Falls

Current Awareness Newsletter

August 2015
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Useful for anybody who wants to find the best and quickest way to source articles.

**How to understand an article**

How to assess the strengths and weaknesses of published articles. Examining bias and validity.

**Medical Statistics**

A basic introduction to the key statistics in medical articles.

Giving an overview of statistics that compare risk, test confidence, analyse clinical investigations, and test difference.

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INTRODUCTION — Falls occur commonly in older individuals, and are a major health concern. Falls usually occur in elderly persons with multiple impairments in cognitive, sensory, and gait domains. Falls are therefore very common among older adults who are cared for in institutional healthcare settings, such as nursing homes, rehabilitation facilities, or acute hospitals.

The multifactorial and interacting causes of falls

- **Intrinsic risk factors**
  - Gait & balance impairment
  - Peripheral neuropathy
  - Vestibular dysfunction
  - Muscle weakness
  - Vision impairment
  - Medical illness
  - Advanced age
  - Impaired ADL
  - Orthostatic hypotension
  - Dementia
  - Drugs

- **Precipitating causes**
  - Trips & slips
  - Drop attack
  - Syncope
  - Dizziness
  - Acute medical illness

- **Extrinsic risk factors**
  - Environmental hazards
  - Poor footwear
  - Restraints

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New from the Cochrane Library

**Exercise for preventing falls in people with cancer living in the community**

Andrew D Williams¹, Marie-Louise Bird¹, Sibella G K King¹, Mark Kirschbaum², Kathryn J Ogden³

Editorial Group: Cochrane Pain, Palliative and Supportive Care Group

Published Online: 11 MAY 2015

**Abstract**

This is the protocol for a review and there is no abstract. The objectives are as follows:

To assess the effects of prescribed or provided exercise for reducing accidental falls incidence and to affect strength, flexibility, balance, and aerobic endurance, as these are major factors known to affect falls risk in cancer survivors living in the community.

New from NICE

**NICE pathways**

**Falls in older people overview**

This pathway covers the assessment and prevention of falls in older people both in the community and during a hospital stay.

Falls and fall-related injuries are a common and serious problem for older people. People aged 65 and older have the highest risk of falling, with 30% of people older than 65 and 50% of people older than 80 falling at least once a year.

The human cost of falling includes distress, pain, injury, loss of confidence, loss of independence and mortality. Falling also affects the family members and carers of people who fall. Falls are estimated to cost the NHS more than £2.3 billion per year. Therefore falling has an impact on quality of life, health and healthcare costs.

People aged 65 and older have the highest risk of falling, and all parts of the pathway apply to this age group. The part of the pathway about preventing falls during a hospital stay also applies to people aged 50 to 64 who are admitted to hospital and are judged by a clinician to be at higher risk of falling because of an underlying condition.
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Current Awareness Database Articles on Falls

Title: Design, delivery, and outcomes from an interprofessional fall prevention course.

Citation: Gerontology & Geriatrics Education, Jul 2015, vol. 36, no. 3, p. 278-301

Author(s): Dauenhauer, Jason A., Glose, Susan, Watt, Celia

Abstract: This article describes the development, delivery, and outcomes from an interprofessional evidence-based falls management course for undergraduate and graduate students. The 3-credit elective course was developed by a gerontological social work and nursing faculty member in partnership with community-based housing and case management organizations. Creation of the course was in response to a mandate by the Health Resources and Services Administration, funding source for federal Geriatric Education Centers, to train interprofessional students using an evidence-based approach while tying the outcomes to improved health measures in the target population. Therefore, this article describes student competencies pre- and postcourse completion and outcomes of community-dwelling older adults completing a Matter of Balance (MOB) program delivered by these students. A total of 16 students completed the course which included delivery of the MOB program to 41 older adults. Results indicate statistically significant improvements in student outcomes from a pre/post falls knowledge test. For older adult participants, many screened positively for fall risk factors pre–post MOB participation showed statistically significant improvements in falls efficacy, control, management, and overall mobility. Opportunities and challenges associated with course delivery are also described.

Title: Education programme helps prevent falls and related injuries in hospital trial.

