Ammendolia 2005[102]	Systematic review: methods are not adequate/unclear
Anon 2000[5]	Systematic review is not relevant to review question or unclear PICO
Anon 2007[24]	Narrative review-unavailable
Berger 2013[217]	Abstract only
Bigos 2009[239]	Systematic review is not relevant to review question or unclear PICO. No relevant outcomes
Bonaiuti 2004[269]	Incorrect interventions
Brodke 2004[291]	Incorrect study design
Castro-sanchez 2012[369]	Incorrect interventions
Charrette 1998[389]	Does not match review question
Charrette 2003[390]	Incorrect study design (article)
Chen 2003[399]	Population does not match protocol (healthy individuals)
Cholewicki 2010[423]	Incorrect interventions
Chuter 2014[448]	Systematic review is not relevant to review question or unclear PICO
Dananberg 1999[515]	Inappropriate comparison
Dougherty 2014[592]	Incorrect interventions

Study	Exclusion reason
Ferrari 2007[657]	Inappropriate comparison
Ferrari 2011[658]	Inappropriate comparison.
Ferrari 2013[659]	Incorrect interventions. combination
Gatty 2003[758]	Population does not match protocol
Gavin 1993[759]	Inappropriate comparison
Gaydos 2012[760]	Systematic review is not relevant to review question or unclear PICO
Goldish 1993[814]	Inappropriate comparison
Hall 2004[885]	Not guideline condition
Hall 2008[884]	Does not match review question
Halvorson 1993[888]	Inappropriate comparison
He 2006[921]	Incorrect interventions
Hipp 2010[970]	Incorrect study design
Jellema 2001[1062]	Systematic review is not relevant to review question or unclear PICO
Jellema 2002[1060]	Inappropriate comparison
Lahad 1994[1257]	Systematic review is not relevant to review question or unclear PICO
Kawchuk 2015[1128]	Inappropriate comparison
Koes 1994[1202]	Incorrect interventions.
Langford 2005[1266]	Incorrect interventions
Legaspi 2007[1302]	Systematic review: methods are not adequate/unclear
Mahoney 2001[1406]	Inappropriate comparison
Malanga 2010[1411]	Inappropriate comparison. Not a study
Mattson 2008[1483]	incorrect study stype, case-series
Nachemson 1983[1600]	Population does not match protocol
Nyiendo 2001[1653]	Intervention does not match protocol
Oh 2014[1664]	No compator group
Penrose 1991[1743]	Incorrect study design
Penttinen 1990[1746]	Inappropriate comparison
Pope 1990[1781]	Conference abstract
Sahar 2007[1896]	Systematic review is not relevant to review question or unclear PICO. Systematic review: study designs inappropriate
Saito 2014[1898]	Inappropriate comparison
Saunders 1993[1925]	Inappropriate comparison
Shabat 2005[1972]	Population does not match protocol
Turner 2008[2169]	Incorrect study design. Inappropriate comparison
Van duijvenbode 2008[2200]	Incorrect interventions. Does not match protocol
Van tulder 2000[2206]	Systematic review: methods are not adequate/unclear
Verbeek 2011[2225]	Systematic review: methods are not adequate/unclear. Systematic review: study designs inappropriate
Wassell 2000[2286]	Population does not match protocol
Wood 2003[2348]	Does not match review question
Zhang 2005[2398]	Population does not match protocol

L.8 Manual therapies

Table 8: Studies excluded from the clinical review (single intervention)

Study	Exclusion reason
Abenhaim 1992[42]	Systematic review: methods are not adequate/unclear
Adamczyk 2009[50]	Inappropriate comparison
Added 2013[51]	Incorrect interventions
Anderson 1992[118]	Systematic review: methods are not adequate/unclear
Anderson 2005[114]	Unavailable
Andersson 1999[120]	Incorrect interventions
Anon 1990[1]	Abstract only
Anon 1997[3]	Unavailable
Anon 1999[127]	Unavailable
Anon 2005[19]	Incorrect study design
Anon 2005[18]	Abstract only
Anon 2005[12]	Not available
Anon 2011[27]	Not available
Anon 2011[1744]	Abstract only
Arkuszewski 1986[138]	Incorrect intervention
Assendelft 1992[148]	Systematic review: methods are not adequate/unclear
Assendelft 1996[149]	Systematic review: methods are not adequate/unclear
Assendelft 2003[150]	Systematic review: quality assessment is inadequate
Assendelft willem 2013[147]	Withdrawn from publication
Aure 2003[160]	Inappropriate comparison
Avery 2004[161]	Systematic review: methods are not adequate/unclear
Balthazard 2012[173]	Incorrect interventions
Bialosky 2009[236]	Outcomes measured immediately after treatment only (5 minutes)
Blomberg 1992[248]	Inappropriate comparison
Blomberg 1993[251]	Inappropriate comparison
Blomberg 1993[249]	Inappropriate comparison
Blomberg 1994[250]	Inappropriate comparison
Boezaart 1999[261]	Incorrect interventions
Bronfort 2000[292]	Incorrect interventions
Bronfort 2004[296]	Systematic review is not relevant to review question or unclear PICO
Bronfort 2011[297]	Unclear which interventions received
Cai 2009[347]	Inappropriate comparison (cohort study with no control group)
Cambron 2005[353]	Unavailable
Canadian coordinating office for health technology assessment 2002[355]	Unavailable
Carr 2005[360]	Incorrect interventions
Cecchi 2010[373]	Inappropriate comparison
Cecchi 2010[371]	Inappropriate comparison
Cecchi 2012[372]	Inappropriate comparison

Chen 2012[395]	Incorrect interventions
Cherkin 1998[402]	Inappropriate comparison
Cherkin 2003[409]	Systematic review: quality assessment is inadequate
Chown 2008[438]	Inappropriate comparison
Christensen 1993[444]	Inappropriate comparison (cohort study with no control group)
Clarke 2006[451]	Systematic review is not relevant to review question or unclear PICO
Clarke 2007[450]	Systematic review is not relevant to review question or unclear PICO
Cleland 2006[454]	Inappropriate comparison
Cleland 2006[455]	Inappropriate comparison
Cleland 2009[453]	Inappropriate comparison
Conijn 2003[471]	Incorrect study design
Conijn 2003[470]	Incorrect study design
Cook 2012[477]	Incorrect study design
Cook 2013[475]	Inappropriate comparison
Cote 1994[483]	Inappropriate comparison
Coxhead 1981[487]	Inappropriate comparison
Critchley 2007[491]	Incorrect interventions
Cuesta-vargas 2011[498]	Inappropriate comparison
De oliveira 2013[533]	Inappropriate comparison
Doran 1975[589]	no relevant outcomes
Ehrenbrusthoff 2012[614]	Not available
Erhard 1994[628]	Incorrect interventions
Ernst 1999[629]	Systematic review: methods are not adequate/unclear
Ernst 2003[630]	Systematic review: methods are not adequate/unclear
Farasyn 2006[651]	Incorrect interventions
Farasyn 2007[650]	Incorrect study design
Ferreira 2003[661]	Systematic review: quality assessment is inadequate
Field 2007[668]	Inappropriate comparison
Flynn 2006[680]	Inappropriate comparison
Foster 2006[684]	Incorrect study design
Franca 2010[688]	Inappropriate comparison
Franca 2012[687]	Inappropriate comparison
Franke 2000[690]	Unavailable
Freeman 2005[694]	Inappropriate comparison
Friedman 2015[701]	Incorrect study design. Conference abstract
Fritzell 2000[720]	Abstract only
Frost 2004[727]	Incorrect interventions
Furlan 2002[733]	Systematic review is not relevant to review question or unclear PICO
Furlan 2003[732]	Systematic review is not relevant to review question or unclear PICO
Furlan 2008[734]	Systematic review is not relevant to review question or unclear PICO
Furlan 2009[735]	Systematic review is not relevant to review question or unclear PICO
Geisser 2005-2[767]	Already included
Gibson 1985[790]	Inappropriate comparison
Gillstrom 1985[793]	Inappropriate comparison (cohort study with no control group)
Gillstrom 1985[794]	Inappropriate comparison (cohort study with no control group)
Ginsberg 1987[796]	Inappropriate comparison
Godfrey 1984[805]	Incorrect outcome
Goertz 2012[806]	Not available
Goertz 2013[807]	Inappropriate comparison

Goldby 2006[813]	Specific details of manual therapy modalities not given - could be anything
Goldstein 2002[815]	Incorrect interventions
Grunnesjo 2004[843]	Incorrect interventions. Participants receive different treatment within the same treatment group
Grunnesjo 2011[842]	Incorrect interventions. Participants receive different treatment within the same treatment group
Gudavalli 2006[845]	Inappropriate comparison
Haas 2004[856]	Inappropriate comparison
Haas 2011[857]	Abstract only
Hadler 1987[860]	Inappropriate comparison
Hadler 1990[861]	Inappropriate comparison
Hallegraeff 2009[887]	Inappropriate comparison
Hancock 2010[894]	Incorrect study design
Harte 2003[906]	Systematic review: quality assessment is inadequate
Hauggaard 2007[912]	Systematic review is not relevant to review question or unclear PICO
Hay 2005[915]	Incorrect interventions. Combination of interventions
Hay 2008[916]	Inappropriate comparison
Hemmila 1997[934]	Incorrect interventions
Hernandez-reif 2001[946]	Inappropriate comparison
Hertzman-miller 2002[950]	Incorrect interventions. Not all participants received the same care in intervention groups
Heymans 2006[952]	Inappropriate comparison
Hoehler 1981[976]	No relevant outcomes
Hofstee 2002[979]	Inappropriate comparison
Hollisaz 2007[981]	Incorrect interventions
Hsieh 2004[988]	Inappropriate comparison
Hsieh 2006[987]	Inappropriate comparison
Hurley 2001[995]	Editorial
Hurwitz 2002[1000]	
Hurwitz 2002[999]	Abstract only
Hurwitz 2002[1001]	
Hurwitz 2006[1003]	Incorrect interventions
Iversen 2010[1028]	Systematic review: methods are not adequate/unclear
Jacobs 1992[1037]	Incorrect study design
Jang 2013[1048]	Inappropriate comparison
Jewell 2005[1072]	Inappropriate comparison (cohort study with no control group)
Johnston 2008[1083]	Systematic review is not relevant to review question or unclear PICO
Jousset 2004[1091]	Inappropriate comparison
Kaapa 2006[1094]	Inappropriate comparison
Kalauokalani 2001[1098]	Incorrect study design
Kankaanpaa 1999[1107]	Inappropriate comparison
Karjalainen 2003[1113]	Inappropriate comparison
Karjalainen 2004[1112]	Inappropriate comparison
Kent 2010[1138]	Systematic review is not relevant to review question or unclear PICO
Kim 2015[1162]	Incorrect population (torture survivors). Incorrect intervention (MET)
Kinalski 1989[1178]	Inappropriate comparison

Koes 1996[1196]	Systematic review is not relevant to review question or unclear PICO
Koes 1998[1194]	Abstract only
Kohlbeck 2005[1206]	Inappropriate comparison
Koldas 2008[1208]	Incorrect interventions
Kraft 2001[1229]	Incorrect study design
Krause 2000[1230]	Systematic review: study designs inappropriate
Kuczynski 2012[1239]	Systematic review: quality assessment is inadequate. Systematic review is not relevant to review question or unclear PICO
Kumar 2013[1244]	Systematic review: methods are not adequate/unclear
Lakke 2009[1259]	Systematic review: methods are not adequate/unclear
Lalanne 2009[1260]	Incorrect outcomes (EMG outcomes)
Larsson 1980[1267]	Incorrect outcomes
Learman 2007[1276]	Not available
Learman 2008[1277]	Incorrect outcomes (improvement in proprioception)
Learman 2009[1278]	Incorrect outcomes (improvement in proprioception)
Lewis 2005[1315]	Inappropriate comparison
Lewis 2013[1319]	Systematic review: methods are not adequate/unclear
Licciardone 2003[1325]	Inappropriate comparison
Licciardone 2005[1324]	Systematic review: methods are not adequate/unclear
Licciardone 2013[1323]	Not guideline condition
Louw 2007[1370]	Systematic review is not relevant to review question or unclear PICO
Luijsterburg 2008[1378]	Inappropriate comparison
Mackawan 2007[1393]	Immediate post-treatment outcomes only
Majchrzycki 2014[1408]	Inappropriate comparison
Mandara 2008[1453]	Incorrect study design
Mathews 1975[1478]	Crossover study
Mathews 1987[1479]	Inappropriate comparison
Mathews 1988[1480]	Inappropriate comparison
Mccarthy 2008[1498]	Incorrect interventions
Mcmorland 2010[1509]	Inappropriate comparison
Menke 2014[1521]	Systematic review: methods are not adequate/unclear
Mirovsky 2002[1534]	Incorrect interventions
Mirovsky 2006[1533]	Incorrect interventions
Moffett 2000[1546]	
Moffett 2003[1543]	We have excluded this study as it was allocated (all arms) into teh combinations review
Mooney 2004[1559]	Incorrect study design
Morris 2013[1572]	Systematic review is not relevant to review question or unclear PICO
Moseley 2002[1577]	Inappropriate comparison
Muthukrishnan 2010[1599]	Inappropriate comparison
Nagrale 2012[1603]	Inappropriate comparison
Netchanok 2012[1622]	Inappropriate comparison
Newel 1977[1624]	no relevant outcomes
Niemisto 2003[1637]	Inappropriate comparison
Noori 2011[1644]	Incorrect interventions

North american spine society board of directors 2003[1647]	Protocol only
O'brien 2006[1655]	Not available
Olson 1991[393]	Incorrect study design. (survey)
Oort 2009[1681]	Not available
Orrock 2013[1685]	Systematic review: methods are not adequate/unclear
Ostelo 2000[1686]	Abstract only
Paanalahti 2014[1694]	Inappropriate comparison
Paatelma 2008[1695]	Inappropriate comparison
Panagopoulos 2015[1702]	Wrong intervention: visceral manipulation, not spine. Inappropriate comparison. Incorrect interventions
Parkinson 2013[1722]	Systematic review: methods are not adequate/unclear
Patel 2013[1727]	Systematic review: methods are not adequate/unclear
Pengel 2002[1740]	Systematic review is not relevant to review question or unclear PICO
Pfefer 2006[1763]	Abstract only
Preyde 2000[1790]	Inappropriate comparison
Rajadurai 2009[1814]	Systematic review: quality assessment is inadequate
Rannou 2009[1819]	Abstrat only
Rasmussen 1979[1824]	Inappropriate comparison
Rasmussen-barr 2003[1825]	Inappropriate comparison
Richards 2013[1848]	Systematic review is not relevant to review question or unclear PICO
Roche 2007[1861]	Inappropriate comparison
Romanowski 2012[1868]	Inappropriate comparison
Rubinstein 2010[1884]	Systematic review is not relevant to review question or unclear PICO
Rubinstein 2011[1885]	Systematic review is not relevant to review question or unclear PICO
Rubinstein 2011[1883]	Systematic review is not relevant to review question or unclear PICO
Rubinstein 2012[1881]	Systematic review is not relevant to review question or unclear PICO
Rubinstein 2013[1882]	Systematic review is not relevant to review question or unclear PICO
Rupert 1983[1887]	Not available
Rupert 2002[1888]	Incorrect study design
Ryan 2004[1892]	Incorrect study design
Saggini 2004[1895]	Inappropriate comparison
Sahin 2009[1897]	Inappropriate comparison
Sanders 1990[1908]	Immediate post-treatment outcomes only
Sanders 1990[1907]	Abstract only
Schafer 2011[1930]	Inappropriate comparison (cohort study with no control group)
Scheer 1996[1933]	Systematic review: methods are not adequate/unclear
Schenk 2012[1936]	Inappropriate comparison
Schenkman 2009[1937]	Inappropriate comparison
Schneider 2010[1942]	Incorrect study design
Schneider 2014[1943]	Abstract only

Schulz 2009[1953]	Abstract only
Schulz 2011[1954]	Protocol only
Seferlis 1998[1964]	Outcomes not reported separately
Seferlis 2000[1963]	Outcomes not reported separately
Selhorst 2015[1965]	Incorrect age group
Shearar 2005[1977]	Not guideline condition
Shekelle 1992[1980]	Systematic review: methods are not adequate/unclear
Shekelle 1994[1979]	Inappropriate comparison
Shum 2013[1992]	Incorrect study design
Silva parreira 2013[2000]	Abstract only
Sims-williams 1978[2002]	Data tables unavailable
Sims-williams 1979[2003]	Inappropriate comparison
Skargren 1997[2014]	Not guideline condition
Skargren 1998[2013]	Incorrect study design
Skargren 1998[2012]	Inappropriate comparison
Skillgate 2007[2016]	Not guideline condition
Skillgate 2010[2015]	Not guideline condition
Slater 2012[2021]	Systematic review is not relevant to review question or unclear PICO
Smith 2006[2029]	Inappropriate outcomes (movement time)
Snow 2001[2033]	Incorrect study design
Snyder 2007[2034]	Incorrect study design
Sran 2005[2055]	Unavailable
Sritoomma 2014[2056]	Inappropriate comparison
Stager 2007[2061]	Incorrect study design
Standaert 2011[2064]	Systematic review: methods are not adequate/unclear
Stano 2002[2067]	Incorrect study design
Surkitt 2012[2086]	Systematic review is not relevant to review question or unclear PICO
Sutlive 2009[2088]	Inappropriate comparison
Sweetman 1993[2092]	Incorrect age group
Swenson 2003[2093]	Systematic review: methods are not adequate/unclear
Szulc 2015[2097]	Incorrect interventions. Combination of interventions
Taber 2014[2098]	Incorrect study design
Takamoto 2015[2100]	Inappropriate comparison. Intraclass comparison. Not guideline population: low back pain defined as 'pain and discomfort below the costal margin and above the inferior gluteal fold'
Tasleem 2003[2107]	Inappropriate comparison
Ter riet 2002[2119]	Abstract only
Tesio 1993[2121]	Inappropriate comparison
Thomson 2009[2136]	Inappropriate comparison
Tobis 1983[2142]	Incorrect study design. methods not described
Tofighi 2011[2143]	Not in English
Tozzi 2012[2147]	Not guideline condition
Tsao 2010[2161]	Incorrect interventions
Tucker 1993[2166]	Incorrect study design. (case report)
Ukhalkar 2013[2181]	Incorrect interventions
Van der heijden 1995[2192]	Systematic review: methods are not adequate/unclear
Van der heijden 1995[2193]	Incorrect comparison
Van der valk 1995[2196]	Incorrect study design. Systematic review is not relevant to review question or unclear PICO

Van tulder 1997[2207]	Systematic review is not relevant to review question or unclear PICO
Van tulder 2000[2203]	Abstract only
Vaucher 2013[2219]	Incorrect study design
Vavrek 2011[2220]	Abstract only
Vavrek 2014[2221]	Abstract only
Verhoef 1997[2227]	Not guideline condition
Vernon 1999[2228]	Systematic review: methods are not adequate/unclear
Verwoerd 2015[2229]	Incorrect interventions. Not enough details
Vincent 2013[2245]	Systematic review is not relevant to review question or unclear PICO
Vismara 2012[2247]	Inappropriate comparison
Visser 2013[2248]	Not guideline condition
Walach 2003[2269]	Not guideline condition
Walker 2010[2272]	Systematic review is not relevant to review question or unclear PICO
Walker 2011[2273]	Systematic review is not relevant to review question or unclear PICO
Wand 2004[2277]	Inappropriate comparison
Wang 2005[2278]	Not in English
Waterworth 1985[2289]	Inappropriate comparison
Weber 1983[2294]	Inappropriate comparison
Wegner 2013[2298]	Systematic review: methods are not adequate/unclear
Westrom 2010[2307]	Protocol only
Wilder 2011[2320]	Protocol only
Wilkey 2003[2322]	Abstract only
Wilkey 2008[2321]	Inappropriate comparison
Williams 1989[2336]	Not available
Williams 1997[2331]	Incorrect study design
Williams 2003[2334]	Not guideline condition
Williams 2004[2333]	Not guideline condition
Williams 2007[2335]	Systematic review is not relevant to review question or unclear PICO
Wilson 2003[2338]	Immediate post-treatment outcomes only
Wontae 2013[2347]	Incorrect outcomes (range of movement)
Xue 2008[2358]	Incorrect study design
Yoon 2012[2383]	Inappropriate comparison
Yurtkuran 1997[2391]	Incorrect interventions
Zaproudina 2009[2394]	Inappropriate comparison
Zhang 2005[2398]	Inappropriate comparison
Zhang 2008[2399]	Inappropriate comparison

L.9 Acupuncture

Table 9: Studies excluded from the clinical review

Study	Exclusion reason
Aboagye 2015[43]	Inappropriate comparison
Albedah 2015[83]	Incorrect interventions. Wet cupping, not acupuncture
Alexandre 2001[87]	Not guideline condition
Altmaier 1992[100]	Inappropriate comparison. Not review population. Not guideline condition
Amos 2012[104]	Not guideline condition. Back and neck pain

Study	Exclusion reason
Anon 2003[8]	Review of teh results of a previously published trial
Anon 2004[9]	Commentary on Meng 2003
Anon 2005[17]	Commentary on Thomas 2005
Anon 2012[30]	Unable to obtain article
Arden 2005[135]	Not guideline condition. Not review population
Bronfort 2012[294]	No outcome data
Carlsson 2001[359]	Inappropriate comparison. Inappropriate sham
Ceccherelli 2002[370]	Inappropriate comparison. Within class comparison
Cherkin 2001[406]	Incorrect intervention (acupuncture group also received other treatments)
Dascanio 2011[520]	No relevant outcomes
Di cesare 2011[567]	Incorrect interventions. Inappropriate comparison. Anaesthetic injections (mesotherapy)
Ding 2015[577]	Inappropriate comparison
Eisenberg 2007[616]	Incorrect intervention. Patients could choose to have massage, acupuncture or chiropracty.
Farham 2006[652]	Commentary on Thomas 2006
Fox 1976[685]	Crossover study
Franke 2000[691]	In German
Frost 1976[724]	Incorrect popualtion
Furlan 2005[737]	Cochrane Review - used as source of references
Furlan 2011[738]	Cochrane reviuew - used as source of references
Garvey 1989[752]	Incorrect interventions
Ghia 1976[780]	Not guideline condition. Not all patients had back pain
Giles 1999[792]	Not guideline condition. Not all patients had low back pain
Glazov 2009[801]	Incorrect intervention. Laser
Glazov 2014[802]	Incorrect intervention. Laser
Guerreiro da silva 2004[846]	Not guideline condition. Low back or pelvic pain in pregnancy
Hanly 2000[898]	cohort study-incorrect population (inflammatory causes of backpain)
Hansson 2008[903]	Not guideline condition. Not all patients had low back pain
Hirota 2006[972]	Not in English
Hirota 2007[971]	Not in English
Hopton 2010[985]	Includes 2 reviews (Furlan 2005 and Manheimer 2005) already included separately
Hsieh 2004[988]	Incorrect intervention. Acupressure (no needles)
Hsieh 2006[987]	Incorrect intervention. Acupressure (no needles)
Hurley 2001[995]	Commentary on Cherkin 2001
Hutchinson 2012[1005]	Systematic review: quality assessment is inadequate. All included studies already in our list
Inman 2004[1017]	cohort study-single intervention study
Inoue 2008[1018]	Incorrect interventions. Comparator is injection of local anaesthetic
Inoue 2009[1019]	Incorrect interventions. Comparator is injection of local anaesthetic
Itoh 2004[1026]	Inappropriate comparison. Within class comparison
Itoh 2004[1023]	Not in English

Study	Exclusion reason
Itoh 2005[1024]	Not in English
Itoh 2006[1025]	Crossover study
Itoh 2009[1027]	Not in English
Ji 2015[1074]	SR used as a source of references. Studies in Chinese language included.
Kerr 2003[1141]	Inappropriate comparison. Inappropriate sham
Kim 2013[1174]	cohort study-interclass comparison
Kinoshita 1981[1180]	Not in English
Kraft 2001[1229]	Commentary on Franke 2000
Kreczi 1986[1231]	Crossover study
Kvorning 2004[1251]	Not guideline condition. Not all patients had LBP (some pelvic/girdle pain; pregnant women)
Lam 2013[1261]	Systematic review - all relevant papers included
Lee 2013[1291]	Systematic review - all relevant papers included
Lee 2013[1295]	Abstract only; no outcomes
Lian 2005[1322]	Inappropriate comparison. Within class comparison
Lin 2015[1330]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). Mixed chronic pain (not just low back pain)
Liu 2015[1350]	Incorrect study design. Cohort study
Macdonald 1983[1385]	Inappropriate sham. Inappropriate comparison
Manheimer 2005[1457]	Systematic review - all relevant papers included
Manheimer 2005[1456]	Systematic review - all relevant papers included
Mendelson 1977[1519]	Incorrect study design. Not outcomes of RCT
Mendelson 1978[1518]	Crossover study
Mendelson 1983[1520]	Crossover study
Miao 2010[1522]	Inappropriate comparison. Within class comparison
Miyazaki 2009[1539]	Not guideline condition. Incorrect interventions
Moffett 1999[1544]	Incorrect interventions
Molsberger 2006[1548]	Incorrect study design
Najafi 2013[1604]	Incorrect study design
Najm 2008[1605]	Commentary on Haake 2007
Nicholas 1992[1635]	Inappropriate comparison
Pach 2013[1697]	Inappropriate comparison. Within class comparison
Sakai 2001[1899]	Commentary on Sakai 2001 published in Japanese
Sator-katzenschlager 2004[1923]	Inappropriate comparison. Within class comparison
Seo 2013[1969]	Protocol only; no results
Sherman 2003[1983]	Protocol only; no results
Shin 2012[1987]	Inappropriate comparison
Skonnord 2012[2018]	Protocol only; no results
Sodipo 1981[2035]	Poster
Sugiyama 1984[2084]	Not in English
Szczurko 2007[2095]	Incorrect interventions. Dietary intervention and relaxation techniques are part of the combination of intervention.
Thomas 1994[2130]	Crossover study
Thomas 2005[2128]	HTA

Study	Exclusion reason
Van tulder 1999[2205]	Systematic review - all relevant trials included
Vas 2014[2218]	Mixed chronic pain (not just low back pain)
Vickers 2004[2234]	Not SR; review only includes 1 eligible RCT, already included (Grant 1999)
Vickers 2009[2237]	Not RCT or SR
Vickers 2010[2236]	Systematic review - all relevant papers included
Vickers 2012[2235]	Systematic review - all relevant papers included
Vickers 2012[2233]	Systematic review - all relevant papers included
Vlaeyen 1995[2250]	Incorrect study design. No useabledatato extract- presented as graphs and univariate analysis
Wedenberg 2000[2297]	Not guideline condition. Not all patients had low back pain (some pelvic pain and some both; pregnant women; only 4/60 pure LBP)
White 2002[2310]	Commentary on Leibing 2002
Xu 2013[2357]	Systematic review - all relevant papers included
Xu 2015[2356]	Incorrect comparison: moxibustion
Yamashita 2001[2365]	Commentary
Yeh 2013[2373]	Incorrect intervention. Acupressure
Yeh 2014[2374]	Mixed chronic pain (not just low back pain). Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Yeung 2003[2378]	Wrong comparison: Combi Tx vs. single Tx - has been included in Combi review
Yuan 2009[2389]	Inappropriate comparison. Within class comparison
Zhang 1997[2402]	Inappropriate comparison. Within class comparison
Zhi 1995[2405]	Inappropriate comparison. Within class comparison

L.10 Electrotherapies

Table 10: Studies excluded from the clinical review

Study	Exclusion reason
Akhmadeeva 2014[71]	incorrect study design: Conference abstract
Barker 2008[180]	Inappropriate comparison
Bloodworth 2004[253]	Crossover study
Brosseau 2002[300]	Systematic review is not relevant to review question or unclear PICO
Chenot 2007[400]	Incorrect study design. Post hoc analysis of a longitudinal prospective cohort study embedded within a 3 armed RCT
Cubukcu 2004[495]	Incorrect interventions
Durmus 2009[604]	Incorrect interventions
Ebadi 2013[609]	Incorrect study design
Ebadi 2014[610]	Systematic review is not relevant to review question or unclear PICO
Flowerdew 1997[679]	Systematic review is not relevant to review question or unclear PICO
Gabis 2009[742]	Incorrect interventions
Ghoname 1999[784]	Crossover study
Ghoname 1999[783]	Crossover study
Ghoname 1999[782]	Crossover study

Study	Exclusion reason
Ghoname 1999[781]	Crossover study
Glaser 2001[799]	Incorrect interventions
Grazio 2009[827]	Abstract only
Hurley 2001[995]	Commentary not primary study
Khadilkar 2005[1145]	Systematic review is not relevant to review question or unclear PICO
Kim 2015[1173]	Incorrect interventions
Kloimstein 2014[1188]	Incorrect study design. No control group
Lam 2014[1262]	Incorrect study aim: looking at procedure for stimulation for popliteal sciatic nerve blocks
Lumpkin 2007[1379]	Unavailable
Monticone 2004[1551]	Not guideline condition
Moore 1997[1567]	Crossover study
Pallett 2014[1701]	Incorrect study design. Observational study (no control group)
Perez-palomares 2010[1748]	Unavailable
Rabin 1987[1806]	Incorrect study design
Sakai 2001[1899]	Unavailable
Salim 1996[1902]	Not guideline condition
Seco 2011[1960]	Systematic review is not relevant to review question or unclear PICO
Thiese 2013[2124]	Protocol only; no outcomes
Thorsteinsson 1977[2137]	Crossover study
Ugur 2001[2179]	Non-English
Weng 2005[2305]	Not guideline condition
Yip 2007[2381]	Incorrect interventions. TENS + radiation (not in list so not permissible combination) vs. usual care
Yokoyama 2004[2382]	Incorrect comparison
Yousefi-nooraie 2008[2385]	Systematic review: quality assessment is inadequate

