Welcome

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- 6th Biennial ANZFPS Conference report
- Websites, Meetings and Conferences
- Recent Abstracts from the research literature

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FOR YOUR DIARY:

- HNELHD Falls Forum - 26th March 2015
- April Falls Day® and Month  2015 - plan now and order your resources
- Falls Network Forum - 22nd May 2015
Mini Review: Non-slip socks and falls prevention

Dr Esther Vance, Dr Jasmine Menant and Professor Stephen Lord, Falls and Balance Research Group, NeuRA

Falls related injuries continue to be a major issue for older people with a third of all people over 65 years living in the community falling each year (1). There are a number of risk factors that contribute to falls and footwear has been identified as one that is modifiable (2). It has been reported that older people often wear inappropriate footwear both inside and outside the home and this contributes to falls mostly due to slipping (3, 4). For example one study reported the risk of falls increased by up to 10 fold in older people who were barefoot or wearing socks or stockings compared with those wearing athletic style shoes (3). Older people generally wear slippers indoors and these are often ill-fitting and can increase the risk of injurious falls (5). In a study of older people who had sustained a fall related hip fracture, it was found that 75% were wearing inappropriate footwear (6). Recommendations have therefore been made on suitable footwear for older people to reduce the risk of falls (7, 8). These include wearing shoes indoors and outdoors with a firm thinner slip resistant sole, low square heel and supporting collar(7).

Many older patients are admitted to hospital without appropriate footwear or have foot problems (such as oedema) that can restrict the type of footwear they can wear. Patients with cognitive impairment or confusion (a major fall risk factor in the hospital setting) may also mobilise without adequate footwear. Patients may also need to wear anti-embolism stockings (though many of these now have non slip soles). The lack of appropriate footwear in these situations has led to recommendations by a number of Local Health Districts to use non slip socks for these patients. This mini-review examines the evidence for the use of non-slip socks to prevent slip-related falls.

Two studies have investigated the properties of slip resistant sock in young people. The first, by Hübscher and colleagues, showed that non slip socks improved slip resistance during gait in 24 healthy young people when compared to conventional socks and slippers (9). The second, by Chari and colleagues, analysed the slip resistance of commercially available non-slip socks and one compression stocking by testing in a laboratory as well as testing healthy adults’ ability to stand on a variable angle inclined platform topped with hospital grade vinyl (10). This study found that non slip socks showed poorer slip resistance than bare feet and were only marginally beneficial in slip resistance when compared to compression stockings on a dry surface (10).

Two other studies have included older people in their samples. The first study compared gait patterns in 21 young and 20 older healthy people in socks and barefoot conditions and found that older people in standard socks adopted a more cautious walking pattern with decreased walking speed and shortened stride compared with barefoot walking (11). The second, by Hatton and colleagues, studied 15 older people completing five trials of the Timed up and Go (TUG) test while barefoot, wearing standard socks and non-slip socks on a four-metre polished wooden walkway. The authors reported that non slip socks significantly improved gait performance compared to standard socks and that the older people adopted similar walking patterns as when walking barefoot; a finding suggesting non-slip socks may reduce the risk of slipping (12).
In summary, the above studies provide limited evidence that non-slip socks improve slip resistance on a variety of indoor surfaces and improve gait performance of older people when walking on slippery floors. Further studies are therefore required to confirm these findings and ensure they translate into a reduction in falls and falls injury. Related research findings indicate older people be screened for ill-fitting or inappropriate footwear and foot problems as part of a multifactorial falls risk assessment and recommendations made and information provided on safe footwear as well as referral to a podiatrist if indicated (8). Non slip socks could be used in this context, especially when appropriate footwear is not available.

References

7. Menant JS, JR; Menz, HB; Munro, BJ; Lord, SR. Optimizing footwear for older people at risk of falls. Journal of Rehabilitation Research and Development. 2008;46(8):1167-82.
8. Australian Commission on Safety and Quality in Healthcare. Preventing Falls and Harm from Falls in Older People: Best Practice Guideleines for Australian Hospitals, Residential Aged Care facilities and Community Care 2009.

Resources

The Clinical Excellence Commission (CEC) NSW Falls Prevention Program has produced a flyer for patients and carers on Falls Prevention - Foot care and Safe Footwear,

Northern Sydney and Central Coast Local Health Districts have flyers on Non-slip socks and Choosing the right shoes for patients and carers.
6th Biennial Australian and New Zealand Falls Prevention Society Conference

This conference was held from the 16-18th November 2014 at Luna Park in Sydney and was attended by 489 delegates from across Australia and New Zealand as well as Brazil, Canada, Germany, Malaysia, and Singapore. The Hon. Jillian Skinner MP, NSW Minister for Health and NSW Minister for Medical Research opened the conference. There were a range of plenary and concurrent session presentations and posters. Awards for best concurrent presentations were won by Ngaire Kerse on “Falls, frailty and mortality, Maori and non-Maori in advanced age: LiLACS NZ” and student Tijana Mihaljcic on “Self-awareness of falls risk in the older population”. The best poster was awarded to Natalie Allen “Risk factors for frequent falls in people with Parkinson’s disease”. The feedback from the conference was positive with over 82% of survey respondents rating the conference content and over 90% rating the plenary presentations as excellent or very good.

The keynote address on the first day was given by Prof Stephen Robinovitch from the Department of Biomedical Physiology and Kinesiology, Simon Fraser University in Canada and his presentation was on falls and injuries in older people in residential care where his group had analysed 1074 real falls in 358 people captured on video using networks of security cameras. The most frequent cause of falling was found to be incorrect weight shifting (41%) followed by trip or stumble (21%), hit or bump (11%), loss of support (11%), and collapse (11%), whereas slipping only caused 3% of the falls. They also found that 33% of these falls involved head impact, 43% hip impact, 33% knee and 69% hand/forearm. Stephen showed some of the videos which are also available on the Lancet website with the publication on this study http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)61263-X/abstract

The keynote address on the second was delivered by Professor Jeffrey Hausdorff, Department of Physical Therapy Sackler Faculty of Medicine and Sagol School of Neuroscience, Tel-Aviv University, Israel. This presentation reported on the use of body fixed sensors and brain imaging to study gait and falls risk as well as using these tools for therapy. A treadmill training program was used with a virtual reality environment that presents obstacles, different challenges and provides feedback. This study included older people with cognitive impairment and Parkinson’s Disease. Results from neural imaging showed changes in cognitive processes that are important for dual tasking.