Citation: Nursing standard (Royal College of Nursing (Great Britain) : 1987), Jul 2015, vol. 29, no. 47, p. 15.

Abstract: A falls prevention education intervention tested in a randomised controlled trial in Australian hospitals has proved successful in reducing falls, including in patients with cognitive impairment.

Title: The association of falls and various physical activities in Chinese nonagenarians/centenarians.

Citation: Archives of gerontology and geriatrics, Jul 2015, vol. 61, no. 1, p. 21-26

Author(s): Hao, Qiukui, Yang, Ming, Luo, Li, Hai, Shan, Ding, Xiang, Dong, Birong

Abstract: Little is known about the relationship between falls and various physical activities in the oldest old people. This study was conducted to observe the association of fall with various exercise habits and farm work in very old people. In this cross-sectional study of a
Chinese cohort of men and women aged 90-108 years, we observed the association of fall with habitual (current and former) farm work and exercise in very old people. The population included 805 unrelated Chinese nonagenarians and centenarians (68.94% of the subjects were women, with a mean age of 93.70 years). In the women, the subjects with a continuing exercise habit had a significantly lower prevalence of fall than those without an exercise habit; the subjects who had never exercised had a significantly higher prevalence of fall than those who exercised. In men, there was no significant difference in the prevalence of these habits between the subjects with and without fall. After adjusting for age, gender, body mass index, educational levels, life styles, vision levels and temperament, we found that current habitual farm work (OR=1.755 95% CI (1.107, 2.780)) and exercise OR=0.666 95% CI (0.445, 0.997) had a significant odds ratio for fall; among the females, continuing exercise (vs. having never exercised) had a significant odds ratio for fall (OR=0.620 95% CI (0.395, 0.973)). Habitual farm work might be positively associated with fall; however, habitual exercise might be negatively associated with fall in Chinese long-lived old people.

Title: Higher antihypertensive dose increases risk of falls in older people.

Citation: Evidence-based nursing, Jul 2015, vol. 18, no. 3, p. 96.

Author(s): Lee, David S H, Goeres, Leah M

Title: Need for improved recognition of in-hospital newborn falls.

Citation: Australian nursing & midwifery journal, Jul 2015, vol. 23, no. 1, p. 28-31, 2202-7114 (July 2015)

Author(s): Teuten, Polly, Bolger, Sarah, Paul, Siba Prosad

Title: Falls and Use of Assistive Devices in Stroke Patients with Hemiparesis: Association with Balance Ability and Fall Efficacy.

Citation: Rehabilitation nursing : the official journal of the Association of Rehabilitation Nurses, Jul 2015, vol. 40, no. 4, p. 267-274

Author(s): Kim, Oksoo, Kim, Jung-Hee

Abstract: This study investigates balance ability and the fall efficacy with regard to the experiences of stroke patients with hemiparesis. The experience of falling, the use of assistive devices, and each disease-related characteristic were assessed using face-to-face interviews and a self-reported questionnaire. The Berg Balance Scale and Fall Efficacy Scale were used to measure balance ability and confidence. The fall efficacy was significantly lower in participants who had experienced falls than those who had not. The participants who used assistive devices exhibited low balance ability and fall efficacy compared to those who did not use assistive devices. Stroke patients with fall experience and walking aids might be considered at increased risk of falling. Preventive measures for individuals using walking aids may be beneficial in reducing the fall rate of community-dwelling stroke patients.
Title: Functional Restriction for the Fear of Falling In Family Caregivers.

Citation: Medicine, Jul 2015, vol. 94, no. 27, p. e1090.

Author(s): Shen, Jing, Hu, Fangke, Liu, Fucun, Tong, Peijian

Abstract: Hip fractures often result from falls, and most family caregivers fear another fall. This study aimed to assess this fear in family caregivers and analyze its influence on functional recovery. This study was retrospectively performed by interview at the clinic or through telephone contact. The Falls Efficacy Scale International (FES-I) was used to assess fall-related feelings of patients and their family caregivers. Of the 539 patients studied, hip fracture was caused by a fall in 467 (86.6%). The mean FES-I value of the family caregivers was significantly lower than that of the patients (85.39 versus 99.02, P < 0.001). The mean patient functional recovery score (FRS) was 68.41. A fracture caused by a fall and recurrent fall-related fractures both reduced caregiver FES-I scores. The difference between patient and caregiver FES-I scores showed a significant positive correlation with the FRS (P < 0.001). Family caregivers were more concerned about falls than were patients. Furthermore, a greater difference in the fall-related reaction between caregivers and patients was associated with greater adverse effects on rehabilitation.

