APPENDIX 1:
Summary of Systematic Review

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Exercise Interventions				
Buchner et al. (1997) US	To determine if strength and endurance training can modify risk factors for falls and have a beneficial effect on falls and health services use. *Population group:* Older adults enrolled in a large HMO (mean=75 years)	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 3 *Level* I A	*Intervention 1*: Endurance training one hour 3 days per week for 24-26 weeks (n=19). *Intervention 2:* Strength training one hour 3 days per week for 24-26 weeks (n=20). *Intervention 3:* Endurance and strength training one hour 3 days per week for 24-26 weeks (n=22). *Control*: Instructed to maintain usual activity levels (n=29).	▪ In the year after randomization, 42% of all exercise participants combined reported a fall compared to 60% of control participants. There was a significant beneficial effect of exercise on time to the first fall (relative hazard = 0.53, p<.05). A person-time analysis revealed exercise participants had fewer total falls during follow-up. The fall rate in exercise participants (.49 falls/year) was significantly lower than the fall rate in controls (.81 falls/year) (RR = 0.61, p<.05). ▪ Participants in the exercise groups showed significant gains in strength and aerobic capacity.
Campbell et al. (1997) New Zealand	To assess the effectiveness of a home exercise program of strength and retraining exercises in reducing falls and injuries in elderly women. *Population group:* Women 80+ (mean=84 years)	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 3 *Level* I A	Four home visits by a physiotherapist over two months to prescribe exercises and a walking plan. Participants were encouraged to complete their exercises and walk at least three times per week. Participants telephone regularly to maintain motivation (n=103). *Control*: Four home visits by the research nurse over two months that were social in nature. Participants also telephone regularly (n=110).	▪ At one-year follow-up, significantly lower rate of falls in exercise group (88) than control group (152) (0.87 vs. 1.34 falls per person year, hazard ratio=0.68 p< .05). 46% of exercise group experienced at least one fall versus 53% of control. 19% of experimental group had multiple falls versus 30% of control group. Hazard ratio for a first fall with injury was 0.61 (p< .05,) and the proportion of participants monitored for the full 12 months (n=213) who were injured from a fall was lower in the exercise group (26.2%) than in the control group (39.1%) (hazard ratio=0.67, p<.05). ▪ After six months, exercise group showed significant improvement in balance performance in the chair stand test as compared to controls.

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Ebrahim et al. (1997) UK	To examine whether brisk walking increases the bone mineral density of the femoral neck, reduces the number of falls experienced, or reduces the rate of spinal fractures. *Population group:* Postmenopausal women who had sustained an upper arm fracture in the past two years (mean=67.2 years)	*Study Design:* Random Control Trial *Data Collection:* 24 months *Power Rating* = 3 *Level* I B	Brisk walking exercise 40 minutes three times per week (n=49). *Control*: Upper limb exercises (n=48).	▪ In first year, women in walking group reported more falls than in control (80.1 vs. 52.0 falls per 100 person-years, p < .01). ▪ In year two, no difference in fall rates between walking and control (59.2 vs. 58.3 falls per 100 person years, ns). ▪ The number of fractures was small, and similar, between groups (year 1, 2 vs. 3; year 2, 4 vs. 1 for walking and control groups, respectively). ▪ No differences in risk factors between groups except walking group had better physical stamina than control group.
Kerschan-Schindl et al. (2000) Austria	To determine if a better outcome in terms of physical frailty could be achieved with a regular home exercise program in women at high risk of fracture. *Population group:* Women who had been patients of an osteoporosis lab and had at least one fracture and with reduced bone mineral content (mean=74 years)	*Study Design:* Quasi-experimental *Data Collection:* 2 years *Power Rating* = 1 *Level* IV B	Exercise program to improve posture and coordination. Supervised first 20 times, then women advised to train at least three times a week at home. At six-month intervals, participants could participate in five supervised training sessions. Intervention 7-12 years in duration (n=19). *Control:* No intervention (n=6).	▪ 47% (9) of exercisers and 33% (2) of controls reported at least one fall in the previous two years. 67% (4) of exercisers and 47% (9) controls reported a near fall. 1 person in exercise group and none in control group reported a fracture due to falling.