A selection of the Plenary presentations were filmed (with permission) and they will be made available on the Australian and New Zealand Falls Prevention Society website at: http://www.anzfallsprevention.org/anzfps-conference-2014/
There were a range of trade exhibits including the NSW Falls Prevention Network and CEC NSW Falls Prevention Program. Over 150 delegates visited our stalls over the 2 days and found the range of resources we provided very useful.

More Photos from the Conference can be accessed at: https://www.flickr.com/photos/129396144@N02/
Websites, Meetings & Conferences

Australian Commission on Safety and Quality in Healthcare

A better way to care: Safe and high-quality care for patients with cognitive impairment (dementia and delirium) in hospital


The Commission has developed three resources to guide health service managers, clinicians and consumers in improving care of people with cognitive impairment. The resources follow a pathway, describing strategies that reflect evidence-based practice and existing models of care. The strategies can be linked to the existing NSQHS Standards.

The resources include:

- Actions for Health Service managers
- Actions for Clinicians
- Actions for Consumers

Agency For Clinical Innovation - Aged Health Network

Building Partnerships - A framework for integrating care for older people with complex needs


This Framework aims to support local health districts and local partnerships of agencies to redesign and implement improved models of care for older people. This Framework introduces the vision for this work and the guiding principles underpinning the work to improve care for older people in NSW. The focus of this Framework is to support local decision making and community partnerships with older people, their carers and families, NSW Health services, Medicare Locals (or Primary Health Networks), General Practitioners, community and residential aged care service providers.
Abstract

Exercise for reducing fear of falling in older people living in the community


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Abstract

BACKGROUND: Fear of falling is common in older people and associated with serious physical and psychosocial consequences. Exercise (planned, structured, repetitive and purposive physical activity aimed at improving physical fitness) may reduce fear of falling by improving strength, gait, balance and mood, and reducing the occurrence of falls.

OBJECTIVES: To assess the effects (benefits, harms and costs) of exercise interventions for reducing fear of falling in older people living in the community.

SEARCH METHODS: We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (July 2013), the Central Register of Controlled Trials (CENTRAL 2013, Issue 7), MEDLINE (1946 to July Week 3 2013), EMBASE (1980 to 2013 Week 30), CINAHL (1982 to July 2013), PsycINFO (1967 to August 2013), AMED (1985 to August 2013), the World Health Organization International Clinical Trials Registry Platform (accessed 7 August 2013) and Current Controlled Trials (accessed 7 August 2013). We applied no language restrictions. We handsearched reference lists and consulted experts.

SELECTION CRITERIA: We included randomised and quasi-randomised trials that recruited community-dwelling people (where the majority were aged 65 and over) and were not restricted to specific medical conditions (e.g. stroke, hip fracture). We included trials that evaluated exercise interventions compared with no intervention or a non-exercise intervention (e.g. social visits), and that measured fear of falling. Exercise interventions were varied; for example, they could be ‘prescriptions’ or recommendations, group-based or individual, supervised or unsupervised. DATA COLLECTION AND ANALYSIS: Pairs of review authors independently assessed studies for inclusion, assessed the risk of bias in the studies and extracted data. We combined effect sizes across studies using the fixed-effect model, with the random-effect model used where significant statistical heterogeneity was present. We estimated risk ratios (RR) for dichotomous outcomes and incidence rate ratios (IRR) for rate outcomes. We estimated mean differences (MD) where studies used the same continuous measures and standardised mean differences (SMD) where different measures or different formats of the same measure were used. Where possible, we performed various, usually prespecified, sensitivity and subgroup analyses.

MAIN RESULTS: We included 30 studies, which evaluated 3D exercise (Tai Chi and yoga), balance training or strength and resistance training. Two of these were cluster-randomised trials, two were cross-over trials and one was quasi-randomised. The studies included a total of 2878 participants with a mean age ranging from 68 to 85 years. Most studies included more women than men, with four studies recruiting women only. Twelve studies recruited participants at increased risk of falls; three of these recruited participants who also had fear of falling. Poor reporting of the allocation methods in the trials made it difficult to assess the risk of selection bias in most studies. All of the studies were at high risk of performance and detection biases as there was no blinding of participants and outcome assessors and the outcomes were self reported. Twelve studies were at high risk of attrition bias. Using GRADE criteria, we judged the quality of evidence to be ‘low’ for fear of falling immediately post intervention and ‘very low’ for fear of falling at short or long-term follow-up and all other outcomes. Exercise interventions were associated with a small to moderate reduction in fear of falling immediately post intervention (SMD 0.37 favouring exercise, 95% confidence interval (CI) 0.18 to 0.56; 24 studies; 1692 participants, low quality evidence). Pooled effect sizes did not differ significantly between the different scales used to measure fear of falling. Although none of the sensitivity analyses changed the direction of effect, the greatest reduction in the size of the effect was on removal of an extreme outlier study with 73 participants (SMD 0.24 favouring exercise, 95% CI 0.12 to 0.36). None of our subgroup analyses provided robust evidence of differences in effect in terms of either the study primary aim (reduction of fear of falling or other aim), the study population (recruitment on the basis of...
increased falls risk or not), the characteristics of the study exercise intervention or the study control intervention (no treatment or alternative intervention). However, there was some weak evidence of a smaller effect, which included no reduction, of exercise when compared with an alternative control. There was very low quality evidence that exercise interventions may be associated with a small reduction in fear of falling up to six months post intervention (SMD 0.17, 95% CI -0.05 to 0.38; four studies, 356 participants) and more than six months post intervention (SMD 0.20, 95% CI -0.01 to 0.41; three studies, 386 participants). Very low quality evidence from four studies indicated that exercise interventions did not appear to reduce symptoms of depression or increase physical activity. The only study reporting the effects of exercise interventions on anxiety found no difference between groups. No studies reported the effects of exercise interventions on activity avoidance or costs. It is important to remember that our included studies do not represent the totality of the evidence of the effect of exercise interventions on falls, depression, anxiety or physical activity as our review only includes studies that reported fear of falling.

