

## Appendix G: Hip protectors; characteristics of excluded studies

Study	Reason for exclusion
Becker 2003	This was a randomised trial of 981 long stay residents of six nursing homes in Ulm Germany. The homes were randomised (cluster randomisation) to have a multifaceted falls intervention programme (staff and resident education on fall prevention, advice on environmental adaptations, progressive balance and resistance training and hip protectors) or to act as controls. 138 of 509 residents allocated to the intervention group wore the hip protectors, with 108 of them wearing them as per the protocol, which was from arising in the morning to bedtime. 17 hip fractures occurred amongst the 509 allocated to the intervention group, as opposed to 15 hip fractures in the 472 residents in the control group. The study was excluded as it was an evaluation of multifaceted intervention programme and not just hip protectors. It will be reviewed in the Cochrane review on interventions for preventing falls in the elderly.
Jensen 2002	This was a randomised trial with 194 participants in residential care facilities. The facilities were cluster randomised to have a multifactorial fall and injury prevention intervention. General: staff education, environmental modification, post-fall staff conferences and ongoing staff guidance. Resident specific: exercises, supply and repair of aids, medication modification, hip protectors. 47/194 participants offered protectors; 34 agreed to wear them. The study was excluded as it was an evaluation of multifaceted intervention programme and not just hip protectors. It will be reviewed in the Cochrane review on interventions for preventing falls in the elderly.
Lauritzen 1996	This study was an open prospective case-cohort study with intervention cases at one hospital and controls from another hospital. It was excluded as it was not a randomised trial.
Ross 1992	This study was a report on assessing the feasibility of wearing hip pads for 30 elderly residents of long-term institutions. The report mentioned there was 'random' allocation of residents to one of six interventions but no numbers of patients in each group were given or outcomes. The individual interventions were not clearly defined. The study was intended as a preparation for a randomised trial. Additional information has been requested from the authors but not provided. The study was excluded because of inadequate information.
Woo 2003	Described as a randomised controlled trial in Current Controlled Trials.com (listed under Hong Kong Health Services Research Fund's contact Prof Johnston). The published article indicated it was a case control study with 302 subjects wearing hip protectors and 352 control subjects. The hip protectors were specially designed for Chinese build and tropical conditions. Mean follow-up was 18.6 + 10.8 days in treatment group. Compliance ranged from 55 to 70%. The relative risk for hip fracture was 0.18 (0.04 to 0.79), relative risk reduction 82% (2 versus 13 cases). The study was excluded as it was not a randomised control trial.
Wortberg 1998	This study involved 84 residents of five nursing homes in Ludenscheid, Germany. 47 were allocated to receive the protectors and 37 residents acted as controls. No fractures occurred for the 91 reported falls in the hip protector group, while seven hip fractures occurred in 28 falls without the protectors. The study was excluded, as there was no randomisation of patients into the two groups.