L.11 Psychological intervention

Table 11: Studies excluded from the clinical review

Study	Exclusion reason
Altmaier 1992[100]	Incorrect interventions. No appropriate control group.
Andersson 2012[119]	Not guideline condition. Included neck pain- no subgrouping.
Argueta-bernal 2004[137]	Systematic review: literature search not sufficiently rigorous. Systematic review: methods are not adequate/unclear. Incorrect interventions. Inappropriate comparison
Bailey 2002[169]	Dissertation
Basler 1990[189]	Not guideline condition. Systematic review is not relevant to review question or unclear PICO. Included all chronic pain syndromes no stratification.
Basler 1997[188,189]	Incorrect intervention
Bean 2014[193]	Mixed chronic pain (not just low back pain)
Beissner 2012[197]	Incorrect study design. Inappropriate comparison

Study	Exclusion reason
Bendix 1995[205]	Incorrect interventions. psychophysical programme- Unclear if the active physical training group could act as compare.
Bendix 1998[204]	Incorrect interventions. Mixed intervention
Bendix 2000[206]	Incorrect interventions. Mixed intervention.
Besen 2015[232]	Incorrect study design
Bland 2010[244]	Systematic review: methods are not adequate/unclear. Systematic review: quality assessment is inadequate. Systematic review: literature search not sufficiently rigorous. Systematic review is not relevant to review question or unclear PICO. Incorrect interventions. Inappropriate comparison
Boogar 2012[271]	Not in English
Brox 2003[313]	Incorrect interventions. Mixed intervention cognitive behavioural approaches +Exercises
Bru 1994[315]	Includes other musculoskeletal pain.
Brunner 2013[317]	Systematic review: study designs inappropriate. Systematic review: quality assessment is inadequate. Included mixed interventions. Poor quality assessment.
Buhrman 2004[323]	Not guideline condition. Included neck pain
Buhrman 2011[324]	Not guideline condition. Mixed low back, thoracic and neck pain.
Busch 2011[332]	Not review population. Mixed chronic pain (not just low back pain)
Canter 2007[357]	Abstract / summary only
Carson 2005[365]	Incorrect interventions
Cherkin 2014[408]	Inappropriate comparison. Comparing two different psychological interventions.
Christensen 2003[443]	Serious spinal pathology (for example, neoplasms, infections or osteoporotic collapse)
Christiansen 2010[445]	Incorrect interventions. No control group.
Cohen 1983[460]	Incorrect study design
Cramer 2012[489]	Systematic review is not relevant to review question or unclear PICO. Included mindfulness based cognitive therapy. Protocol does not include this intervention
Diaz 2013[572]	Abstract only
Dobscha 2008[581]	Inappropriate comparison. Muscular skeletal pain, not specifically back pain. Indirect population.
Domenech 2013[583]	Incorrect study design. Incorrect interventions. Inappropriate comparison. Description of intervention only
Donaldson 1994[585]	Mixed chronic pain (not just low back pain)
Esmer 2010[635]	Inappropriate comparison
Finan 2012[669]	Incorrect study design. Crossover study. Not guideline condition. Incorrect interventions. Inappropriate comparison
Flor 1993[677]	Not guideline condition
Friedberg 2010[700]	Incorrect study design. (commentary)
Gatchel 2003[756]	Incorrect interventions
Glombiewski 2010[803]	Not guideline condition. Mixed low, mid and upper back pain.
Guck 2015[844]	Incorrect study design
Goossens 1998[817]	HE paper with no relevant clinical outcomes
Haig 2003[875]	Wrong intervention. Incorrect interventions

Study	Exclusion reason
Hansen 2010[901]	Incorrect study design. Description of an intervention used. No data.
Hay 2005[915]	Incorrect interventions. Mixed intervention
Heinrich 1985[929]	Incorrect interventions
Henschke 2010[943]	Systematic review is not relevant to review question or unclear PICO
Hentschke 2010[944]	Incorrect study design. Incorrect interventions
Hernandez-reif 2001[946]	Incorrect interventions
Hoffman 2007[977]	Primary neurological disorders (including cauda equina syndrome or mononeuritis). Serious spinal pathology (for example, neoplasms, infections or osteoporotic collapse). Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). Included all non-cancerous causes of LBP
Johnson 2007[1082]	Incorrect interventions. Mixed cognitive behavioural approaches with physical intervention
Johnstone 2002[1084]	Inappropriate comparison
Jonbozorgi 2013[1086]	Not in English
Kaluza 1986[1101]	Not in English
Kankaanpaa 1999[1107]	Incorrect interventions
Kapitza 2010[1109]	Incorrect interventions. Inappropriate comparison
Kerns 2014[1140]	intraclass comparison
Klaber moffett 1986[1184]	Mixed intervention group compared with control (Back school)
Lamb 2007[1263]	Incorrect study design
Lindell 2008[1332]	Not guideline condition. Data for CLBP patients was not analysed separately
Lindstrom 1992[1336]	Outcomes do not match protocol
Linton 1984[1339]	Incorrect interventions. Mixed relaxation and behavioural therapy versus waiting list control.
Linton 2000[1338]	included patients with non-specific neck and back pain.
Linton 2001[1343]	Included non-specific neck pain as well, no subgroup for low back pain.
Linton 2005[1345]	Not guideline condition. Included neck pain patients.
Linton 2006[1342]	included patients with non-specific neck and back pain.
Machado 2007[1391]	Incorrect interventions
Mangels 2009[1455]	Not guideline condition. Mixed musculoskeletal disease.
Mccauley 1983[1499]	Incorrect interventions
Mehling 2005[1512]	Incorrect interventions
Monticone 2013[1553]	Incorrect interventions
Monticone 2014[1552]	Wrong intervention: included in MBR review
Moore 2000[1562]	Not guideline condition. Population unclear.
Morone 2012[1571]	Incorrect study design. Design and methods only.
Moseley 2004[1576]	Incorrect interventions. Non
Nakao 2012[1606]	Post-hoc analysis of another RCT selecting those with low back pain from their responses to the Symptom Checklist questionnaire.
Newton-john 1995[1627]	Incorrect study design. control group not randomised.
Nicholas 1991[1634]	Incorrect interventions
Nicholas 1992[1635]	Incorrect interventions
Norton 2015[1648]	Cost effectiveness analysis only

Study	Exclusion reason
O'keeffe 2015[1658]	Study protocol
Olason 2004[1674]	Wrong study design. Incorrect study design. Inappropriate comparison. Retrospective cohort study.
Onac 2012[1678]	Inappropriate comparison
Paolucci 2012[1704]	Incorrect interventions
Patil 2009[1730]	Incorrect study design. Systematic review: methods are not adequate/unclear. Systematic review: literature search not sufficiently rigorous. Incorrect interventions. Inappropriate comparison
Persson 2001[1753]	Serious spinal pathology (for example, neoplasms, infections or osteoporotic collapse). Incorrect interventions. Inappropriate comparison. No psychological intervention arm.
Pincus 2011[1769]	Incorrect study design
Pincus 2013[1770]	Incorrect study design. Reports proposed study design only.
Pincus 2015[1771]	Incorrect comparator - no details of physio given
Pouladeireishehri 2011[1787]	Conference abstract
Raftery 2013[1811]	Incorrect interventions. Psychological intervention was PGAP, not on protocol
Raine 2004[1812]	Wrong study design. Incorrect study design
Rasmussen 2013[1823]	Incorrect interventions
Reid 2003[1837]	Incorrect study design. Inappropriate comparison. Uncontrolled study.
Reme 2011[1840]	Incorrect study design. Protocol only
Riecke 2013[1851]	Incorrect interventions. Cognitive behavioural approaches used as control, both arms received it. . Inappropriate comparison
Riipinen 2005[1852]	Wrong comparison. Incorrect interventions. Inappropriate comparison
Rogerson 2010[1866]	Incorrect interventions. Mixed cognitive behavioural approaches with physical therapy.
Rose 1997[1874]	Inappropriate comparison. Comparing cognitive behavioural approaches course lengths, no placebo group.
Saarijärvi 1992[1893]	Incorrect interventions. Couple therapy intervention
Schiltenwolf 2006[1939]	Inappropriate comparison
Schweikert 2006[1956]	Incorrect interventions. Usual care, is far beyond usual care in NHS.
Sleptsova 2013[2023]	Not guideline condition. Incorrect interventions. Mixed types of chronic pain.
Sousa 2009[535]	Incorrect sample size. Incorrect interventions. Waiting list versus exercise, cognitive behavioural approaches and EMG
Spinhoven 2004[2053]	Re-analysis of the results of Kole 1999
Steenstra 2006[2070]	Incorrect interventions. Mixed intervention with large PT input.
Sveinsdottir 2012[2089]	Systematic review: methods are not adequate/unclear. Systematic review is not relevant to review question or unclear PICO. Incorrect study design. Narrative review
Taloyan 2013[2104]	Incorrect study design. Inappropriate comparison
Tlach 2011[2140]	Incorrect study design. Incorrect interventions. Non randomised study from description, and also 3 x interventions all involving cognitive behavioural approaches no control group.
Trapp 2009[2151]	Conference abstract
Turner 1982[2171]	Incorrect study design
Van den hout 2003[2191]	Incorrect interventions. Problem solving therapy.

Study	Exclusion reason
Van tulder 2000[2209]	Systematic review is not relevant to review question or unclear PICO. Only chronic LBP, (>12 weeks)
Van tulder 2001[2210]	Systematic review is not relevant to review question or unclear PICO. Only chronic >12 weeks included
Vibe fersum k. 2013[2231]	Incorrect interventions
Vlaeyen 1995[2250]	Incorrect study design. Patients assigned to treatment groups based on timing of referral ('time criterion')
Wand 2004[2277]	Inappropriate comparison
Werner 2010[2306]	Incorrect study design. Describes prospective study design only. . Trail design and not results
Whitfill 2010[2313]	Incorrect interventions

L.12 Pharmacological interventions

Table 12: Studies excluded from the clinical review

Study	Exclusion reason
Aghababian 1986[57]	Drug not licensed in the UK.
Agrifoglio 1994[62]	Inappropriate comparison
Aksoy 2002[72]	Inappropriate comparison
Albert 2008[84]	Incorrect study design. Incorrect interventions. Inappropriate comparison
Alford 2013[89]	Not clinical trial.
Allan 2005[93]	Incorrect interventions
Altman 2010[101]	Narative review
Andersen 1978[110]	Not review population
Anon 2005[13]	Abstract
Anon 2005[16]	Not clinical trial
Anon 2007[26]	Narative review
Aoki 1983[129]	Incorrect interventions
Arbus 1990[134]	Incorrect interventions
Arul prakasam 2011[144]	Incorrect study design
Atkinson 1985[152]	Narrative review
Bakshi 1994[171]	Incorrect interventions
Baratta 1976[177]	Not guideline condition
Baratta 1982[178]	Incorrect interventions
Baron 2015[182]	incorrect population (sciatica)
Bartleson 2002[186]	Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Basmajian 1989[191]	Not review population
Benyamin 2015[214]	Study protocol
Biondi 2013[240]	Incorrect interventions. Inappropriate comparison
Blazek 1986[245]	Inappropriate comparison
Borenstein 1990[272]	Inappropriate comparison

Study	Exclusion reason
Bosch 1997[277]	Incorrect interventions
Brannan 2005[285]	Not guideline condition. Not review population
Brizzi 2004[290]	Inappropriate comparison
Bronfort 1996[293]	Inappropriate comparison
Bronfort 2004[296]	Inappropriate comparison
Brotz 2010[301]	Sciatica population
Brown 1978[304]	Not guideline condition. Mixed back and neck pain.
Brown 1986[305]	Drug not licensed in the UK.
Brown 1996[308]	Systematic review: study designs inappropriate. Systematic review: literature search not sufficiently rigorous. Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Browning 2001[309]	Systematic review: methods are not adequate/unclear
Brunton 2010[318]	Systematic review is not relevant to review question or unclear PICO
Buffum 2004[322]	Crossover study
Burgess 2001[327]	Narative review.
Cabitza 2008[342]	Inappropriate comparison
Casale 1988[367]	Incorrect interventions
Chan 2009[378]	Narrative review
Chandanwale 2011[379]	Incorrect interventions
Chaparro 2014[383]	Systematic review: methods are not adequate/unclear
Chapman 1982[385]	Incorrect interventions
Charlusz 2010[388]	Incorrect interventions
Childers 2005[410]	Inappropriate comparison
Chou 2004[437]	Systematic review is not relevant to review question or unclear PICO
Chou 2007[435]	Systematic review is not relevant to review question or unclear PICO
Chung 2013[446]	Systematic review is not relevant to review question or unclear PICO
Coats 2004[456]	Inappropriate comparison. Intervention removed from the market.
Codding 2008[458]	Abstract
Cohen 2015[463]	Inappropriate comparison. Not guideline condition
Coletta 1988[468]	Inappropriate comparison
Cowan 1963[485]	Not guideline condition. Mixed musculoskeletal disorders.
Davies 2008[527]	Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Davoli 1989[528]	Incorrect interventions
Dharmshaktu 2012[566]	Systematic review is not relevant to review question or unclear PICO. Not review population
Driessens 1994[596]	Inappropriate comparison
Durant 1988[603]	Not guideline condition. Not an efficacy trial.
Ergun 2010[627]	Inappropriate comparison
Euller-ziegler 2001[637]	Narative review
Famaey 1998[648]	Inappropriate comparison
Farajirad 2013[649]	Inappropriate comparison. Drug not used to treat low back pain
Ferreira 2002[660]	Systematic review is not relevant to review question or unclear PICO

Study	Exclusion reason
Fine 2002[670]	Systematic review is not relevant to review question or unclear PICO
Fishbain 2000[672]	Systematic review is not relevant to review question or unclear PICO. Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Frampton 2007[686]	Not guideline condition
Friedman 2008[702]	Incorrect interventions
Fryda-kaurimsky 1981[728]	Inappropriate comparison
Furlan 2006[736]	Systematic review is not relevant to review question or unclear PICO
Gaynor 2011[761]	Systematic review is not relevant to review question or unclear PICO
Geba 2004[762]	Abstract only
Giles 1999[792]	Comment, not RCT
Gimbel 2014[795]	Incorrect interventions
Ginsberg 1987[796]	Incorrect interventions
Glaxosmithkline 1995[800]	Study register, RCT included (Dickens2000)
Gold 1978[812]	Insufficient information reported for analysis
Goldstein 2002[815]	Incorrect interventions
Gotzsche 2000[818]	Excerpts from clinical evidence reports.
Gotzsche 2010[819]	Systematic review is not relevant to review question or unclear PICO
Gould 2009[820]	Oxymorphone is not licended in the UK
Grahame 1976[821]	Not guideline condition. Narative review.
Grevsten 1975[830]	Not guideline condition
Griffin 2000[832]	Abstract.
Grillage 1986[834]	Not guideline condition
Gross 1986[837]	not in english
Grunenthal gmbh 2010[841]	Clinical trial, not published study
Hackett 1988[859]	Brief report
Hagen 2000[864]	Incorrect interventions
Hale 1997[880]	Inappropriate comparison
Hale 2007[882]	Incorrect interventions. Oxymorphone is not licenced in the UK
Hale 2009[881]	Not guideline condition. Mixed causes of pain.
Hale 2013[883]	Not an efficacy trial.
Hameroff 1982[889]	Not guideline condition. Mixed back and neck pain population.
Hameroff 1984[890]	Not guideline condition. Mixed back and neck pain population
Hancock 2009[896]	Not an efficacy trial.
Haroutiunian 2010[905]	Systematic review is not relevant to review question or unclear PICO. Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Hasue 1997[911]	Not guideline condition. Non English language
Heath 2006[923]	Not guideline condition
Hennies 1981[938]	Not guideline condition. Inappropriate comparison
Hickey 1982[953]	Drug not licensed in the UK.
Himanen 1982[963]	Conference abstract
Hindle 1972[964]	Inappropriate comparison
Hingorani 1966[965]	Not guideline condition

Study	Exclusion reason
Hingorani 1970[968]	Drug not used for low back pain.
Hingorani 1971[966]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Hingorani 1975[969]	Inappropriate comparison
Hingorani 1975[967]	Conference abstract
Hondras 2009[983]	Incorrect interventions
Hunt 2003[993]	Not an efficacy trial.
Hurme 1986[998]	Drug not licensed in the UK.
Hurwitz 2002[1002]	Incorrect interventions
Hurwitz 2005[1004]	Incorrect interventions
Ilic 2009[1012]	Incorrect population
Jackson 2006[1035]	Narative review
Jaffe 1974[1044]	Inappropriate comparison
Jamison 1998[1046]	Inappropriate comparison
Jamison 2013[1047]	Inappropriate comparison. Post-hoc analysis of Hale et al. looking at effect of psychological status.
Jokhio 1998[1085]	Not guideline condition. Inappropriate comparison
Kageyama 1982[1096]	Not in english
Kalso 2005[1099]	Not clinical trial.
Kalso 2007[1100]	Incorrect interventions
Kantor 1986[1108]	Not guideline condition. Narative review.
Katz 2003[1122]	Incorrect interventions. Drug withdrawn from the market.
Katz 2004[1124]	Inappropriate comparison. Intervention withdrawn from the market.
Katz 2007[1123]	Incorrect interventions. Oxymorphone is not licenced in the UK
Katz 2011[1121]	Drug not licensed in the UK. Inappropriate comparison
Kavanagh 2009[1125]	Not guideline condition
Kavanagh 2012[1126]	Not guideline condition. Inappropriate comparison. Mixed population of osteoarthrisits and low back pain.
Keller 2007[1133]	Summary of reviews.
Ketenci 2005[1144]	Inappropriate comparison
Kimbrough 2010[1177]	Inappropriate comparison. Letter to editor.
Kivitz 2013[1182]	Inappropriate comparison. Drug not licensed in the UK.
Koes 1992[1198]	Incorrect interventions
Koes 1992[1199]	Inappropriate comparison
Koes 1993[1197]	Not guideline condition. Inappropriate comparison
Koes 1996[1200]	Systematic review: literature search not sufficiently rigorous. Systematic review: methods are not adequate/unclear
Koes 1997[1201]	Systematic review: methods are not adequate/unclear
Koes 2006[1203]	Narative reivew
Kotani 1976[1223]	Not in english
Kroenke 2009[1234]	Not guideline condition
Kuijpers 2011[1240]	Systematic review is not relevant to review question or unclear PICO
Kuroki 1995[1248]	Not in english
Kwong 2013[1253]	Not an efficacy trial.

Study	Exclusion reason
Lam 2013[1261]	Systematic review is not relevant to review question or unclear PICO
Lange 2010[1265]	Systematic review is not relevant to review question or unclear PICO
Laws 1994[1272]	Inappropriate comparison
Leas 2010[1279]	Evidence advisory paper - not an efficacy trial.
Lee 2008[1286]	Not guideline condition
Lepisto 1979[1307]	Not review population. Thoracic and lumbar muscle spasm population
Li 2008[1320]	Inappropriate comparison
Lind 2007[1331]	Not guideline condition. Narative review.
Lionberger 2010[1346]	Systematic review is not relevant to review question or unclear PICO
Listrat 1990[1347]	Short communication only.
Lloyd 2004[1356]	Incorrect interventions
Loldrup 1989[1360]	Not guideline condition
Machado 2009[1388]	Systematic review is not relevant to review question or unclear PICO
Maciel 2014[1392]	Not guideline condition
Madhusudhan 2013[1398]	Inappropriate comparison
Madigan 2009[1399]	Narative reivew
Majchrzycki 2014[1408]	Inappropriate comparison
Maksymowych 2004[1410]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Malanga 2008[1412]	Narrative review
Malanga 2009[1413]	Not guideline condition
Markman 2015[1469]	Not guideline condition
Martell 2007[1475]	Systematic review: methods are not adequate/unclear
Martina 2005[1476]	Narative review
Matsumo 1981[1482]	Abstract only.
Mayyas 2010[1488]	Not guideline condition. Systematic review is not relevant to review question or unclear PICO
Mazza 2010[1490]	Incorrect interventions
Mccarberg 2010[1496]	Systematic review is not relevant to review question or unclear PICO
Mccarberg 2013[1497]	Not a clinical trial.
Mcguinness 1969[1505]	Not guideline condition
Mcintosh 2011[1506]	Systematic review is not relevant to review question or unclear PICO
Mehta 2009[1514]	Drug not licended in UK
Mibielli 2010[1523]	Not guideline condition. Mixed back, hip and nexk pain populations.
Middleton 1984[1524]	Exclude: intraclass comparison
Mika 2013[1525]	Not guideline condition. Narative review.
Milgrom 1993[1526]	Incorrect study design
Miller 2013[1530]	Incorrect interventions
Mitra 2013[1537]	Not guideline condition. Mixed chronic pain population
Moore 1999[1563]	Not guideline condition
Moore 2003[1564]	Not guideline condition
Moore 2007[1565]	Systematic review is not relevant to review question or unclear PICO
Moore 2010[1566]	Irrelevant study
Moore 2015[1560]	Abstract

Study	Exclusion reason
Morlion 2011[1568]	Systematic review is not relevant to review question or unclear PICO. Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Moulin 2001[1582]	Systematic review: methods are not adequate/unclear
Muckle 1986[1585]	Not guideline condition
Muller 2005[1588]	Comment, not RCT
Mullican 2001[1589]	Not guideline condition. Mixed population of osteoarthritis and low back pain.
Muncie 1986[1590]	Drug not available in the UK.
Murphy 1978[1596]	Not guideline condition
Nalamachu 2011[1607]	Systematic review is not relevant to review question or unclear PICO
Nemes 2013[1620]	Incorrect population
Noble 2010[1640]	Not guideline condition
O'donnell 2009[1656]	Incorrect interventions. Cyclo-Oxygenase-2 not listed in the BNF
Okada 1976[1671]	Not in english
Ono 1987[1680]	Non English language
Orava 1986[1683]	Inappropriate comparison
Oyemade 1979[1692]	Not guideline condition
Palangio 2000[1699]	Not guideline condition. Mixed chronic pain population
Palangio 2002[1700]	Inappropriate comparison
Patel 2000[1726]	Inappropriate comparison
Pedersen 2014[1737]	Not guideline condition
Pedersen 2015[1738]	Incorrect population, sciatica.
Peniston 2009[1742]	Post hoc analysis of 2 studies pooled.
Pergolizzi 2013[1749]	Narative review
Perrot 2006[1751]	Systematic review is not relevant to review question or unclear PICO
Perrot 2008[1750]	Systematic review is not relevant to review question or unclear PICO
Petering 2011[1755]	Narative review.
Pohjolainen 2000[1777]	Inappropriate comparison
Postacchini 1988-1[1785]	Incorrect study design
Pownall 1986[1788]	Not an efficacy trial.
Preston 2014[1789]	Not review population
Raber 1999[1804]	Inappropriate comparison
Ralph 2008[1816]	Inappropriate comparison. Intervention withdrawn from the market.
Rauck 2006[1832]	Inappropriate comparison
Rauck 2006[1833]	Inappropriate comparison
Rauck 2006[1828]	Abstract
Rauck 2006[1829]	Abstract
Rauck 2006[1830]	Abstract
Rauck 2007[1831]	Inappropriate comparison
Rauck 2009[1827]	Systematic review is not relevant to review question or unclear PICO
Rauck 2014[1834]	Incorrect interventions. Hydrocodone is not licenced in the UK
Relja 1990[1838]	Incorrect study design
Richards 2002[1849]	Conference abstract

Study	Exclusion reason
Riou 2014[1854]	Not an efficacy trial.
Roelofs 2008[1864]	Systematic review: methods are not adequate/unclear
Roelofs 2008[1865]	Systematic review is not relevant to review question or unclear PICO
Romano 2012[1867]	Systematic review is not relevant to review question or unclear PICO
Romera 2012[1869]	Not guideline condition. Not an efficacy trial.
Roodbro 1975[1873]	Not guideline condition
Rossi 2012[1877]	Inappropriate comparison
Rovinski 1995[1879]	Non-English language.
Rusinyol 2009[1890]	Incorrect interventions
Sakai 2008[1900]	Not guideline condition
Salerno 2002[1901]	Systematic review is not relevant to review question or unclear PICO
Salvini 1986[1904]	Not guideline condition. Inappropriate comparison
Salzman 1999[1905]	Inappropriate comparison. Not an efficacy trial.
Salzmann 1992[1906]	Inappropriate comparison. Drug withdrawn from the market.
Santos 2015[1913]	Systematic review: methods are not adequate/unclear
Sarbu 2008[1916]	Non-comparative study.
Schattenkirchner 2003[1931]	Incorrect interventions
Schnitzer 2003[1944]	Narative review.
Schnitzer 2004[1945]	Systematic review is not relevant to review question or unclear PICO. Systematic review: study designs inappropriate
Schreiber 2001[1949]	Not guideline condition. Mixed low back pain and whiplash populations.
Sedighi 2014[1962]	RCT protocol
Serfer 2010[1970]	Drug withdrawn
Shimia 2014[1986]	Not guideline condition
Shirado 2010[1991]	Incorrect interventions
Silva 1995[2001]	Systematic review: methods are not adequate/unclear
Skljarevski 2011[2017]	Not guideline condition. Systematic review is not relevant to review question or unclear PICO
Slappendel 2006[2020]	Inappropriate comparison. Not an efficacy trial.
Sloan 2008[2025]	Narative review.
Smith 2002[2028]	Narrative review
Smith 2010[2030]	Narative review. Not guideline condition
Soni 2009[2043]	Systematic review is not relevant to review question or unclear PICO
Soonawalla 2008[2044]	Inappropriate comparison
Sorge 1997[2046]	Inappropriate comparison
Sprott 2006[2054]	Not an efficacy trial.
Staiger 2003[2062]	Systematic review is not relevant to review question or unclear PICO
Steiner 2011[2072]	Inappropriate comparison
Stimmel 1986[2075]	Narative review.
Storch 1982[2076]	Non English language
Stratz 1990[2078]	Incorrect interventions. Drug not licensed in the UK.
Straube 2010[2080]	Systematic review is not relevant to review question or unclear PICO
Sweetman 1987[2091]	Incorrect study design
Szpalski 1993[2096]	Conference abstract

Study	Exclusion reason
Taguchi 2015[2099]	incorrect population (sciatica)
Tanen 2014[2105]	Incorrect comparison adn population (sciatica)
Tasleem 2003[2107]	Incorrect study design. Not guideline condition. Inappropriate comparison
Tavafian 2014[2109]	Inappropriate comparison
Taylor 2013[2112]	Systematic review is not relevant to review question or unclear PICO
Ternelin 1998[2120]	Incorrect interventions
Thomas 2006[2129]	Incorrect interventions
Thompson 1983[2134]	Abstract only
Thurel 1991[2138]	Inappropriate comparison
Torri 1994[2145]	Not in english
Toth 2004[2146]	Systematic review is not relevant to review question or unclear PICO. Systematic review: quality assessment is inadequate. Systematic review: methods are not adequate/unclear
Tsuyama 1977[2165]	Not in english
Tsuyama 1981[2163]	Not in english
Tsuyama 1984[2164]	Not in english
Turner 1993[2172]	Systematic review: methods are not adequate/unclear. Systematic review: literature search not sufficiently rigorous. Systematic review: quality assessment is inadequate
Tuzun 2003[2173]	Inappropriate comparison. Drug not licensed in UK
Uberall 2012[2175]	Drug not licensed in the UK.
Ueberall 2015[2178]	Incorrect interventions. Intraclass comparison
Urquhart 2008[2183]	Systematic review: methods are not adequate/unclear
Vaiani 1990[2186]	Not guideline condition
Van der weide 1997[2197]	Systematic review is not relevant to review question or unclear PICO
Van tulder 1997[2207]	Systematic review is not relevant to review question or unclear PICO
Van tulder 2000[2211]	Systematic review is not relevant to review question or unclear PICO
Van tulder 2001[2204]	Not in english
Van tulder 2003[2212]	Systematic review is not relevant to review question or unclear PICO
Van tulder 2003[2213]	Systematic review: study designs inappropriate
Van tulder 2006[2208]	Summary of systematic reviews.
Veenema 2000[2222]	Incorrect interventions
Verdu 2008[2226]	Systematic review: methods are not adequate/unclear. Systematic review: quality assessment is inadequate
Videman 1984[2241]	Drug not licensed in the UK.
Videman 1984[2242]	Incorrect interventions. Inappropriate comparison
Volklein 1990[2252]	Not in english
Von heymann 2013[2253]	Incorrect interventions
Vorsanger 2009[2258]	Irrelevant study
Vorsanger 2009[2257]	Irrelevant study
Vorsanger 2010[2260]	Not guideline condition. Inappropriate comparison
Vorsanger 2011[2259]	Inappropriate comparison. Within class post-hoc comparison.
Wade 2009[2265]	Narrative review
Waikakul 1995[2267]	Inappropriate comparison

Study	Exclusion reason
Waikakul 1996[2266]	Inappropriate comparison
Wang 2008[2280]	Systematic review is not relevant to review question or unclear PICO
Ward 1981[2284]	Inappropriate comparison
Ward 1984[2282]	Incorrect study design
Ward 1986[2283]	Not an efficacy trial.
Waterworth 1985[2289]	Diflunical not registered in the UK
Watson 2004[2291]	Not guideline condition. Mixed chronic pain population.
Weber 1980[2295]	Drug not used for low back pain.
Weber 1980[2293]	Incorrect interventions
Wen 2015[2304]	Incorrect intervention (hydrocodone is not lincended in the UK)
Weil 2010[2300]	Not guideline condition
Wetzel 2014[2308]	Incorrect study design: cross-over study
White 2011[2311]	Systematic review: methods are not adequate/unclear
Wielage 2013[2317]	Incorrect study design
Wielage 2013[2316]	Incorrect study design
Wild 2010[2319]	Not guideline condition. Inappropriate comparison. Mixed low back pain and osteoarthritis populations.
Williams 2009[2329]	Incorrect interventions
Williamson 2014[2337]	Post-hoc analysis of length of treatment.
Worz 1996[2350]	Not in english
Ximenes 2007[2354]	Inappropriate comparison. Drug withdrawn from the market
Yakhno 2006[2361]	Inappropriate comparison
Yaksi 2007[2362]	Incorrect interventions
Yarlas 2013[2369]	Inappropriate comparison
Yue 2014[2390]	Incorrect interventions
Zerbini 2005[2397]	Inappropriate comparison. Within class comparison.
Zippel 2007[2412]	Inappropriate comparison