AUTHORS’ CONCLUSIONS: Exercise interventions in community-dwelling older people probably reduce fear of falling to a limited extent immediately after the intervention, without increasing the risk or frequency of falls. There is insufficient evidence to determine whether exercise interventions reduce fear of falling beyond the end of the intervention or their effect on other outcomes. Although further evidence from well-designed randomised trials is required, priority should be given to establishing a core set of outcomes that includes fear of falling for all trials examining the effects of exercise interventions in older people living in the community.

Effects of exercise on dual-task ability and balance in older adults: a systematic review

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Abstract

The interest in research on exercise and physical activity effects on dual-task performance has grown rapidly in the last decade due to the aging global population. Most of the available literature is focused on exercise benefits for the risk of falls, attention, and gait-speed; however, there is a lack of evidence reporting the exercise effects on balance in healthy older adults during dual-task performance. The objective of this study was to critically review the existing evidence of a potential relationship between exercise and improvement of static and dynamic balance during dual-task in healthy older adults and secondary outcomes in other physical and cognitive indices. A systematic search using online databases was used to source articles. Inclusion criteria included articles classified as randomized controlled trials (RCT), controlled trials (CT) and uncontrolled trials (UT). Moreover, the studies had to include an exercise or physical activity protocol in the intervention. Eight studies met the eligibility criteria and included 6 RCTs, 1 CT, and 1 UT. Several limitations were identified, mainly focused on the lack of a common and standardized method to evaluate the balance during the dual-task performance. Additionally, exercise protocols were extensively different, and generally lacked reporting measures. Preliminary findings show that the current body of evidence does not support that exercises used in these interventions entail clear and noteworthy benefits on static or dynamic balance improvements during dual-task performance. Innovative measures and exercise programs may need to be developed before efficacious screening and treatment strategies can be used in clinical settings.

Polypharmacy and falls in the elderly: a literature review

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Abstract

Polypharmacy and falls in the elderly: a literature review

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Abstract

CONTEXT: Medications are taken to ease, control or cure ailments. They are effective and safe if used correctly. In the elderly, disorders that occur as a result of ageing, frequently require treatment, resulting in increased use of medications. Polypharmacy is common among the elderly and although it can be therapeutic in nature, is linked to adverse events such as falls.

EVIDENCE ACQUISITION: A review of the literature was conducted. English articles in Cinahl, Medline and Healthsource (2000-2012) were searched for links between polypharmacy and falls in older adults aged 65 years old and over. Articles not meeting the age criterion were excluded. Search terms included falls, polypharmacy, medications, multiple medications, medicines, elderly, aged. A total of 120 articles were retrieved from the Literature search.

RESULTS: Sixteen articles were included in the literature review. Four literature reviews, three observational prospective cohort, three cross-sectional, three case-control, one longitudinal study and two retrospective cohort studies were examined. Many studies were able to demonstrate a link between the number of medications taken and risk of falls however the potential for bias resulting from confounding by indication was high due to study design in many cases.

CONCLUSIONS: Polypharmacy as an independent variable has been linked to falls in older people, however there appears to be a stronger link between falls and the type of medications taken (e.g. medications known to increase risk of falls), rather than polypharmacy on its own. Polypharmacy can sometimes be therapeutic and it may be more beneficial to consider terms such as ‘inappropriate prescribing’ or potentially inappropriate medications’ when considering the effects of medication on falls in older adults. Polypharmacy in older people is often viewed in a negative light due to the increased risk of adverse events, including falls. This article examined current knowledge on the characteristics that define polypharmacy, its effect on falls in elderly people and provided recommendations for future research. Further research utilizing prospective and intervention studies are needed to clarify the causal relationship between polypharmacy, comorbidities and fall risk.

Screening for vitamin D deficiency: a systematic review for the U.S. Preventive Services Task Force

LeBlanc ES, Zakher B, Daeges M, Pappas M, Chou R.
(Copyright © 2014, American College of Physicians)
DOI 10.7326/M14-1659 PMID 25419719

Abstract

BACKGROUND: Vitamin D deficiency has been associated with adverse health outcomes.

PURPOSE: To systematically review benefits and harms of vitamin D screening in asymptomatic adults.

DATA SOURCES: Ovid MEDLINE (through the third week of August 2014), Cochrane Central Register of Controlled Trials, and Cochrane Database of Systematic Reviews.

STUDY SELECTION: Randomized trials of screening for and treatment of vitamin D deficiency and case-control studies nested within the Women’s Health Initiative.

DATA EXTRACTION: One investigator abstracted data, a second reviewed data for accuracy, and 2 investigators independently assessed study quality using predefined criteria.

DATA SYNTHESIS: No study examined the effects of vitamin D screening versus no screening on clinical outcomes. Vitamin D treatment was associated with decreased mortality versus placebo or no treatment (11 studies; risk ratio [RR], 0.83 [95% CI, 0.70 to 0.99]), although benefits were no longer seen after trials of institutionalized persons were excluded (8 studies; RR, 0.93 [CI, 0.73 to 1.18]). Vitamin D treatment was associated with possible decreased risk for having at least 1 fall (5 studies; RR, 0.84 [CI, 0.69 to 1.02]) and falls per person (5 studies; incidence rate ratio, 0.66 [CI, 0.50 to 0.88]) but not fractures (5 studies; RR, 0.98 [CI, 0.82 to 1.16]). Vitamin D treatment was not associated with a statistically significant increased risk for serious adverse events (RR, 1.17 [CI, 0.74 to 1.84]).

LIMITATION: Variability across studies in 25-hydroxyvitamin D assays and baseline levels, treatment doses, use of calcium, and duration of follow-up.

Epidemiology

Changes in gait performance over several years are associated with recurrent falls status in community-dwelling older women at high risk of fracture

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Abstract

BACKGROUND: gait analysis is a recommended geriatric assessment for falls risk and sarcopenia; however, previous research utilises measurements at a single time point only. It is presently unclear how changes in gait over several years influence risk of recurrent falls in older adults.

METHODS: we investigated 135 female volunteers (mean age ± SD: 76.7 ± 5.0 years; range: 70-92 years) at high risk of fracture. Gait parameters (speed, cadence, step length, step width, swing time and double support phase) were assessed using the GAITRite Electronic Walkway System at four annual clinics over ∼3.7 ± 0.5 years. Participants reported incident falls monthly for 3.7 ± 1.2 years.