Title: Fall prevention and bathroom safety in the epilepsy monitoring unit.

Citation: Epilepsy & behavior : E&B, Jul 2015, vol. 48, p. 75-78

Author(s): Spritzer, Scott D, Riordan, Katherine C, Berry, Jennnifer, Corbett, Bryn M, Gerke, Joyce K, Hoerth, Matthew T, Crepeau, Amy Z, Drazkowski, Joseph F, Sirven, Joseph I, Noe, Katherine H

Abstract: Falls are one of the most common adverse events occurring in the epilepsy monitoring unit (EMU) and can result in significant injury. Protocols and procedures to reduce falls vary significantly between institutions as it is not yet known what interventions are effective in the EMU setting. This study retrospectively examined the frequency of falls and the impact of serial changes in fall prevention strategies utilized in the EMU between 2001 and 2014 at a single institution. Overall fall rate was 2.81 per 1000 patient days and varied annually from 0 to 9.02 per 1000 patient days. Both seizures and psychogenic nonepileptic events occurring in the bathroom were more likely to result in falls compared with events occurring elsewhere in the room. With initiation of increased patient education, hourly nurse rounding, nocturnal bed alarms, having two persons assisting for high fall risk patients when out of bed, and immediate postfall team review between 2001 and 2013, there was a trend of decreasing fall frequency; however, no specific intervention could be identified as having a particular high impact. In late 2013, a ceiling lift system extending into the bathroom was put in place for use in all EMU patients when out of bed. In the subsequent 15 months, there have been zero falls. The results reinforce both the need for diligent safety standards to prevent falls in the EMU as well as the challenges in identifying the most effective practices to achieve this goal.
Title: Trends in CT Utilization for Pediatric Fall Patients in US Emergency Departments.

Citation: Academic radiology, Jul 2015, vol. 22, no. 7, p. 898-903

Author(s): Shahi, Varun, Brinjikji, Waleed, Cloft, Harry J, Thomas, Kristen B, Kallmes, David F

Abstract: Falls are a common cause of emergency department (ED) visits in the United States. We evaluated trends in computed tomography (CT) utilization for pediatric fall victims in the United States from 2001 to 2010. Using the National Hospital Ambulatory Medical Care Survey from 2001 to 2010, we identified all visits of pediatric (aged <18 years) patients presenting to EDs after falls. This database surveys approximately 500 EDs per year for 4 weeks providing national estimates on ED resource utilization and outcomes. We studied trends in CT utilization and proportion of visits with life-threatening conditions after falls. We also studied the association between CT utilization rates and demographic characteristics and admission status. A total of 9763 unweighted observations for a total of 32,432,686 pediatric fall patients were seen in US EDs from 2001 to 2010. The proportion of pediatric fall patients receiving CT increased from 5.3% in 2001 to a peak of 16.6% in 2009 and decreased to 11.3% in 2010, whereas the proportion of pediatric fall patients with life-threatening conditions fluctuated between 1.2% and 3.3% during this period. In multivariate logistic regression analysis, each increasing year was independently associated with CT utilization (odds ratio [OR], 1.15; 95% confidence interval [CI], 1.14-1.16). Patients aged 0-1 years had higher odds of CT utilization than patients aged 13-17 years (OR, 2.27; 95% CI, 2.26-2.27). There was a twofold increase in CT utilization among pediatric fall visits from 2001 to 2010. When controlling for demographic and clinical variables, increasing year was independently associated with CT utilization. These findings suggest that CT may be overutilized among pediatric fall patients.

Title: Postural instability in parkinson disease: To step or not to step.

Citation: Journal of the Neurological Sciences, Jul 2015,

Author(s): Kimmell, Kristopher, Pulusu, Vinay K., Bharucha, Kersi J., Ross, Elliott D.