L.13 Combined interventions: multidisciplinary biopsychosocial rehabilitation (MBR) programmes

Table 13: Studies excluded from the clinical review (Combination, MBR and RTW reviews)

Study	Exclusion reason
Ahlqwist 2008[65]	Incorrect age group
Alaranta 1991[79]	Not guideline condition. Not in English. Not review population
Alaranta 1994[80]	Back school included in comparison arm
Albaladejo 2010[82]	Incorrect interventions
Alexandre 2001[87]	Inadequate description of exercise
Andersson 1999[120]	Not a programme. No specific Tx given
Apeldoorn 2012[132]	Control group all tailored
Basler 1997[188]	All tailored Tx and CBT in combination

Ben salah frih 2009[203]	Insufficient description of interventions
Brealey 2003[286,286]	Incorrect study design (protocol of UK Beam trial)
Bronfort 2000[292]	Not everyone received same care
Bronfort 2011[297]	No combi Tx group
Brox 2003[313]	Incorrect interventions. Comparator is spinal surgery
Bru 1994[315]	Not guideline condition. Not all patients had low back pain
Callaghan 1994[351]	Incorrect interventions. 8 week back school vs. 4 week back school vs sham exercise
Carr 2005[360]	Incorrect interventions. Modality of physiotherapy is not described
Cecchi 2010[371]	Exercises part of the combi Tx not defined
Chan 2011[377]	Tailored Tx modalities in both groups
Chatzitheodorou 2008[391]	Diathermy in combi group, excluded Tx
Chown 2008[438]	Fully tailored Tx
Christensen 2003[443]	Incorrect population
Christiansen 2010[445]	Incorrect interventions. Modalities of exercise and physiotherapy are not specified
Corey 1996[479]	Same study as Mitchell 1994. Back school offered in control arm, control arm could also receive 'physiotherapy' - no further elaboration provided.
Cramer 1993[488]	Usual care + massage + cold pack vs. manipulation (+ tailored adjunct)
Cuesta-vargas 2009[497]	Inappropriate comparison. A+B versus A only type (adjunct)
Cuesta-vargas 2011[498]	Inappropriate comparison. A+B versus A only type (adjunct)
Demir 2014[545]	Incorrect population (post-surgery)
Denis 2012[549]	Not all participants currently have low back pain
Deyo 1990[565]	Inappropriate comparison. Analysed as TENS vs. no TENS, exercise vs. no exercise not in randomised groups
Donaldson 1994[585]	No combi Tx arm
Ernst 2005[632]	Incorrect study design (commentary)
Erp 2015[633]	Protocol for an RCT
Esmer 2010[635]	No combi Tx arm
Farrell 1982[653]	Diathermy part of the main intervention - diathermy is an excluded intervention
Ferrari 2013[659]	Incorrect interventions. No description of exercise
Ford 2015[682]	Wrong intervention: mixed physio: the interventions given were diffeernt depending upon the ubnderlying pathology of the LBP. Pts not all randomised to the same Tx.
Franco 2014[689]	Incorrect study design. Protocol for an RCT
Frost 2004[727]	Combi physiotherapy group completely tailored
Gudavalli 2006[845]	Participants in Tx group could also receive choice of modalities - cryote or USS
Hampel 2015[891]	Incorrect study design. Longitudinal non-randomised study
Hebert 2015[924]	Rehabilitation following lumbar disc surgery
Heinrich 1985[929]	Does not give details of modalities used within core elements of the interventions, eg 'exercises'
Helmhout 2008[932]	Combi Tx arm is tailored Tx
Hemmila 1997[934]	Comparison group gives classes but modalites used tailored at discretion of physiotherapist
Henry 2014[940]	Inappropriate comparison. Comparison between treatment matched vs unmatched to patient-specific clinical features

Hodselmans 2001[975]	Incorrect study design. Not RCT; Includes back school in intervention group
Homayouni 2015[982]	Incorrect interventions. Hot packs as part of intervention
Hurley 2015[997]	Mixed chronic pain (not just low back pain). Population includes postpartum back pain
Jakobsen 2015[1045]	Not guideline condition. Mixed chronic pain (not just low back pain). Population with muscoloskeletal pain in the back and neck/shoulder
Jensen 2011[1069]	The classes and modalities of the physical / exercise interventions are not reported
Jensen 2012[1065]	The classes and modalities of the physical / exercise interventions are not reported
Johnson 2010[1081]	Uninterpretable data
Kamali 2014[1102]	Inappropriate comparison. Intra-class combination rather than inter-class comparison
Kamper 2015[1103]	SR - used as source of references
Karjalainen 2003[1113]	Insufficient description of exercise intervention
Kaye 2015[1130]	Systematic review on epidurals. Incorrect interventions
Keijsers 1989[1131]	Includes back school in intervention arm
Kim 2013[1156]	Incorrect study design
Kim 2015[1162]	Mixed chronic pain (not just low back pain). Incorrect population (torture survivors)
Kizhakkeveettil 2014[1183]	SR - used as source of references
Klaber moffett 1986[1184]	Includes back school in intervention arm
Koc 2009[1193]	Incorrect interventions
Kool 2007[1217]	Incorrect interventions. Comparator group = back school excluded from protocol
Kumar 2009[1245]	Incorrect interventions. Intervention includes diathermy which is excluded
Kumar 2010[1247]	Incorrect interventions. Intervention includes diathermy which is excluded
Lambeek 2009[1264]	Process evaluation report within an RCT
Lee 2011[1300]	Moist heat Tx part of combi group
Lee 2014[1294]	Incorrect study design
Licciardone 2003[1325]	Tailored vs. control groups
Linden 2014[1333]	SIngle intervention. Included in psychological therapies review
Luedtke 2015[1375]	Incorrect interventions. Transcranial stimulation is not a suitable intervention for this review
Macedo 2008[1386]	Inappropriate comparison
Manniche 1988[1459]	Heat Tx part of combi Tx
Mannion 1999[1463]	Incorrect interventions
Matsudaira 2015[1481]	Not guideline condition
Moffett 2003[1543]	Incorrect study design (conference abstract)
Momsen 2014[1549]	The classes and modalities of the physical / exercise interventions are not reported
Murtezani 2015[1598]	Not guideline condition. Mixed chronic pain (not just low back pain). People with lumbar and thoracic pain

Nazzal 2013[1616]	Incorrect interventions. Intervention non reproducible due to lack of details (excluded after presentation of evidence at GDG)
Nochit 2014[1641]	Incorrect study design
Onat 2014[1679]	Incorrect interventions. Balneotherapy is not relevant to this review
Prommanon 2015[1791]	Incorrect interventions
Rantonen 2014[1821]	Not true combination arm: different forms of self-management (Back book education booklet + 1:1 information)
Reme 2009[1839]	No relevant outcomes reported
Roussel 2015[1878]	Not guideline condition. Healthy people at risk for low back pain
Rushton 2015[1889]	Incorrect population (post-surgery)
Schaafsma 2013[1929]	Cochrane review - used as source of references
Schenk 2012[1936]	Exercises in the comparison group tailored and not specified, just exercises according to the DP determined at initial visit
Schenkman 2009[1937]	Participants in each group had tailored Tx's, choice of various classes and modalities
Searle 2015[1959]	Incorrect interventions. SR on exercise (not combination).
Semrau 2015[1968]	Incorrect study design. Quasi-experimental study
Sokunbi 0g 2014[2041]	Not guideline condition. Mixed chronic pain (not just low back pain). Low back definition including gluteal fold and therefore sacroiliac joint
Stapelfeldt 2011[2068]	The classes and modalities of the physical / exercise interventions are not reported
Steenstra 2003[2071]	Protocol only, no outcomes. Study protocol
Storro 2004[2077]	Not enough detail of interventions used in control group (only gives health care professionals)
Streicher 2014[2081]	Incorrect study design
Szczurko 2007[2095]	Incorrect interventions. Dietary advice and relaxation techniques are part of the combination of intervention but are not relevant to our protocol
Tao 2005[2106]	Heat wrap in Tx combi arm, not on list of interventions
Turner 1988[2170]	Not combination treatment
Verwoerd 2015[2229]	Intervention not adequately described
Walker 2011[2273]	Cochrane review, used for reference list
Walti 2015[2276]	Incorrect interventions. Multimodal therapy arm consists of sensory and motor retraining, not relevant to this review
Waterworth 1985[2289]	Some participants has extra mechanical therapy
Yousefi-nooraie 2008[2385]	Cochrane review, used for references only
Zahari 2014[2392]	Physiotherapy was tailored to each person in both groups

L.14 Return to work programmes

As above.

L.15 Spinal injections

Table 14: Studies excluded from the clinical review

Study	Exclusion reason

Abdi 2005[40]	SR - used as source of references
Abdi 2007[41]	SR - used as source of references
Ackerman 2008[49]	Same intervention given to both groups
Al 1999[74]	conference abstract
Anon 2001[6]	conference abstract
Anon 2002[7]	conference abstract
Anon 2012[32]	Incorrect study design
Anwar 2005[128]	Same intervention given in both groups (steroid vs. steroid)
Baeza-noci 2007[168]	Incorrect study design. cohort study-non-protocol intervention: ozone therapy)
Balague 1996[172]	Narrative review
Bartynski 2007[187]	Incorrect study design. cohort study-single intervention
Bellini 2013[201]	review article
Benyamin 2012[212]	systematic review
Bernstein 2001[224]	review article
Bicket 2013[237]	SR - used as source of references
Blomberg 1992[248]	Cortisone injections were given in combination with a number of other non-invasive treatments
Boezaart 1999[260]	single agent trial
Bogduk 2005[262]	Narrative review
Bogefeldt 2008[266]	part of a program of treatments, not specifically injections
Boswell 2003[279]	systematic review
Boswell 2005[280]	SR - used as source of references
Bourne 2000[283]	review
Briggs 2010[288]	cohort study-single intervention
Brown 2012[307]	Sacro-iliac joint injection
Buenaventura 2009[321]	SR - used as source of references
Buttermann 2004[336]	No randomization or comparator
Buttermann 2012[335]	comment only
Cadth 2014[345]	summary of abstracts
Cahana 2004[346]	review article
Cakit 2007[350]	Incorrect study design
Carreon 2008[363]	SR - used as source of references
Cesare 2011[567]	Same agent used in both groups (just compares different technique)
Chambers 2013[376]	Narrative review
Chapman 1981[386]	conference abstract
Choi 2013[421]	SR - used as source of references
Chou 2009[432]	SR - used as source of references
Cohen 2011[462]	review article
Cohen 2013[466]	SR - used as source of references
Conn 2009[472]	SR - used as source of references

Coric 2013[480]	Incorrect study design. Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Costantino 2011[482]	Non protocol intervention- mesotherapy
Covarrubias-gomez 2011[484]	non-English study
Dagenais 2005[505]	SR - used as source of references
Dagenais 2007[507]	systematic review
Dagenais 2010[506]	Review article
Dallas 1987[511]	Crossover study
Das 2004[519]	Incorrect study design
Datta 2009[524]	SR - used as source of references
Datta 2009[523]	SR - used as source of references
De oliveira magalhaes 2012[532]	Wrong Tx - ozone therapy
Depalma 2009[551]	cohort study-single intervention
Derby 2004[552]	cohort study-non-protocol intervention
Friedman 2013[703]	SR - used as source of references
Friedrich 2010[704]	Narrative review
Fritzler 2011[723]	review paper
Galiano 2007[745]	Wrong comparison: ultrasound guided injection vs. CT controlled injection
Goodman 2008[816]	review
Grewal 2012[831]	Narrative review
Gupta 1987[851]	Incorrect study design
Gupta 2012[850]	Incorrect study design. cohort study-protocol outcomes not reported
Hanly 2000[898]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). cohort study
Hansen 2007[900]	SR - used as source of references
Hansen 2012[899]	SR - used as source of references
Henschke 2010[941]	SR - used as source of references
Henschke 2012[942]	Review article
Herskowitz 2004[949]	conference abstract
Herskowitz 2004[948]	Conference abstract
Hery 1987[951]	conference abstract
Huda 2010[992]	within-class comparison: steroid vs. steroid
Ikegami 2010[1010]	Wrong intervention: elcatonin
Inman 2004[1017]	Incorrect study design. cohort study-single intervention
Jabbari 2006[1032]	Incorrect study design. Pilot study-single intervention
Jabbari 2007[1033]	review paper
Jabbari 2008[1031]	Review of an RCT - we already have the full RCT published paper
Jabbari 2011[1034]	SR - used as source of references
Jensen 2011[1069]	systematic review
Jeynes 2008[1073]	SR - used as source of references

Kapural 2007[1110]	cohort study-single intervention
Karnezis 2008[1114]	review article
Kim 2004[1172]	SR - used as source of references
Kim 2010[1176]	Sacro-iliac joint injection
Kim 2013[1174]	cohort study-interclass comparison
Klein 2003[1185]	Incorrect study design. cohort-single intervention
Kroenke 2009[1235]	Review article
Lechmann 2013[1280]	cohort study-single intervention
Lee 2009[1288]	Same intervention in both groups (different doses)
Lee 2009[1296]	non-English study
Lee 2010[1289]	Incorrect study design. cohort study-single intervention
Lee 2010[1292]	Sacro-iliac joint injection. cohort study
Levin 2009[1310]	SR - used as source of references
Lierz 1997[1328]	Abstract
Lierz 2004[1327]	Wrong comparison: intra-class comparison (anesthetic vs. anesthetics)
Lilius 1990[1329]	Not review population. Prognostic data from an RCT previously included in the review
Loeser 2004[1357]	conference abstract
Loizides 2013[1359]	Same intervention in both groups (just compares different guidance methods)
Lu 2014[1374]	SR - used as source of references
Luukkainen 2002[1382]	Sacro-iliac joint injection
Luukkainen 2007[1381]	Overview of RCTs already published
Manchikanti 2000[1424]	Allocation of intervention was by patient choice. Incorrect study design. Sarapin - not licensed in UK
Manchikanti 2001[1423]	Incorrect interventions. Sarapin is not licensed in the UK
Manchikanti 2001[1425]	cohort study-incorrect intervention (Sarapin not licensed for use in the UK)
Manchikanti 2004[1445]	same drugs in both arms
Manchikanti 2008[1433]	includes patients suffering from radicular pain
Manchikanti 2008[1450]	SR - used as source of references
Manchikanti 2009[1427]	SR - used as source of references
Manchikanti 2009[1428]	SR - used as source of references
Manchikanti 2010[1439]	SR - used as source of references
Manchikanti 2012[1429]	systematic review
Manchikanti 2012[1443]	Incorrect study design. cohort study: no intervention reported
Manchikanti 2012[1442]	cohort study-does not report interventions
Manchikanti 2013[1426]	SR / guidelines - used as source of references
Manchikanti 2014[1430]	Further discussion of a previously published trial, which we already have looked at for this review
Manchikanti 2014[1421]	SR - used as source of references
Manchikanti 2015[1444]	Data from previous published trials already included in the review

Mandel 2013[1454]	cohort study-incorrect population
Marks 1992[1471]	same steroid injected in both groups
Mckenzie-brown 2005[1508]	SR - used as source of references
Mcquay 1997[1510]	SR - used as source of references
Miyakoshi 2007[1538]	interclass comparison
Moskovich 1996[1578]	Narrative review
Murakami 2007[1593]	cohort study-incorrect population: Sacroiliac joint pain
Murakami 2008[1594]	Incorrect study design. cohort study-incorrect population: sacroiliac joint pain
Nachtnebel 2009[1601]	SR - used as source of references
Nagarajan 2007[1602]	Incorrect study design. cohort study-single intervention
Nampiaparampil 2012[1608]	review article
Naumann 2008[1614]	Review article
Ney 2006[1629]	Incorrect study design. cohort study-single intervention
Oh 2004[1665]	Radiofrequency lesioning is an approved "other treatment" in this guideline only in facet joints. RF in this study was non-facet joint
Orozco 2011[1684]	Incorrect study design. cohort study-single intervention
Pach 2011[1696]	Wrong intervention: verum (homeopathy)
Paoloni 2009[1703]	does not include intervention specified in protocol
Paradiso 2005[1707]	cohort study-non-protocol intervention: oxygen-ozone
Parr 2009[1723]	SR - used as source of references
Parr 2012[1724]	SR - used as source of references
Paz-valinas 2006[1736]	non-protocol treatment
Peng 2010[1739]	Wrong intervention: methylene blue
Perry 1994[1752]	review piece
Peterson 2010[1760]	SR - used as source of references. review article
Quinet 1979[1798]	Review article
Qureshi 2013[1800]	Same intervention in both groups
Rabago 2005[1803]	SR - used as source of references
Radcliff 2012[1807]	cohort study-incorrect population (Sciatica only)
Raffaeli 2006[1810]	Wrong intervention: morphine
Revel 1998[1844]	prognostic study and does not report outcomes other than immediately post injection.
Reverberi 2005[1845]	cohort-Radiofrequency denervation was not in facet joint
Ribeiro 2013[1847]	Wrong comparison: intra class (steroid vs. steroid)
Rivest 1998[1858]	cohort study-both groups received same intervention`
Rocha 2014[1860]	No comparator group
Rupert 2009[1886]	SR - used as source of references
Scott 2009[1957]	SR - used as source of references
Shin 2013[1989]	Wrong comparison: different needles compared
Shin 2015[1990]	Wrong intervention- discectomy followed by injection. Unclear if injections for surgical pain or non-specific low back pain

Singh 2013[2004]	SR - used as source of references
Slipman 2003[2024]	SR - used as source of references
Spiker 2012[2051]	SR - used as source of references
Staal 2008[2058]	SR - used as source of references
Staal 2009[2057]	SR - used as source of references
Staal 2013[2060]	Narrative review
Straube 2013[2079]	SR - used as source of references
Subin 2003[2083]	No outcomes of interest reported
Tobinick 2004[2141]	Mixed chronic pain (not just low back pain). cohort study
Tonkovich-quaranta 2000[2144]	review article
Tran 2000[2150]	Incorrect study design
Uyttendaele 1981[2184]	Incorrect study design. cohort study-no intervention details given
Wald 2014[2270]	Incorrect study design. -cohort study(single intervention)
Waseem 2011[2285]	cochrane review
White 2007[2312]	Incorrect study design. cohort study-incorrect population: mixed LBP and neck
Williams 1989[2332]	Incorrect study design
Williams 2007[2328]	cohort study-same intervention in both groups
Wittenberg 2001[2344]	Not interventions of interest
Wong 2010[2346]	review paper
Wu 2009[2352]	Wrong interventions: collagenase + oxygen ozone vs. surgery
Yang 1994[2367]	Wrong intervention: oxytocin
Yelland 2000[2375]	review article
Yelland 2004[2376]	SR - used as source of references
Yelland 2004A[2377]	Incorrect intervention. Participants randomized to both injections and exercise intervention
Zakaria 2007[2393]	SR - used as source of references
Zelle 2005[2396]	review article
Zhang 2011[2401]	SR - used as source of references
Zhuang 2008[2406]	Wrong intervention: herbal injection + acupuncture

L.16 Radiofrequency denervation

Table 15: Studies excluded from the clinical review

Study	Exclusion reason
Anon 2014[33]	Not an RCT
Babur 1994[165]	Review article
Banerjee 1976[174]	Incorrect study design. Mixed chronic pain (not just low back pain)
Barendse 2001[179]	Wrong population: not just facet joint pain
Birkenmaier 2007[241]	Wrong comparison: diagnostic blocks compared
Bogduk 2000[264]	Cost-effectiveness analysis with no clinical data

Study	Exclusion reason
Boswell 2007[278]	SR - used as source of references
Buijs 2004[326]	Wrong comparisons: RF denervation by temperature vs. voltage
Calodney 2004[352]	Review article
Cho 1997[420]	Incorrect study design. case-series
Cohen 2010[464]	Incorrect interventions. Inappropriate comparison. Compares RF denervation after 0, 1 or 2 Dx blocks
Cohen 2014[465]	Erratum to previously published study
Derby 2013[555]	Incorrect study design. Compares RF denervation after 0, 1 or 2 Dx blocks. Incorrect interventions. Inappropriate comparison
Dobrogowski 2005[580]	Patients randomised to different corticosteroids with their RF denervation.
Duger 2012[600]	Pulsed radiofrequency (not an denervation procedure)
Duse 2009[606]	Abstract
Falco 2012[646]	Systematic review - used as source of references
Falco 2012[647]	Systematic review - used as source of references
Falco 2012[645]	Systematic review - used as source of references
Florez 1977[678]	Incorrect study design
Gocer 1997[804]	Incorrect study design
Gofeld 2006[809]	Letter to editor
Hashemi 2014[909]	Pulsed radiofrequency (not an denervation procedure)
Hickey 1977[954]	Incorrect study design
Joo 2013[1090]	Incorrect interventions. Wrong comparison: alcohol denervation
Klessinger 2013[1187]	Incorrect study design
Kroll 2008[1236]	Wrong comparison: continuous RF vs. pulsed RF
Lakemeier 2013[1258]	Wrong population: patients had to have facet joint osteoarthritis
Leggett 2014[1303]	Systematic review - used as source of references
Li 2014[1321]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). Serious spinal pathology (for example, neoplasms, infections or osteoporotic collapse). Mixed chronic pain (not just low back pain)
Lindner 2006[1334]	Incorrect study design
Lu 2012[1371]	Incorrect study design. Wrong comparison: conventional RF vs. pulsed RF
Maas 2015[1383,1383]	Systematic review – used as source for references
Melzer 1999[1516]	Incorrect study design
Melzer 1999[1517]	Incorrect study design
Moon 2013[1558]	Wrong comparison: RF distal approach vs. RF tunnel approach
Nedelka 2014[1618]	Not an RCT (retrospective cohort)
Niemisto 2003[1636]	Systematic review - used as source of references
Ogsbury 1977[1663]	Incorrect study design
Park 2006[1713]	Incorrect study design
Park 2010[1708]	Wrong comparison: RF by CT guidance vs. RF by C-arm guidance
Poetscher 2014[1776]	Systematic review - used as source of references
Proschek 2010[1792]	Incorrect study design. Wrong comparison: RF by fluoroscopic guidance vs. RF by SabreSource image guidance system
Rashbaum 1983[1822]	Incorrect study design

Study	Exclusion reason
Sanders 1999[1909]	Wrong comparison: Intraarticular RF vs. extraarticular RF
Schmid 1999[1941]	Incorrect study design
Sheldon 1986[1981]	Incorrect study design
Van 2005[2217]	Unable to obtain paper
Van wijk 2008[2214]	Incorrect study design
Zhang 2009[2400]	Unable to obtain paper

L.17 Epidural injections for sciatica

Table 16: Studies excluded from the clinical review

Study	Exclusion reason
Abram 1997[44]	SR - used as source of references
Ackerman 2007[48]	Wrong comparison: compares different routes not interventions
Ahadian 2011[63]	Wrong comparison: compares different doses of the same interventions
Amr 2011[105]	Wrong ibntervention: ketamine (not in our protocol)
Anderberg 2007[107]	Incorrect stratum. Cervical radicular pain
Andersen 1987[109]	Incorrect study design
Anon 2004[10]	Article unavailable
Anon 2012[32]	Incorrect stratum. Incorrect study design
Anon 2014[35]	Incorrect stratum. Epidurals: review of previously published trial with wrong comparison (intra-class)
Anwar 2005[128]	Same intervention class in both arms
Aref 2011[136]	Wrong comparison: compares different volumes of the same intervention
Aronsohn 2010[141]	Included inthe spinal decompression review
Atlas 2015[153]	Epidurals: Commentary on previously published trial that has alerady been included in our review (Friedly 2014)
Becker 2007[195]	Wrong intervention: ACS/orthokine not licensed in UK
Bellini 2013[201]	SR - used as source of refernces
Benny 2011[210]	SR - used as source of references
Benoist 2012[211]	SR of SRs
Benyamin 2012[213]	Incorrect stratum. SR
Benzon 1986[215]	SR - used as source of references
Bergeron 1999[218]	Incorrect stratum. Wrong population: not sciatica
Block 2012[246]	Commentary only
Borms 1988[275]	Wrong route of administration - intramuscular not epidural
Bui 2013[325]	SR - used as source of references
Burgher 2011[328]	Wrong comparison: clonidine (outside our protocol)
Buttermann 2004[336]	Incorrect study design
Buttermann 2012[335]	Unable to obtain study
Byun 2014[341]	Wrong comparison: within class

Candido 2008[356]	Wrong comparison: different route of administration
Castagnera 1994[368]	Incorrect stratum. Cervical pain, not LBP
Chang-chien 2014[382]	SR - used as source of referenecs
Chapman 1981[386]	Incorrect stratum. Abstract only
Choi 2013[421]	SR - uesd as source of references
Chou 2015[429]	Epidurals: SR - used as source of references
Cocelli 2009[457]	Wrong comparison: intra-class
Cohen 2007[461]	Electronic citation of a trial
Cohen 2010[464]	Wrong interventions and comparisons. Incorrect stratum
Cohen 2012[467]	Wrong comparison: image guided vs. non-image guided
Cohen 2013[466]	SR - used as source of references
Cohen 2015[463]	Incorrect stratum. inappropiate comparison
Dallas 1987[511]	Crossover study
Dashfield 2005[522]	Wrong comparison: different routes of administration
Depalma 2005[550]	SR - used as source of references
Dilke 1973[574]	Wrong tratment: no epidural arm
Dreyfuss 2006[595]	Incorrect stratum. Cervical pain
Engel 2014[624]	SR - used as source of references
Evansa 2015[641]	Epidurals: Wrong population: includes spondylolisthesis pts
Friedman 2008[702]	Wrong intervention: intramuscular not epidural
Galhom 2013[744]	Incorrect stratum. Wrong compariosn: different routes of administration
Gelalis 2009[768]	Wrong comparison: different routes of administration
Gerszten 2010[775]	Included in the spinal decomrpession review for sciatica
Ghahreman 2011[776]	Wrong study design: predictors of response from another RCT (we have already included the RCT)
Ghai 2013[778]	Wrong comparison: intra-class
Ghai 2014[777]	Wrong comaprison: different routes of administration
Gharibo 2011[779]	Wrong comparison: compares different routes of administration
Grayson 2012[826]	Letter
Grevsten 1975[830]	Not our guideline condition
Gupta 1987[851]	Incorrect study design
Gupta 2014[852]	Wrong comparison: different routes of administration
Haimovic 1986[876]	Wrog intervention: oral (not epidural) steroid
Hashemi 2015[908]	Wrong comparison: intra-class
Hee 2007[927]	Wrong comparison: compares different routes of administration
Hery 1987[951]	Abstract
Iversen 2011[1030]	Wrong comparison: subcutaneous saline. Data for the correct comaprison arm (3rd arm = epidural saline) has not been reported.
Jee 2013[1059]	Incorrect stratum. Cervical pain
Kang 2011[1106]	Wrong comparison: intra-class comparison
Kawu 2012[1129]	Incorrect study design. Case-series/before and after

Khan 2010[1148]	Unable to obtain paper
Kim 2011[1170]	Wrong comparison: hyaluronidase (off protocol)
Kim 2011[1153]	Wrong comparison: intra-class
Kim 2013[1171]	Wrong comprison: steroid after balloon treatment vs. steroid without balloon treatment
Kloth 2011[1189]	Incorrect stratum. Cervical pain
Koh 2013[1205]	Wrong comparison: intra-class
Kolsi 2000[1209]	Incorrect stratum. Sciatica or femoral neuralgia
Lee 2009[1290]	Incorrect stratum. Cervical pain
Lee 2013[1299]	Incorrect stratum. Cervical pain
Lierz 1997[1328]	Abstract
Lierz 2004[1327]	Wrong comparison: intra-class (anaesthetic vs. anaesthetic)
Macvicar 2013[1396]	SR - used as source of references
Maity 2012[1407]	Wrong comparison: epidural opioid
Manchikanti 2008[1447]	Incorrect stratum. Hernia OR radiculitis (written in methods section)
Manchikanti 2010[1436]	Incorrect stratum. Cervical pain
Manchikanti 2011[1448]	Incorrect stratum. Hernia OR radiculitis (written in methods section)
Manchikanti 2012[1434]	Inlcuded in spinal injections review - not sciatica population
Manchikanti 2012[1437]	Incorrect stratum. Cervical pain
Manchikanti 2012[1429]	SR - used as source of references
Manchikanti 2012[1431]	Preliminary data from only 60 patients in the trial
Manchikanti 2013[1422]	HE analysis only
Manchikanti 2013[1435]	Inlcuded in spinal injections review - not sciatica population
Manchikanti 2013[1438]	Incorrect stratum. Cervical pain
Manchikanti 2013[1449]	Incorrect stratum. Mixed population - hernia OR sciatica (50% sciatica)
Manchikanti 2014[1421]	SR - used as source of references
Mcgregor 2001[1503]	Wrong comparisons: different routes of administration
Murata 2009[1595]	Treatment is a block of the nerve for back pain, not for the sciatica (leg pain)
Ng 2004[1630]	Cohort study. Incorrect study design
Ngai 2014[1631]	Epidurals: Short review of previously published trial
Ohtori 2012[1670]	Wrong population: spondyliosis or spondylisthesis
Ohtori 2012[1667]	Wrong population: spondylitis or spondylisthesis
Okoro 2010[1672]	Wrong administration route: subcutaneous not epidural
Owlia 2007[1690]	Wrong comparison: different doese of steroid
Park 2010[1710]	Wrong comparison: intra-class
Park 2013[1709]	Wrong intrevention: epidural morphine
Park 2013[1714]	Incorrect stratum. Wrong population: sacroiliac arthritis
Pasqualucci 2007[1725]	Incorrect stratum. cervical pain
Pérez 1992[1747]	Abstract. In Italian
Pimentel 2014[1768]	SR - used as source of references