RESULTS: increasing gait speed (odds ratio: 0.96; 95% confidence interval 0.93, 0.99) and step length (0.87; 0.77, 0.98) from baseline to final follow-up was associated with reduced likelihood of being a recurrent faller over the study period. No significant associations were observed for baseline gait parameters (all P ≥ 0.05). At the second follow-up (2.8 ± 0.6 years), an increase in swing time (0.65; 0.43, 0.98) was associated with reduced likelihood, while an increase in double support phase (1.31; 1.04, 1.66) was associated with increased likelihood, for being a recurrent faller in the subsequent 1.3 years following this time point.

CONCLUSION: changes in gait parameters over several years are significantly associated with the likelihood of being a recurrent faller among community-dwelling older women at high risk of fracture. Further research is required to develop gait monitoring guidelines and gait parameter decline cut points that may be utilised by clinicians to identify older adults at risk of incident falls and sarcopenia.

Visual impairment and the incidence of falls and fractures among older people: longitudinal findings from the Blue Mountains Eye Study

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(Copyright © 2014, Association for Research in Vision and Ophthalmology)

Abstract

PURPOSE: To assess the impact of visual impairment on the incidence of falls and fractures in older persons.

METHODS: Of 3654 baseline participants, 2334, 1952 and 1149 were re-examined after 5, 10 and 15-years. Presenting visual acuity (VA) was measured at each examination. Bilateral and unilateral visual impairment was defined as VA <20/40 in the better eye and worse eye, respectively. Incident visual impairment was defined in eyes with VA ≥20/40 at baseline which subsequently developed visual impairment. The incidence of falls was assessed over the 12-month period prior to each visit; whereas incidence of fractures were assessed over the...
5-year period between the two visits. Discrete logistic-regression models with time-dependant variables were used to assess associations between visual impairment and subsequent falls and fractures after adjusting for co-factors.

RESULTS: The proportions of participants reporting ≥2 falls ranged 10%-14%, and proportions reporting fractures ranged 12%-21%, across the three follow-up visits. Participants with incident visual impairment were more likely to report ≥2 falls in 5 years, OR 1.46, 95% CI 1.04-2.04 (bilateral visual impairment) and OR 1.22, 95% CI 0.98-1.51 (unilateral). Compared to participant with normal vision, those with incident unilateral visual impairment had a higher incidence of fractures over 5 years (OR 1.27, 95%CI 0.98-1.51). No increased incidence of falls or fractures was evident after 5+ years among participants with any visual impairment.

CONCLUSIONS: In this older cohort, more recent development of visual impairment was associated with increased likelihood of subsequent falls and fractures in the next 5 years, independent of co-morbidities.

Community-dwelling older people with an injurious fall are likely to sustain new injurious falls within 5 years - a prospective long-term follow-up study

Pohl P, Nordin E, Lundquist A, Bergström U, Lundin-Olsson L.

BMC Geriatr. 2014; 14: 120.

(Permission © 2014, BioMed Central)

Abstract

BACKGROUND: Fall-related injuries in older people are a leading cause of morbidity and mortality. Self-reported fall events in the last year is often used to estimate fall risk in older people. However, it remains to be investigated if the fall frequency and the consequences of the falls have an impact on the risk for subsequent injurious falls in the long term. The objective of this study was to investigate if a history of one single non-injurious fall, at least two non-injurious falls, or at least one injurious fall within 12 months increases the risk of sustaining future injurious falls.

METHODS: Community-dwelling individuals 75-93 years of age (n =230) were initially followed prospectively with monthly calendars reporting falls over a period of 12 months. The participants were classified into four groups based on the number and type of falls (0, 1, ≥2 non-injurious falls, and ≥1 injurious fall severe enough to cause a visit to a hospital emergency department). The participants were then followed for several years (mean time 5.0 years +/-1.1) regarding injurious falls requiring a visit to the emergency department. The Andersen-Gill method of Cox regression for multiple events was used to estimate the risk of injurious falls.

RESULTS: During the long-term follow-up period, thirty per cent of the participants suffered from at least one injurious fall. Those with a self-reported history of at least one injurious fall during the initial 12 months follow-up period showed a significantly higher risk for sustaining subsequent injurious falls in the long term (hazard ratio 2.78; 95% CI, 1.40-5.50) compared to those with no falls. No other group showed an increased risk.

CONCLUSIONS: In community-dwelling people over 75 years of age, a history of at least one self-reported injurious fall severe enough to cause a visit to the emergency department within a period of 12 months implies an increased risk of sustaining future injurious falls. Our results support the recommendations to offer a multifactorial fall-risk assessment coupled with adequate interventions to community-dwelling people over 75 years who present to the ED due to an injurious fall.

Fear of Falling

Effect of fall-related concerns on physical, mental, and social function in community-dwelling older adults: a prospective cohort study

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(Permission © 2014, John Wiley and Sons)
Abstract

OBJECTIVES: To determine the effect of fall-related concerns on physical, mental, and social function.

DESIGN: Community-based prospective cohort study (secondary analysis using control group data from a randomized controlled trial).

SETTING: Two municipalities in the south of the Netherlands.

PARTICIPANTS: Community-dwelling older adults (N = 260).

MEASUREMENTS: Two groups were created using Modified Falls Efficacy Scale scores (high and low levels of fall-related concerns). Five outcome measures representing physical, mental, and social function were included: activities of daily living (ADLs), symptoms of depression, feelings of anxiety, social participation, and social support interactions. Outcomes were measured at baseline and at 2, 8, and 14 months. Data were analyzed using analysis of covariance and mixed-effect regression models for longitudinal data, adjusting for age, sex, living status (alone or with another person), educational level, cognitive status, self-perceived health, and falls history at baseline.

RESULTS: At baseline, significantly more limitations in ADLs and social participation were found for older persons with high levels of fall-related concerns than for those with low levels of concern. These differences persisted over 14 months of follow-up and were consistent over time. No significant differences were found for symptoms of depression, feelings of anxiety, or social support interactions, except for feelings of anxiety at 14 months.