Abstract: Postural instability is a key feature of Parkinson Disease that is associated with falls and morbidity. We designed a pull apparatus to quantitatively measure the force needed to pull subjects off-balance. Thirteen Controls and eight individuals with Parkinson Disease (PD) were evaluated. All individuals with PD reported subjective symptoms of postural instability and were symptomatic for approximately 9.4 years when tested. No significant differences were found between Controls and PD subjects in the magnitude of force required to pull them off-balance. None of the Controls fell and all took a step into the direction of pull to maintain their balance. 59% of the time PD subjects fell because they did not take a step in the direction of pull to maintain their center of mass (COM) over their feet, thus indicating a deficiency in postural reflexes. If they fell on the first pull, PD subjects did not show a learning effect when pulled multiple times in the same direction. The utility of the Pull Test to detect postural instability is related to the subject's behavioral response, not the force needed to pull them off balance. Our findings may also help explain certain
features of the PD gait as an attempt by subjects to avoid postural instability by not placing their COM in gravitationally unstable positions.

**Title:** What Are the Characteristics of Home Exercise Programs That Older Adults Prefer?: A Cross-Sectional Study.

**Citation:** American journal of physical medicine & rehabilitation / Association of Academic Physiatrists, Jul 2015, vol. 94, no. 7, p. 508-521

**Author(s):** Simek, Emily M, McPhate, Lucy, Hill, Keith D, Finch, Caroline F, Day, Lesley, Haines, Terry P

**Abstract:** The aim of this study was to examine the preferences of older adults toward the structure and delivery of home exercise programs for the prevention of falls as well as the perceived benefits of and barriers to program adherence. A two-wave cross-sectional telephone survey of community-dwelling older adults was conducted in Victoria, Australia. Respondents were categorized as current, previous, or nonparticipants of a home exercise program in the last 6 yrs. Thematic analysis of open-response questions examining the preferences of current and previous participants toward participation in, and delivery of, home exercise programs for falls prevention was performed. A total of 245 respondents completed the follow-up survey. The respondents were classified as current (n = 54), previous (n = 22), or nonparticipants (n = 169) of a home exercise program in the last 6 yrs. Program adherence was influenced by the perceived effect of programs on physical and mental health, participant autonomy, and how well the program structure complemented individual exercise and lifestyle preferences. Adherence to home exercise programs for falls prevention is influenced by personal preferences toward program structure and delivery as well as perceived benefits of and barriers to program participation. To optimize participant adherence, service providers need to consider personal preferences and some flexibility in the program being delivered.

**Title:** Hyperventilation-induced respiratory alkalosis falls short of countering fatigue during repeated maximal isokinetic contractions.

**Citation:** European journal of applied physiology, Jul 2015, vol. 115, no. 7, p. 1453-1465

**Author(s):** Sakamoto, Akihiro, Naito, Hisashi, Chow, Chin Moi

**Abstract:** Hyperventilation, implemented during recovery of repeated maximal sprints, has been shown to attenuate performance decrement. This study evaluated the effects of hyperventilation, using strength exercises, on muscle torque output and EMG amplitude. Fifteen power-trained athletes underwent maximal isokinetic knee extensions consisting of 12 repetitions × 8 sets at 60°/s and 25 repetitions × 8 sets at 300°/s. The inter-set interval was 40 s for both speeds. For the control condition, subjects breathed spontaneously during the interval period. For the hyperventilation condition, subjects hyperventilated for 30 s before each exercise set (50 breaths/min, PETCO2: 20-25 mmHg). EMG was recorded from the vastus medialis and lateralis muscles to calculate the mean amplitude for each contraction. Hyperventilation increased blood pH by 0.065-0.081 and lowered PCO2 by 8.3-10.3 mmHg from the control values (P < 0.001). Peak torque declined with repetition and set
numbers for both speeds (P < 0.001), but the declining patterns were similar between conditions. A significant, but small enhancement in peak torque was observed with hyperventilation at 60°/s during the initial repetition phase of the first (P = 0.032) and fourth sets (P = 0.040). EMG amplitude also declined with set number (P < 0.001) for both speeds and muscles, which was, however, not attenuated by hyperventilation. Despite a minor ergogenic effect in peak torque at 60°/s, hyperventilation was not effective in attenuating the decrement in torque output at 300°/s and decrement in EMG amplitude at both speeds during repeated sets of maximal isokinetic knee extensions.