Pinto 2012[1772]	SR - used as source of references
Pirbudak 2003[1773]	Wrong intervention and comparison: both arms contain oral agents
Quraishi 2012[1799]	SR - used as source of references
Rados 2011[1809]	Wrong comparison: different routes of administration
Rados 2013[1808]	Wrong comparison: different routes of administration
Rastogi 1994[1826]	Incorrect stratum. Wrong population: some without sciatica, some with spondylosis and spondylolisthesis
Revel 1996[1842]	Incorrect stratum. Wrong population: sciatica from post-operative lumbar spinal stenosis
Reverberi 2005[1845]	Incorrect study design
Rezende 2015[1846]	Wrong comparison: intra-class
Ridley 1988[1850]	Crossover study
Sayegh 2009[1927]	Incorrect stratum
Sayle-creer 1969[1928]	Incorrect study design
Schuermans 1988[1952]	Wrong route of administration: intramuscular not epidural
Shamliyan 2014[1974]	SR - used as source of references
Song 1995[2042]	Incorrect interventions
Tauheed 2014[2108]	Wrong comparison: clonidine (not in protocol) in the 2 comparator arms
Thomas 2003[2126]	Wrong comparison: different route of administration
Vad 2002[2185]	Not true randomised study - randomised by patient choice (written in the abstract)
Valat 2006[2187]	SR - used as source of references
Van zundert 2009[2216]	Narrative
Veihelmann 2006[2223]	Wrong intervention: epidural neuroplasty
Walker 1998[2271]	Conference abstract
Waseem 2011[2285]	SR - used as source of references
Weiner 2012[2302]	Commentary
Wewalka 2012[2309]	Incorrect study design
Whynes 2012[2314]	HE analysis. Incorrect stratum
Williams 2013[2327]	Incorrect stratum. Irrelevant review
Wilson-macdonald 2005[2341]	Wrong comparison: intramuscular injection of steroid + anesthetic (not in our protocol) vs. epidural steroid
Wu 2015[2351]	Incorrect stratum. wrong comparison - nucleoplasty
Yates 1978[2371]	Incorrect stratum. Crossover study
Yosry 2008[2384]	Wrong comparison: image-guided vs. non-image guided arms

L.18 Surgery and prognostic factors

Table 17: Studies excluded from the clinical review

Reference	Reason for exclusion
Abramovitz et al., 1991[45]	Multivariable analysis not adjusted for key confounder

Reference	Reason for exclusion
Adogwa et al, 2012[55]	Incorrect study design: presentation
Adogwa et al, 2014[54]	Multivariable analysis not adjusted for key confounder and no relevant outcomes reported
Ahn et al, 2009[68]	No relevant prognostic factors reported
Anderson et al,2009[117]	Incorrect population: neck/cervical patients
Anderson 2015[116]	Wrong population: mixed population of lumabr fusion patients - some had spondylolisthesis and spondylosis
Basler et al, 2007[190]	Univariate study
Bernard et al, 1993[222]	Univariate study
Bieliauskas et al, 1994[238]	Incorrect population: greater than 30% of population with failed back surgery
Carreon 2009[364]	Incorrect study design :Letter to editor
Chang et al, 2005[381]	Univariate study
Chou et al, 2011[426]	Systematic review: references checked for relevant studies
Christensen et al, 1996[442]	Incorrect population: greater than 30% of population with Spondylolisthesis
Cook 2015[476]	
Deberard et al, 2002[536]	Univariate study
Dewing et al, 2008[561]	Univariate study
Deutsch 2010,[559]	Univariate study
Djurasovic et al, 2011[579]	Multivariable analysis not adjusted for key confounder and no relevant prognostic factor reported no relevant prognostic factor reported
Djurasovic et al, 2012[578]	No relevant prognostic factor reported
El Barzouhi et al, 2013[618]	Univariate study
Espersen et al, 1984[636]	Univariate study
Fisher et al,2004[673]	No relevant prognostic factor reported: pain and disability score together
Graver ET AL, 1999[45]	Multivariable analysis not adjusted for key confounder
Greenough et al,1994[829]	Incorrect population: greater than 30% of population with failed back surgery and Spondylolisthesis
Hagg et al, 2003[869]	No multiple variable analysis reported for outcomes specified in the protocol
Havakeshian 2013[914]	Incorrect study design: presentation with no relevant prognostic factor reported
Hee et al, 2003[926]	No relevant prognostic factor reported
Herno 1995[947]	Incorrect population: greater than 30% of population with failed back surgery
Herno,A 1995[947]	Incorrect study design: thesis with no relevant outcomes reported
Hodges et al, 2001[974]	Univariate study
Jonsson et al, 1997[1089]	No relevant prognostic factor reported
Junge et al,1996[1092]	Univariate study
Kagaya et al, 2005[1095]	Univariate study
Katz eta l, 1997[1119]	Univariate study
Katz et al, 1999[1120]	Multivariable analysis not adjusted for key confounder
Kim et al, 2014[1161]	No independent analysis of the effect of the prognostic factor reported
Kim et al, 2015[1160]	No relevant outcomes reported in the study

Reference	Reason for exclusion
Kleinstueck et al, 2011[1186]	Multivariable analysis not adjusted for key confounder and no relevant prognostic factor reported
Kohlboeck et al, 2004[1207]	Univariate study
Komori et al, 2002[1211]	Univariate study
Kosteljanetz et al, 1984[1222]	Univariate study
Kuittinen et al, 2014[1241]	Multivariable analysis not adjusted for key confounder and no relevant prognostic factor reported
Kumar et al, 2001[1243]	Univariate study
Lewis et al, 1987[1316]	No relevant prognostic factor reported
Long et al, 1980[1364]	Univariate study
Loupasis et al, 1999[1369]	Univariate study
Manniche et al, 1994[1458]	Univariate study
Mariconda et al, 2006[1467]	Multivariable analysis not adjusted for key confounder and no relevant prognostic factor reported
Marshman et al, 2010[1474]	Univariate study
McGregor et al, 2002[1504]	Univariate study
Melgar et al, 2014[1515]	No relevant prognostic factor reported
Moore et al, 1994[1561]	Univariate study
Motiei-Langroudi et al, 2014[1581]	Univariate study
Nygaard et al, 1994[1652]	Univariate study
Nguyen et al, 2011[1632]	No relevant outcomes reported
Ronnberg et al, 2007[1872]	Univariate study
Santavirta et al, 1996[1912]	Univariate study
Sedighi et al, 2014[1961]	No relevant prognostic factors reported
Shi et al, 2012[1985]	Univariate study
Sigmundsson et al, 2014[1997]	No relevant prognostic factor reported
Sinikallio et al, 2009[2009]	Multivariable analysis not confounded for key confounder
Sinigaglia et al, 2009[2008]	No relevant prognostic factor reported
Soroceanu et al, 2012[2047]	Multivariable analysis not adjusted for key confounder and no relevant prognostic factor reported
Taylor et al,2000[2113]	Multivariable analysis not adjusted for key confounder
Tsai et al, 2007[2159]	No relevant outcomes reported for prognostic factor
Vialle 2015[2230]	Wrong population: degenrative disorders of lumbar spine (unclear what this includes and if sciatica only)
Voorhies et al, 2007[2256]	Multivariable analysis not adjusted for key confounder
Willems et al,2007[2325]	Multivariable analysis not adjusted for key confounder and no relevant prognostic factor reported no relevant prognostic factor reported
Willems 2013[2324]	Incorrect study design: thesis with no relevant prognostic factor reported

L.19 Disc replacement

Table 18: Studies excluded from the clinical review

Study	Exclusion reason

Aghayev 2010[60]	Incorrect interventions. Inappropriate comparison. Intraclass comparison
Aghayev 2014[58]	Incorrect study design. Case series (order cancelled)
Aghayev 2014[59]	Incorrect study design. Case series
Ahrens 2009[69]	Incorrect study design. Case series
Andrade 2013[123]	Non-systematic review; non relevant to review question
Anekstein 2015[125]	Not guideline condition. Mixed chronic pain (not just low back pain). Incorrect population: spondylolisthesis
Anon 2004[11]	SR - used as source of references
Anon 2005[14]	SR - used as source of references
Anon 2007[25]	Systematic review: literature search not sufficiently rigorous. SR - used as source of references
Assaker 2015[146]	Not review population. Includes people with spondylolisthesis. Inappropriate comparison. No comparator
Bao 2007[176]	Incorrect study design. Case series; pre-clinical studies
Berg 2011[216]	Incorrect study design. Thesis
Berlemann 2009[220]	Incorrect study design. Incorrect interventions. Case series; nucleus replacement
Bernsmann 2001[223]	Incorrect interventions. Inappropriate comparison. Fat graft vs no fat graft for laminectomy
Bertagnoli 2005[228]	Incorrect study design. Case series
Bertagnoli 2006[226]	Inappropriate comparison. Incorrect interventions. All had total disc arthroplasty; comparison of smokers vs non smokers. . Not guideline condition. Spondylosis population
Bertagnoli 2006[225]	Incorrect study design. Case series
Bertagnoli 2006[227]	Incorrect study design. Case series
Blondel 2011[252]	Incorrect study design. Case series
Blumenthal 2003[255]	Incorrect study design. Incorrect interventions. Case series; same implant at different levels
Blumenthal 2005[254]	Not review population. People with back and/or leg pain
Botelho 2008[282]	Incorrect study design
Bronsard 2011[298]	Incorrect study design. Case series
Cakir 2009[349]	Incorrect study design. Case series
Chung 2006[447]	Incorrect study design. Case series
Daneyemez 1999[516]	Incorrect study design. Case series
David 1993[526]	Incorrect study design. Case series
De kleuver 2003[531]	SR - used as source of references
Delamarter 2003[542]	Incorrect study design. Abstract. Not review population. People with Back and/or leg pain
Delamarter 2005[541]	Incorrect study design. Abstract. Not review population. People with Back and/or leg pain
Delamarter 2011[2409]	Not review population. People with back and/or leg (radicular) pain
Di silvestre 2009[570]	Incorrect interventions. Inappropriate comparison. 2 level vs 1 level disc replacement
Errico 2004[634]	Incorrect study design. Narrative review
Freeman 2006[697]	SR - used as a source of references
Gamradt 2005[747]	SR - used as a source of references
Geisler 2004[763]	Not review population. People with back and/or leg pain

Geisler 2008[764]	Not review population. People with back and/or leg pain
Goins 2005[811]	Incorrect study design. Narrative review
Griffith 1994[833]	Incorrect study design. Case series
Hagg 2006[870]	Fusion vs non surgical treatment. Incorrect interventions. Inappropriate comparison
Hakkinen 2007[877]	Incorrect study design. Case series
Health quality ontario 2006[922]	SR - used as a source of references
Huang 2004[989]	Incorrect study design. Narrative review
Huang 2005[990]	Incorrect study design. Case series
Huang 2006[991]	Incorrect study design. Case series
Ilharreborde 2005[1011]	Incorrect study design. Abstract only
Jacobs 2013[1039]	SR - used as source of references
Jensen 1996[1071]	Inappropriate comparison. Incorrect interventions. Free fat transplantation vs no free fat transplantation in laminectomy
Jin 2003[1075]	Incorrect study design. Case series
Kagaya 2005[1095]	Inappropriate comparison. Incorrect interventions. Quality of life before vs after surgery
Kasliwal 2012[1117]	Incorrect study design. Case series
Katsimihas 2010[1118]	Incorrect study design. Case series
Kim 2003[1175]	Not guideline condition. Incorrect study design. People with neurologic disturbance (neurogenic intermittent claudication) and/or severe back pain. Case series
Kim 2007[1155]	Incorrect study design. Case series
Kishen 2010[1181]	SR - used as source of references
Lazennec 2014[1273]	Incorrect study design. Case series (order was cancelled)
Le huec 2005[1275]	Incorrect study design. Case series
Le huec 2005[1274]	Incorrect study design. Case series
Leckie 2009[1281]	Incorrect study design. Narrative review
Lee 2014[1285]	Incorrect study design. Case series
Lemcke 2010[1305]	Not review population. Incorrect interventions. Low back pain and/or persisting pain radiating to lower extremities. Nucleoplasty vs disc decompressor
Levin 2007[1308]	Not review population. People with primarily back and/or radicular pain
Levine 2000[1311]	Not guideline condition. Mixed chronic pain (not just low back pain). Incorrect study design. Narrative review
Lu 2015[1373]	Incorrect study design. Case series
Lu 2015[1372]	No comparator arm. Incorrect study design
Maestretti 2011[1400]	Incorrect study design. Case series
Magnussen 2011[1402]	Incorrect study design. Commentary and abstract
Markwalder 2011[1472]	Incorrect study design. Case series (order was cancelled)
Matejka 2012[1477]	Article in Czech (order was cancelled)
Mayer 2002[1485]	Not guideline condition. Mixed chronic pain (not just low back pain). Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). Incorrect study design. Case series
Mcafee 2003[1494]	Not guideline condition. Some patients had spondylosis
Mcafee 2003[1495]	Not guideline condition. Some patients had spondylosis, leg or back pain
Mcafee 2003[1491]	Incorrect study design. Narrative review and case report
Mcafee 2004[1493]	Incorrect study design. Narrative review

Mcafee 2007[1492]	Incorrect study design. Not guideline condition. Mixed chronic pain (not just low back pain). Case series
Mostofi 2015[1580]	Incorrect study design. Case series
Mundy 2003[1591]	Incorrect study design. Narrative review
Ohnmeiss 2010[1666]	Not guideline condition. Incorrect study design. Some patients had spondylolisthesisPost hoc analysis of RCTs
Park 2012[1711]	Incorrect study design. Case series
Parkinson 2013[1721]	Wrong population: LBP and OR sciatica (some pts had sciatica only). Incorrect study design. Not review population
Parkinson 2013[1720]	Not guideline condition. People with axial back pain and/or radicular pain
Pimenta 2010[1767]	Incorrect study design (cohort)
Pimenta 2012[1766]	Inappropriate comparison. Intra-class comparison of different nucleus replacement devices
Puolakka 2008[1796]	Not guideline condition. Incorrect study design. Back pain and/or muscle weakness. Case series
Rainey 2012[1813]	Incorrect stydy design (cohort)
Resnick 2007[1841]	Incorrect study design. Narrative review
Rischke 2015[1855]	Not review population. Unclear intervention population inclusion criteria. Not Define
Ross 2007[1875]	Incorrect study design. Case series
Sasani 2009[1917]	Incorrect study design. Case series
Sasso 2007[1920]	Not guideline condition. Not review population
Sasso 2008[1918]	Not guideline condition. Cervical arthroplasty
Sasso 2011[1921]	Not guideline condition. Cervical disc herniations or spondylosis
Schluessmann 2009[1940]	Inappropriate comparison. Intra-class comparison: monosegmental vs bisegmental total disc arthroplasty
Schoenfeld 2011[1946]	Incorrect study design. Commentary
Schroven 2006[1951]	Cohort study
Selviaridis 2010[1967]	Not guideline condition. Incorrect study design. Low back pain and/or sciatica. Case series
Siepe 2008[1995]	Inappropriate comparison
Siepe 2009[1996]	Incorrect study design. Case series
Siepe 2014[1994]	Case series (order was cancelled). Incorrect study design
Silber 2006[1999]	Not guideline condition. Cervical degenerative disease
Sinigaglia 2009[2008]	Inappropriate comparison. Intra-class comparison
Tepper 2006[2118]	Abstract only
Thavaneswaran 2014[2123]	SR - used as source of references
Trincat 2015[2152]	Incorrect study design. Case series (order was cancelled)
Tropiano 2003[2156]	Incorrect study design. Case series
Tropiano 2005[2154]	Incorrect study design. Case series
Tropiano 2006[2155]	Incorrect study design. Article of description of surgical technique
Trouillier 2006[2157]	Incorrect study design. Case series
Tsou 2004[2162]	Incorrect study design. Case series
Tumialan 2010[2167]	Incorrect study design (cohort)
Van de kelft 2012[2189]	Incorrect study design. Case series
Van den eerenbeemt 2010[2190]	Systematic review: methods are not adequate/unclear. Ordered to identify any relevant paper
Vital 2014[2249]	Incorrect study design. Narrative review
Vlayen 2006[2251]	Ordered for identification of any relevant studies

Yaszay 2008[2370]	Incorrect study design. Case series/post-hoc analysis of one arm only of an RCT
Zhang 2009[2404]	Incorrect study design. Case series
Zigler 2004[2411]	Not review population. People with back and/or leg pain
Zigler 2007[2407]	Not review population. People with back and/or leg (radicular) pain

L.20 Spinal fusion

Table 19: Studies excluded from the clinical review

Study	Exclusion reason
Abbott 2011[38]	incorrect population: LBP population with or without Sciatica or Sciatica only
Allen 2009[96]	Review of literature
Andersen 2003[111]	intra-class comparison
Andersen 2008[113]	intra-class comparison
Andersen 2009[112]	intra-class comparison
Andersson 2006[122]	systematic review
Anon 2004[11]	NICE guideline with no references
Anon 2005[14]	unable to obtain article
Anon 2006[22]	technology assessment: review of literature
Arnold 2009[139]	single intervention study
Azzazi 2010[164]	incorrect comparison and intra-class comparison
Berg 2011[216]	incorrect population
Bjarke christensen 2002[243]	intra-class comparison
Blumenthal 2005[254]	incorrect population: Patients with or without sciatica
Bogduk 1000[263]	review
Botelho 2008[282]	Letter in response to an excluded study
Bradley 2012[284]	Single intervention study. single intervention
Burkus 2002[329]	intra-class comparison
Bydon 2014[338]	systematic review
Carreon 2008[363]	systematic review
Chaudhary 2011[392]	systematic review
Choma 2011[424]	systematic review
Chou 2009[428]	Review of literature
Chou 2014[427]	Incorrect population: patients with burst fractures
Christensen 2002[441]	intra-class comparison
Christensen 2004[440]	review as part of a book
Christensen 2014[439]	intra-class comparison
Dahdaleh 2013[509]	intra-class comparison
Daubs 2011[525]	systematic review
Delamarter 2011[2409]	incorrect population: only Sciatica population
Deyo 2005[564]	protocol only; paper now published
Dong 2014[586]	intra-class comparison
El shazly 2013[621]	incorrect comparison: intra-class and recurrent herniation population

Study	Exclusion reason
Fayssoux 2010[654]	health economic study
Freeman 2007[695]	intra-class comparison
Freeman 2007[696]	health economic study
Fritzell 2000[720]	item not ordered
Fritzell 2002[721]	intra-class comparison
Fritzell 2002[718]	intra-class comparison
Fritzell 2003[719]	intra-class comparison
Fritzell 2004[722]	heath economic study
Geisler 2007[766]	incorrect population: Patients with or without sciatica
Geisler 2008[765]	incorrect population: Patients with or without sciatica
Gibson 1999[787]	Cochrane review
Guo 2007[848]	item not ordered: non-English paper
Guyer 2009[854]	incorrect population: Patients with or without sciatica
Hacker 1997[858]	intra-class comparison
Haid 2004[873]	intra-class comparison
Hayes 2012[918]	intra-class comparison
Hoy 2013[986]	intra-class comparison
Hurlbert 2013[994]	intra-class comparison
Ibrahim 2008[1008]	meta-analysis
Inamdar 2006[1013]	intra-class comparison
Jacobs 2012[1041]	Cochrane review
Jacobs 2013[1039]	systematic review
Kai 2014[1097]	intra-class comparison
Karabekir 2008[1111]	incorrect comparison: intra-class
Kasis 2009[1116]	Incorrect population: patients with spondylolisthesis included
Katz 1997[1119]	incorrect population: patients with sciatica only included
Kersten 2014[1143]	intra-class comparison
Kim 2006[1164]	intra-class comparison
Kim 2015[1157]	incorrect population: only Sciatica population
Korovessis 2012[1220]	intra-class comparison
Korsgaard 2002[1221]	intra-class comparison
Kwon 2006[1252]	Review of literature
Lee 2015[1301]	Cohort study- sufficient RCT evidence available for fusion versus other types of surgery comparison
Lee 2015[1293]	Incorrect population: neck and spine fusion surgery reported together
Liu 2014[1351]	meta-analysis
Malmivaara 2007[1416]	Intra-class comparison: combination surgery in one arm
Malmivaara 2007[1415]	incorrect comparison: segmental decompression and facetectomy plus fusion versus non operative treatment
Manchikanti 2013[1432]	incorrect intervention: adhesiolysis
Manchikanti 2015[1452]	systematic review-used to check for references
Mannion 2013[1464]	review
Mannion 2014[1462]	Review of literature
Mayer 2014[1487]	systematic review

Study	Exclusion reason
Mcgirt 2015[1502]	Cohort study- sufficient RCT evidence available for fusion versus other types of surgery comparison
Mirza 2007[1535]	systematic review
Mirza 2013[1536]	incorrect intervention: combination of studies
Mroz 2011[1584]	Review of literature
Nordin 2006[1645]	Review of literature
North American spine society board of directors 2003[1647]	protocol only
Noshchenko 2014[1649]	systematic review
Ohtori 2011[1668]	intra-class comparison
Park 2010[1712]	incorrect intervention: laminectomy
Parker 2012[1715]	incorrect population
Parkinson 2013[1721]	health economic study
Phillips 2013[1764]	literature review
Putzier 2009[1797]	incorrect population and intra-class comparison
Qureshi 2013[1801]	heath economic study
Rischke 2015[1855]	Cohort study- sufficient RCT evidence available for fusion versus other types of surgery comparison
Saltychev 2014[1903]	meta-analysis
Sasso 2004[1919]	intra-class comparison
Sasso 2007[1920]	incorrect population
Shen 2014[1982]	intra-class comparison
Shin 2009[1988]	incorrect population and combination comparison
Shunwu 2010[1993]	intra-class comparison
Silber 2002[1998]	Review of literature
Singh 2007[2005]	incorrect intervention
Slatis 2011[2022]	incorrect population: patients with spondylolisthesis included
Soegaard 2006[2037]	systematic review
Soegaard 2007[2036]	health economic study
Soegaard 2007[2038]	health economic study
Sogaard 2008[2040]	health economic study
Takeshima 2000[2102]	Abstract
Thavaneswaran 2014[2123]	systematic review
Thomsen 1997[2135]	incorrect population and intra-class comparison
Tian 2013[2139]	meta-analysis
Van den eerenbeemt 2010[2190]	systematic review
Van der schaaf 1999[2195]	incorrect population: greater than 30% of patients were failed back surgery cases
Videbaek 2006[2240]	intra-class comparison
Videbaek 2006[2239]	intra-class comparison
Virk 2012[2246]	Health economics study
Wang 2014[2281]	meta-analysis-used as source of references
Weinstein 2008[2303]	Incorrect intervention: laminectomy
Willems 2013[2323]	systematic review

Study	Exclusion reason
Xie 2007[2353]	incorrect comparison: combination treatment
Yang 2015[2368]	Incorrect population: spondylolisthesis and neurogenic claudication population included
Zdeblick 1993[2395]	single intervention review
Zigler 2003[2408]	incorrect population: includes Sciatica only population
Zigler 2007[2407]	incorrect population: includes Sciatica only population
Zigler 2012[2410]	incorrect population: includes Sciatica only population

L.21 Spinal decompression

Table 20: Studies excluded from the clinical review

Study	Exclusion reason
Adogwa 2012[53]	Wrong population: segment disease
Adogwa 2013[52]	Wrong intervention: revision surgery - not in our scope
Ahn 2000[67]	Wrong population
Akagi 2010[70]	Not sciatica
Alaranta 1986[77]	Not answer the question - Treatment after surgery
Alfieri 2012[88]	SR - used ass source of references
Ali 2013[92]	Wrong population: back or neck pain, not all sciatica
Al-khalaf 2003[75]	Does not answer the question: Treatment post- surgery
Allen 1990[95]	Intra-class comparison: automated versus manual discectomy
Almadni 2010[98]	Abstract
Amoretti 2013[103]	Does not answer the question: compares surgery (one type) in 2 different groups of patients
Amundsen 2000[106]	Wrong interventions: mixed types of surgery
Andersson 2006[121]	Letter
Anon 2004[11]	Guideline; wrong intervention
Anon 2005[21]	SR - used as source of references
Anon 2005[20]	Not in English
Anon 2007[25]	SR - used as source of references
Arai 2014[133]	Cohort study, but intra-class comparison
Aronsohn 2010[141]	Unable to obtain article
Arts 2011[143]	Letter
Arts 2013[142]	Review
Atlas 1996[155]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Atlas 1996[154]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Atlas 2000[156]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Atlas 2005[157]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Atlas 2005[158]	Cohort study, but already have sufficient RCT data in the review for this

Study	Exclusion reason
	comparison (discectomy vs. UC)
Atlas 2010[159]	Subgroup analysis of SPORT trial (already included main data in review). Subgroups irrelevant to review question.
Awad 2006[162]	SR - used as source of references
Baek 2012[166]	Wrong population: no mention of sciatica - just all hernia patients
Banken 2005[175]	SR - used as source of references
Barth 2008[184]	intra-class comparison
Barth 2008[185]	intra-class comparison
Bernstein 2001[224]	SR - used as source of references
Beyer 2013[234]	Incorrect stratum. Not sciatica population
Birkmeyer 1999[242]	SR - used as source of references
Boden 2014[259]	Abstract
Bogduk 2002[265]	Incorrect stratum. Not sciatica pts.
Bohmfalk 1991[267]	Letter
Bokov 2010[268]	Wrong comparison: nucleoplasty
Boswell 2007[281]	SR - used as source of references
Brouwer 2009[303]	Study protocol
Brouwer 2015[302]	covered by NICE interventional procedures guidance 357 (2010)
Brown 2012[307]	wrong comparison: sacroiliac joint injection (not in our scope)
Brox 2010[310]	Wrong population: not sciatica
Butterman 2004 [337]	No relevant outcomes reported
Bydon 2013[339]	SR. Wrong condition - cysts
Carey 2005[358]	Short article / Review
Celik 2010-1[374]	Intra-class comparison
Chen 2015[394]	Not answer the question: Treatment post-surgery
Chitragran 2012[416]	Wrong intervention: nucleoplasty
Cho 2007[417]	incorrect comparison: intra-class comparison
Choi 2014[422]	incorrect intervention: decompression therapy (non-surgical)
Chopko 2013[425]	Not sciatica population
Chou 2009[433]	Guideline
Chou 2009[430]	Guideline
Crawshaw 1984[490]	Wrong comparison: chemonucleolysis
Crockett 2014[492]	Unable to obtain article
Dagenais 2010[506]	Guideline
Daneyemez 1999[516]	Incorrect study design. Case-series
Dasenbrock 2012[521]	SR/MA - intra-class comparison
De seze 2013[534]	Incorrect study design. Case-series
Dedering 2004[537]	Wrong comparison: intra-class
Deinsberger 2006[539]	Wrong population: spinal cysts
Demircan 1992[546]	Abstract
Derby 2008[553]	Review article
Don 2008[584]	Review article
Dora 2002[588]	Does not answer the question: not Treatment
Dubourg 2002[598]	Does not answer the question: not at Treatment study

Study	Exclusion reason
Dvorak 1988[607]	Cohort study but groups irrelevant to review question: people with pension vs. no pension
Ebenbichler 2015[611]	Does not answer the question: Treatment post-surgery
Ecri 2004[612]	Unable to obtain article
Ecri 2005[613]	paper could not be sourced
Eichen 2014[615]	SR - used as source of references
Ejeskar 1983[617]	Wrong intervention: chemonucleolysis
El barzouhi 2014[620]	Unable to obtain article
Epstein 2004[626]	Wrong population: spinal cysts. SR
Fakouri 2011[643]	Wrong population: not sciatica
Fakouri 2015[644]	SR - used as source of references
Fitzsimmons 2014[676]	Different Treatment pathways looked at, not individual interventions compared
Franke 2009[692]	Wrong comparison: nucleotomy
Freeman 2005[694]	Cross-over RCT
Freeman 2007[695]	Wrong intervention and comparison: fusion vs. fusion
Freeman 2008[698]	SR - used as source of references
Fu 2005[730]	incorrect comparison: intra-class; level of detail: is decompression with or without fusion not in scope
Fu 2008[731]	Intraclass comparison: laminoforaminotomy vs. laminectomy
Garcia 2013[751]	Does not answer the question: Treatment post-surgery
Gerges 2010[774]	SR - used as source of references
Giannadakis 2015[785]	Intra-class comparison
Gibson 2000[786]	Cochrane systematic review: used as reference list
Gibson 2007[789]	Cochrane SR - used as source of references
Gibson 2007[788]	Cochrane SR - used as source of references
Greenfield 2003[828]	conference abstract
Guo 2005[849]	Not in English
Guo 2007[848]	Not in English
Hadzic 2013[862]	Presentation
Haefeli 2008[863]	Incorrect stratum. no outcomes of interest reported
Haughton 2003[913]	SR - used as source of references
Hazard 1989[920]	Does not answer our question: wrong intervention
Heid 2008[928]	Does not answer the question: Treatment post-surgery
Hellum 2011[930]	Wrong intervention/comparison: prosthesis vs. rehabilitation
Herkowitz 1991[945]	Wrong population: spondylolisthesis. Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Hirsch 2009[973]	SR - used as source of references
Hong 2015[984]	SR - used as source of references
Ibrahim 2008[1009]	SR - used as source of references
Indrakanti 2012[1016]	SR of HE analysis papers
Islam 2013[1020]	Incorrect study design. Case-series
Issack 2012[1022]	Review article
Jacobs 2011[1040]	SR - used as source of references