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Lord et al. (1995) Australia	To determine whether a regular exercise program can improve balance, reaction time, neuro-muscular control, and muscle strength and reduce the rate of falling in older women. *Population group:* Seniors 65+ (mean=72 years)	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 1 *Level* IV B	Exercise classes two times a week for one-year that targeted stretching, strengthening, aerobic, balance, flexibility, endurance, and hand-eye/foot-eye coordination (n=75). *Control*: No intervention (n=94)	▪ There were no differences in the percentage of intervention participants (34.7%) and control participants (35.1%) who fell (RR=0.99, ns). ▪ Exercisers demonstrated significant improvement in strength, reaction time, neuromuscular control, and body sway. Control participants displayed little or no improvement.
Reinsch et al. (1992) US	To reduce falls through exercise and cognitive behavioural interventions. *Population group:* Individuals from seniors centres (mean=75 years)	*Study Design:* Quasi-experimental *Data Collection:* 12 months *Power Rating* = 2 *Level* III B	*Intervention 1*: Exercise intervention included a step up/step down exercise program three times per week for one year (n=57). *Intervention 2:* Cognitive behavioural intervention group met weekly for one year and covered a health and safety curriculum to prevent falls, relaxation training to lower tension and fear, and videogame playing to improve reaction time (n=51). *Intervention 3:* Exercise and cognitive behavioural intervention followed the I2 protocol once per week and twice per week focused on exercise for one year (n=72). *Control*: Discussion group once per week covered health and discussion topics not specifically related to falls prevention for one year (n=50).	▪ The number of fallers did not differ significantly among the four groups (chi-square=2.21, ns). The likelihood of a severe fall-related injury also did not differ among the four groups. ▪ There were no differences between the groups in strength, balance, or endurance at the end of one year.

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Rubenstein et al. (2000) US	1. To measure the effects of an exercise intervention on strength, balance, and endurance among elderly men with risk factors for falls. 2. To measure the effects on fall rates, self-reported health measures, and activity levels. *Population group:* Senior men 70+ who had a risk factor due to lower extremity weakness, impaired gait/balance, or more than one fall in the previous six months (mean=75 years).	*Study Design:* Random Control Trial *Data Collection:* 3 months *Power Rating* = 1 *Level* IV B	Three 90 minute exercise sessions per week for 12 weeks that included strength training, endurance training, and balance training (n=28). *Control:* No intervention (n=27).	▪ 38.7% of exercisers and 32.1% of controls reported falling, with a total of 13 and 14 falls respectively. ▪ Exercisers demonstrated significant improvement compared to controls in right knee flexion strength, right knee extension endurance, left knee flexion endurance, meters walked in six minutes, and POMI gait score.
Wolf et al. (1996) US	To evaluate the effects of Tai Chi and computerized balance training on specified primary outcomes and secondary outcomes (occurrence of falls). *Population group:* Seniors 70+ (mean=76 years)	*Study Design:* Random Control Trial *Data Collection:* 7-20 months *Power Rating* = 3 *Level* I B	*Intervention 1*: Tai Chi training two times per week for 15 weeks plus encouraged to practice at home (n=72). *Intervention 2:* Computerized balance training once per week for 15 weeks (n=64). *Control*: Weekly discussion of topics of interest to seniors plus instructed not to change their level of exercise for 15 weeks (n=64).	▪ Using the FICSIT fall definition, relative to the control group, the Tai Chi group had a longer time to one or more falls (RR=0.63, p=.009) but no difference for the balance training group (RR=1.03, ns). There was no difference in time to one or more injurious falls (RR=0.95 and 1.36, ns for Tai Chi and Balance Training respectively compared to control). Adjusting for fall occurrence in past year, fear of falling, and trouble falling asleep produced results similar to the unadjusted outcomes. ▪ Risk factors that showed significant differences were that participants in the Tai Chi group compared to the control group had less loss of left hand grip strength, reduced ambulation speed, and lower systolic blood pressure after a 12-minute walk. No differences in balance training group compared to control.