CONCLUSION: Older persons with higher levels of fall-related concerns reported up to 14 months poorer ADL and social participation for up to 14 months than those with lower levels of fall-related concerns. From a clinical point of view, the clear relationship between fall-related concerns and ADL dysfunction and social participation may help to target groups who are at risk of developing adverse consequences of concerns about falls.

Effects of communal exercise with visual and auditory feedback provided by a smart application on gait ability and fear of falling in Parkinson’s disease patients

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(Right © 2014, Korean Society of Exercise Rehabilitation)

Abstract

Parkinson’s disease is a chronically developing neurodegenerative disease showing typical motor symptoms of the following triad: resting tremor, freezing of gait, and bradykinesia-hypokinesia. In the present study, we investigated the effects of a communal exercise program, using the visual and auditory feedback provided by a smart application, to assess gait ability, fear of falling, and fall efficacy in Parkinson’s disease patients. Subjects consisted of 29 Parkinson’s disease patients who were non-demented individuals. The subjects were randomly divided into three groups: the control group (n= 9, CG), the communal exercise group using the smart application (n= 10, CCEG), and the individual exercise group using the smart application (n= 10, ICEG). The communal exercise program consisted of a warm up (10 min) followed by communal exercise using the smart application (40 min), and a cool down (10 min) for 3 days per week over 10 weeks. The results presented here show that velocity and cadence were significantly increased among groups. Step and stride length were significantly increased among times. Fear of falling and fall efficacy were significantly different among groups and times. In particular, fear of falling was lower and fall efficacy was higher in the CCEG than in the ICEG and CG. These findings indicate that 10 weeks of the communal exercise program using the smart application can be effective in improving gait ability, fear of falling, and fall efficacy in Parkinson’s disease patients.

Risk Factors

Impairment of balance in elderly subjects with type 2 diabetes

Lee IH, Park SY.

Abstract

PURPOSE: The purpose of this study was to investigate balance among elderly subjects with type 2 diabetes.

SUBJECTS AND METHODS: Twelve subjects with type 2 diabetes and 15 age-matched controls were examined. Balance was assessed by a computerized device while the subjects were standing. RESULTS: Subjects with diabetes exhibited significantly more sway than control subjects while standing on a balance platform. CONCLUSION: Our findings suggest that diabetes impairs balance when compared with that in normal elderly subjects.

Influence of dual task and frailty on gait parameters of older community-dwelling individuals

Guedes RC, Dias RC, Pereira LS, Silva SL, Lustosa LP, Dias JM.


Abstract

BACKGROUND: Gait parameters such as gait speed (GS) are important indicators of functional capacity. Frailty Syndrome is closely related to GS and is also capable of predicting adverse outcomes. The cognitive demand of gait control is usually explored with dual-task (DT) methodology.

OBJECTIVE: To investigate the effect of DT and frailty on the spatio-temporal parameters of gait in older people and identify which variables relate to GS.

METHOD: The presence of frailty was verified by Fried’s Frailty Criteria. Cognitive function was evaluated with the Mini-Mental State Exam (MMSE) and gait parameters were analyzed through the GAITRite(r) system in the single-task and DT conditions. The Kolmogorov-Smirnov, ANOVA, and Pearson’s Correlation tests were administered.

RESULTS: The participants were assigned to the groups frail (FG), pre-frail (PFG), and non-frail (NFG). During the DT, the three groups showed a decrease in GS, cadence, and stride length and an increase in stride time (p<0.001). The reduction in the GS of the FG during the DT showed a positive correlation with the MMSE scores (r=730; p=0.001) and with grip strength (r=681; p=0.001).

CONCLUSIONS: Gait parameters are more affected by the DT, especially in the frail older subjects. The reduction in GS in the FG is associated with lower grip strength and lower scores in the MMSE. The GS was able to discriminate the older adults in the three levels of frailty, being an important measure of the functional capacity in this population.

Is cognitive function a concern in independent elderly adults discharged home from the emergency department in Canada after a minor injury?


Abstract

OBJECTIVES: To describe the cognitive functioning of independent community-dwelling elderly adults visiting the...
emergency department (ED) for minor injuries and at 3- and 6-month follow-up assessments and to document the occurrence of falls, return to the ED, and hospital visits over time according to cognitive level.

DESIGN: Prospective cohort study. SETTING: Three Canadian EDs. PARTICIPANTS: Individuals aged 65 and older who were independent in basic activities of daily living, visiting the ED for minor injuries, and discharged home within 48 hours (N = 320). MEASUREMENTS: Participants completed the Montreal Cognitive Assessment (MoCA). New falls involving pain and ED or hospital visits were documented at 3 and 6 months.

RESULTS: At baseline, 62.4% of participants scored below the recommended cutoff of 26 on the MoCA, suggesting cognitive dysfunction, and 22.9% scored below a more-stringent cutoff of 21. MoCA scores had improved significantly at 3 and 6 months. Items showing the most improvement were delayed recall and verbal fluency. Persons with MoCA scores of less than 21 reported significantly more new falls and hospital visits 3 to 6 months after injury.

CONCLUSION: Cognition is not optimal in many community-dwelling elderly adults visiting an ED for a minor injury, which may affect their capacity to comprehend, recall, and adhere to medical recommendations after their injury and put them at risk of further negative health events such as falls.

Medication-related fall incidents in an older, ambulant population: the B-PROOF Study


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Abstract

BACKGROUND: Medication use is a potentially modifiable risk factor for falling; psychotropic and cardiovascular drugs have been indicated as main drug groups that increase fall risk. However, evidence is mainly based on studies that recorded falls retrospectively and/or did not determine medication use at the time of the fall. Therefore, we investigated the associations indicated in the literature between medication use and falls, using prospectively recorded falls and medication use determined at the time of the fall.

METHODS: Data from the B-PROOF (B-vitamins for the prevention of osteoporotic fractures) study were used, concerning community-dwelling elderly aged ≥65 years. We included 2,407 participants with pharmacy dispensing records. During the 2- to 3-year follow-up, participants recorded falls using a fall calendar. Cox proportional hazard models were applied, adjusting for potential confounders including age, sex, health status variables and concomitant medication use.