Study	Exclusion reason
Jacobs 2012[1042]	SR - used as source of references
Jacobs 2013[1043]	SR - used as source of references
Jacobs 2013[1038]	SR - used as source of references
Jarrett 2012[1052]	SR - used as source of references
Jirarattanaphochai 2007[1076]	Does not answer the question: post-surgery Treatment
Jirarattanaphochai 2008[1077]	Does not answer question: post-surgery Treatment
Jo 2014[1078]	All pts. had surgery. and comparison is those with history vs. those without history of surgery
Johansson 2009[1080]	Does not answer the question: post-surgery Treatment
Jurecki-tiller 2007[1093]	SR - used as source of references
Kamper 2014[1105]	SR/MA - used as source of references
Karabekir 2008[1111]	incorrect comparison: study compares two different fusion techniques with one treatment arm also having a decompression: doesn't inform the review question
Kawakami 2013[1127]	Cohort study but mixed population of sciatica or claudication
Kim 2003[1166]	Wrong comparison: combination Treatment - surgery + oxiplex gel
Kim 2004[1165]	Wrong comparison: combination Treatment - discectomy + oxiplex gel
Kim 2015[1159]	incorrect population: patient choice too narrow for study to be useful as all patients had type 2 diabetes
Kim 2015[1158]	Incorrect study design. Case-series
Kim 2015[1167]	Breakdown of spine surgery not reported
Knape 1970[1190]	Does not answer the question: post-surgery Treatment
Knight 2001[1192]	SR - used as source of references
Knight 2009[1191]	Wrong comparison: nucleoplasty
Komp 2015[1212]	Intra-class comparison: interlaminar vs. microsurgical laminotomy
Kondrashov 2006[1213]	Incorrect study design. Case-series
Kong 2007[1214]	Wrong intervention/comparison: implantation versus fusion
Konnopka 2012[1216]	Case-series and prognostic study. Incorrect study design
Korkmaz dilmen 2010[1219]	Does not answer question: post-surgery Treatment
Kotil 2014[1224]	Not sciatica population
Kreiner 2014[1233]	Guideline
Krugluger 2000[1237]	Wrong intervention: chemonucleolysis
Lauryssen 2015[1269]	Incorrect population: patients with spondylolisthesis included(from Patel 2014)
Lee 1996[1297]	Not in English
Lee 2013[1284]	Wrong intervention: combination of laminectomy + flavectomy
Lee 2015[1298]	Intra-class comparison
Levy 2012[1312]	SR - used as source of references
Lewis 2015[1318]	Unable to obtain article
Livesey 2000[1353]	Abstract
Loguidice 2011[1358]	SR - used as source of references
Lonne 2015[1366]	Neurogenic claudication population but not with sciatica
Lopez 2005[1367]	Not in English
Lorish 1998[1368]	All pts. had same surgery

Study	Exclusion reason
Luhmann 2003[1376]	Not in English
Luhmann 2005[1377]	SR - used as source of references
Macario 2006[1384]	SR - used as source of references
Madan 2003[1397]	Wrong population: unclear sciatica
Majeed 2013[1409]	Cohort study but intra-class comparison
Malmivaara 2007[1416]	Wrong population: some had spondylolisthesis and some with buttock pain and not all leg.
Malmivaara 2007[1415]	Wrong population: not sciatica
Malter 1996[1418]	Wrong intervention: chemonucleolysis
Malter 1996[1419]	HE paper - no clinical effectiveness data
Manchikanti 2009[1440]	SR - used as source of references
Manchikanti 2013[1441]	SR - used as source of references
Manchikanti 2013[1451]	SR - used as source of references
Manchikanti 2013[1446]	SR - used as source of references
Mannion 2010[1465]	Case-series. Incorrect study design
Mariconda 2002[1466]	incorrect population: Spondylolisthesis population
Marin 2005[1468]	Wrong comparison: nucleoplasty
Markova 2007[1470]	SR - used as source of references
Mazanec 2007[1489]	Overview of a previously published trial (SPORT) that has been included in our review
Mcculloch 1981[1501]	Case-series. Wrong intervention: chemonucleolysis
Moojen 2010[1555]	Study protocol
Moojen 2013[1554]	Incorrect population: neurogenic claudication with no leg pain reference
Moojen 2015[1556]	Incorrect population: neurogenic claudication with no leg pain reference
Munting 2015[1592]	Wrong population: some had spondylolisthesis. Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Neblett 2014[1617]	Unable to obtain article
Nerland 2015[1621]	Intra-class comparison
Niskanen 2002[1639]	Not mention sciatica
Nykvist 1995[1654]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Ohtori 2011[1669]	Wrong intervention/comparisons. All arms included in fusion review.
Overdevest 2015[1688]	intra-class comparison
Pappas 1992[1706]	incorrect comparison: intra-class comparison
Parker 2010[1719]	Incorrect study design. Case-series
Parker 2013[1716]	Intra-class comparison
Parker 2013[1718]	Intra-class comparison
Parker 2015[1717]	Economic study excluded from HE analysis
Patel 2014[1729]	Wrong population: some pts. had spondylolisthesis. Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera)
Patel 2015[1728]	incorrect comparison-intraclass
Pauza 2002[1733]	Unable to obtain article
Pauza 2003[1734]	Abstract
Pauza 2004[1735]	Mixed population: only 27% had sciatica

Study	Exclusion reason
Pauza 2004[1732]	Abstract
Pichon 2011[1765]	Not in English
Pneumaticos 2010[1775]	case-control study. Incorrect study design
Postacchini 1987[1786]	Wrong comparison: chemonucleolysis
Postacchini 1993[1784]	intra-class comparison
Rajasekaran 2013[1815]	Neurogenic claudication population but not with sciatica. Intra-class comparison: 2 types of decompression (midline vs. spinous process splitting)
Ran 2015[1817]	SR - used as source of references
Revel 1993[1843]	Wrong comparison: chemonucleolysis
Reverberi 2005[1845]	Not an RCT - cohort study
Rompe 1999[1870]	Intra-class comparison
Rossi 1993[1876]	Not in English
Saberski 2000[1894]	Wrong comparison: treatment via spinal canal endoscopy (but no details of what was given in the endoscopy arm)
Satoh 2006[1922]	No mention of sciatica
Schick 2009[1938]	intra-class comparison
Sedighi 2014[1961]	Wrong comparison: nucleotomy and osteotomy
Shamji 2014[1973]	Conference abstract
Shareef 2014[1976]	incorrect comparison: intra-class comparison
Singh 2009[2006]	SR - used as source of references
Singh 2013[2007]	SR - used as source of references
Slatis 2011[2022]	incorrect population: patients with Spondylolisthesis (% not reported)
Slotman 1996[2026]	intra-class comparison
Smith 2013[2031]	SR - used as source of references
Smorgick 2013[2032]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). Wrong population: spondylolisthesis
Sutheerayongprasert 2012[2087]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Swezey 1996[2094]	Inflammatory causes of back pain (for example, ankylosing spondylitis or diseases of the viscera). Wrong population: some pts. had spondylolisthesis
Takeshima 2000[2102]	Abstract
Tharin 2012[2122]	Abstract
Thomas 2007[2127]	Cohort study, but already have sufficient RCT data in the review for this comparison (discectomy vs. UC)
Thome 2005[2133]	intra-class comparison
Thomé 2005[2132]	intra-class comparison
Thome 2006[2131]	Abstract
Wang 2013[2279]	All pts. had discectomy
Wu 2015[2351]	Wrong intervention: nucleoplasty
Xinyu 2009[2355]	incorrect comparison: intra-class comparison
Yaman 2015[2364]	Wrong population: not mention sciatica

Appendix M: Excluded health economic studies

M.1 Clinical Examination

None.

M.2 Risk assessment and stratification

Reference	Reason for exclusion
Fritz 2003[710]	This study was excluded due to limited applicability and the availability of more applicable evidence.[130,131] US resource use and cost data (1997-1999) may not reflect current NHS context. QALYs were not used as the health outcome measure (SF-36 reported, however QALYs were not calculated).

M.3 Imaging

Reference	Reason for exclusion
Kerry 2000[1142]	This study was excluded due to a combination of limited applicability and very serious methodological limitations. QALYs were not used as the health outcome measure (SF-36 reported, however QALYs were not calculated). Resource use and unit cost data from 1995-1999 judged unlikely to be applicable to current UK NHS practice.
Kendrick 2001[1136] Miller 2002[1531]	This study was excluded due to a combination of limited applicability and very serious methodological limitations. QALYs were not used as the health outcome measure (EQ-5D reported, however QALYs were not calculated). Instead patient satisfaction is used in bootstrapping analysis, which does not appear in the study protocol. Resource use and cost year not reported, but the enrolment year was prior to 1999. This means the study is unlikely to be applicable to current UK NHS practice.
Jensen 2010[1067]	This study was selectively excluded due to a combination of limited applicability, potentially serious limitations, and the availability of more applicable evidence. This study only reported the direct cost of the interventions from a Danish perspective, which is unlikely to reflect UK NHS costs.
Graves 2014[823]	This study was selectively excluded due to methodological limitations and the availability of more applicable evidence. This study considers costs but is not a cost-utility analysis (no cost per QALY is calculated). In addition, it is not based on a RCT and comes from the US. Hence it is unlikely to reflect current UK NHS practice.
Jarvik 2015[1056]	This study was selectively excluded due to methodological limitations and the availability of more applicable evidence. QALYs were not used as the health outcome measure (EQ-5D reported, however QALYs were not calculated), although this is because no significant difference in quality of life between interventions was seen.
Webster 2014[2296]	This study was assessed as not applicable as it did not include any health outcome data, and cost data were from the USA and judged unlikely to be applicable to current UK NHS practice.

M.4 Self-management

Reference	Reason for exclusion

Cherkin 2001[406]	This study was assessed as not applicable. USA resource use from 1997/8 (cost year unclear) judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.
Lewis 2011[1317]	This study was selectively excluded due to a combination of applicability and methodological limitations. While the intervention met the review protocol the majority of the comparators did not. In addition the NMA on which the analysis was based was not included in the clinical review.
Fitzsimmons 2014[675]	This study was selectively excluded due to a combination of applicability and methodological limitations. While the intervention met the review protocol the majority of the comparators did not. In addition the NMA on which the analysis was based was not included in the clinical review.
Hemmila 2002[933]	This study was assessed as not applicable. Finnish resource use and costs from 1994 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.

M.5 Exercise

Reference	Reason for exclusion
Aboagye2015 [43]	This paper was assessed as only partially applicable with potentially serious limitations. There were concerns over the population included in the study. The reported cost for physiotherapists is high and is unlikely to be consistent with a UK setting. It is not clear how the QALYs were calculated as no details are given on how the utilities values at each time point and for each subgroup (adherent and non-adherent) were combined to obtain QALYs. The study was also excluded from clinical review due to outcome reporting.
Seferlis 2000[1963]	This study was assessed as not applicable. Swedish resource use and costs from 1996 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure. Study was excluded from clinical review (due to outcome reporting).
Henchoz 2010[935]	This study was assessed as not applicable. Total or incremental costs could not be extracted for an NHS perspective only and indirect costs accounted for the majority of the total costs. In addition, Swiss resource use data and units costs from 2008 may not reflect current NHS context.

M.6 Postural therapy

None.

M.7 Orthotics

None.

M.8 Manual therapy

Reference	Reason for exclusion
Cherkin 2001[406]	This study was assessed as not applicable. USA resource use from 1997/8 (cost year unclear) judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.
Lewis 2011[1317]	This study was selectively excluded due to a combination of applicability

Reference	Reason for exclusion
	and methodological limitations. While the intervention met the review protocol the majority of the comparators did not. In addition the NMA on which the analysis was based was not included in the clinical review.
Fitzsimmons 2014 [675]	This study was selectively excluded due to a combination of applicability and methodological limitations. While the intervention met the review protocol the majority of the comparators did not. In addition the NMA on which the analysis was based was not included in the clinical review.
Cook 2008[473]	This study was assessed as not applicable. USA resource use and costs from 1988-2005 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.
Crow 2009[493]	This study was selectively excluded due to a combination of applicability and methodological limitations. USA resource use data (2002-2005) and unit costs (2006) may not reflect the current NHS context and QALYs were not used as the health outcome measure; the analysis is based on a cohort study that was not included in the clinical review for the guideline.
Fritz 2006[708]	This study was selectively excluded due to a combination of applicability and methodological limitations. USA resource use data and unit costs from 2004 may not reflect the current NHS context and QALYs were not used as the health outcome measure; the analysis is based on a cohort study that was not included in the clinical review for the guideline.
Kominski 2005[1210]	This study was assessed as not applicable. USA resource use and costs from 1995-1998 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.
Seferlis 2000[1963]	This study was assessed as not applicable. Swedish resource use and costs from 1996 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure. Study was excluded from clinical review (due to outcome reporting).
Hemmila 2002[933]	This study was assessed as not applicable. Finnish resource use and costs from 1994 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.

M.9 Acupuncture

Reference	Reason for exclusion
Cherkin 2001[406]	This study was assessed as not applicable. USA resource use from 1997/8 (cost year unclear) judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome measure.
Kim 2010[1168]	This study was assessed as not applicable. Total or incremental costs could not be extracted for an NHS perspective only and indirect costs are considered likely to account for a significant proportion of total costs. In addition, costs and health effects were discounted at a non-reference case rate (5%) and reporting about utility data used in the analysis was unclear.
Witt 2006[2343]	This study was assessed as not applicable. Total or incremental costs could not be extracted for an NHS perspective only and indirect costs are considered likely to account for a significant proportion of total costs. In addition, German resource use from 2001-2004 may not reflect current NHS context and the cost year was unclear. QALYs were estimated using a non-reference case measure (SF-6D).

Reference	Reason for exclusion
Taylor2013 [2111]	This paper was selectively excluded as QALYs were not reported and there were methodological concerns about the conversion of SMDs from meta-analysis into DALYs averted. Costs and resource utilisation were not reported clearly.

M.10 Electrotherapy

Reference	Reason for exclusion
Pivec2013 [1774]	This paper was assessed as not applicable. The paper only includes costs from a US perspective which were judged unlikely to be applicable to a UK NHS perspective.

M.11 Psychological

Reference	Reason for exclusion
Newcomer 2008[1623]	This study was selectively excluded due to a combination of limited applicability and very serious methodological limitations. USA resource use data (2000-2002) and unit costs (2002) may not reflect current NHS context, QALYs were not used as the health outcome measure and intervention costs were not addressed.
Norton2015 [1648]	This paper was excluded because it a US perspective analysis of Lamb 2010 which is already included in the analysis.

M.12 Pharmacological

Reference	Reason for exclusion
Fritz 2013[707]	This study was selectively excluded due to a combination of applicability and methodological limitations, USA 2004-2008 resource use and costs from claims data may not reflect the current NHS context and QALYs were not used as the health outcome measure (health outcome was not assessed); the analysis is based on a cohort study that was not included in the clinical review for the guideline and is a multivariate generalised linear model that does not report total or incremental costs for the different pharmacological variables of interest (only a regression coefficient and the increase in total cost per unit increase in variable).
Wielage2013A[2316]	This study was assessed as not applicable. Total or incremental costs could not be extracted for a healthcare payer perspective only; unclear if non-health costs are likely to change the cost-effectiveness result. In addition, Canadian resource use data and unit costs (2011) may not reflect current NHS context, the EQ5D tariff used is unclear and costs and health effects were discounted at a non-reference case rate (5%).

M.13 MBR

Reference	Reason for exclusion
Gatchel 2003[756]	This study was assessed as not applicable. USA resource use (year not stated) and unit cost (2002) data judged unlikely to be applicable to current UK NHS context. QALYs were not used as the health outcome measure.
Moffett 1999[1544]	This study was assessed as not applicable. UK resources use and costs from before 1999 judged unlikely to be applicable to current UK NHS context.
NCCPC 2009A[1610]	This study was assessed as not applicable. Analysis based on clinical data

Reference	Reason for exclusion
	from an RCT with a mixed pain population excluded from the review for the guideline.
Skouen 2002[2019]	This study was assessed as not applicable. Norwegian resources use and costs from before 1999 judged unlikely to be applicable to current UK NHS context. In addition, QALYs were not used as the health outcome.

M.14 Return to work

None.

M.15 Spinal injections

None.

M.16 Radiofrequency denervation

None.

M.17 Epidurals

Reference	Reason for exclusion
Peterson2013[1759]	This study was selectively excluded due to a combination of limited applicability and very serious methodological limitations. Swiss resource use data (2010-2011) and unit costs (date unclear) may not reflect current NHS context. QALYs were not used as the health outcome measure. The analysis is based on a cohort study that was not included in the clinical review for the guideline. Furthermore the follow-up is short (1 month) and no sensitivity analyses undertaken. Only the cost of interventions included, no downstream costs reported and the source of unit costs is unclear.
Lewis 2011[1317]	This study was selectively excluded due to a combination of applicability and methodological limitations. While the intervention met the review protocol the majority of the comparators did not. In addition the NMA on which the analysis was based was not included in the clinical review.
Fitzsimmons 2014[675]	This study was selectively excluded due to a combination of applicability and methodological limitations. While the intervention met the review protocol the majority of the comparators did not. In addition the NMA on which the analysis was based was not included in the clinical review.
Spijker-Huiges 2015[2050]	This study was selectively excluded due to a combination of limited applicability and very serious methodological limitations. Costs were reported from a societal perspective (including loss of productivity) and direct medical costs could not be separated. We could not use the QALY and analyse them with the costs reported in the previous study from the same group as the QALY calculation did not match with the SF36 changes reported for the two interventions.
Udeh2014 [2176]	This paper was selectively excluded due to serious methodological concerns. Complication costs after 90 days of procedure were not included and the source of outcome data was not clear. The translation of outcome data to QALY gains was also unclear, and some strong assumptions were made to adjust QALYs for the model.

M.18 Surgery and prognostic factors

None.

M.19 Spinal decompression

Reference	Reason for exclusion
Hansson 2007[902]	This study was assessed as not applicable because the resource use data are from 1995 and the study was conducted in Sweden.
Udeh2014 [2176]	This paper was selectively excluded due to serious methodological concerns. Complication costs after 90 days of procedure were not included and the source of outcome data was not clear. The translation of outcome data to QALY gains was also unclear, and some strong assumptions were made to adjust QALYs for the model.

M.20 Spinal fusion

None.

M.21 Disc replacement

Reference	Reason for exclusion
Berg 2011[216]	Study based on the same data reported in the included study by Fritzell et al (2011).[717]

Appendix N: Cost-effectiveness analysis: Radiofrequency denervation

N.1 Introduction

The clinical review showed that radiofrequency denervation (RFD) is clinically effective at improving the pain score outcome for individuals that have severe low back pain. Given the potential high cost and resource use associated with this procedure and the availability of clinical evidence to inform an original cost effectiveness analysis, an economic model was prioritised to assess whether the increase in effectiveness associated with RFD justifies the incremental costs. The clinical question that the model tries to address is:

What is the clinical and cost effectiveness of radiofrequency denervation for facet joint pain in the management of non-specific LBP?

N.2 Methods

N.2.1 Model overview

N.2.1.1 Comparators

In our model RFD is compared to usual care, defined as active management in primary care. The RFD intervention consists of an initial diagnostic block which identifies patients who are likely to respond to the RFD; we have not looked at the literature comparing the effectiveness of different numbers of diagnostic blocks as part of the guideline and therefore are unable to comment on the efficacy of different numbers of blocks. We are therefore going to use the mean number of blocks used in the trials that inform the review (i.e. 1). After the diagnostic block, some patients will end up not receiving RFD should the diagnostic block be negative. If the diagnostic block is positive, the model includes the possibility that the individual refuses the actual RFD intervention or that the response to the block leads to an adequate reduction in pain and RFD is not immediately necessary.

N.2.1.2 Population

The population in the model is people with low back pain and symptoms suggestive of facet joint origin that has not resolved despite non-invasive management. The population reflects the RCTs identified in clinical review which is informing the clinical data, therefore it consists of people that have failed conservative treatment (non-invasive interventions) and whose mean pain score is more than 4. The model starts at the referral point, therefore people meeting these criteria would be referred to a person who will assess for eligibility.

N.2.1.3 Time horizon, perspective, discount rates used

The time horizon reflects the duration of the effect of the intervention, taking into account the duration of the diagnostic block and the duration of the RFD, which is assumed to be conducted only once in the base case. Therefore in the deterministic base case a time horizon of 28 months was implemented, while in the probabilistic analysis this is linked to the duration of the effect for each simulation. In a sensitivity analysis where a repeat procedure is included, the time horizon is extended to incorporate the duration of the second procedure too. Therefore in this scenario the time horizon is extended to 52 months in the deterministic analysis.

As mortality will not be impacted by interventions a lifetime horizon was not deemed necessary. Once the effect of the intervention has worn off any further costs and health effects will be equal in both arms meaning expanding the time horizon will not affect the results.

A UK NHS/PSS perspective will be taken in line with the NICE reference case for clinical guidelines. The analysis will follow the standard assumptions of the reference case including discounting at 3.5% for costs and health effects, and incremental analysis is conducted. A sensitivity analysis using a discount rate 1.5% for costs health benefits is conducted.

N.2.1.4 Deviations from NICE reference case

Health-related quality of life (HRQoL) data was not available directly from the clinical evidence; therefore EQ-5D had to be estimated by mapping from the pain score outcome. A mapping algorithm was found in a published study from the US where pain scores were mapped to EQ-5D using a US tariff instead of UK tariff.

N.2.2 Approach to modelling

In order to take into account natural mortality and a possible repetition of RFD, a Markov model was developed. In the RFD arm, people are first given a diagnostic block; if this is negative the individual goes to the usual care arm; if this is positive, individuals can have the following possibilities:

A. prolonged response to the block and RFD is delayed
B. no prolonged response and they are offered RFD directly

In both cases, after a positive block individuals can also choose to decline RFD. If the RFD is declined, in scenario A they move to the usual care arm after the effect of the block wears off, while in scenario B they move to the usual care arm immediately. In the base case RFD is performed only once, either with or without an initial prolonged response with diagnostic block. In a sensitivity analysis, RFD is repeated after the effect of the first RFD wears off.

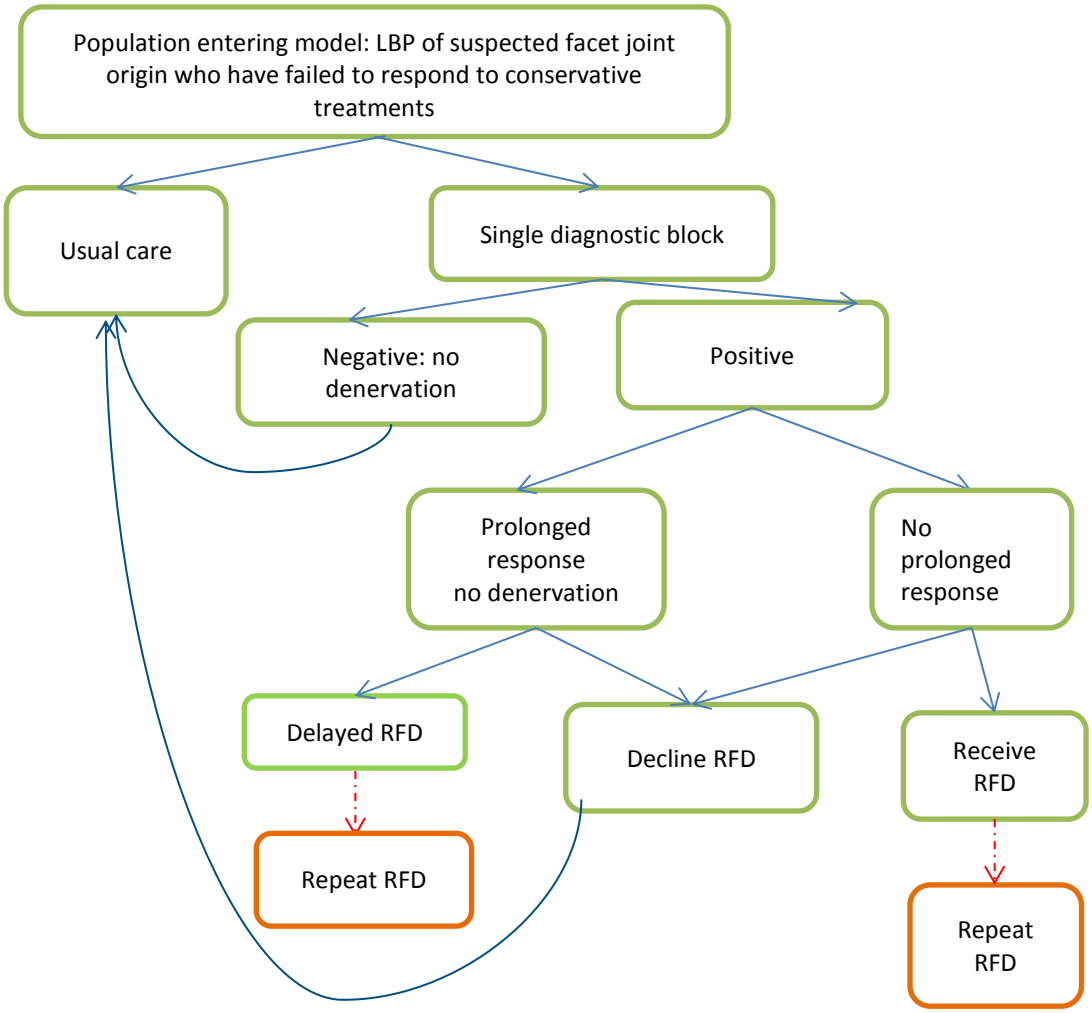
Based on the data available from the clinical review conducted for this question, the treatment effect incorporated is pain score; health-related quality of life (HRQoL) is then attached to pain scores using a mapping study (see section N.2.3.6). Adverse events will not be considered as the only reported adverse event in the RCTs was immediate pain from the intervention, which was considered negligible and difficult to quantify.

The approach we adopted for estimating the pain score reflects the fact that in the model RFD is compared to usual care while in the clinical review the comparator was sham. In an economic model this would not be the ideal comparator as it would not be the alternative in real life and also sham would be still associated with the same costs as the intervention. Therefore in the base case we assumed that individuals in the usual care arm have no improvement from the baseline pain score observed in the RFD arm of the included RCTs. This assumption is varied in a sensitivity analysis around the pain score outcome, where the score observed in the sham arm of the RCTs is used for the usual care arm in the model.

N.2.2.1 Model structure

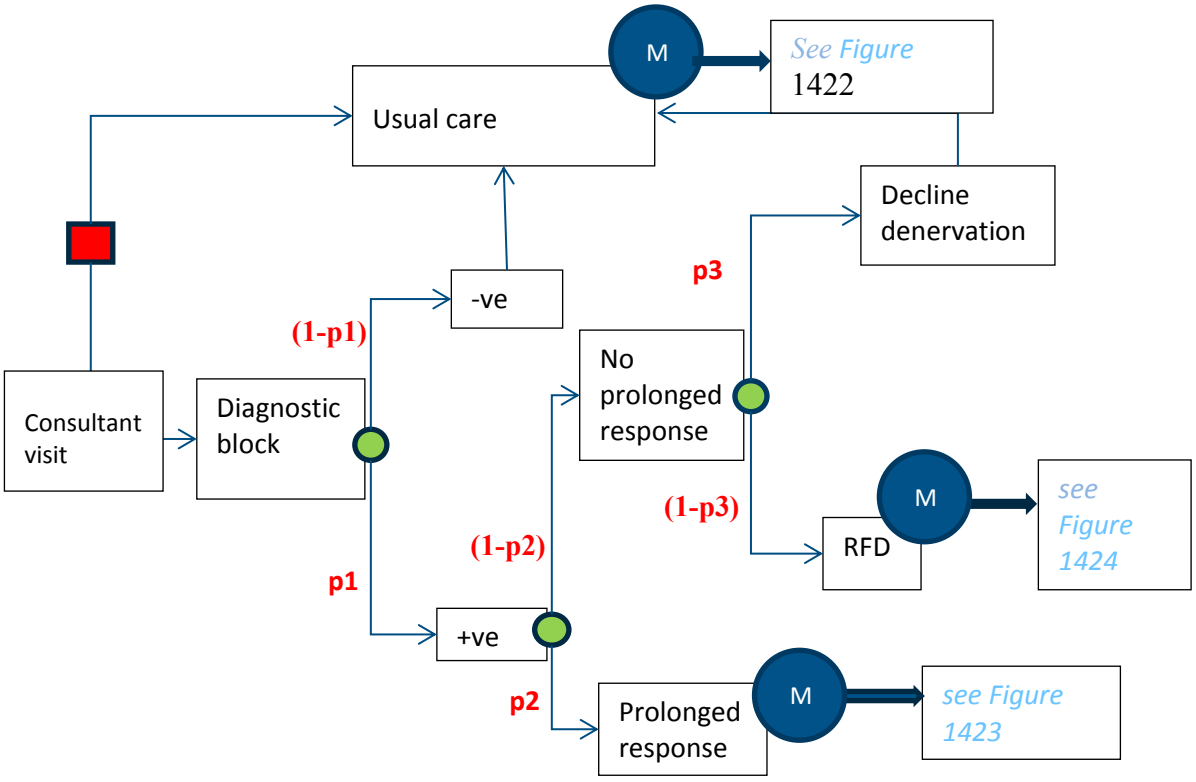
The overall model structure is explained in **Figure 1420**. **Figure 1421** shows the initial part of the model: after the decision node individuals in the usual care arm enter a Markov model; individuals in the RFD arm will go through some initial chance nodes which define the proportion of patients having a positive diagnostic block (p1), those having a prolonged response after an initial positive block (p2), those undergoing initial RFD (1-p3) and those who decline RFD (p3). They will then enter the appropriate Markov model (usual care, prolonged response to diagnostic block, or RFD). All the Markov models have a one month cycle length and the same time horizon defined as the maximum duration of effect.

Figure 1420 - overall model structure



The boxes in orange represent those options included only in a sensitivity analysis.