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Abreu 1998	Not RCT. Divided into groups by convenience sampling. Intervention: group versus home fall prevention education. Falls outcomes.
Ades 1996	RCT. Intervention: weight training exercise. No falls outcome. Outcome: gait velocity and strength.
Allen 1986	RCT. Intervention: geriatric consultation team. No falls outcome. Outcome: compliance of hospital doctors.
Bean 2002	RCT. Intervention: 12 week exercise programme of stair climbing, using weighted vests versus walking. Outcomes: strength, power and physical performance in mobility-limited older people. No falls outcome.
Binder 1995	RCT. Intervention: exercise programme, randomised to vitamin D or not. Outcome balance. All participants demented. No falls outcome.
Bowling 1992	RCT. Intervention: randomised to nursing home or long stay hospital ward. No falls outcome. Outcomes: accidents, quality of life.
Buchner 1997b	RCT. Intervention: endurance training. MoveIT study. Same control group as included FICSIT study. No falls outcome.
Caplan 1999	RCT. Intervention: 'hospital in the home' instead of acute admission. Not just elderly (age range 17-111 years). Not fall prevention trial; falls monitored as possible complications.
Charette 1991	RCT. Intervention: resistance exercise. No falls outcome. Outcome: cross section of muscle fibre.
Cheng 2001	RCT. Intervention: symmetrical standing training and repetitive sit-to-stand training using a standing biofeedback trainer. Falls outcome but all subjects had hemiplegic stroke.
Chin A Paw 2001	RCT. Intervention: exercise and enriched food regimen. Outcome: functional performance. No falls outcome.
Clark 1975	RCT. Exercise intervention. No falls outcome.
Crilly 1989	RCT. Intervention: exercise programme. Outcome: postural sway. No falls outcome.
Crotty 2002	RCT. Intervention: accelerated discharge and home-based rehabilitation after hip fracture. Not intervention to prevent falls; falls recorded but as adverse events.
Deery 2000	Not RCT. Controlled trial. Pre-post intervention analysis. Intervention: fall prevention programme consisting of peer presented education sessions. Falls outcomes.
Fiatarone 1994	RCT. Exercise/ nutritional intervention. No falls outcome. Outcomes muscle strength and mobility, gait, stair climbing and others. FICSIT trial.
Galindo-Ciocon 1995	Not RCT. Pre-post intervention design. Intervention: fall prevention counselling and gait and balance training. Falls outcomes.
Graafmans 1996	Sub-group of RCT testing daily vitamin D versus placebo. 2,578 persons randomised. This paper reports an epidemiological study of risk factors for falls in a sub-group of 368 subjects. The source population for this paper were subjects from 13 homes or apartment houses and randomisation had taken place within these units in blocks of 10. However, of 458 eligible subjects, only 368 agreed to enrol in this study (80.1%). Although the percentage who fell in intervention and control groups is reported, it was felt that this paper should be excluded as the sample was a self-selected subgroup and the number in intervention and control groups were not provided. There was no statistically significant difference in percentage of fallers with or without vitamin D (OR 1.0; 95% CI 0.6 to 1.5).
Green 2002	RCT. Intervention: physiotherapy for patients with mobility problems more than one year after a stroke. Falls outcomes but all stroke patients and 95% had left or right hemiparesis.
Greendale 2000	RCT. Intervention: use of a weighted vest (no vest, 3% of body weight or 5% of body weight) to be worn two hours per day, four days per week, for 27 weeks. No falls outcome. Outcome knee extensor and flexor strength, selected measures of physical performance, serum and urine markers of bone turnover, and quality of life indices.
Hagberg 1989	RCT. Intervention: exercise. No falls outcome. Outcome: new cardiovascular event.
Hall 1992	RCT. Intervention: nurse visit, individualised interventions. No falls outcome. Outcomes: psychological tests, care status.
Hansen 1992	RCT. Intervention: geriatric follow up after hospital discharge. Outcome: admission to nursing homes. No falls

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	outcome.
Hebert 2001	RCT. Intervention: multifactorial assessment of community dwelling people aged 75 and above. Primary outcome: functional decline (defined as death, admission to an institution or increase of > or = 5 points on the functional autonomy measurement system (SMAF) scale disability score during one year follow-up). Secondary outcomes: functional autonomy, well-being, perceived social support and use of health care services. No falls outcome.
Hendrich 1988	Not RCT. Hospital prevention plan. Falls outcomes.
Hendriksen 1984	RCT. Intervention: home visits and provision of aids. Outcome: GP visits, hospitalisation. No falls outcome.
Hendriksen 1989	RCT. Intervention: preventive home visits. Outcome: hospitalisation. No falls outcome.
Hofmeyer 2002	RCT. Intervention: training to improve the ability of disabled older adults to rise from the floor. Not fall prevention. No falls outcome.
Holmqvist 1998	RCT. Intervention: early supported discharge after stroke. Not fall prevention. Falls reported as a possible adverse effect.
Hopman-Rock 1999	RCT. Intervention: psychomotor activation programme for cognitively impaired elderly in institutional care. Not fall prevention. Falls monitored as a possible adverse effect.
Hu 1994	RCT. Not fall prevention. Falls artificially induced. Balance parameters measured.
Judge 1993	RCT. Outcome: static balance, muscle strength. No falls outcome.
Kempton 2000	Not RCT. Evaluation of non-randomised community fall prevention programme targeting eight risk factors. Geographical control.
Kerschman-Schindler 2000	Not RCT. Sample selected from controlled trial of home exercise programme. Falls outcomes.
Kilpack 1991	Not RCT. Pre-post intervention design. Nursing intervention. Outcome: falling.
Krishna 1983	Not RCT. Pre-post intervention design. Hospital-based, staff education programme. Outcome: falling.
Kuipers 1993	Controlled study. Pre-post intervention. Hospital-based risk assessment and intervention. Falls outcome.
Kustaborder 1983	Not RCT. Pre-post intervention design. Hospital-based. Outcome: accidents (not just falls).
Lamoureux 2003	RCT. Intervention: progressive resistance. Outcome: strength assessed using an obstacle course. No falls outcome.
Latham 2001	RCT. Hospital-based. Intervention: progressive resistance strength training. No falls outcome. Outcome: strength, gait speed, timed 'up-and-go', balance (Berg).
Lauritzen 1993	RCT. Intervention: hip protectors. Hip fracture outcome.
Lawrence 1992	Not RCT. Case series. Nursing intervention. Outcome: falling.
Lichtenstein 1989	RCT. Exercise intervention. No falls outcome. Outcome: balance and sway
Lord 1996a	RCT. Exercise intervention. No falls outcome. Outcome: gait related.
Lord 1996b	RCT. Exercise intervention. No falls outcome. Outcome: balance related.
MacRae 1996	Not RCT. Pre-post intervention. Walking programme for nursing home residents. Falls monitored as possible adverse events.
McCabe 1985	Not RCT. Nursing intervention. Falls outcomes.
McEwan 1990	RCT. Intervention: screening programme by nurses with general assessment. Outcome: health indices, ADL, morale. No falls outcome.
McMurdo 1993	RCT. Intervention: exercise. Outcome: sway, depression, ADLs, chair to stand time. No falls outcome.
Mills 1994	RCT. Low intensity aerobic exercise. No falls outcome.