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Environment Modification Interventions				
Cumming et al. (1999) Australia	To determine whether occupational therapist home visits targeted at environmental hazards can reduce the rate of falls. *Population group:* Seniors 65+ who were inpatients of selected hospital wards, attended outpatient clinics, or from local day care centers for older people (mean=77 years).	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 3 *Level* I B	Occupational therapist home visits were conducted for a routine OT assessment plus a standardized home assessment form used to record home hazards. Participants received a list of recommended home modifications and the occupational therapist supervised any modifications. Telephone follow-ups were made to encourage participants to make modifications. Modifications were funded through "usual sources" available to older people who are OT clients (n=264). *Control*: No intervention (n=266)	▪ Intervention participants were less likely to report at least one fall than control participants (35% vs. 45%, RR=0.81, p=.05). However, the effect seemed to be entirely due to the difference in falls among seniors who had reported a fall in the previous year. Among those who did not report a fall in the previous year, the proportion who fell was virtually identical in the intervention (32%) and control groups (33%) (RR=1.03, ns). For those who fell in the previous year, intervention participants (42%) were less likely to have at least one fall than control participants (65%) (RR=0.64, p=.001). ▪ At 12 month follow-up visit, between 49% (remove mats/rugs) and 75% (use non-slip bathmat) of recommendations had been made, with the exception of add rail to external stairs (19% compliance).

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Hornbrook et al. (1994) US	1. To determine whether non-fallers could reduce their likelihood of becoming fallers by adopting appropriate safety habits prior to suffering a fall; and, 2. Whether fallers would benefit from learning ways to reduce their chances of falling again. *Population group:* 65+ of a large HMO (mean=73 years)	*Study Design:* Random Control Trial *Data Collection:* 24 months *Power Rating* = 3 *Level* I B	Participants received a home inspection, and a safety booklet detailing common hazards and information on home repairs, including where to get assistance. Also invited to four weekly 90-minute classes and quarterly follow-ups to learn how to deal with environmental, behavioural, and physical risk factors. Participants encouraged to make home safety-related repairs and given financial and technical assistance to make the repairs (n=1455). *Control*: Received a home visit at which time they received a home inspection, informed of hazards, and given safety booklet that identified common hazards (n=1571).	▪ After adjusting for length of follow-up, rate of self-reported falls per 1000 person-years was 16% lower in intervention group (586) than in control group (699). ▪ After adjusting for age & gender, falls in previous six weeks prior to intervention, days hospitalized last year, chronic medical conditions, intervention group less likely to fall (Adj OR=0.85, p < .05) but no difference in falls resulting in injury (OR=0.93, ns).
Plautz et al. (1996) US	To determine to what extent an intervention that focused primarily on the reduction of environmental hazards in the home was feasible and could decrease the rates of falls, scalds, and burns *Population group:* Seniors 75+ and seniors 60+ who had fallen in the previous year (mean=75 years)	*Study Design:* Pre-post *Data Collection:* 6 months *Power Rating* = 3 *Level* II B	Participants counseled and given written material about injury risk factors due to home hazards. They also received a home assessment and home modifications were planned and completed for the participants. (n=141) *Control:* NA (pre-post)	▪ There was a significant decrease in falls from pre-intervention (59 falls, 0.810 falls per person-year) to post intervention (26 falls, 0.329 falls per person-year), t=2.73, p=0.007 as well as participants reporting one or more falls (35 (25%) pre vs. 13 (9%) post, chi-square=13.44, p < .001).

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Thompson (1996) Australia	To verify the results of a successful pilot program for reducing falls in the home through home modifications. *Population group:* Elderly (mean=74 years)	*Study Design:* Pre-post *Data Collection:* 12 months *Power Rating* = 3 *Level* II B	Participants received a home safety inspection and modifications were made either free of charge or subsidized (n=305). *Control:* NA (pre-post).	▪ 69 (22.6%) participants fell in their home in the year prior to the intervention compared to 29 (9.5%) after the intervention, a reduction of 58% (p<.05). The number of falls dropped from 121 to 45, a reduction of 63% (p<.05). Falls requiring medical treatment fell from 38 to 17, an improvement of 55% (p<.05). ▪ The study targeted 215 residences, 205 of which had one or more grab-rails fitted and 36 had floors treated to improve grip.