Title: Effects of customized balance exercises on older women whose balance ability has deteriorated with age.

Citation: Journal of Women & Aging, Jul 2015, vol. 27, no. 3, p. 237-250

Author(s): Narita, Makoto, Islam, Mohammed M., Rogers, Michael E., Koizumi, Daisuke, Takeshima, Nobuo

Abstract: Falls represent a major public health problem for older adults, and loss of balance (LOS) abilities is one of the primary causes of falls. Previous studies have shown that balance training is effective in improving physical function and decreasing risk of falls. However, little attention has been given specifically to balance training in older adults with very poor balance. The purpose of this study was to determine the effect of a 12-week customized balance exercise program on LOS for community-dwelling older women with poor balance ability. Twenty-four older women with poor balance (composite maximum excursion [MXEcomp] score of less than 70% based on Limits of Stability) were divided into an exercise group and control group. After 12 weeks of balance exercises, mean MXEcomp improved (p < .05) from 58.6% to 79.0% in the exercise group. EPEcomp (composite endpoint excursion), RTcomp (composite reaction time), SVcomp3 (composite sway velocity on thick foam with the eyes open), UG (up and go) also improved, but the functional reach and other static balance indexes did not change. These results indicated that balance training allows older adults with poor balance to improve dynamic balance ability and potentially reduce risk for falls.

Title: Effects of a Multimodal Exercise Program on Physical Function, Falls, and Injuries in Older Women: A 2-Year Community-Based, Randomized Controlled Trial.

Citation: Journal of the American Geriatrics Society, Jul 2015, vol. 63, no. 7, p. 1306-1313

Author(s): Patil, Radhika, Uusi-Rasi, Kirsti, Tokola, Kari, Karinkanta, Saija, Kannus, Pekka, Sievänen, Harri

Abstract: To investigate the effects of multimodal supervised exercise on physical functioning, falls, and related injuries in older women. Two-year randomized controlled trial. Tampere, Finland. Women aged 70 to 80 who had fallen in the previous year (n = 409). Participants were randomly assigned to an exercise or control group (ClinicalTrials.gov NCT00986466). Exercisers participated in group exercise classes twice a week for 12 months and once a week for the subsequent 12 months and home exercises. Controls maintained
their current physical activity. Physical functioning assessed at baseline and at 6-month intervals during the intervention. Falls and related injuries monitored with fall diaries. Intention-to-treat analyses showed that exercise led to significant improvements in physical functioning. Leg strength differed significantly between the groups (mean change: 14.1%, 95% confidence interval (CI) = 8.0 to 20.2 in exercisers; 1.6%, 95% CI = -4.5 to 7.7 in controls; P < .001). Chair stand time also differed significantly between groups (7.4%, 95% CI 3.8 to 10.8% in exercisers; 2.4%, 95% CI = -1.6 to 6.2) in controls; P = .02). Between-group differences were significant for fast walking speed (P = .003) and probability of completing the backward walking test (P < .001), favoring exercisers. Timed Up-and-Go and grip strength did not differ between groups. There was no difference in the total falls incidence rate ratio (IRR = 1.0, 95% CI = 0.79 to 1.26), but exercisers were less likely to have medically attended injurious falls (IRR = 0.45, 95% CI = 0.27 to 0.78; P = .004). Twenty-four months of multimodal exercise enhanced physical functioning in women aged 70 to 80 with a history of falls. Although the total number of falls was not lower than in controls, the rate of medically attended injurious falls was more than 50% lower.

Title: Older adults with chronic musculoskeletal pain are at increased risk of recurrent falls and the brief pain inventory could help identify those most at risk.