RESULTS: During follow-up, 1,147 participants experienced at least one fall. Users of anti-arrhythmic medication had an increased fall risk (hazard ratio [HR] 1.61; 95% confidence interval [CI] 1.12-2.32) compared with non-users. Similarly, non-selective beta-blocker use was associated with an increased fall risk (HR 1.41 [95% CI 1.12-1.78]), while statin use was associated with a lower risk (HR 0.81 [95% CI 0.71-0.94]). Benzodiazepine use (HR 1.32 [95% CI 1.02-1.71]), and antidepressant use (HR 1.40 [95% CI 1.07-1.82]) were associated with an increased fall risk. Use of other cardiovascular and psychotropic medication was not associated with fall risk.

CONCLUSION: Our results strengthen the evidence for an increased fall risk in community-dwelling elderly during the use of anti-arrhythmics, non-selective beta-blockers, benzodiazepines, and antidepressant medication. Clinicians should prescribe these drugs cautiously and if possible choose safer alternatives for older patients.

Is use of fall risk-increasing drugs in an elderly population associated with an increased risk of hip fracture, after adjustment for multimorbidity level: a cohort study

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Abstract

BACKGROUND: Risk factors for hip fracture are well studied because of the negative impact on patients and the community, with mortality in the first year being almost 30% in the elderly. Age, gender and fall risk-increasing drugs, identified by the National Board of Health and Welfare in Sweden, are well known risk factors for hip fracture, but how multimorbidity level affects the risk of hip fracture during use of fall risk-increasing drugs is to our knowledge not as well studied. This study explored the relationship between use of fall risk-increasing drugs in combination with multimorbidity level and risk of hip fracture in an elderly population.

METHODS: Data were from Ostergotland County, Sweden, and comprised the total population in the county aged 75 years and older during 2006. The odds ratio (OR) for hip fracture during use of fall risk-increasing drugs was calculated by multivariate logistic regression, adjusted for age, gender and individual multimorbidity level. Multimorbidity level was estimated with the Johns Hopkins ACG Case-Mix System and grouped into six Resource Utilization Bands (RUBs 0-5).

RESULTS: 2.07% of the study population (N = 38,407) had a hip fracture during 2007. Patients using opioids (OR 1.56, 95% CI 1.34-1.82), dopaminergic agents (OR 1.78, 95% CI 1.24-2.55), anxiolytics (OR 1.31, 95% CI 1.11-1.54), antidepressants (OR 1.66, 95% CI 1.42-1.95) or hypnotics/sedatives (OR 1.31, 95% CI 1.13-1.52) had increased ORs for hip fracture after adjustment for age, gender and multimorbidity level. Vasodilators used in cardiac diseases, antihypertensive agents, diuretics, beta-blocking agents, calcium channel blockers and renin-angiotensin system inhibitors were not associated with an increased OR for hip fracture after adjustment for age, gender and multimorbidity level.

CONCLUSIONS: Use of fall risk-increasing drugs such as opioids, dopaminergic agents, anxiolytics, antidepressants and hypnotics/sedatives increases the risk of hip fracture after adjustment for age, gender and multimorbidity level. Fall risk-increasing drugs, high age, female gender and multimorbidity level, can be used to identify high-risk patients who could benefit from a medication review to reduce the risk of hip fracture.

Delirium markers in older fallers: a case-control study
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Abstract

BACKGROUND: When a hospitalized older patient falls or develops delirium, there are significant consequences for the patient and the health care system. Assessments of inattention and altered consciousness, markers for delirium, were analyzed to determine if they were also associated with falls.

METHODS: This retrospective case-control study from a regional tertiary Veterans Affairs referral center identified falls and delirium risk factors from quality databases from 2010 to 2012. Older fallers with complete delirium risk assessments prior to falling were identified. As a control, non-fallers were matched at a 3:1 ratio. Admission risk factors that were compared in fallers and non-fallers included altered consciousness, cognitive performance, attention, sensory deficits, and dehydration. Odds ratio (OR) was reported (95% confidence interval [CI]).

RESULTS: After identifying 67 fallers, the control population (n=201) was matched on age (74.4±9.8 years) and ward (83.6% medical; 16.4% intensive care unit). Inattention as assessed by the Months of the Year Backward test was more common in fallers (67.2% versus 50.8%, OR=2.0; 95% CI: 1.1-3.7). Fallers tended to have altered consciousness prior to falling (28.4% versus 12.4%, OR=2.8; 95% CI: 1.3-5.8).

CONCLUSION: In this case-control study, alterations in consciousness and inattention, assessed prior to falling, were more common in patients who fell. Brief assessments of consciousness and attention should be considered for inclusion in fall prediction.
Interventions

Exposure-based CBT for older adults after fall injury: description of a manualized, time-limited intervention for anxiety
Affiliation: Weill Cornell Medical College.
(Copyright © 2014, Association for Advancement of Behavior Therapy, Publisher Elsevier Publishing)

Abstract
Fall accidents among older adults can be devastating events that, in addition to their physical consequences, lead to disabling anxiety warranting the attention of mental health practitioners. This article presents “Back on My Feet,” an exposure-based cognitive-behavioral therapy (CBT) protocol that is designed for older adults with posttraumatic stress disorder (PTSD), subthreshold PTSD, or fear of falling resulting from a traumatic fall. The protocol can be integrated into care once patients have been discharged from hospital or rehabilitation settings back to the community. Following a brief description of its development, the article presents a detailed account of the protocol, including patient evaluation and the components of the eight home-based sessions. The protocol addresses core symptoms of avoidance, physiological arousal/anxiety, and maladaptive thought patterns. Because older patients face different coping challenges from younger patients (for whom the majority of evidence-based CBT interventions have been developed), the discussion ends with limitations and special considerations for working with older, injured patients. The article offers a blueprint for mental health practitioners to address the needs of patients who may present with fall-related anxiety in primary care and other medical settings. Readers who wish to develop their expertise further can consult the online appendices, which include a clinician manual and patient workbook, as well as guidance on additional resources.