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Education Interventions

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Abreu et al. (1998) US	To explore the effectiveness of group versus home education in teaching fall prevention. *Population group:* Volunteers 60+ from the Little Council on Aging (mean=72 years)	*Study Design:* Quasi-experimental *Data Collection:* 2 months *Power Rating* = 1 *Level* IV B	*Intervention 1*: Group in-service on falls prevention through modification of risk factors (n=5). *Intervention 2:* Home visits that included identifying and information on modifying risk factors for falls (n=7).	▪ One fall occurred in the in-service group and no falls occurred in the home visit group.
Alkalay, Alcalay, & Sherry (1984) Israel	To determine whether specific preventive measures could significantly reduce falls *Population group:* Seniors	*Study Design:* Pre-post *Data Collection:* 6 months *Power Rating* = 1 *Level* IV B	Group session about the causes and prevention of falls. Individual sessions with family physician and nurse concerning importance of reducing non-essential drug intake, especially tranquilizers and sleeping pills (n=74). *Control:* NA (pre-post)	▪ 18 (24.3%) participants fell in the six-month pre-intervention compared to 5 (6.8%) in the six-month post-intervention. ▪ A considerable reduction in the use of tranquillizers and hypnotics and repairs and alterations were made in several homes to prevention accidents.
Robson et al. (un-published) Canada	To reduce risk factors and fall rates for seniors participating in a brief community intervention. *Population group:* Healthy seniors (mean=73 years)	*Study Design:* Random Control Trial *Data Collection:* 4 months *Power Rating* = 2 *Level* II B	Two ninety-minute group sessions. Session 1 participants learned about falling risks and completed self-assessment for their own behavioural, physical, and environmental risk factors. Participants urged to reduce risk factors and tips were given to do so, including an exercise video. Session 2 was a social opportunity for participants to share their experiences (n=235). *Control*: No intervention (n=236).	▪ No difference in falls between intervention and control groups (17% vs. 23%, ns). ▪ After adjusting for health status and living alone, a subgroup analysis of those who fell in the previous year revealed fewer treatment group (20%) than control group (33%) participants fell (Adj OR=2.16, p<.05). ▪ Among those who received the intervention, significant reductions were made in 7 out of 8 risk factors (paying attention, taking risks, footwear, foot care, vision, home hazards, balance, leg strength -- no change in medication).

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Ryan & Spellbring (1996) US	To pilot test the methodology of a fall prevention educational program and its influence on fall prevention among older women living in the community. *Population group:* Participants 65+ attending two senior meal sites (mean=78 years)	*Study Design:* Quasi-experimental *Data Collection:* 3 months *Power Rating* = 1 *Level* IV B	*Intervention 1*: One-hour group educational session that emphasized threat of falling, increase belief that specific activities could increase safety, and recommend cost effective interventions (n= 16). *Intervention 2:* Same as Intervention #1, only delivered in one-to-one sessions (n= 14). *Control*: One-hour health promotion session (n= 15).	▪ More control group (3) participants fell than group education (1) or one-to-one education (2). ▪ Overall, 31 participants made at least one fall prevention change. 61% of changes were categorized as personal/no cost, 32% as environmental with cost (under $20), and 7% as environmental/no cost.
Schoenfelder & Van Why (1997) US	To develop a fall prevention program for community-dwelling older adults and to assess participants' responses to recommended fall prevention strategies. *Population group:* Older adults (mean=75 years)	*Study Design:* Pre-post *Data Collection:* 3 months *Power Rating* = 1 *Level* IV B	Three session fall prevention education program that focused on raising awareness of the threat of falls, exercise as a fall prevention strategy, and home hazard identification and modification (n=14). *Control:* NA (pre-post)	▪ 46% (6 out of 13) participants reported falling in the previous year, at three month post-test, 2 out of 14 (14.3%) reported a fall. ▪ Two participants reported making changes to their home.