Figure 1421 - Initial part of the economic model

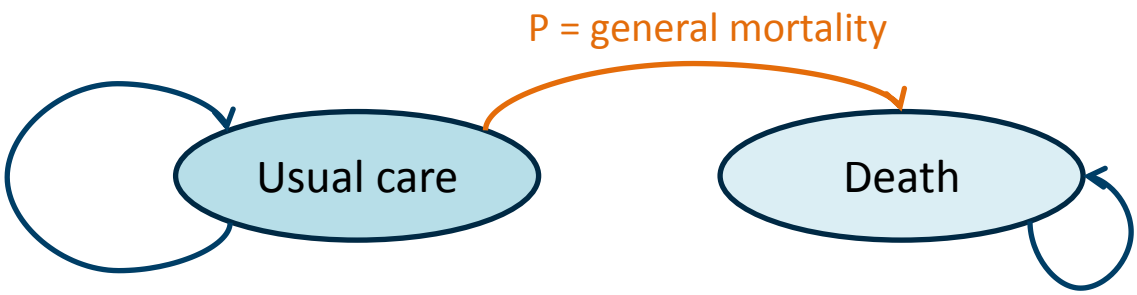


The red square represents the decision node; the green circle represents the chance node.

p1, p2, and p3 represent the probabilities following a chance node, respectively the probability of a positive diagnostic block, of a prolonged response with a positive diagnostic block and of patients declining denervation. Boxes with the blue M circle represent those points where Markov states were initiated.

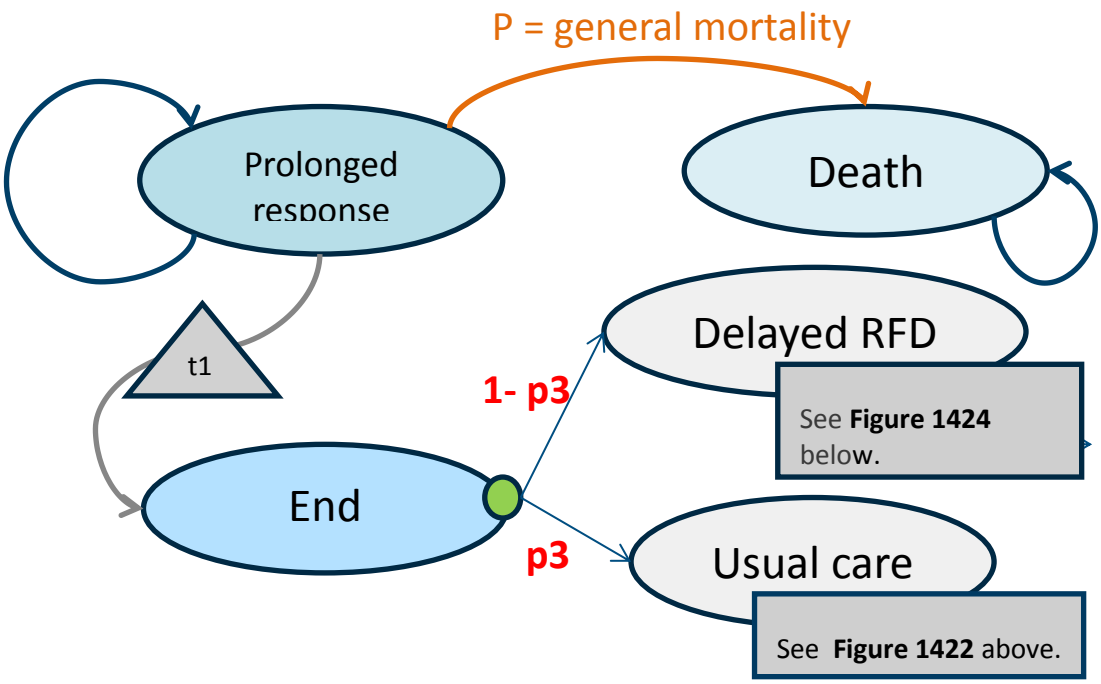
There are three Markov models embedded in the model: one to represent the usual care arm (**Figure 1422**), one to represent a prolonged response to diagnostic block (**Figure 1423**), and finally one representing RFD (**Figure 1424**).

Figure 1422 - Markov model - usual care



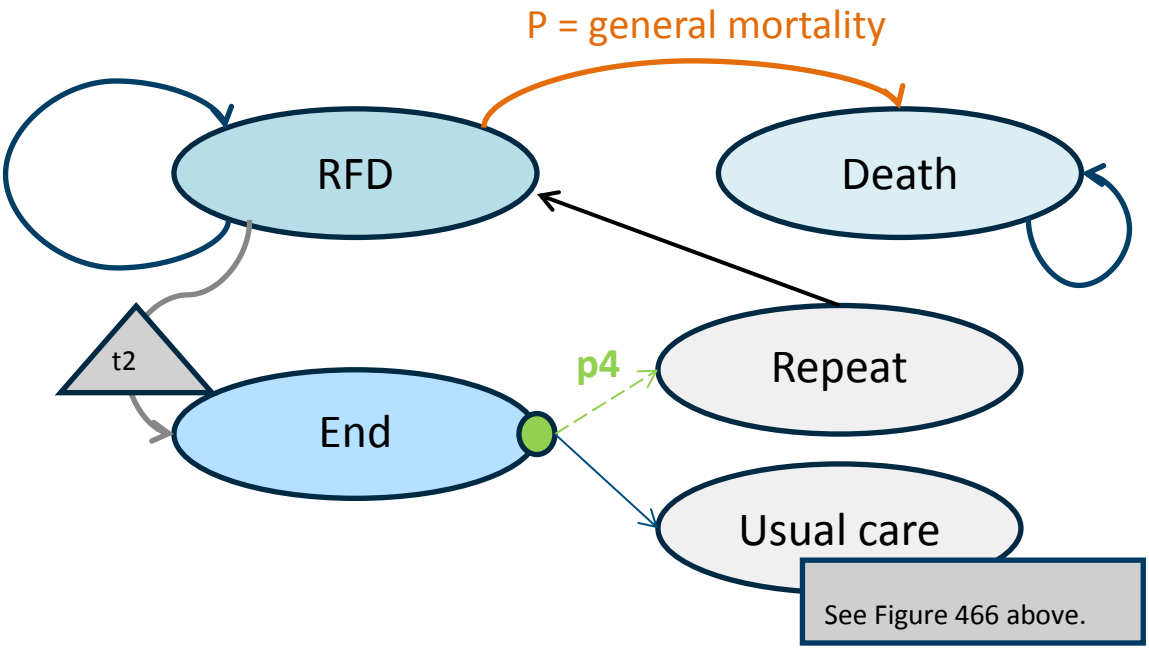
In the usual care arm people can only remain in that health state or transit to the death state.

Figure 1423 - Markov model - Prolonged response



People either transit to the death state or remain in the prolonged response state until the time **t1,** which corresponds to the duration of the response to a prolonged response to nerve block. After the end of response, some patients will have RFD whilst some will still choose to decline the surgery. This is represented with probability p3. If the individual continues to have the surgery then they move to the RFD state, detailed in **Figure 1424** below.

Figure 1424 - Denervation part of the model



People either transit to the death state or remain in the RFD state until the time **t2,** which corresponds to the duration of the response to RFD. After the end of response, in the base case people transit to the usual care state, while in a sensitivity analysis some patients will have a repeat RFD, according to probability p4, and in this case the outcomes of the initial procedure will be used.

Each health state will have utilities attached according to the pain score achieved with the strategy characterizing the health state (see N.2.3.4). Costs used in the model are only one-off costs and therefore are attached to events/procedures rather than to health states (see N.2.3.7).

N.2.2.2 Uncertainty

The model was built probabilistically to take account of the uncertainty around input parameter point estimates. A probability distribution was defined for each model input parameter. When the model was run, a value for each input was randomly selected simultaneously from its respective probability distribution; mean costs and mean QALYs were calculated using these values. The model was run repeatedly – 10,000 times for the base case – and results were summarised.

The way in which distributions are defined reflects the nature of the data, so for example utilities were given a beta distribution, which is bounded by 0 and 1, reflecting that a quality of life weighting will not be outside this range. All of the variables that were probabilistic in the model and their distributional parameters are detailed in **Table 21** and in the relevant input summary tables in Section N.2.3.1. Probability distributions in the analysis were parameterised using error estimates from data sources.

Table 21: Description of the type and properties of distributions used in the probabilistic sensitivity analysis

Parameter	Type of distribution	Properties of distribution
Probabilities	Beta	Bounded between 0 and 1. As the sample size and the number of events were specified alpha and Beta values were calculated as follows: Alpha = (number of patients hospitalised) Beta = (Number of patients) − (number of patients hospitalised)
Probabilities based on expert opinion	Beta	Derived from a mean and SE assuming the SE is 20 % of the mean Alpha = $mean^2 \times [(1-mean)/SE^2] - mean$ Beta = Alpha×[(1−mean)/mean]
Utilities Mean pain scores (adjusted to fit on a scale from 0 to 1)	Beta	Bounded between 0 and 1. Derived from mean and its standard error, using the method of moments, or assuming the SE is 20% of the mean. Alpha and Beta values were calculated as follows: Alpha = $mean^2 \times [(1-mean)/SE^2] - mean$ Beta = Alpha×[(1−mean)/mean]
Utilities decrements NHS Reference Costs Duration of effectiveness	Gamma	Bounded at 0, positively skewed. Derived from mean and its standard error. Alpha and Lambda values were calculated as follows: Alpha = $(mean/SE)^2$ Lambda = $mean/(SE^2)$
Difference in pain score	Lognormal	Where appropriate, the lognormal distribution may provide a better fit than the gamma distribution for costs. The natural log of the mean was calculated as follows:

Parameter	Type of distribution	Properties of distribution
		Mean = ln(mean) SE = (ln(UpperCI)-ln(lowerCI))/(1.96*2)

The following variables were left deterministic (that is, they were not varied in the probabilistic analysis):

- the cost-effectiveness threshold (which was deemed to be fixed by NICE),
- the resource, including time and cost of staff, required to implement each strategy (assumed to be fixed according to national pay scales and programme content)

In addition, various deterministic sensitivity analyses were undertaken to test the robustness of model assumptions. In these, one or more inputs were changed and the analysis rerun to evaluate the impact on results and whether conclusions on which intervention should be recommended would change.

N.2.3 Model inputs

N.2.3.1 Summary table of model inputs

Model inputs were based on clinical evidence identified in the systematic review undertaken for the guideline, supplemented by additional data sources as required. Model inputs were validated with clinical members of the GDG. A summary of the model inputs used in the base-case (primary) analysis is provided in Table 22 below. More details about sources, calculations and rationale for selection can be found in the sections following this summary table.

Table 22: Summary of base-case model inputs

Input	Point estimate	Probability distribution and parameters	Source
Probabilities			
Probability of a positive diagnostic block	69%	Beta α = 261 β = 115	Nath 2008[1609]
Probability of declining RFD after a positive diagnostic block	10%	Beta α =22.4 β = 201.6	GDG opinion
Probability of a prolonged response to diagnostic block	15%	Beta α = 21.1 β =119.6	GDG opinion
Proportion of patients repeating RFD after the effect of the first RFD wears off	10%	Beta α = 22.4 β = 201.6	GDG opinion
Effectiveness			
Pain score – prolonged diagnostic block (base case)	Same as RFD		Assumption
Pain score – usual care (base case)	5.7	Beta α = 10.18 β = 7.68 (multiplied by 10)	Pain score from weighted average of baseline score in the RFD arms of the included

Input	Point estimate	Probability distribution and parameters	Source
			RCTs (Gallagher 1994, Leclaire 2001, Tekin 2007, Van Kleef 1999, Nath 2008)
Pain score - RFD (base case)	3.7	Beta α = 15.38 β = 26.188 (multiplied by 10)	Pain score from weighted average of score at the longest follow up in the RFD arms of the included RCTs (Gallagher 1994, Leclaire 2001, Tekin 2007, Van Kleef 1999, Nath 2008)
Pain score – RFD (without Leclaire)	3.4	Beta α = 16.16 β = 31.37 (multiplied by 10)	
Pain score – usual care (without Leclaire)	5.9	Beta α = 9.66 β = 6.713 (multiplied by 10)	
Pain score – usual care (sensitivity analysis)	4.8	Beta α = 12.52 β = 13.563 (multiplied by 10)	Pain score at baseline for the placebo arm (Gallagher 1994, Leclaire 2001, Tekin 2007, Van Kleef 1999, Nath 2008)
Mean difference in change from baseline between RFD and placebo (within 4 months)	1.83	Lognormal Ln(mean)=0.59 SE = 0.169	Gallagher 1994, Leclaire 2001, Tekin 2007, Van Kleef 1999
Mean difference in change from baseline between RFD and placebo (after 4 months)	1.57	Lognormal Ln(mean)=0.4281 SE = 0.2142	Gallagher 1994, Tekin 2007, Nath 2008
Duration of pain relief with a prolonged diagnostic block	4 months	Gamma α =61.51 λ =15.38	GDG opinion
Duration of pain relief with RFD	24 months	Gamma α=61.31 λ=2.555	GDG opinion
Quality of life data			
See Table 26	Varies according to score		Mapping from pain score to EQ5D – based on Mueller et al. 2013[1586]
Costs			
Unit cost - initial appointment	£168	Gamma α=5.583 λ=0.033	NHS Reference Cost 2013/14 - consultant-led, first non-admitted face to face, Service: pain management
Unit cost - diagnostic block procedure	£546	Gamma α=5.176 λ=0.01	NHS Reference Cost 2013/14 - HRG code

Input	Point estimate	Probability distribution and parameters	Source
			AB05Z - intermediate pain procedure – day case
Unit cost - follow up visit	£121	Gamma α=3.689 λ=0.0305	NHS Reference Cost 2013/14 – Consultant or non-consultant-led outpatient appointment, service: pain management
Unit cost - RFD procedure	£618	Gamma α=5.418 λ=0.0088	NHS Reference Cost 2013/14 – HRG code AB08Z - pain radiofrequency treatments – day case
Cost of usual care per year	£0	None	Assumption – cost of intervention calculated as an incremental compared to usual care so its cost does not influence the incremental analysis
Total cost for patients undergoing RFD the first time with no prolonged response to the diagnostic block (based on unit costs described below)	£1,574	None – function of unit costs	Cost initial appointment + Cost block procedure + Cost follow up visit + Cost RFD procedure + Cost follow up visit
Total cost for patients undergoing RFD the first time with a prolonged response to the diagnostic block (based on unit costs described below)	£1,742	None – function of unit costs	Cost initial appointment + Cost block procedure + Cost follow up visit + Cost initial appointment + Cost RFD procedure + Cost follow up visit
Cost of repeating RFD (based on unit costs described below)	£907	None – function of unit costs	Cost initial appointment + Cost RFD procedure + Cost follow up visit
Other model settings			
Initial age of individuals in the model	52	None	Weighted average from the RFD arms of the included RCTs (Gallagher 1994, Leclaire 2001, Tekin 2007, Van Kleef 1999, Nath 2008)
Proportion male/female	35/65	None	Weighted average from the RFD arms of the included RCTs (Gallagher 1994, Leclaire 2001, Tekin 2007, Van Kleef

Input	Point estimate	Probability distribution and parameters	Source
			1999, Nath 2008)
Time horizon - base case	28 months	None	Calculated as: duration of pain relief with a prolonged diagnostic block + duration of pain relief with RFD
Discount costs	3.5%	None	NICE Reference Case
Discount effects	3.5%	None	NICE Reference Case

N.2.3.2 Initial cohort settings

The initial age (52 years) and the proportion male/female (35/65) were obtained from the weighted average of the RFD arm in the RCTs included in the meta-analysis conducted for this question.

These data only influences the baseline mortality which was the same as for the general UK population reported in the National Life Tables for the years 2011-2013.[1662]

N.2.3.3 Probability data

Probability of a positive diagnostic block was reported in three of the included RCTs.

In the study by Gallagher et al (1994)[746] out of the 60 patients enrolled in the study, 19 (31.67%) had a negative response to the diagnostic block, 30 (50%) had a positive response and 11 (18.33%) had an equivocal response. This was not ideal as in our model we are considering only a dichotomous outcome (either positive or negative block).

Also the study by Leclaire et al (2001)[1282] reported how many patients had a positive diagnostic block, however the GDG did not believe this figure (92%) was realistic and it was not used to inform this parameter. For the same reason, in a sensitivity analysis this study was excluded from the meta-analysis informing the effectiveness data as in the study there were probably too many false positives to diagnostic block. Therefore also people not eligible for RFD received this intervention, making its effectiveness appear worse than what it would be in reality.

In the study by Nath et al (2008)[1609] out of 376 patients enrolled, 115 (31%) had a negative block, while 261 (69%) had a positive block. Positive diagnostic block was defined as 80% relief of pain. The GDG considered these estimates reasonable and also considering the larger sample size of this study it was selected to inform this parameter. However a sensitivity analysis will also be conducted on these values.

All the other probability data in the model (ie probability of declining denervation, probability of a prolonged response after a diagnostic block, probability of repeating RFD after an initial one) were based on GDG expert opinion.

N.2.3.4 Effectiveness data

Change in pain score measured on the Visual Analogue Scale (VAS) was the intermediate outcome obtained from the systematic review of clinical evidence conducted for the guideline. In this review RFD was compared to sham and the change in pain score was estimated for both at follow up. However in the economic model RFD was compared to usual care, therefore the placebo effect which could be influencing the outcome in the sham arm of the RCTs should be removed from the effectiveness of the usual care arm. To do this, the pain score in the usual care intervention was

assumed to be the same as the weighted pain score at baseline in the RFD arm of the RCTs included in the meta-analysis, as patients in the usual care arm do not receive any intervention, while the pain score after patients receive RFD was the same as that observed at follow-up in the RFD arm of the same RCTs (weighted average).

We realise that using the baseline pain score in the usual care intervention would overestimate the effectiveness of RFD as in reality some patients would also have some spontaneous improvement in pain score over time. For this reason, the base case assumption was varied in a sensitivity analysis where the effectiveness from the sham arm of the RCTs at follow up was used to estimate the effectiveness of usual care and the incremental change with the RFD arm was used to estimate the intervention effectiveness. There is the possibility of false positive results from the diagnostic block. This is however taken into account in the mean reduction of pain score in the RFD arm, which would be greater if false positives were minimised.

Another assumption is that pain score associated with a prolonged response to diagnostic block is equal to the score with RFD.

The studies used to estimate the pain score data and the final scores are reported in **Table 23** below; to note there was no significant difference between the mean values and the mean weighted values.

Table 23: Base case pain score data

Studies included in the meta-analysis			Usual care		RFD	
	N	Weighting value	Mean baseline	Weighted baseline	Mean follow up	Weighted follow up
Gallagher 1994	18	0.167	5.8	0.97	4.4	0.73
Leclaire 2001	35	0.324	5.19	1.68	4.4	1.43
Tekin 2007	20	0.185	6.5	1.20	2.4	0.44
Van Kleef 1999	15	0.139	5.2	0.72	2.83	0.39
Nath 2008	20	0.185	5.98	1.11	3.88	0.72
TOTAL			5.7	**5.7**	3.6	**3.7**

In the base case the pain score for usual care was 5.7 as estimated at baseline while for RFD was 3.7 as measured at the latest study follow-up.

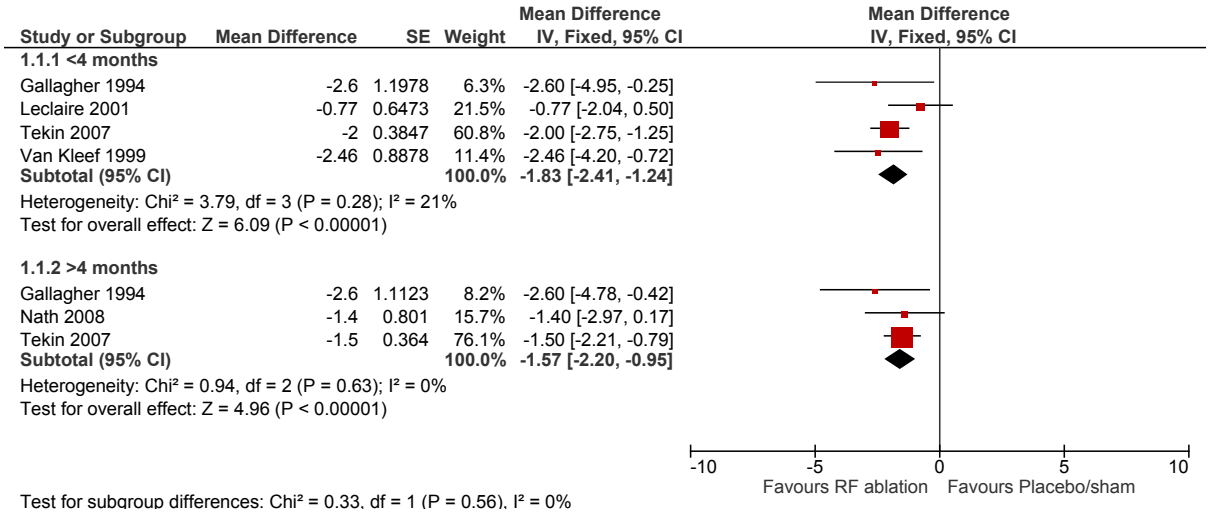
In the sensitivity analysis using the sham data, we estimated the pain score for the usual care arm as the follow up score in the sham arm and this is reported in **Table 24** below.

Table 24: Sensitivity analysis - pain score data from sham arm

Studies included in the meta-analysis			Sham/usual care	
	N	Weighting value	Mean at follow up	Weighted mean at follow up
Gallagher 1994	12	0.121212	7.0	0.8
Leclaire 2001	31	0.313131	5.2	1.6
Tekin 2007	20	0.20202	3.9	0.8
Van Kleef 1999	16	0.161616	4.77	0.8
Nath 2008	20	0.20202	3.68	0.7
TOTAL			4.9	**4.8**

We then applied the mean difference of RFD vs sham obtained from our meta-analysis (see Chapter 23.3 of the Full Guideline and **Figure 1425** below), which was -1.83 at 4 months and -1.57 after 4 months.

Figure 1425 - Pain (VAS 0 -10) from our meta-analysis



This gave a mean pain score of 2.97 (within 4 months) and 3.23 (after 4 months) in the RFD intervention.

In a second sensitivity analysis we excluded the study by Leclaire et al (2001) from the meta-analysis as in this study a very high proportion of participants were categorised as having a positive diagnostic block, which could be due to a less strict definition of positive diagnostic block and could lead to a high number of false positives (ie people receiving RFD who could not actually benefit from it) and a consequently smaller effect size of the intervention. The pain score calculated when this study was taken out is reported in **Table 25** below.

Table 25: Sensitivity analysis - pain score data excluding Leclaire 2001

Studies included in the meta-analysis			Usual care		RFD	
	N	Weighting value	Mean baseline	Weighted baseline	Mean follow up	Weighted follow up
Gallagher 1994	18	0.247	5.8	1.43	4.4	1.08
Tekin 2007	20	0.274	6.5	1.78	2.4	0.66
Van Kleef 1999	15	0.205	5.2	1.07	2.83	0.58
Nath 2008	20	0.274	5.98	1.64	3.88	1.06
TOTAL			5.9	**5.9**	3.4	**3.4**

When this study was excluded, the difference in pain score between baseline and after intervention was larger than in the base case.

N.2.3.5 Duration of effectiveness

No data were found from the included RCTs regarding the duration of effectiveness (change in pain score) observed with either RFD or the prolonged diagnostic block. We considered other observational studies which evaluated the duration of effectiveness with RFD but none of them was completely applicable to the type of outcome, intervention or population in the model. For example, the study by Schofferman et al (2004)[1947] was a retrospective chart review including only patients for

whom the initial procedure was successful but then benefits were subsequently dissipated and at least one additional RFD was performed. This study is selecting people in whom the procedure is less likely to be successful in the long run as all of them had a repeat procedure, therefore it wasn't applicable to the population in our model. In the study by Godeld et al (2007)[808] patients were not selected using controlled diagnostic blocks; in addition, the baseline pain score was not reported and here only the median pain relief duration was reported. We are interested in the mean as the median would not take into account the outliers (possibly on the higher end) and therefore could reduce the overall duration.

The study by MacVicar et al (2013)[1395] was considered more reliable by the GDG. In this study patients underwent RFD if they had complete pain relief after controlled, diagnostic medical branch blocks. RFD was considered successful if patients experienced complete relief from pain or at least 80% of relief for at least 6 months, they restored their daily activities and they required no othe health care. The mean complete pain relief duration per RFD treatment was 16 months. However th authors noted that two thirds of patients successfully treated stil had ongoing pain relief at the time of follow up so the 16 month figure represents an underestimate of the pain relief duration. Furthermore, in the study effectiveness was defined as at least an 80% reduction in pain while in our model the reduction from baseline is on average 65% as, being an average, it includes also people who did not improve. Therefore if we only included people with at least an 80% reduction in our RFD arm of the model, this would probably last for less than 24 months and may match the MacVicar data. However, since the RFD arm includes a lower estimate of improvement, this is likely to be observed for a longer time, which was estimated as 24 months by the GDG experts.

N.2.3.6 Utilities

No direct data estimating quality of life related to the intervention were available. One study reported SF-36 data however this was the study by Van Wijk et al. 2005[2215] which used an intra-articular joint injection as opposed to a true diagnostic block. As a result the GDG felt that this study was not discriminating which patients may benefit from RFD and therefore the effect size is likely to be reduced. Furthermore this study did not report fully all 8 domains for SF-36.

A quality of life search was conducted to help identify any relevant mapping studies that may allow low back pain outcomes to be mapped to EQ-5D. From this search the following potentially relevant papers were identified:

- Rundell et al 2014:[34] mapping of RMDQ to EQ-5D. An algorithm is provided. Authors highlight concerns with generalizability to other populations. This study is not relevant as the studies for radiofrequency denervation reported no difference for RMDQ.
- Khan et al. 2014:[1149] mapping RMDQ to EQ-5D. An algorithm is available. This study is not relevant as the studies for radiofrequency denervation reported no difference for RMDQ.
- Carreon et al. 2013:[362] mapping of the following three outcomes ODI, back pain (NRS) and leg pain (NRS) together to generate EQ-5D. Although a mapping algorithm is provided by the study, the authors conclude that this mapping cannot be accurately done. In addition, this study is not relevant as the studies for radiofrequency denervation reported no difference for ODI and leg pain was not an outcome we are looking to map.
- Mueller et al. 2013:[1586] US study looking at correlation between EQ-5D and other individual health outcomes including ODI, leg pain NRS and back pain NRS in patients with degenerative lumbar spine pathology. Of note this study uses the US EQ-5D tariff. Furthermore the study has not conducted any regression analyses to adjust for baseline characteristics.

No studies were identified which attributed EQ-5D utility estimates for responder and non-responders. Therefore it is not possible to use the dichotomous responder analysis outcome from the

clinical review or to dichotomise continuous outcomes from the clinical review into 'responders' and 'non-responders' to estimate QALYs.

We decided to use the mapping study by Mueller et al. (2013)[1586] which estimated the EQ5D scores reported in the table below together with the sample size in each back pain score group used to estimate the EQ-5D scores.

Table 26 - estimated EQ5D scores based on back pain scores

Back pain score	N	EQ-5D score (SD)
0	293	0.838 (0.201)
1	386	0.817 (0.147)
2	412	0.753 (0.141)
3	540	0.711 (0.155)
4	572	0.667 (0.167)
5	931	0.630 (0.183)
6	1035	0.586 (0.198)
7	1438	0.513 (0.209)
8	1527	0.406 (0.186)
9	727	0.325 (0.162)
10	524	0.314 (0.878)

This study has some important limitations: it uses the US EQ-5D tariff (as opposed to the UK tariff) and no regression analyses were conducted to adjust for baseline characteristics.

Values were inserted in a table in TreeAge and a linear extrapolation was selected to obtain values between integer pain scores. This resulted in the EQ5D values associated with the different pain scores used in the model as reported in **Table 27**.

Table 27: Utility data attached to pain score data used in the model

Analyses	Usual care		RFD	
	Pain score	Associated EQ-5D	Pain score	Associated EQ-5D
Base case	5.7	0.5992	3.6	0.6846
Sensitivity analysis – sham at follow-up	4.8	0.6374	2.97 (<4 m) 3.23 (>4 m)	0.7123 (<4m) 0.7001 (>4m)
Sensitivity analysis – excluding Leclaire 2001	5.9	0.5904	3.4	0.6934

The utility score associated with a prolonged diagnostic block was the same as the one for the RFD intervention but this had a different duration.

In a sensitivity analysis where prolonged response to diagnostic block was assumed to reduce pain score to 4, the associated utility value was 0.667.

N.2.3.7 Resource use and costs

All the patients having a diagnostic block (every patient in the RFD arm) will incur the costs of the following event:

1. Initial outpatient	£168	Based on a Consultant-led outpatient appointment, First Non-

appointment		Admitted Face to Face Attendance, Service: Pain management (NHS reference costs 2013/2014)
2. Diagnostic block	£521	Based on HRG code: AB05Z Intermediate Pain Procedures (NHS reference costs 2013/2014)
3. Follow-up appointment (telephone/face-to-face)	£121	Based on non-Consultant-led outpatient appointment, Follow-up Non-Admitted Non-Face to Face Attendance, Service: Pain management / Consultant-led outpatient appointment, Follow-up Non-Admitted Face to Face Attendance, Service: Pain management (NHS reference costs 2013/2014)

After a positive block, if patients undergo the actual RFD they will incur these additional costs:

1.Radiofrequency denervation	£640	Based on HRG code: AB08Z - Pain Radiofrequency Treatments (NHS reference costs 2013/2014)
2.Follow-up appointment (telephone/face-to-face)	£121	Based on non-Consultant-led outpatient appointment, Follow-up Non-Admitted Non-Face to Face Attendance, Service: Pain management / Consultant-led outpatient appointment, Follow-up Non-Admitted Face to Face Attendance, Service: Pain management (NHS reference costs 2013/2014)

Patients who go for a denervation after an initial prolonged response of diagnostic block or after the initial RFD effectiveness has worn off will incur these additional costs:

1. Initial outpatient appointment	£168	Based on a Consultant-led outpatient appointment, First Non-Admitted Face to Face Attendance, Service: Pain management (NHS reference costs 2013/2014)
2.Radiofrequency denervation	£640	Based on HRG code: AB08Z - Pain Radiofrequency Treatments (NHS reference costs 2013/2014)
3. Follow-up appointment (telephone/face-to-face)	£121	Based on non-Consultant-led outpatient appointment, Follow-up Non-Admitted Non-Face to Face Attendance, Service: Pain management / Consultant-led outpatient appointment, Follow-up Non-Admitted Face to Face Attendance, Service: Pain management (NHS reference costs 2013/2014)

Patients receiving usual care will not incur any additional costs compared to patients who have received a RFD or a prolonged response to diagnostic block. This is a very conservative assumption as in reality some evidence showed a more intense resource use in the usual care arm in terms of GP visits and medication. The cost of usual care will be varied in a sensitivity analysis.