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Mohide 1988	RCT. Intervention: quality assurance programme in nursing homes. No falls outcome. Outcome: hazardous mobility and constipation.
Morganti 1995	RCT. Intervention; resistance training. Outcome: not falling, strength.
Morton 1989	Not RCT. Falls prevention programme. Hospital.
Naso 1990	RCT. Exercise intervention. No falls outcome. Outcome: 'training effect'.
Nichols 1993	RCT. Intervention: resistance training. No falls outcome. Outcome: strength.
Obonyo 1983	Not RCT. No untreated group. Falls outcomes.
Pathy 1992	RCT. Intervention: postal health screening by questionnaire. Outcome: mortality, quality of life, health service use. No falls outcome.
Plautz 1996	Not RCT. Pre-post intervention design. Falling outcome.
Ploeg 1994	RCT. Intervention: safety assessment. No falls outcome. Outcome: safety behaviour changes.
Pomeroy 1999	RCT. Intervention: physiotherapy to improve mobility in demented elderly people. No falls outcome.
Posner 1990	RCT. Intervention: aerobic exercise intervention. No falls outcome. Outcome: new cardiovascular diagnoses.
Poulstrup 2000	Not RCT. Community-based intervention programme. Quasi experimental, with non-randomised control communities. Intervention: information and home visits with follow-up, removing physical hazards, treating somatic and psychiatric illnesses and dealing with improper drug consumption, diet insufficiencies and physical and mental inactivity. Outcome: fall related fractures.
Rainville 1984	Not RCT. Pre-post intervention. Hospital fall prevention programme.
Rantz 2001	RCT (cluster randomised nursing homes). Intervention: staff workshops and feedback about 23 quality indicators versus workshops and feedback and clinical consultation versus control. Outcomes: reporting of 23 quality indicators. Subgroup analysis of nursing homes that made use of clinical consultation v those that did not. Falls one of 23 quality indicators but no useable data.
Reuben 1995	RCT. Intervention: geriatric assessment of hospital patients. No falls outcome. Outcome: functional and health status, mortality.
Robbins 1992	RCT. Balance outcomes. No falls outcome.
Robertson 2001c	Not RCT. Controlled trial in multiple centres. Intervention: home based exercise in over 80 year olds. Same programme as in Campbell 1997, Campbell 1999, and Robertson 2001. Outcome: falls, injuries resulting from falls, and cost effectiveness.
Robinson 2002	Not RCT. Controlled study of physiotherapy in community dwelling elderly people, but subjects self-selected to participate in intervention.
Sauvage 1992	RCT. Intervention: aerobic exercise programme. No falls outcome. Outcome: strength, gait, balance.
Schlicht 2001	RCT. Intervention: intense strength training to improve functional ability related to the risk of falling. No falls outcomes. Outcome: strength, walking speed, balance, sit-to-stand performance.
Schmid 1990	Not RCT (pre-post intervention design). Development of injury risk assessment tool in nursing home patients. Outcome falling.
Schnelle 1996	RCT. Intervention: exercise to improve mobility in physically restrained nursing home residents. No falls outcomes.
Sherrington 1997	RCT. Intervention: home exercise programme. No falls outcome. Outcome: improved mobility and strength, post hip fracture.
Shumway-Cook 1997	Not RCT. Quasi-experimental design. Exercise intervention. Non-equivalent control group. Logistic regression model of fall risk was an outcome, but not actual falls.
Simmons 1996	RCT. Intervention: exercise in water. No falls outcome. Outcome: functional reach as a measure of fall risk.
Sinaki 2002	RCT. Intervention: proprioceptive dynamic posture training in osteoporotic women with kyphotic posture.