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			Medication Interventions	
Armstrong et al. (1996) UK	To determine the effect of oral hormone replacement therapy plus calcium compared with calcium alone on balance, muscle performance, and falls. *Population group:* Post-menopausal women who had suffered a wrist fracture in the previous 7 weeks (mean=61 years)	*Study Design:* Random Control Trial *Data Collection:* 11 months *Power Rating* = 1 *Level* IV B	Participants took calcium daily and oral hormone replacement therapy (n=53). *Control:* Participants took calcium daily (n=55).	▪ No differences in falls between groups (37% of all participants fell at least once). ▪ Calcium only group had significantly improved leg extensor power.
Campbell et al. (1999) New Zealand	To assess the effectiveness of psychotropic medication withdrawal and a home-based exercise program in reducing falls in older people. *Population group:* Seniors 65+ taking benzodiazepine, any other hypnotic, or any antidepressant or major tranquilizer (mean=75 years).	*Study Design:* Random Control Trial *Data Collection:* 10 months *Power Rating* = 3 *Level* I B	*Intervention 1*: Gradual medication withdrawal plus physiotherapist guided home exercise program that participants were to complete three times per week plus walk three times per week (n=24). *Intervention 2:* Gradual medication withdrawal only (n=24). *Intervention 3:* Exercise only (n=22). *Control:* No gradual medication withdrawal/no exercise (n=24).	▪ There was no difference in the unadjusted rate of falls for medication withdrawal versus no medication withdrawal (0.52 vs. 1.16 falls per person year, ns) or for exercise program versus no exercise program (0.71 vs. 0.97 falls per person year, ns). After adjusting for history of fall in previous year and total number of medications taken, the relative hazard for falls in the medication withdrawal group compared with the no medication withdrawal group was 0.34 (p<.05) and the relative hazard for the exercise program versus no exercise program was 0.87 (p<.05). Controlling for taking benzodiazepines and taking antidepressants did not change the magnitude or statistical significance of these relative hazard values. No interaction effect was found between the two interventions.

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Clinical Assessment Interventions				
Baraff et al. (1999) US	To determine the effect of a practice guideline for the Emergency Department management of falls in community-dwelling seniors. *Population group:* Seniors 65+ of an HMO who presented to an Emergency Department for a fall (mean=76 years)	*Study Design:* Cohort *Data Collection:* 12 months *Power Rating* = 3 *Level* II B	Practice guidelines were presented to the Emergency Department staffs as well as to internal medicine and family medicine care providers at the Emergency Department sites. Health information was also provided to the participants (n=597). *Control:* No intervention (n=907).	▪ There was no difference in the number of falls reported (36.2 fall/100 patient years at both pre- and post-intervention), nor any differences between pre- and post-intervention in the proportion of participants hospitalized for injuries, fractures, or falls. ▪ Compared to the pre-intervention, post-intervention participants were more likely to take daily calcium supplements and daily vitamin D.
Carpenter et al. (1990) UK	To test the benefits of regular surveillance of the elderly at home using an activity of daily living questionnaire administered by volunteers. *Population group:* Seniors 75+ who were members of a general practice	*Study Design:* Random Control Trial *Data Collection:* 2 months *Power Rating* = 3 *Level* I B	Participants received periodic home visits by volunteers to complete an 18-item ADL scale. Based on their ADL scores, volunteers visited participants either every six months (no disability) or every three months (disability). Individuals found to have an increased disability score were referred to their general practitioners and those with specific requests were referred to the appropriate agency (n=181). *Control:* No intervention (n=186).	▪ In the study group, there was no increase in falls, with 12 recorded at both initial and final interviews. In the control group, 36 falls were reported in the month before the final interview compared with 17 in the month before the first interview.

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Close et al. (1999) UK	To determine whether a structured bi-disciplinary assessment of elderly people who attend an accident and emergency department with a primary diagnosis of a fall could decrease the rate of further falls. *Population group:* Patients 65+ who attended the accident and emergency department with a primary diagnosis of a fall (mean=78 years)	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 3 *Level* I B	Baseline medical assessment plus detailed medical assessment and occupational assessment in addition to usual care. Based on this information, primary cause for fall was assigned and identified risk factors modified if possible. A single home visit was undertaken by an occupational therapist to assess patient function and home hazards and to provide advice and education. Minor home modifications were made with the patient's consent and minor equipment was supplied directly by the occupational therapist. Referrals were made for larger repairs or equipment (n=141). *Control*: Usual care (n=163)	▪ There were significantly fewer falls in the intervention group (183) than in the control group (510) (p=.0002). 32% (59) of intervention participants versus 52% (111) of control group participants reported at least one fall. There was no significant difference in the percentage reporting a fall resulting in serious injury 8 (4%) of intervention and 16 (8%) of control. After adjusting for function, cognition, and number of falls in previous year at baseline, the risk of falling was lower in the intervention group than control (Adj OR=0.39, p<.05) as well as the risk of recurrent falling (Adj OR=0.33, p<.05). ▪ Using the Barthel index as a measure of function, the intervention group had a significantly higher level of functioning than the control group at the end of the intervention, although both groups showed a decline from the beginning to the end of the study.
Fabacher et al. (1994) US	To evaluate the effectiveness of in-home geriatric assessment as a means of providing preventive health care and improving health and functional status of elderly veterans. *Population group:* Veterans 70+ (mean=73 years)	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 2 *Level* II B	In-home assessment by nurse or physician assistant that included physical examination, health behaviour inventory, medication review, functional status, and home hazard inspection. Participants then received a letter detailing results of assessment and recommendations. Each participant also received 4-month follow-up visits for one year by volunteers or staff members to assist with compliance, provide additional information, and detect new problems (n=100). *Control:* No intervention (n=95)	▪ No significant difference in the number of intervention (14%) and control (23%) participants reporting a fall. ▪ Of participants for whom a recommendation was made, 63% got a hearing evaluation, 83% got an eye examination, 71% modified their home to reduce the risk of falls, 54% increased their physical activity.