N.2.4 Computations

The model was constructed in TreeAge 2015 and was evaluated by cohort simulation. Time dependency was built in by cross referencing the cohorts age as a respective risk factor for mortality.

A half-cycle correction was not applied as the cycle length was considered already quite short. Life years for the cohort were computed each cycle. To calculate QALYs for each cycle, Q(t), the time spent in the alive state of the model (1 month or 0.08 years) was weighted by a utility value that is dependent on the time spent in the model and the treatment effect. QALYs were then discounted to reflect time preference (discount rate 3.5%). QALYs during the first cycle were not discounted. The total discounted QALYs were the sum of the discounted QALYs per cycle.

Costs per cycle, C(t), were calculated in the same way as QALYs. Costs were discounted to reflect time preference (discount rate 3.5%) in the same way as QALYs using the following formula:

Discount formula:

$\text{Discounted total} = \frac{\text{Total}}{(1+r)^n}$	Where: *r*=discount rate per annum *n*=time (years)

N.2.5 Sensitivity analyses

A series of sensitivity analyses were conducted to test the robustness of parameters and assumptions.

SA1 – Repeat denervation

In this sensitivity analysis, after the effect of the first RFD wears off patients receive another one.

SA2 - Pain score – sham

in this analysis, the pain score for the usual care arm is the same as the one reported in **Table 24** (4.8) and to estimate the pain score for the RFD intervention we applied the mean difference of RFD vs sham obtained from our meta-analysis (see Chapter 23 of the Full Guideline), which was -1.83 at 4 months and -1.57 after 4 months. This gave a mean pain score of 2.97 (within 4 months) and 3.23 (after 4 months) in the RFD intervention.

SA3 – Pain score – excluding Leclaire 2001

The pain scores for intervention and usual care were estimated excluding Leclaire 2001.[1282] Values are reported in **Table 25**.

SA4 – Pain score diagnostic block 4 points

A positive diagnostic block was assumed to be a bit less effective than RFD (pain score = 4).

SA5 - Cost of referral to an interface clinic

The cost of a referral appointment in a community interface clinic was added to the RFD arm of the model. This cost is approximately 80% of the cost of a consultant-led first outpatient attendance in hospital, that is £134.

SA6 - Positive diagnostic block

Threshold analysis on the probability of a positive diagnostic block.

SA7 - Durations of effects of both RFD and block

In a two-way sensitivity analysis the duration of pain relief in both diagnostic block and RFD were decreased to 0 and 4 months respectively.

SA8 – Proportion declining RFD

Threshold analysis on the probability of declining RFD.

SA9 – Proportion repeating RFD

Threshold analysis on the proportion of patients repeating RFD within SA1.

SA10 – Repeat denervation and duration of effect of RFD

After the effect of the first RFD wears off patients receive another and the duration of effect of RFD is varied in a threshold analysis.

SA11 – 1.5% discounting for both costs and health benefits

Costs and QALYs were discounted by 1.5%

SA12 – Baseline pain score from sham arm

The baseline pain score was derived from the sham arm of the RCTs (5.6).

SA13 – Baseline pain score varied from 4 to 8

The baseline pain score was varied between 4 and 8 points to reflect different degrees of pain, while the incremental improvement observed with RFD (-1.96) was kept constant and applied to the baseline pain score.

N.2.6 Model validation

The model was developed in consultation with the GDG; model structure, inputs and results were presented to and discussed with the GDG for clinical validation and interpretation.

The model was systematically checked by the health economist undertaking the analysis; this included inputting null and extreme values and checking that results were plausible given inputs. The model was peer reviewed by a second experienced health economist from the NGC; this included systematic checking of many of the model calculations.

N.2.7 Estimation of cost effectiveness

The widely used cost-effectiveness metric is the incremental cost-effectiveness ratio (ICER). This is calculated by dividing the difference in costs associated with 2 alternatives by the difference in QALYs. The decision rule then applied is that if the ICER falls below a given cost per QALY threshold the result is considered to be cost effective. If both costs are lower and QALYs are higher the option is said to dominate and an ICER is not calculated.

$$ICER = \frac{Costs(B) - Costs(A)}{QALYs(B) - QALYs(A)}$$

Where: Costs(A) = total costs for option A; QALYs(A) = total QALYs for option A

Cost-effective if:

- ICER < Threshold

Results are also presented graphically where total costs and total QALYs for each strategy are shown. Comparisons not ruled out by dominance or extended dominance are joined by a line on the graph where the slope represents the incremental cost-effectiveness ratio.

N.2.8 Interpreting Results

This analysis will inform the question of whether radiofrequency denervation is cost-effective in people where symptoms indicate a facet joint cause.

NICE's report 'Social value judgements: principles for the development of NICE guidance'[1612] sets out the principles that GDGs should consider when judging whether an intervention offers good value for money. In general, an intervention was considered to be cost effective if either of the following criteria applied (given that the estimate was considered plausible):

- The intervention dominated other relevant strategies (that is, it was both less costly in terms of resource use and more clinically effective compared with all the other relevant alternative strategies), or
- The intervention costs less than £20,000 per quality-adjusted life-year (QALY) gained compared with the next best strategy.

N.3 Results

N.3.1 Base case

The base case probabilistic results show that RFD is cost effective (**Table 28**).

Table 28: Base case results – probabilistic analysis

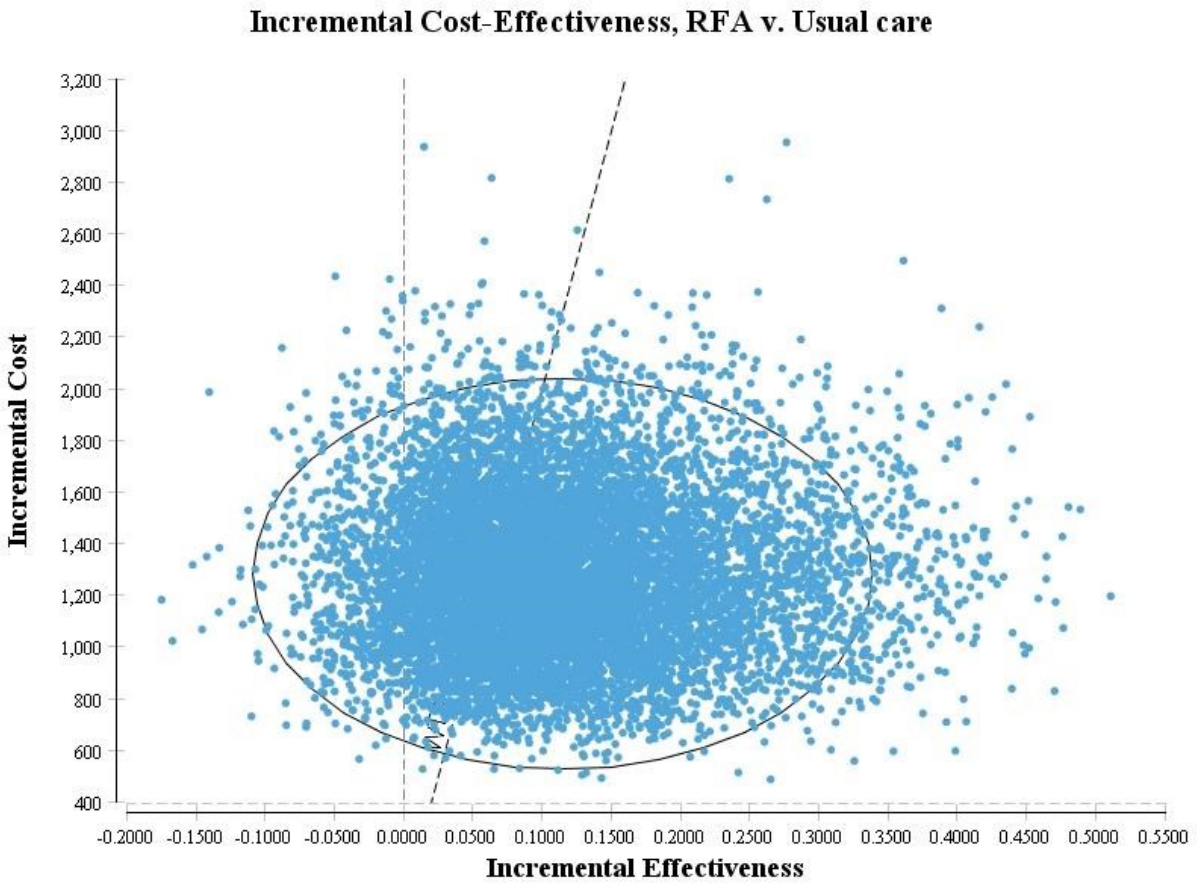
Strategy	Mean cost per patient	Incremental costs	Mean QALYs per patient	Incremental QALYs	ICER (£ per QALY gained)	Probability that strategy is most cost-effective [£20k per QALY]
Usual care	0		2.1402	0	0	30%
RFD	1282	1282	2.2549	0.1147	11,178	70%

Similar results were observed in the deterministic analysis reported in **Table 29**.

Table 29: Base case results – deterministic analysis

Strategy	Mean cost per patient	Incremental costs	Mean QALYs per patient	Incremental QALYs	ICER
Usual care	0		2.1704		
RFD	1,307	1,307	2.2662	0.0957	13,658

Figure 1426 - scatterplot of incremental cost and effect of RFD vs usual care in 10,000 simulations, each one represented by a dot. The ellipse represents the 95% confidence interval while the dotted bold line represents the £20,000 per QALY threshold. 70% of the dots are plotted under this line as in these simulations RFD was more cost effective than usual care.



N.3.2 Sensitivity analyses

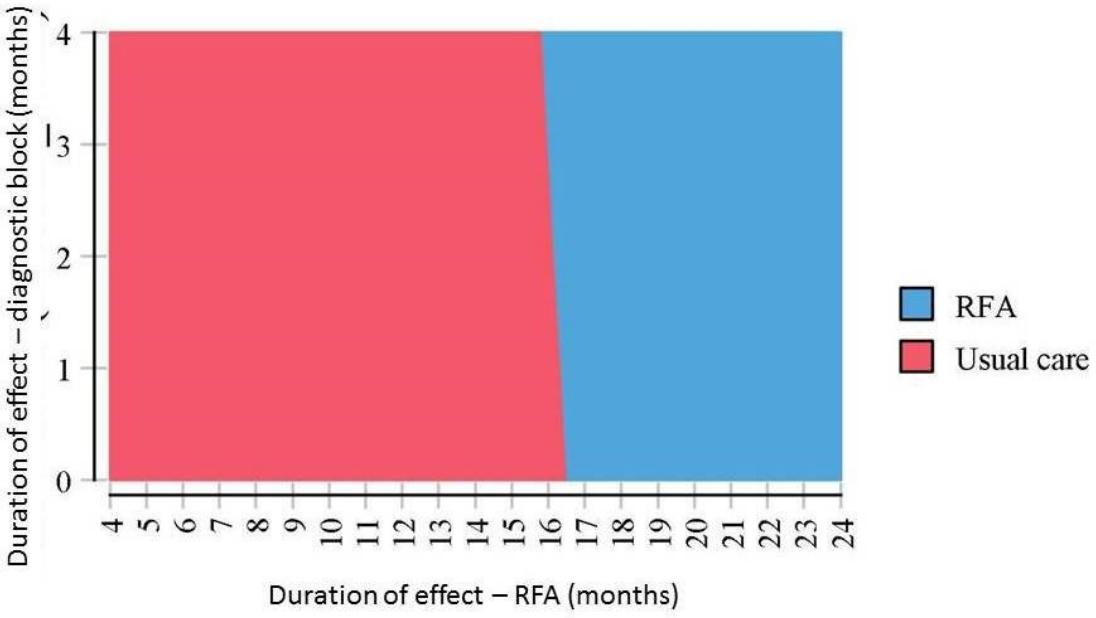
A wide range of sensitivity analyses were undertaken in which key assumptions and parameters were varied. These are explained in N.2.5 and the main deterministic results are listed in **Table 30**.

Table 30: Results of sensitivity analyses SA1-SA9

Sensitivity analysis	Result
SA1: Repeat denervation	ICER RFD vs usual care = £13,954/QALY
SA2: Pain score - sham	ICER RFD vs usual care = £16,896/QALY
SA3: Pain score – excluding Leclaire 2001	ICER RFD vs usual care = £10,741/QALY
SA4: Pain score diagnostic block 4 points	ICER RFD vs usual care = £13,722/QALY
SA5: Cost of referral to an interface clinic	ICER RFD vs usual care = £15,062/QALY
SA6: positive diagnostic block	RFD is cost effective if the probability of a positive diagnostic block is at least 40%
SA7: duration of effects of both RFD and block	See Figure 1427 – duration of diagnostic block effect does not have any impact, while usual care becomes cost effective when duration of RFD is less than 16 months

SA13: baseline pain score from 4 to 8	The ICER of RFD vs usual care ranged from £13,120/QALY when baseline pain score is 4 to £6,247/QALY when baseline pain score is 8.
SA8: proportion declining RFD	RFD is cost effective if the probability of a declining RFD is less than 50%
SA9: proportion repeating RFD (+SA1)	RFD is always cost effective (ICER ranges from £13,658 per QALY when 0% of patients repeat RFD to £16,270 per QALY when 100% of patients repeat RFD)
SA10: Repeat denervation and duration of effect of RFD	Usual care becomes cost effective when duration of RFD is less than 16 months
SA11: 1.5% discounting for costs and health benefits	ICER RFD vs usual care = £13,388/QALY
SA12: baseline pain score from sham arms	ICER RFD vs usual care = £14,443

Figure 1427 - Two way sensitivity analysis on the duration of effect for both diagnostic block and RFD. The red-shaded area is where usual care is cost-effective; the blue area is where RFD is cost-effective.



N.4 Discussion

N.4.1 Summary of results

The main results, both probabilistic and deterministic, show that RFD is cost effective in the model population. These results were also quite robust to changes to the inputs, especially on the effectiveness inputs.

N.4.2 Limitations and interpretation

The model was built around some important assumptions such as the duration of pain relief after a prolonged response to diagnostic block and RFD, and that people considered for this procedure

would be unlikely to experience a spontaneous remission in pain so that the baseline pain score of people participating in the trials was adopted as the pain score for the usual care arm in the model. We carefully considered alternative approaches, including using the effectiveness of the placebo arm as reported in our meta-analysis; however we concluded that the aim of the economic model is to reflect what would be observed in real practice. Therefore as a sham intervention would never be offered instead of usual care and therefore no placebo effect would be observed in usual care, we concluded that using the baseline pain score was appropriate for the economic model. The possible limitation with the adopted approach is that although we used randomised studies, we may have not kept the randomisation. However we conducted an additional sensitivity analysis where we used the placebo score as the baseline score and it did not make any difference to the results.

There were also some deviations from the NICE reference case, such as the use of mapping functions to estimate EQ5D values from an intermediate outcome and the use of the USA EQ5D tariffs. The uncertainty around the EQ5D scores could not be captured in the probabilistic model as the software did not allow us to link probabilistic value of the pain score to a distribution around the relevant utility value, as these were looked up in a table linking pain scores to utilities.

Another important limitation of the model is the quality of the clinical evidence around the effectiveness of RFD; these studies were low quality and their limitations are explained in Chapter 23.3 of the guideline. We also did not have data on RFD vs usual care and we had to assume people in the usual care arm would maintain the initial pain score, while in reality there could be an improvement over time. This was however addressed in a sensitivity analysis where data from the placebo arm were used instead. The model also did not account for any potential harm of the procedures, both the diagnostic block and the RFD, as no evidence on side effects was found; the GDG discussed whether these were likely to influence the results and concluded that adverse events or harm coming from the procedures were likely to be negligible, even when the procedures are conducted by less experienced staff.

The GDG considered the various limitations of the model together with the main results and concluded that although RFD is a cost effective intervention in the base case analysis and in various sensitivity analyses, there is not enough confidence to make a firm recommendation for this intervention. In addition, as the low back pain population is wide, there are concerns on the potential cost impact of a firm recommendation if many people were eligible for the intervention.

N.4.3 Generalisability to other populations or settings

The population in our model was suspected of having pain of facet joint origin; people with a different type of pain would not be expected to benefit from RFD and therefore it would not be cost effective for them. The model was based on clinical studies which included people who had baseline pain levels of at least 4 on a visual analogue scale. RFD might not be cost effective for people with a less severe pain score baseline.

N.4.4 Comparisons with published studies

One economic study by van Wijk et al (2005) comparing RFD with sham lesion (intervention costs only applied to the intervention arm) found that performing RFD costs on average £197 per patient, which looks like an underestimate compared to the NHS Reference Cost data used in our analysis. The clinical outcomes showed some benefit for the RFD arm with regards to health related quality of life and the global perception of reduction in back pain and pain responder criteria. No incremental analysis was conducted and it was not possible to conclude from this study whether RFD was cost-effective compared to sham. Furthermore, this study had applicability and methodological issues as Dutch resource use data (1996-1999) and unit costs (year not reported, assumed to be 2003) may not reflect current NHS context and the time horizon was quite short (3 months).

N.4.5 Conclusions

The GDG considered the various limitations of the model together with the main results and concluded that although RFD is a cost effective intervention in the base case analysis and in various sensitivity analyses, there is not enough confidence to make a firm recommendation for this intervention. In addition, as the low back pain population is wide, there are concerns on the potential cost impact of a firm recommendation if many people were eligible for the intervention

Appendix O: Research recommendations

O.1 Laser therapy

Research question: What is the clinical and cost-effectiveness of laser therapy in the management of low back pain and sciatica?

Why this is important:

Laser therapy involves the non-invasive application of a single wavelength of light to the skin over the painful area using a probe. There are various laser devices and probe configurations in clinical use. The light is absorbed in the tissues and it is hypothesised that this results in local heating and effects on local chemical activity and cellular behaviour. It is through those effects that laser therapy is purported to have an anti-inflammatory effect and promote tissue repair.[2385]

Conflicting evidence was found comparing laser with sham and usual care for pain and disability outcomes. While evidence of clinical benefit was observed in some comparisons for pain and disability there were concerns with the quality and applicability of the evidence (see the LETR for electrotherapies). There remains uncertainty regarding the efficacy and effectiveness of laser therapy, though there is some promising evidence. There is therefore a need for high quality trials into the effectiveness and cost effectiveness of laser therapy for low back pain with and without sciatica.

Table 31: Criteria for selecting high-priority research recommendations:

PICO question	Population: People with non-specific low back pain with or without sciatica Intervention(s): Laser therapy and usual care Comparison: Sham laser therapy and usual care Outcome(s): Pain, disability, quality of life, cost
Importance to patients or the population	If laser therapy offers clinically important benefits over sham laser therapy when added to care, at a reasonable cost threshold then it may be an important modality to enhance clinical outcome in this patient group.
Relevance to NICE guidance	This research will reduce the existing uncertainty regarding the effectiveness and cost-effectiveness of laser therapy and enable future guidelines to clearly recommend for or against the use of laser therapy.
Relevance to the NHS	A clear recommendation for or against laser therapy will offer clinicians clearer guidance on best care for low back pain. A recommendation for laser therapy is likely to require the purchase of new equipment and staff training.
National priorities	Low back pain comes under the long-term condition directorate in the UK.
Current evidence base	Conflicting evidence was found comparing laser with sham and usual care for pain and disability outcomes. While evidence of clinical benefit was observed in some comparisons for pain and disability there were concerns with the quality and applicability of the evidence (see the LETR for electrotherapies). There remains uncertainty regarding the efficacy and effectiveness of laser therapy, though there is some promising evidence. There is therefore a need for a conclusive study into the effectiveness and cost effectiveness of laser therapy for low back pain with and without sciatica.
Equality	The recommendation is unlikely to impact on equality issues.
Study design	Randomised controlled trial with corresponding economic analysis.
Feasibility	The trial is feasible and should be straightforward to carry out. There are challenges associated with the design of adequate sham controls for higher-

	intensity laser therapy that delivers a sensation of heating that will require specific consideration when designing the trial.
Other comments	Low intensity laser therapy is easy to design sham controls for since it delivers no sensation beyond the pressure of the probe.
Importance	• Medium: the research is relevant to the recommendations in the guideline, but the research recommendations are not key to future updates.

O.2 Benzodiazepenes

Research question: What is the clinical and cost-effectiveness of benzodiazepines for the acute management of low back pain?

Why this is important:

Guidelines from many countries have advocated that muscle relaxants be considered for short-term use in patients with low back pain when the paraspinal muscles are in spasm. The evidence for this mainly comes from studies on medications that are not licenced for this use in the United Kingdom. The 2009 NICE guideline makes the recommendation to consider prescribing diazepam as a muscle relaxant in this scenario, but the evidence base to support this particular drug is extremely small. Benzodiazepines are not without risk of harm even in the short-term. There is therefore a need to determine whether diazepam is cost-effective in the management of acute low back pain.

Table 32: Criteria for selecting high-priority research recommendations:

PICO question	Population:
	Adults presenting with suspected non-specific low back pain of <= 6 weeks duration.
	It is important that the population be as representative as possible of people who present with acute low back pain in primary or urgent care settings. Exclusions to include serious spinal pathology, pregnancy, severe psychiatric illness, inability to complete research questionnaires, previous benzodiazepine dependence.
	Intervention(s): Diazepam, short-term usage up to 2 weeks duration
	Comparison: Placebo
	Outcome(s):
	Critical
	• Health-related quality of life (for example, SF-12, SF-36 or EQ-5D).
	• Pain severity (for example, visual analogue scale [VAS] or numeric rating scale [NRS]).
	• Function measured by disability scores (for example, the Roland-Morris disability questionnaire or the Oswestry disability index)
	• Psychological distress (HADS, GHQ, BPI, BDI, STAI)
	Important
	• Responder criteria (pain and function)
	• Return to work
	• Adverse events:
	  ○ Morbidity, including cognitive impairment
	  ○ mortality
	Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit)

Importance to patients	To determine whether diazepam is an appropriate medication to consider

or the population	offering to the above population
Relevance to NICE guidance	To establish whether or not diazepam should be recommended or not in the NICE guideline on the management of acute low back.
Relevance to the NHS	Although diazepam is a relatively low cost medication it is associated with the potential for harm to patients.
National priorities	Low back pain comes under the long-term condition directorate in the UK.
Current evidence base	The NICE Low Back Pain Guideline (2015) identified a small number of trials involving tizanidine and single studies for baclofen, diazepam, cyclobenzaprine and orphenadrine. There was little or no information with respect to important outcomes such as function, distress and quality of life. There was conflicting evidence for the effectiveness of tizanidine for low back pain, with some showing benefit and some not. In addition there was evidence of adverse events occurring in people taking muscle relaxants.
Equality	N/A
Study design	Randomised controlled trial with corresponding economic analysis
Feasibility	Given that muscle relaxants are only recommended for short-term use any effect on the main outcomes should be apparent within a short time frame. Consideration should be given as how to recruit patients that is representative of the desired population described previously.
Other comments	It is important that the patients in both arms of the trial are adequately described using the CONSORT statement. The question is to whether diazepam adds any benefit to the usual care of patients with acute low back. Therefore the management given to both intervention and comparator groups should be optimal, in line with current best practice guidelines and the same apart from the use of diazepam.
Importance	• High: the research is essential to inform future updates of key recommendations in the guideline.

O.3 Weak opioids

Research question: What is the clinical and cost-effectiveness of codeine with or without paracetamol for the acute management of low back pain?

Why this is important:

Codeine, often in combination with paracetamol, is commonly prescribed in primary care to people presenting with acute low back. This is often the case for people who are intolerant of NSAIDs or for whom there are contra-indications to these medications. Whilst there is evidence that opioids are not effective in chronic low back pain, there are relatively few studies that look at the acute low back pain scenario that is commonly experienced in primary care. In addition it is not known whether the addition of paracetamol to codeine has a synergistic effect in the treatment of back pain.

Table 33: Criteria for selecting high-priority research recommendations:

PICO question	Population: Adults presenting with suspected non-specific low back pain with or without sciatica of <= 6 weeks duration. It is important that the population be as representative as possible of people who present with acute low back pain in primary or urgent care settings. Exclusions to include serious spinal pathology, pregnancy, severe psychiatric illness, inability to complete research questionnaires, known allergy to or intolerance of codeine or paracetamol. Intervention(s): Codeine with or without paracetamol, short duration usage only. Comparison: Placebo

	Outcome(s): Critical • Health-related quality of life (for example, SF-12, SF-36 or EQ-5D). • Pain severity (for example, visual analogue scale [VAS] or numeric rating scale [NRS]). • Function measured by disability scores (for example, the Roland-Morris disability questionnaire or the Oswestry disability index) • Psychological distress (HADS, GHQ, BPI, BDI, STAI) Important • Responder criteria (pain and function) • Return to work • Adverse events: o Morbidity, including drowsiness and constipation o mortality Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit)
Importance to patients or the population	To determine whether codeine with or without paracetamol is an effective and cost-effective treatment for acute low back pain.
Relevance to NICE guidance	To establish whether or not codeine with or without paracetamol should be recommended or not in the NICE guideline for the management of acute low back.
Relevance to the NHS	Codeine with or without paracetamol is commonly prescribed in primary and is associated with the potential for harm to patients. Use in the acute scenario may lead to dependence in the long-term.
National priorities	Low back pain comes under the long-term condition directorate in the UK.
Current evidence base	The NICE Low Back Pain Guideline (2015) identified a small number of trials that looked at the use of opioids in acute low back pain. None of these examined the use of codeine with or without paracetamol.
Equality	N/A
Study design	Randomised controlled trial with corresponding economic analysis.
Feasibility	It is anticipated that given the research question that it is feasible to perform the trial within a relatively short time frame.
Other comments	It is important that the patients in both arms of the trial are adequately described using the CONSORT statement. The question is to whether codeine with or without paracetamol adds anything to the care of people with acute low back pain. Therefore the management given to both intervention and comparator groups should be optimal, in line with best practice guidelines and the same apart from the use of codeine with or without paracetamol.
Importance	• High: the research is essential to inform future updates of key recommendations in the guideline.

O.4 Long-term support

Research question: What is the cost-effectiveness of providing long term support (>12 months) for people with chronic, low back pain with or without sciatica, in reducing health care utilization?

Why this is important:

Chronic low back pain is a very common, potentially disabling, long-term health condition and by definition not amenable to curative medical treatment. In the absence of effective self-management

strategies people with long-term conditions are likely to disengage from their normal roles, becoming increasingly disabled and dependent on health and social care.

The Kings Fund 2013 long term conditions report cites evidence that multidisciplinary rehabilitation programmes (MBR), in the form of self-management support, have been shown to reduce unplanned hospital admissions for other long term conditions such as chronic obstructive pulmonary disease and asthma and to improve adherence to treatment and medication, but evidence that this translates into cost savings, particularly in reduced healthcare utilization is unclear.[1615]

Further the cost effectiveness of providing long term support beyond MBR programmes for people with low back pain is unknown.

Table 34: Criteria for selecting high-priority research recommendations:

PICO question	**Population:** Adults with chronic (>3 months) non-specific low back pain with or without sciatica **Intervention:** Support programmes led either by health and social care professionals, lay or co-led. **Comparison:** Usual care **Outcomes:** **Critical** Health-related quality of life (for example, SF-12, SF-36 or EQ-5D). Function measured by disability scores (e.g. RMDQ or ODI) Psychological distress (HADS, GHQ, BPI, BDI, STAI) Healthcare utilisation (prescribing, investigations, hospitalisation and both health professional frequency and quality of visit) **Important** Return to work Perceived pain severity (e.g. visual analogue scale [VAS] or *numerical* scale [NRS]). Psychological constructs (e.g. catastrophisation, fear-avoidance, self-efficacy) **Adverse events:** Morbidity Mortality
Importance to patients or the population	Reduced iatrogenic harm from reduction in inappropriate repeated healthcare prescribing and reduced investigations including imaging, hospitalisation or health professional visits and invasive interventions. Improved quality of life through reduction of unwanted medication side effects and improvement in physical, psychological and social function Improvement in mood and confidence Return to meaningful activities of daily living including employment
Relevance to NICE guidance	Evidence of the cost effectiveness of this form of support would enable recommendation for provision of care at the end of the LBP pathway and would inform future updates of this guideline.
Relevance to the NHS	Evidence for a long term treatment option for people with chronic non-specific low back pain has potential for significantly reduced healthcare costs over a lifetime of care.
National priorities	Highly relevant to DWP return to work policy
Current evidence base	A review of rehabilitation programmes provided some evidence of benefit of such programmes, but we were unable to state the content of the programme, nor whether this would have long term benefit. On average, the trial durations were 8 weeks long with an average follow up of 10 months, therefore the evidence did not inform long term support.

Equality	The research should be undertaken across multiple sites to control for variables such as socio-economic status, levels of unemployment and access to services in rural areas. Recruitment of proportionate numbers of men and women and ethnic minorities to represent the population.
Study design	Multicentre Randomised controlled trial Comparator best usual care.
Feasibility	This should be undertaken over a minimum of 24 months with a minimum follow-up period of a further 12 months.
Other comments	-
Importance	• Medium: the research is relevant to the recommendations in the guideline, but the research recommendations are not key to future updates.

O.5 Radiofrequency denervation

Research question: What is the clinical and cost effectiveness of radiofrequency denervation for chronic low back pain in the long term?