Primary prevention of falls: effectiveness of a statewide program
Affiliation: Steven M. Albert and Jennifer King are with the Department of Behavioral and Community Health Sciences, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA. Robert Boudreau, Tanushree Prasad, and Anne B. Newman are with the Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh. Chyongchiou J. Lin is with the Department of Family Medicine, School of Medicine, University of Pittsburgh.
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Abstract
OBJECTIVES: We examined a population-wide program, Pennsylvania’s Healthy Steps for Older Adults (HSOA), designed to reduce the incidence of falls among older adults. Older adults completing HSOA are screened and educated regarding fall risk, and those identified as being at high risk are referred to primary care providers and home safety resources.

METHODS: From 2010 to 2011, older adults who completed HSOA at various senior center sites (n = 814) and a comparison group of older adults from the same sites who did not complete the program (n = 1019) were recruited and followed monthly. Although participants were not randomly allocated to study conditions, the 2 groups did not differ in fall risk at baseline or attrition. We used a telephone interactive voice response system to ascertain the number of falls that occurred each month.

RESULTS: In multivariate models, adjusted fall incidence rate ratios (IRRs) were lower in the HSOA group than in the comparison group for both total (IRR = 0.83; 95% confidence interval [CI] = 0.72, 0.96) and activity-adjusted (IRR = 0.81; 95% CI = 0.70, 0.93) months of follow-up.

CONCLUSIONS: Use of existing aging services in primary prevention of falls is feasible, resulting in a 17% reduction in our sample in the rate of falls over the follow-up period.
Abstracts Continued
Recent abstracts from the research literature

Effects of a randomized controlled recurrent fall prevention program on risk factors for falls in frail elderly living at home in rural communities
Jeon MY, Jeong H, Lee H, Petrofsky J, Yim J.
Affiliation: Department of Physical Therapy, Sahmyook University, Seoul, Korea.
(Copyright © 2014, Medical Science International)

Abstract
BACKGROUND: Falling can lead to severe health issues in the elderly and importantly contributes to morbidity, death, immobility, hospitalization, and early entry to long-term care facilities. The aim of this study was to devise a recurrent fall prevention program for elderly women in rural areas. Material and Methods This study adopted an assessor-blinded, randomized, controlled trial methodology. Subjects were enrolled in a 12-week recurrent fall prevention program, which comprised strength training, balance training, and patient education. Muscle strength and endurance of the ankles and the lower extremities, static balance, dynamic balance, depression, compliance with preventive behavior related to falls, fear of falling, and fall self-efficacy at baseline and immediately after the program were assessed. Sixty-two subjects (mean age 69.2±4.3 years old) completed the program - 31 subjects in the experimental group and 31 subjects in the control group.

RESULTS: When the results of the program in the 2 groups were compared, significant differences were found in ankle heel rise test, lower extremity heel rise test, dynamic balance, depression, compliance with fall preventative behavior, fear of falling, and fall self-efficacy (p<0.05), but no significant difference was found in static balance.

CONCLUSIONS: This study shows that the fall prevention program described effectively improves muscle strength and endurance, balance, and psychological aspects in elderly women with a fall history.

Putting a new spin on things: evidence-based management of geriatric dizziness
Agrawal Y, McKinnon BJ, Rubin AM, Wetmore SJ.
(Copyright © 2014, American Academy of Otolaryngology - Head and Neck Surgery Foundation, Publisher Sage)

Abstract
PROGRAM DESCRIPTION: Dizziness and balance problems are very common in older adults. These problems can be vexing to manage for the otolaryngologist given that symptoms are often nonspecific, and multiple vestibular and nonvestibular factors are typically involved. In this miniseminar sponsored by the Geriatric Otolaryngology and Equilibrium Committees, we will review the latest evidence on how vestibular function changes with age and how this affects mobility and falls risk in older adults. We will discuss a practical, evidence-based approach to identifying important vestibular and nonvestibular contributing factors (eg, benign paroxysmal positional vertigo in elderly patients, orthostatic hypotension, specific medications), and strategies for managing these factors.

EDUCATIONAL OBJECTIVES: (1) Describe multiple contributing factors to dizziness in older adults. (2) Explain how vestibular function changes with aging and how this affects mobility and falls risk. (3) Enhance the diagnosis and management of vestibular dysfunction in older adults.

The influence of tai chi and yoga on balance and falls in a residential care setting: a randomised controlled trial
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Affiliation: Faculty of Health, School of Nursing and Midwifery, University of Newcastle, Callaghan, NSW, Australia.
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Abstract
Falls amongst older people is a global public health concern. Whilst falling is not a typical feature of ageing, older people are more likely to fall. Fall injuries amongst older people are a leading cause of death and disability. Many
Abstracts Continued

Recent abstracts from the research literature

Older people do not do regular exercise so that they lose muscle tone, strength, and flexibility which affect balance and predispose them to falls. The management of falls in residential care settings is a major concern with strategies for prevention and monitoring a focus in this setting. Yoga and tai chi have shown potential to improve balance and prevent falls in older adults. They also have potential to improve pain and quality of life. The aim of this study was to determine the feasibility of conducting a three-arm randomised controlled trial (RCT) with frail older people in a residential care setting to test the hypothesis that a 14-week modified tai chi or yoga programme is more effective than usual care activity in improving balance function, quality of life, pain experience and in reducing number of falls. There were no statistically significant differences between the three groups in the occurrence of falls. Yoga demonstrated a slight decrease in fall incidence; quality of life improved for the tai chi group. Only the yoga group experienced a reduction in average pain scores though not statistically significant. The findings of the study suggest it is possible to safely implement modified yoga and tai chi in a residential care setting and evaluate this using RCT design. They show positive changes to balance, pain and quality of life and a high level of interest through attendance amongst the older participants. The results support offering tai chi and yoga to older people who are frail and dependent with physical and cognitive limitations.

Handgrip strength and balance in older adults following withdrawal from long-term use of temazepam, zopiclone or zolpidem as hypnotics.


_BMC Geriatr_. 2014; 14: 121.

(Conflict © 2014, BioMed Central)

Abstract

BACKGROUND: Benzodiazepines and related drugs affect physical functioning negatively and increase fall and fracture risk. As impaired muscle strength and balance are risk factors for falls, we examined the effects of hypnotic withdrawal on handgrip strength and balance in older adult outpatients during and after long-term use of temazepam, zopiclone and zolpidem (here collectively referred to as “benzodiazepines”).