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Gallagher & Brunt (1996) Canada	To develop and evaluate a program designed to reduce falls among older people. **Population group:** Seniors 60+ (mean=75 years)	**Study Design:** Random Control Trial **Data Collection:** 6 months **Power Rating** = 1 **Level** IV A	Nurse conducted personal and home risk assessment and one counseling interview to provide feedback of results of risk assessment, ways to reduce risks, a motivational 13-minute video, and booklet entitled "Head Over Heals" (n=50). **Control:** No intervention (n=50)	▪ There were no significant differences in falls between the study and control group after adjusting for baseline differences (F=2.39, ns). ▪ Participants in the intervention group acted upon approximately 50% of the recommendations for fall risk reduction.
Vetter, Lewis, & Ford (1992) Wales	To assess whether intervention by a health visitor could reduce the number of fractures. **Population group:** Patients 70+ from general practices	**Study Design:** Random Control Trial **Data Collection:** 48 months **Power Rating** = 2 **Level** II B	Four-year intervention where health visitors visited participants at least once a year, those with health problems were visited more often. Risk factors targeted included poor nutrition, alcohol use, smoking, medication review, environmental hazards assessed and corrected, pressure put on local authorities to grit areas where these people lived when there was ice and snow, and exercise including fitness classes (n=450). **Control:** No intervention	▪ No differences between intervention and control groups in number who had sustained fractures (6.7% vs. 6.7%) or in the number experiencing a fall (40% vs. 31%, ns).

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Wagner et al. (1994) US	To reduce days of restricted activity in older adults by targeting risk factors for disability and falls. *Population group:* Seniors 65+ from a large HMO (mean=73 years)	*Study Design:* Random Control Trial *Data Collection:* 24 months *Power Rating* = 3 *Level* I B	Participants received a 60-90 minute visit with a specially trained nurse/educator to review their risk factors for falling and to develop a tailored follow-up plan to address identified risk factors and motivate seniors to increase physical and social activity. Follow-up options included interventions to address physical inactivity, excess drinking, home hazards, prescription drug use, and uncorrected hearing or visual impairments (referred or received information concerning resources in the community who could help) (n=635). *Control 1:* One-time visit from a nurse around chronic disease prevention (n=317). *Control 2:* Usual care (n=667)	▪ In the first year of follow-up, fewer participants in the experimental group (27.5%) reported falling than the usual care group (36.8%) due to a decrease in falls in the experimental group and an increase in the control group (difference = 9.3%, p < .01). Fewer participants in the experimental group (9.9%) than the control group (14.5%) reported a fall that resulted in injury (p<.01). There were no significant differences between groups during the second year of follow-up.
Weber et al. (1996) US	To reduce the incidence of injuries and accidents in the home and increase the senior's awareness of potential personal and environmental risks that could result in injury. *Population group:* Seniors (mean=81 years)	*Study Design:* Pre-post *Data Collection:* 6 months *Power Rating* = 1 *Level* IV B	Individualized home assessment that resulted in each participant receiving an individualized written intervention care plan as well as a general home safety pamphlet (n=201). *Control:* NA (pre-post)	▪ 46 (22.3%) participants fell in the 6-month intervention period compared to 105 (52.2%) who fell in the previous year. ▪ 133 (66%) implemented one or more of the suggested interventions, the most frequent changes were establishing a system for daily telephone contact (50), changing to sponge bathing to eliminate use of bathtub (47), obtaining a personal emergency response system (34), purchasing bath mats (32), and installing grab bars in bathroom (30).