Why this is important:

The lumbar facet joints are pairs of joints that stabilize and guide motion in the spine. These joints and periarticular structures are well innervated by the medial branches of the dorsal rami. The prevalence of pain thought to be arising from the facet joints and periarticular structures in heterogeneous populations using local anaesthetic nerve blockade (medial branch block), where 75–100% pain relief is used as a criterion standard, is thought to be 25–40%.[1424]

The current guidance recommends that for people with low back pain who have failed to respond to conservative management, local anaesthetic medial branch nerve blockade to determine the presence or absence of a pain arising from the facet joints and periarticular structures may be offered. Those who experience significant but short term relief may then be offered a neurodestructive procedure called 'radiofrequency denervation' in an attempt to achieve longer term pain relief.

Radiofrequency denervation has evolved as a treatment for spinal pain over the last 40 years and is a minimally invasive and percutaneous procedure performed under local anaesthesia or light intravenous sedation. Radiofrequency energy is delivered along an insulated needle in contact with the target nerves. This focussed electrical energy heats and denatures the nerve. This process may allow axons to regenerate with time requiring the repetition of the radiofrequency procedure.

The duration of pain relief following radiofrequency denervation is uncertain. Data from randomised controlled trials suggests relief is maintained for at least 6-12 months but no study has reported longer term outcomes. Pain relief for more than two years would not be an unreasonable clinical expectation.

The de novo economic model undertaken for this guideline for radiofrequency denervation suggested that the treatment is likely to be cost effective provided the duration exceeds 16 months.

If radiofrequency denervation is repeated, we do not know whether the outcomes and duration of these outcomes are similar to the initial treatment. If repeated radiofrequency denervation is to be offered, we need to be more certain that this intervention is both effective and cost effective.

Table 35: Criteria for selecting high-priority research recommendations:

PICO question	Population: People with chronic low back pain who have not improved despite guideline recommended conservative management and who have moderate to severe pain (VAS>5) and who have responded to a local anaesthetic medial branch nerve block. Intervention(s): Radiofrequency denervation of the lumbar medial branches of the dorsal rami and usual care. Comparison: 1. Sham radiofrequency denervation and usual care 2. Usual care Outcome(s): Critical: 1. Health-related quality of life. 2. Pain severity. 3. Function measured by disability scores. 4. Psychological distress. 5.Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) Important: Important 6. Responder criteria (pain and function) 7. Adverse events: 7.1. morbidity 7.2. mortality 8. Return to work
Importance to patients or the population	This research would inform guidance about whether repeated radiofrequency denervation is effective and cost effective (i.e. of same or greater duration and effect size as initial radiofrequency denervation).
Relevance to NICE guidance	Current NICE guidance recommends this intervention but is unable to recommend repeat denervation due to lack of evidence. This study would improve the strength of the current recommendation, provide much needed clarity about the long term effects of radiofrequency denervation and inform a recommendation about the provision of repeat procedures.
Relevance to the NHS	Repeated interventions for any long term condition require robust evidence that they are both clinically and cost effective.
National priorities	The question is highly relevant to the provision of a cost effective treatments in the NHS, and minimisation of economic burden from musculoskeletal disability.
Current evidence base	The available randomised trials of radiofrequency denervation for low back pain provide outcome measures up to 12 months. No studies have evaluated long term outcome. There are no randomised controlled trials evaluating efficacy, duration or cost effectiveness of repeated radiofrequency denervation. The suggestion that repeated radiofrequency denervation may be as efficacious as the initial treatment comes primarily from retrospective reviews.
Equality	N/A
Study design	Randomised controlled trial: Intervention + usual care Sham + usual care Usual care alone Crossover to active treatment at 3 months Responders (>50% pain relief for at least 16 months following active treatment) followed up annually for 5 years

	Repeat active intervention allowable
Feasibility	Previous trials of radiofrequency denervation vs. sham have been completed successfully. No ethical issues.
Other comments	Commercial funding may be available.
Importance	• High: the research is essential to inform future updates of key recommendations in the guideline.

O.6 Epidural injections

Research question: What is the clinical and cost effectiveness of image guided compared to non-image guided epidural injections for people with acute sciatica?

Why this is important:

Epidural injection of therapeutic substances that include corticosteroids is commonly offered to people with sciatica. Epidural injection might improve symptoms, reduce disability and speed up return to normal activities. Several different procedures have been developed for epidural delivery of corticosteroids. Some practitioners inject substances through the caudal opening to the spinal canal in the sacrum (caudal epidural), whereas others direct the injection through the foraminal space at the presumed level of nerve root irritation (transforaminal epidural). There is a rationale that transforaminal epidurals might be most effective, by ensuring delivery of corticosteroids directly to the region in which the nerve root might be compromised. However, transforaminal epidural injection requires imaging, usually within a specialist setting, potentially limiting treatment access and increasing costs. Caudal epidural injection might be undertaken without imaging, or with ultrasound guidance in a non-specialist setting, but, it has been argued, the drug might not reach the affected nerve root and therefore this approach might not be as effective as would be transforaminal injection. Empirical evidence that one approach is clearly superior to the other is currently lacking. Access to the two procedures varies between healthcare providers, and patients who do not respond to caudal corticosteroid injection might subsequently receive image guided epidural injection. People with sciatica might therefore currently experience unnecessary symptoms at unnecessary cost to the NHS than would be the case if the most cost effective modes of delivering epidural corticosteroid injections were used.

Table 36: Criteria for selecting high-priority research recommendations:

PICO question	Population: People with acute sciatica Intervention(s): Injection of corticosteroid into the epidural space. Comparison: Image-guided transforaminal corticosteroid injection plus non-image guided caudal placebo injection v. non-image guide caudal corticosteroid injection plus image guided transforaminal placebo injection. Outcome(s): Critical: 1. Health-related quality of life. 2. Pain severity. 3. Function measured by disability scores. 4. Psychological distress. 5.Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit) Important:

	Important 6. Responder criteria (pain and function) 7. Adverse events: 7.1. morbidity 7.2. mortality 8. Return to work
Importance to patients or the population	Guidance on the most cost-effective means by which to offer epidural injection of corticosteroids for sciatica should enable consistent and optimal delivery throughout the NHS, thereby improving patient outcomes and reducing NHS costs. Implementation of such guidance has implications for the distribution of services between specialist and non-specialist settings.
Relevance to NICE guidance	Future NICE guidance on the management of sciatica would specify the route of corticosteroid administration for epidural injection and thereby encourage practices that would be most cost effective.
Relevance to the NHS	Caudal epidural injections can often be provided within a non-specialist setting (e.g. primary care practice), whereas image-guided, transforaminal epidural injection requires more specialist equipment and expertise, usually only available within a secondary care setting. Empirical evidence that caudal epidural has superior cost efficacy might reduce secondary care referrals for sciatica. Clear evidence that transforaminal epidural injection were more cost effective might lead to decommissioning of caudal epidurals for the treatment of sciatica, and reallocation of resources to secondary care services.
National priorities	The question is highly relevant to the provision of a cost effective NHS, and minimisation of economic burden from musculoskeletal disability.
Current evidence base	The current evidence base supports consideration of epidural corticosteroid injection for people with acute sciatica, but is insufficient to recommend one approach over the other. Epidural corticosteroid injection might improve leg pain and quality of life. Head to head trials have not compared caudal with image guided epidural injections.
Equality	This research recommendation is intended to address inequalities that arise within the NHS due to heterogeneous care provision across the UK. Geographical heterogeneity often reflects underlying inequalities between social classes and ethnic groups.
Study design	Blinded, randomised-controlled trial comparing image guided transforaminal with non-image guided caudal epidural injection of corticosteroid for acute sciatica.
Feasibility	Previous RCTs of epidural injections compared to placebo or other active treatments have been successfully completed. Acute sciatica is a common condition. There are no fundamental ethical or technical issues. Double-blinding would require provision of placebo injections (i.e. each participant would receive injections, active or placebo, by both caudal and transforaminal routes). This would require a trial environment that might not reflect the non-specialist environment in which caudal epidurals might be delivered, thereby compromising health economic analysis.
Other comments	Corticosteroids and local anaesthetic agents used for epidural injections are typically beyond patent and it is unlikely that significant commercial funding would be available for this trial.
Importance	• High: the research is essential to inform future updates of key recommendations in the guideline.

O.7 Spinal fusion

Research question: Should people with low back pain be offered spinal fusion as a surgical option?

Why this is important:

Low back pain affects a large number of individuals in UK. The condition has a huge cost to the individual, society and the country's economy. Over the past 2 decades, an increasing number of procedures have been proposed for the surgical management of LBP. These include but are not limited to surgical fixation with internal metal-work applied from the back, front, side or any combination of the three routes. The cost of these operations has escalated and with the advent of minimally invasive approaches more of the operations are performed with uncertain benefit. As well as the monitory cost, there are complications associated with the surgical approaches with some studies reporting around 20% complication rate in the short to medium term. There has been several studies (randomized and cohort) looking at the clinical effectiveness of spinal fusion versus usual care, no surgery, different surgeries, and other treatments. The studies collectively fail to show clear advantage of fusion but do show some modest benefit in some elements of pain, function and quality of life as well a reduction in healthcare utilisation. It is not known what treatments should have been tried prior to the consideration of surgery. The studies generally suffer from low number of patients, large cross over and in case selection bias. We therefore propose a large, multi-centre randomized trial with sufficient power to answer these important questions.

Table 37: Criteria for selecting high-priority research recommendations:

PICO question	**Population** Adult population 16 or over with suspected lower back pain with or without or without sciatica **Interventions** Spinal fusion via posterior route only either open or minimally invasive **Comparison with** Usual care Other treatments **Outcomes:** **Critical** • Health-related quality of life (for example, SF-12, SF-36 or EQ-5D). • Pain severity (for example, visual analogue scale [VAS] or numeric rating scale [NRS]). • Function measured by disability scores (for example, the Roland-Morris disability questionnaire or the Oswestry disability index). • Psychological distress (HADS, GHQ, BPI, BDI, STAI) **Important** • Adverse events: o post-operative complications (e.g. infection) o increased risk of requiring surgery at adjacent segments o Mortality. • Revision rate • Failure rate Healthcare utilisation (prescribing, investigations, hospitalisation or health professional visit)
Importance to patients or the population	The impact on the UK based population will be high as the condition of back pain is extremely common and troublesome, with a high cost. The condition has relapsing and remitting nature and most individuals try a number of treatment options in the pathway before the consideration of surgery. The "pre surgical

	cost" can therefore be considerable and potentially unnecessary cost to the patient and healthcare provision.
Relevance to NICE guidance	There is uncertainty regarding the effectiveness of spine fusion surgery in back pain and that is reflected in the NICE guidelines. A large randomized multi-centre trial with sufficient numbers can alter the NICE guidelines and reduce uncertainty.
Relevance to the NHS	The cost to the NHS of spine fusion is high and increasing. The effectiveness of surgery is uncertain and long term cost of health care utilisation re-operation and complication cost is likely to be very high.
National priorities	The time off work and the economic cost associated with recurrent back pain is likely to be high. The governments, well-being and happiness drive makes this very common and disabling condition worthy of a target for potential cure with surgery?
Current evidence base	There are limited number of randomized trials with low numbers and high risks of bias. The studies suffer from high cross over numbers
Equality	There are no equality issues of note
Study design	We recommend a multi-centre randomized controlled trial with corresponding economic analysis of adults with LBP with or without sciatica. The outcome measures listed above to be assessed in a blinded manner.
Feasibility	Due to the prevalence of the condition and large number of operations already carried out for this condition feasibility is not a major issue
Other comments	It would be important to minimise the cross over in the studies by design, for example to reassure patients that after the trial period other modalities of treatment are open to them. Furthermore, the funding should not be exclusively sourced from the industry as this would add potential bias..
Importance	• High: the research is essential to inform future updates of key recommendations in the guideline.

Appendix P: Additional information

P.1 Red flags

The following information was taken from NICE Referral Advice: A guide to appropriate referral from general to specialist services.[1611]

The majority of patients with acute low back pain can be managed in primary care. They should, however, be referred to a specialist service if:

✪✪✪✪	They have neurological features of cauda equina syndrome (sphincter disturbance, progressive motor weakness, perineal anaesthesia, or evidence of bilateral nerve root involvement)
✪✪✪	Serious spinal pathology is suspected (preferably seen within 1 week)
✪✪✪	They develop progressive neurological deficit (weakness, anaesthesia) (preferably seen within 1 week)
✪✪✪	They have nerve root pain that is not resolving after 6 weeks (preferably seen within 3 weeks)
✪✪	An underlying inflammatory disorder such as ankylosing spondylitis is suspected
✪✪	They have simple back pain and have not resumed their normal activities in 3 months. The effects of pain will vary and could include reduced quality of life, functional capacity, independence or psychological wellbeing.

Key to referral timings

Arrangements should be made so that the patient:

✪✪✪✪ is seen immediately[a]

✪✪✪ is seen urgently[b]

✪✪ is seen soon[b]

✪ has a routine appointment[b]

a Within a day.
b Health authorities, trusts and primary care organisations should work to local definitions of maximum waiting times in each of these categories. The multidisciplinary advisory groups considered a maximum waiting time of 2 weeks to be appropriate for the urgent category.

P.2 Risk assessment tools and stratification

Table 38: Description of risk tool contents identified from papers included in the review

	No. item	Description

Chronic Pain Risk Item Set [2255]	22	A score derived from an original Chronic Pain Risk Score, a tool assessing pain intensity, pain interference with activities, number of activity limitation days due to pain, pain persistence in the past 6 months, a depressive symptom scale and the number of painful anatomic sites. The simplified Chronic Pain Risk Item Set includes:
		• 3 items on back pain intensity (scored on a 0-10 scale)
		  ○ Average/usual pain
		  ○ Worst pain
		  ○ Pain right now
		• 3 items on back pain-related activity interference (scored on a 0-10 scale)
		  ○ Interference with usual activities
		  ○ Interference with social and family activities
		  ○ Interference with work or housework activities
		• 1 item on Back pain persistence (back pain days in the prior 6 months)
		• 7 items from the Pain health questionnaire(PHQ)-15, assessing an expanded number of pain sites and pain bothersomeness rating for each site (response format: not bothered at all, bothered a little, bothered a lot; score obtained by summing all ratings)
		  ○ Back pain
		  ○ Stomach pain
		  ○ Pain in arms, legs, or joints
		  ○ Headaches
		  ○ Neck pain
		  ○ Pelvic/groin pain
		  ○ Widespread pain
		• 8 items from the Pain Health Questionnaire (PHQ)-8 to assess depressive symptoms severity

Eleven-Item version of the Tampa Scale of Kinesiophobia (TSK-11) [207]	11	11-item questionnaire derived from an original 17-item Tampa Scale of Kinesiophobia. TSK-11 evaluates the degree of fear on movement and injury or re-injury in individuals with low back pain. Items are scored from 1 (strongly disagree) to 4 (strongly agree). Potential scores range 11-44, with higher scores indicating greater fear on movement and injury or re-injury due to pain.
Fear Avoidance Beliefs Questionnaire (FABQ) [207]	4+7	A questionnaire assessing fear avoidance beliefs specific to low back pain. It consists of a 4-items physical activity scale (FABQ-PA, score range 0-24) and a 7-items work scale (FABQ-W, score range 0-42). 4-item physical activity scale (FABQ-PA) statements: • Physical activity makes my pain worse • Physical activity might harm my back • I should not do physical activities which (might) make my pain worse • I cannot do physical activities which (might) make my pain worse 7-item work scale (FABQ-W) statements: • My pain was caused by my work or by an accident at work • My work aggravated my pain • My work is too heavy for me • My work makes or would make my pain worse • My work might harm my back • I should not do my normal work with my present pain • I do not think that I will be back to my normal work within 3 months Each item is scored on a 'completely disagree' (0) – 'unsure' (3) – 'completely agree' (6) scale. Total score for each subscale is calculated as the total sum of scores of all items in that subscale. Higher levels indicate higher levels of fear avoidance beliefs. http://www.udel.edu/PT/PT%20Clinical%20Services/journalclub/caserounds/05_06/mar06/FABQ1.pdf
Hancock CPR (clinical prediction rule)[2326]	3	A 3-item clinical prediction rule for the identification of patients with acute low back pain (within 12 weeks of symptom onset), presenting to primary care, likely to recover rapidly from acute low back pain. • Baseline pain. Feature associated with a more rapid recovery: ≤7/10 on numerical

	No. item	Description
		pain rating scale • Duration of current symptoms. Feature associated with a more rapid recovery: ≤5 days • Number of previous episodes of low back pain. Feature associated with a more rapid recovery: ≤1previous episodes Status on the prediction rule is determined by calculating the number of predictors of recovery present. On the basis of the number of positive features present (0, 1, 2, or 3 features positive), each patient can be assigned to one of 4 strata, representing their status on the prediction rule. *Hancock MJ et al. Can rate of recovery be predicted in patients with acute low back pain? Development of a clinical prediction rule. European Journal of Pain 2009; 13:51-55*
Low back pain perception scale[1063]	5	A scale on low back pain perception containing a total of 5 items: • Worrying • Coping • Limitations due to low back pain • Expectation regarding pain relief • Pain interference. All items have a yes/no response format; the total score is derived by totalling number of 'yes' responses. Higher scores indicate greater risk.
Nine-Item Patient Health Questionnaire (PHQ-9) [207]	9	A 9-item questionnaire used to assess degree to which depressive symptoms have on a patient with low back pain (scores range from 0-27). • Little interest or pleasure in doing things • Feeling down, depressed or hopeless • Trouble falling or staying asleep, or sleeping too much • Feeling tired or having little energy • Poor appetite or overeating • Feeling bad about yourself – or that you are a failure or have let yourself or your family down • Trouble concentrating on things, such as reading the newspaper or watching television • Moving or speaking so slowly that other people could have noticed, or being so fidgety or restless that you have been moving around a lot more than usual • Thoughts that you would be better off dead or of hurting yourself in some way Each item is scored on a 'not at all' (0) – 'nearly every day' (3) scale. Total score is calculated by adding up responses to all items. High scores indicate elevated depressive symptoms (major depression is diagnosed if ≥5 depressive symptom criteria have been present more than half the days in the past 2 weeks and one of the symptoms is depressed mood or anhedonia). http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1495268/pdf/jgi_01114.pdf
Örebro Musculoskeletal Screening Questionnaire (ÖMSPQ, modified version of ÖMSPQ) [741]	25 (21)	The Örebro Musculoskeletal Screening Questionnaire (ÖMSPQ) is a modified version of the original Örebro Musculoskeletal Pain Questionnaire (ÖMSPQ). Four critical characteristics of the original questionnaire are retained in the ÖMSPQ: question number and order, scoring format and total score. All scored 21 ÖMSPQ items are included in the ÖMSPQ, with one being renamed and 4 additional ADL being combined with the physical function questions. 1. Region. Where do you have your pain/problem? Back or neck, arm, leg, both sides, several body areas. 2. Absenteeism. Due to your pain/problem, how many days of work or 'normal daily routine' have you missed? '0 days' (1), '1-2 days' (2), '3-7 days' (3), '8-14 days' (4), '15-28 days' (5), '1 month' (6), '2 months' (7), '3-6 months' (8), '6-12 months' (9), 'over 1 year' (10) 3. Duration. How long have you had your current pain/problem? '0-1 weeks' (1), '1-2 weeks' (2), '3-4 weeks' (3), '4-5 weeks' (4), '6-8 weeks' (5), '9-11 weeks' (6), '3-6 months' (7), '6-9 months' (7), '9-12 months' (9), 'over 1 year' (10) 4. Burdensome. Do you feel your work or normal daily routine is a burden to you (eg heavy or monotonous)? 'Not at all' (0) – 'extremely' (10) 5. Intensity acute. How would you rate your pain/problem during the past week, or since the injury if less than a week ago? 'No pain/problem' (0) – 'worst possible' (10) 6. Severity chronic. Since your injury (or in the past 3 months if it is not a recent injury), in general, how has your pain/problem been? 'No pain/problem' (0) – 'worst possible' (10) 7. Frequency. Since your injury (or in the past 3 months if it is not a recent injury), in general, how often is your pain/problem present? 'Never' (0) – 'all the time' (10)

	No. item	Description
		8. Coping. Over the last week, or since the injury if it were less than a week ago, on an average day, how well can you cope with or control your pain/problem? 'Not at all' (0) – 'completely' (10) 9. Anxiety. Over the last week or since the injury if it were less than a week ago, on an average day, how tense or anxious have you felt? 'Not at all' (0) – 'extremely' (10) 10. Depression. Over the last week or since the injury if it were less than a week ago, on an average day, how depressed or 'down' have you felt? 'Not at all' (0) – 'extremely ' (10) 11. Recovery expectation problem. In your view how large is the risk that your current pain/problem may become persistent? 'No risk' (0) – 'very large risk' (10) 12. Recovery expectation work. What are the chances you will be doing your work or normal daily routine in 6 months' time? 'No chance' (0) – 'very large chance' (10) 13. Job satisfaction. How satisfied are you with your current life situation (work/normal daily routine, home, friends)? 'Not at all' (0) – 'completely' (10) 14. Fear-avoid: activity. Physical activity makes my pain/problem worse. 'Completely disagree' (0) – 'Completely agree' (10) 15. Fear-avoid: stop work. An increase in my pain/problem tells me I should stop what I am doing until my pain/problem decreases. 'Completely disagree' (0) – 'Completely agree' (10) 16. Fear-avoid: not work. I should not do my work or normal daily routine with my present pain/problem. 'Completely disagree' (0) – 'Completely agree' (10) 17. Light work/chores. I can manage light work for up to an hour (eg lift, carry or move light objects < 5 kg). 'Not at all' (0) – 'completely' (10) 18. Walk/recreation. I can walk for an hour or participate in my normal light recreational or sporting activities. 'Not at all' (0) – 'completely' (10) 19. Home activity. I can manage my regular home activities and chores (cleaning, steps, use a chair, family duties, etc). 'Not at all' (0) – 'completely' (10) 20. ADL and social. I can manage my regular daily routine and social activities (shopping, transport or seeing friends). 'Not at all' (0) – 'completely' (10) 21. Sleep/move in bed. I can sleep at night or move normally in bed. 'Not at all' (0) – 'completely' (10) Items are rated 0 to 10 points where higher scores indicate increased risk. Scores for items 8, 12, 13 and 17 to 21 are reversed and calculated as (10 - score). The item assessing pain sites is scored counting the number of pain sites and multiplying by 2. Total score is calculated as the total sum of scores of all items (score range: 0-210), with high scores indicating increased risk of poor outcome. Cut-off ranges in ÖMSPQ are used to indicate low (<95), moderate (95-112) and high (>112) risk of delayed recovery from low back pain.
Örebro Musculoskeletal Pain Questionnaire (ÖMPQ, Acute Low Back Pain Screening Questionnaire) [508,741,937,1063,1404]	25 (21)	25-questions questionnaire, of which 21 are scored on a 0-10 points response scale. The 21 scored items assess 5 proposed constructs: function, pain, psychological (mood, perceptions of work, patients' estimate of prognosis), fear avoidance and miscellaneous. • Items 1–3 concern the number of regions of the body affected by pain, the duration of pain and the duration of sick leave from work in the previous 18 months because of pain. • Items 4 and 13 focus on the patients' perception of their work (is their work heavy, are they satisfied with their job). • Items 5–8 assess the patient's perception of pain (current pain intensity, average pain intensity, pain frequency) and coping strategies (control over pain). • Items 9–12 assess the patient's feelings of anxiety, depression, their perception of pain becoming chronic and their chance of getting back to work in a 6-months' time. • Items 14–16 involve fear avoidance beliefs and behaviours in response to pain. • Items 17–21 focus on activities of daily living (light working, walking, household work, shopping, sleeping). Items are rated 0 to 10 points where higher scores indicate increased risk. Scores for items 8, 12, 13 and 17 to 21 are reversed and calculated as (10 - score). The item assessing pain sites is scored counting the number of pain sites and multiplying by 2. Total score is calculated as the total sum of scores of all items (score range: 0-210), with high scores indicating increased risk of poor outcome. Cut-off ranges in ÖMSPQ are used to indicate low (90-100) and high (105-119) risk of prolonged recovery from low back pain. Some Authors [508,1061] use different risk thresholds (based on sensitivity and specificity thresholds and Linton & Hallden 1998): low risk (score <90), moderate risk (score 90-105) and high risk for prolonged disability

	No. item	Description
		(score > 105). http://www.oru.se/PageFiles/12103/Screening%20eng.pdf http://occmed.oxfordjournals.org/content/58/6/447.full.pdf+html
Pain Catastrophizing Scale [207]	13	A 13-item questionnaire (score range 0-52) assessing the degree of catastrophic cognitions due to low back pain. • I worry all the time about whether the pain will end (helplessness) • I feel I can't go on (helplessness) • It's terrible and I think it's never going to get any better (helplessness) • It's awful and I feel that it overwhelms me (helplessness) • I feel I can't stand it anymore (helplessness) • I become afraid that the pain will get worse (magnification) • I keep thinking of other painful events (magnification) • I anxiously want the pain to go away (rumination) • I can't seem to jeep it out of my mind (rumination) • I keep thinking about how much it hurts (rumination) • I keep thinking about how badly I want the pain to stop (rumination) • There is nothing I can do to reduce the intensity of the pain (helplessness) • I wonder whether something serious may happen (magnification) Each item is scored on a 'not at all' (0) – 'all the time' (5) scale. The total score is calculated by adding up responses to all items. Higher scores indicate higher levels of pain catastrophizing. Three subscales (PCS rumination, PCS magnification, PCS helplessness) scores are computed by summing up the responses to the relevant items. *Sullivan MJL, Bishop SR, Pivik J. The Pain Catatrophizing Scale: Development and validation. Psychological Assessment 1995; 7(4):524-532.*
Spinal manipulation clinical prediction rule [412]	5	A clinical prediction rule for the identification of patients with low back pain who are likely to benefit from a manipulation intervention (achieving at least 50% improvement in disability within 1 week with a maximum of 2 manipulation interventions). It contains 5 criteria: • Duration of current episode of low back pain. Definition of positive outcome: < 16 days • Extent of distal symptoms (assessed with a body diagram; distribution is categorized as being in the back, buttock, thigh or leg (distal to the knee) as described by Werneke et al, Spine 1993). Definition of positive outcome: no symptoms extending distal to the knee • FABQ (Fear Avoidance Beliefs Questionnaire) work subscale score (7 items with potential score range 0-42; higher scores representing increased fear avoidance beliefs). Definition of positive outcome: < 19 points • Segmental mobility testing (tested over the spinous processes of the vertebrae with the patient prone and the neck in neutral rotation. The examiner applies a gentle but firm, anteriorly directed pressure with their hand on the spinous process and assesses a segment as normal, hypomobile or hypermobile on the basis of their anticipation of what normal mobility would feel like at that level, compared with the mobility detected in the segments above and below). Definition of positive outcome: ≥ 1 hypomobile segment in the lumbar spine • Hip internal rotation range of motion (tested bilaterally with the patient lying prone and with the cervical spine at the midline. The leg opposite that to be measured is placed in approximately 30 degrees of hip abduction, to enable the tested hip to be freely moved. The lower extremity of the side to be tested is kept in line with the body, and the knee on that side is flexed to 90 degrees. A gravity inclinometer is placed on the distal aspect of the fibula in line with the bone. Internal rotation is measured at the point in which the pelvis first begins to move). Definition of positive outcome: ≥ 1 hip with > 35 degrees of internal rotation range of motion. A threshold of ≥4 criteria identifies a positive outcome and < 3 a negative outcome, based on Flynn et al (2002).
STarT Back Screening Tool (SBT) [207 208,1575]	9	A 9-item questionnaire about physical and psychosocial predictors of back pain used to categorize patients with Low Back Pain in primary care settings, based on risk for poor disability outcomes. It has been translated into several languages and has cross-cultural validity. 9 Items: • Radiating leg pain • Pain elsewhere (shoulder or neck)

	No. item	Description
		• Disability (walking) • Disability (self-care) • Fear • Anxiety • Pessimistic patient expectations • Low mood • Bothersomeness Each item is scored dichotomously, either 0 or 1. All items have a 'disagree' (0)/'agree' (1) response format, except from the bothersomeness item, which has a 'not at all' (0)/ 'slightly' (0)/ 'moderately' (0)/ 'very much' (1)/ 'extremely' (1) response format. Two scores are finally calculated: • SBT overall score (0-9): determined by the sum of all positive responses. • SBT psychosocial subscale score (0-5): determined by the sum of all items related to fear, anxiety, catastrophizing, depression and bothersomeness. On the basis of both scores, patients are categorized into 3 groups: • SBT high risk group (overall score ≥4): high levels of psychosocial prognostic factors are present with or without physical factors present, • SBT medium risk group (overall score >3, psychosocial subscale score <4): physical and psychosocial factors are present but not a high levels of psychosocial factors, • SBT low risk group (overall score 0-3): few prognostic factors are present. When SBT is administered at 2 time points (cf Beneciuck et al 2014, SBT administered at intake and after 4 weeks), a SBT change categorization may be used to describe the variation in the patients' SBT overall score (determined by summing all positive responses, 0-9) over time: • Improved: SBT risk categorization changed from medium to low, high to low or high to medium risk • Stable: SBT risk categorization remained low or medium risk • Worsened: SBT risk categorization changed from low to medium, low to high, medium to high, or remained high risk. http://www.keele.ac.uk/media/keeleuniversity/group/startback/Keele_STarT_Back9_item-7.pdf

Appendix Q: NICE technical team

Name	Role
Chris Carson	Guideline Lead
Mark Baker	Clinical Advisor
Steven Barnes	Technical Lead
Ross Maconachie	Health Economist
Louise Shires	Guideline Commissioning Manager (until November 2015)
Rupert Franklin	Guideline Commissioning Manager
Jill Peacock	Guideline Coordinator (until October 2015)
Trudie Willingham	Guideline Coordinator
Gareth Haman	Editor

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