METHODS: Eighty-nine chronic users (59 women, 30 men) of temazepam, zopiclone or zolpidem aged >=55 years participated in a benzodiazepine withdrawal study. Individual physician-directed withdrawal was performed gradually over a one-month period and participants were followed up to six months. Handgrip strength was assessed using a handheld dynamometer, and balance using the Short Berg’s Balance Scale during the period of benzodiazepine use (baseline), and at 1, 2, 3 weeks, and 1, 2 and 6 months after initiating withdrawal. Withdrawal outcome and persistence were determined by plasma benzodiazepine-determinations at baseline and at four weeks (“short-term withdrawers”, n = 69; “short-term non-withdrawers”, n = 20), and by interviews at six months (“long-term withdrawers”, n = 34; “long-term non-withdrawers”, n = 55). Also most of the non-withdrawers markedly reduced their benzodiazepine use.

RESULTS: Within three weeks after initiating withdrawal, handgrip strength improved significantly (P ≤ 0.005) compared to baseline values. Among women, long-term withdrawers improved their handgrip strength both when compared to their baseline values (P = 0.001) or to non-withdrawers (P =0.004). In men, improvement of handgrip strength from baseline was not significantly better in withdrawers than in non-withdrawers. However, men did improve their handgrip strength values compared to baseline (P = 0.002). Compared to balance test results at baseline, withdrawals improved starting from the first week after withdrawal initiation. There was, however, only a borderline difference (P = 0.054) in balance improvement between the long-term withdrawers and long-term non-withdrawers. Of note, the non-withdrawers tended to improve their handgrip strength and balance compared to baseline values, in parallel with their reduced benzodiazepine use.

CONCLUSIONS: Withdrawal from long-term use of benzodiazepines can rapidly improve muscle strength and balance. Our results encourage discontinuing benzodiazepine hypnotics, particularly in older women who are at a high risk of falling and sustaining fractures. Trial registration: EU Clinical Trials Register: EudraCT2008000679530. Registered 31 October 2008.
Abstracts Continued
Recent abstracts from the research literature

Effects of a fall prevention exercise program on muscle strength and balance of the old-old elderly
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(Copyright © 2014, Society of Physical Therapy Science)

**Abstract**

PURPOSE: The purpose of this study was to investigate the effects of an 8-week balance exercise and elastic-resistance exercise program on muscle strength and balance of the old-old elderly (over the age of 75).

SUBJECTS AND METHODS: Fifty-five elderly persons were recruited from the community and assigned to three groups for convenience: balance exercise (intervention group 1; INT 1), resistance exercise (intervention group 2; INT 2), and control (CON) groups. The intervention was performed twice a week at a senior center and three times a week at home for 8 weeks. Muscle strength and balance were evaluated before and at the end of the trial, using a PowertrackII and Tetrax.

RESULTS: There were significant improvements in the strength of all seven muscle groups and balance in the INT 2 group. In the INT 1 group, there were significant improvements in the strength of all muscle groups except for the knee flexor and ankle plantar flexor muscle groups.

CONCLUSION: This study demonstrated that an intervention using balance exercises or elastic-resistance exercises is effective at improving the muscle strength and balance of the old-old elderly. These type of exercises should be appropriate for the physical characteristics of the subjects.

Prevention of potential falls of elderly healthy women: gait asymmetry
Seo J, Kim S.


(Copyright © 2014, Informa-Taylor and Francis Group)

**Abstract**

The study attempted to see if exercise training would alleviate gait asymmetry between nondominant and dominant legs, thus, eliminate the likelihood of slips. The present study provided 18 older adults exercise training for eight weeks and evaluated kinematics and ground reaction forces (GRFs) in both legs. Participants were randomly assigned to balance, weight, or control group. Each group met three times a week for eight weeks. Their pretraining and posttraining kinematic and GRFs data were taken while walking. Data analyses were performed in 2 (Time; pre and post) × 3 (Group; weight, balance, and control) × 2 (Leg; dominant and nondominant) mixed factor repeated measure ANOVA. The results indicated that nondominant legs' heel contact velocity decreased more in comparison to dominant legs' as the knee strength improved. Additionally, factors (PFz and RCOF) contributing to the likelihood of slips were improved after training in nondominant legs. The present study suggested that, after the training, asymmetrical gait or limb patterns could be alleviated, and this outcome may contribute to reductions in the likelihood of slips.

These abstracts have been sourced from SafetyLit.org

SafetyLit provides abstracts of peer reviewed articles from researchers who work in the more than 30 distinct professional disciplines relevant to preventing and researching unintentional injuries, violence, and self-harm. Each week citations and summaries of about 400 articles and reports are included in a pdf document or through an RSS subscription.
Joining the Network
To join the NSW Falls Prevention Network listserv, send an email to:

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In the body of the message type
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on the next line type end

Do not put anything in the subject line. You will receive an e-mail to confirm you have been added to the listserv.

To unsubscribe send an e-mail to:

majordomo@lists.health.nsw.gov.au

and in the body of the message type
unsubscribe nsw-falls-network
on the next line type end

If you have any problems, contact Esther Vance at e.vance@neura.edu.au.

Share your news and information/ideas
Do you have any news on Falls Prevention you want to share with others on the network, or do you want to report on a project that is happening in your area.

Please email Esther with your information. We also welcome suggestions for articles and information you would like to see in this newsletter.

Send your information to:

e.vance@neura.edu.au

The Network Listserv
It is great to see the increased activity on the listserv and we want to continue to promote this. To send an item to the listserv where all members of the network can see it, send an email to:

nsw-falls-network@lists.health.nsw.gov.au

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NSW Falls Prevention Network Background
The NSW Falls Prevention Network was established in 1993. The role of this network has grown since its inception and now includes:

• Meetings for discussion of falls related issues;
• Dissemination of research findings both local and international;
• Sharing resources developed and exploration of opportunities to combine resources in joint initiatives;
• Encouragement of collaborative projects and research;
• To act as a group to influence policy;
• To liaise with NSW Ministry of Health to provide information on current State/Commonwealth issues in relation to falls and
• Maintenance of resources pertinent to the field.

The main purpose of the network is to share knowledge, expertise and resources on falls prevention for older people.

The NSW Falls Prevention Network activities are part of the implementation of the NSW Falls Prevention Policy funded by the NSW Ministry of Health.

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