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Multi-Factorial Interventions				
Bezon et al. (1999)

US | To describe a fall prevention project targeting low-income patients of a nurse-managed primary care clinic.

Population group:
Patients of a nurse run clinic located in the community of a housing project for the elderly and disabled (mean=70 years). | *Study Design:*
Pre-post

Data Collection:
12 months

Power Rating = 3
Level II B | Participants assessed for risk of falling using a risk assessment tool. Those scoring at high risk received an intervention to target identified risk factors. Interventions targeted control of chronic disease, medications, health lifestyle (diet and exercise), visual and hearing corrections, physical activity prescriptions, education, removing environmental hazards, exercise programs, footwear, and teaching the person how to fall and how to get up after a fall (n=115).

Control:
NA (pre-post) | ▪ At the first appraisal, 30 individual (20%) had fallen, one year after implementation, only 4 (3%) of the 115 participants sustained falls. There was no indication how the post data was collected. |
| Kempton et al. (2000)

Australia | To evaluate a multi-strategic, community-based intervention to prevent older people from falling

Population group:
Seniors 60+ | *Study Design:*
Cohort

Data Collection:
12 months

Power Rating = 3
Level II B | Four year multi-strategic intervention targeting fall-related knowledge, attitudes, behaviours, and risk factors including footwear, vision, physical activity, balance and gait, medication use, chronic conditions, and home and public safety hazards. Strategies included awareness raising, community education, policy development, home hazard reduction, media campaigns, and working with clinicians and other health care professionals (n=1314).

Control:
No intervention (n=1131) | ▪ No difference in falls or reduction in falls between groups pre to post. At follow-up there was a 20% lower age standardized rate of fall-related hospital admissions in the intervention relative to the control area (Rate ratio=0.80, $p<.05$).
▪ After adjusting for age and sex, there was a significant effect of the intervention on perceptions of falls being preventable, risk of falling, and benefits of safe footwear. |

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Poulstrup & Jeune (2000) Denmark	To determine whether a community-based intervention using existing care staff and facilities could prevent fall-related injuries. *Population group:* Seniors 65+	*Study Design:* Quasi-experimental *Data Collection:* 18 months *Power Rating* = 3 *Level* II A	Community-based program to address multiple risks, including fall risks, by education through mailed leaflets and talks; home visits to 70-79 year olds with the goal of informing, identifying, and reducing risk factors; and information on and identification of risk factors provided to home helpers of elderly (n=12,905; 5 municipalities). *Control*: No intervention (n=11,460; 4 municipalities)	▪ During the project period, a total of 2006 fall injuries were registered of which 56% were fractures. Using logistic regression, adjusted for age, gender, and marital status, there was a non-significant reduction of all fractures in the intervention group compared to the control group (Adj OR=0.85, ns). Women had a significant reduction in lower extremity fractures (Adj OR=0.54, p=.02), and just below significance for hip fractures (Adj OR=0.55, p=.06). No significant reductions were found among men.
Steinberg et al. (2000) Australia	To assess the effectiveness of multi-component interventions in reducing the incidence of slips, trips, and falls. *Population group:* Individuals who attended branches of the National Seniors Association (community group of active Australians)	*Study Design:* Quasi-experimental *Data Collection:* 17 months *Power Rating* = 2 *Level* III B	*Intervention 1*: Oral presentation, plus participants given video on home safety and pamphlet on fall risk factors and prevention (n=63). *Intervention 2:* Same as Intervention 1 plus one hour exercise class monthly plus exercise handouts and exercise video (n=69). *Intervention 3:* Same as I2 plus home safety assessment with financial and practical assistance to make home modifications (n=60). *Intervention 4:* Same as I3 plus a clinical assessment and advice on medical risk factors for falls (n=57).	▪ There were no differences in falls between groups either in total number of falls or the number of persons reporting a fall. However, the number of slips and trips were significantly higher in the education only group compared to the other three groups. Hazard ratios, adjusting for sex, age group, health status, living alone, history of previous slips/trips, and combining groups 2, 3, 4 which had very similar hazard ratios indicated that the interventions in the combined groups had a protective effect against the risk of slipping (0.42, p<.05), tripping (0.36, p<.05), and a marginally protective effect against falls (0.70, p=.058).