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	Outcome: spinal x-rays, back extensor, hip extensor, knee extensor and grip strength, balance tested by computerised dynamic posturography. No falls outcomes.
Skelton 1999	Not RCT. Pre-post test design. Describes falls management exercise (FaME) Programme and ongoing evaluation study that is not randomised.
Speltz 1987	Not RCT. Pre-post intervention. Hospital. Falls outcomes.
Svanstrom 1996	Not RCT. Quasi experimental, with non-randomised controls. Intervention: environmental risk control. Pre-post intervention design. Outcomes hip fracture (discharge data).
Sweeting 1994	Not RCT. Pre-post intervention. Hospital. Falls outcomes.
Tennstedt 1998	RCT. Intervention: to reduce fear of falling and increase activity levels. Not fall prevention. Falls reported as possible adverse effect.
Thompson 1988	RCT. Exercise intervention. No falls outcome.
Thompson 1996	Not RCT. Pre-post intervention. Environmental risk factor modification. Falls outcomes.
Tideiksaar 1990	Not RCT. Pre-post intervention. Falls outcomes.
Tideiksaar 1992	Not RCT. Community-based survey and falls prevention programme. Qualitative evaluation only. Falls outcomes.
Tinetti 1992	Not RCT. Prospective cohort study. Outcome: injurious falls.
Tinetti 1999	RCT. Intervention: home-based multicomponent rehabilitation after hip fracture. Not intervention to prevent falls; falls recorded but as adverse events.
Topp 1993	RCT. Intervention: resistance training classes. Outcome: change in gait and balance. No falls outcome.
Topp 1996	RCT. Intervention: home-based resistance training. Outcome: change in ankle strength, training intensity, postural control, and gait. No falls outcome.
Tynan 1987	Not RCT. Description of fall and fracture prevention programme.
Urton 1991	Not RCT. Description of falls prevention programme.
von Koch 2000	RCT. Intervention: early supported discharge and rehabilitation at home after a stroke. Falls outcome but stroke patients and not a fall prevention strategy; falls monitored as adverse event.
White 1991	Not RCT. Description of intervention in rehabilitation unit.
Wolf-Klein 1988	Not RCT. Pre-post intervention (multidisciplinary falls clinic). Falls outcomes.
Wolfson 1996	RCT. Intervention: exercise. Outcome: balance, strength and gait velocity. No falls outcome. FICSIT trial.
Yates 2001	RCT. Intervention: multifactorial intervention to reduce fall risk (fall risk education, 10 week exercise programme, nutritional counselling and/or referral, environmental hazard education). Outcome: decrease in selected fall risk factors (physiological outcome measures, locus of control for nutrition, nutritious food behaviour, falls efficacy score, depression, environmental hazards). No falls outcomes.
Ytterstad 1996	Not RCT. Quasi experimental, with non-randomised controls. Pre-post intervention design. Outcomes include falling.

*RCT: randomised controlled trial*

## Appendix G: Assessment tools; excluded studies

Study	Reason for exclusion
Alpini 2001	Detailed evaluation of postural control
Behrman 2002	In-patient
Bergland 2002	Self-reported walking information
Bloem 2000	Stop walking when talking small sample
Cho 1998	Balance performance, small sample
Conley 1999	In-patient
Di Fabio 1997	Small sample
Finlay 1999	Detailed footwear analysis
Goodgold 2001	FR, TUGT, small sample
Gunter 2000	Diagnosing fallers from non-fallers.
Harada 1995	Tool to identify those needing physiotherapy
Jannink-Nijlant 1999	Mobility control subscale of sickness impact profile, small sample
Kemoun 2002	Detailed gait analysis
Krishnan 2002	Reliability study with DGI, small sample

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Lajoie 2002	Small sample
Lee 2001	No falls outcome data
Lord 2000	Choice step reaction time, too detailed and not pragmatic
Lundin 2001	Small sample
Maki 2000	Small sample and no falls data
Menz 2001	Footwear analysis
Najafi 2002	Detailed postural transition evaluation
Nyberg 1997	In-patient
O'Brien 1998	Small sample
Simpson 2002	180 degree turn test, no falls data
Thorbahn 1998	Small sample
Thorbahn 1996	Small sample
Van Swearingen 1996	Modified gait abnormality rating scale, small sample
Vassallo 2000	Not enough detail to extract
Vergheze 2002	Walking while talking task, detailed attentional resources

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Study	Reason for exclusion
Hale 1992	Small sample
Joo 2002	Small sample
Laird 2001	Outcomes - hospital utilisation
Lipsitz 1994	Cross-cultural case series - fall rates
Lord 1994	Detailed analysis of vision and balance
Lord 2001	Detailed visual factors
Maki 1997	Detailed gait analysis
McCarty 2002	Detailed visual risk factors