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Tinetti et al. (1994) US	To assess the effectiveness of a multi-factorial targeted risk-abatement strategy in reducing the risk of falls and targeted risk factors. *Population group:* HMO enrollees 70+ (mean=78 years)	*Study Design:* Random Control Trial *Data Collection:* 12 months *Power Rating* = 3 *Level* I A	Participants received an individualized intervention based on a baseline assessment. Interventions were for three months and included behavioural recommendations to reduce hypotension, education about sedative-hypnotic agents, review of medications with primary physician, training in transfer skills in bathroom and alterations to bathroom equipment, removal of home hazards/installation of safety devices, gait training/use of assistive devices, balance and strengthening exercises. Staff then contacted participants monthly for three additional months (n=147). *Control*: Received home visits from social work students during which structured interviews were conducted. The number of social visits was matched to the estimated number of visits by a nurse practitioner or physical therapist for intervention group participants with comparable risk factors (n=144).	• Longer time to first fall for intervention participants compared to control participants (p = 0.05) and in the proportion that fell (35% vs. 47%, OR=0.75, p =0.04). Intervention participants had 94 falls versus 164 for controls resulting in fewer falls per person week (OR = 0.64, p < .05). Little change in odds ratios after adjusting for age, sex, previous falls, and number of risk factors as well as the week of follow up for the incidence rate ratio. • Compared to baseline, 4.5 months later a significantly smaller percentage of the intervention group compared to the control group continued to use at least four prescription medications, to transfer unsafely to bathtub or toilet, or to have impairment in balance or gait. Overall, the intervention group had a mean decline of 1.1 in the total number of risk factors, as compared to a decrease of 0.6 in the control group (p=0.03).
Wolf-Klein et al. (1988) US	To evaluate the effectiveness of a clinic for reducing falls. *Population group:* Patients attending a falls clinic (mean=77 years)	*Study Design:* Pre-post/descriptive *Data Collection:* 12 months *Power Rating* = 3 *Level* II B	A health care team assessed patients for the possible causes of falling and interventions put in place as a result of the assessment including medical management, home environment adaptation, and education around appropriate equipment and precautions. Follow-up was included whenever necessary. (n=36) *Control:* NA (pre-post)	• Prior to attending the falls clinic, 18 (50%) patients fell monthly or more frequently, 14 fell semi-annually, and four had fallen only once in the past year. At one-year follow-up, 28 (77.7%) had experienced no additional falls and 6 (17%) continued to fall, but less frequently. Only two patients continued to fall as often as they had.

Author, Country	Study Purpose, Population group	Study Design, Data Collection, Power Rating, Level	Interventions, Control	Study Results
Ytterstad (1996) Norway	To describe a community-based program to prevent fractures resulting from falls. *Population group:* All seniors 65+ living in or around Harstad	*Study Design* Cohort *Data Collection:* 60 months *Power Rating* = 3 *Level* II A	As part of a larger, 5-year comprehensive, community-based program designed to prevent accidental injuries, an injury prevention group was formed consisting of hospital, public, and private organizations. The focus of the fall prevention component of the intervention was on detecting and preventing environmental hazards, both in and out of the home. Strategies included a health fair; media campaigns; home visits to promote environmental safety; healthy diet and lifestyle; reduction of isolation and inactivity; special health station for health consultations for seniors; fitness classes for seniors; greatly subsidized home modification service; anti-slip and safe footwear equipment was made available; and delivery of sand to homes for gritting driveways, stairs, and yards was arranged (n=8,120 person years [pre] & 14,850 person years [post]). *Control:* NA (pre-post)	▪ There were 152 fractures due to falls in private homes in period 1 (3 years) and 205 in period 2 (5 years), resulting in a significant reduction of 26.3%, (RR=0.74, p=0.006). Fractures occurring in traffic areas in winter were halved for men (RR=0.49 for 65-79 year old males, p=0.032 and 0.52 for 80+, ns but very small n). There were do differences in fractures in traffic areas for women.