Citation: Geriatrics & gerontology international, Jul 2015, vol. 15, no. 7, p. 881-888

Author(s): Stubbs, Brendon, Eggermont, Laura, Patchay, Sandhi, Schofield, Pat

Abstract: Chronic musculoskeletal pain (CMP) and falls are common among community-dwelling older adults. The study aims were: (i) to investigate the relationship between CMP and any falls (≥1), single falls and recurrent falls (≥2) in community-dwelling older adults; and (ii) to determine the discriminative validity of the Brief Pain Inventory (BPI) to differentiate between non-fallers and (a) any and (b) recurrent fallers. A cross-sectional study involving 295 community-dwelling participants (mean age 77.5 ± 8.1 years, 66.4% female) was carried out. CMP was assessed and classified as none (comparison group), single and multisite (≥2). The BPI severity and interference subscales were used, and falls were recorded over 12 months. Data were analyzed with logistic regression and receiver operating characteristic curves (ROC). Over half of the participants (154/295, 52.2%) had CMP (41.6% single and 58.4% multisite pain). Participants with CMP were at increased risk of recurrent falls (OR 2.25, 95% CI 1.03-4.88), and this risk was highest in those with multisite CMP (OR 3.43, CI 1.34-8.65). The BPI severity subscale showed good discriminative ability to differentiate between recurrent and non-fallers with an area under the curve (AUC) of 0.731 (95% CI 0.635-0.826); a mean score of 5.1 had a sensitivity of 93.3% and specificity of 56.7%. The AUC for the BPI interference subscale was 0.724 (95% CI 0.630-0.818), and a cut-off score of 4.6 had a sensitivity of 84.4% and specificity of 57.8% Older adults with multisite CMP are at greatest risk of recurrent falls. In clinical settings, the BPI could prove useful to discriminate between recurrent and non-fallers.

Title: A Randomized Controlled Feasibility Trial of a Specific Cueing Program for Falls Management in Persons With Parkinson Disease and Freezing of Gait.

Citation: Journal of neurologic physical therapy : JNPT, Jul 2015, vol. 39, no. 3, p. 179-184
Author(s): Martin, Tara, Weatherall, Mark, Anderson, Tim J, MacAskill, Michael R

Abstract: Freezing of gait (FOG) increases fall risk in persons with Parkinson disease (PD). Cueing improves gait parameters associated with freezing, but it is unclear whether a cueing program can address falling. We used a parallel-groups delayed-(n = 12) or immediate-start (n = 9) randomized controlled trial design to evaluate a cueing exercise program for FOG and falls in participants with PD. Each group received preintervention falls monitoring, followed by a 6-month standardized, home-based, cueing exercise and education program. Participant questionnaires rated program value and compliance. Freezing was measured with the New Freezing of Gait Questionnaire (NFOGQ). Falls were recorded by weekly diaries. Self-reported adherence was high; 83% of participants reported exercising after 6 months. Participants reported that the program was beneficial (89%), walking improved (78%), falls were fewer (73%), and self-management of freezing improved (61%). Mean (standard deviation) NFOGQ scores were 14.8 (5.0), for the immediate (n = 10), and 16.0 (7.7) for the delayed group (n = 9), after 6 months (difference -1.0 [95% confidence interval, -7.9 to 6.0; P = 0.78]). With baseline NFOGQ scores as a covariate, the estimate of difference was -0.7 (95% confidence interval, -6.1 to 4.7; P = 0.79). The relative rate of falls for immediate compared with delayed groups was 1.22 (95% confidence interval, 0.45 to 3.26). The cueing program intervention is acceptable and participants feel they improve; however, this small feasibility study lacks statistical power to detect important changes in falls rates or FOG severity. A larger study is warranted to further investigate the potential to influence FOG and falls.

Title: FRAX (Aus) and falls risk: Association in men and women.

Citation: Bone, Jul 2015, vol. 76, p. 1-4

Author(s): Holloway, Kara L, Kotowicz, Mark A, Lane, Stephen E, Brennan, Sharon L, Pasco, Julie A

Abstract: The WHO fracture risk prediction tool (FRAX®) utilises clinical risk factors to estimate the probability of fracture over a 10-year period. Although falls increase fracture risk, they have not been incorporated into FRAX. It is currently unclear if FRAX captures falls risk and whether addition of falls would improve fracture prediction. We aimed to investigate the association of falls risk and Australian-specific FRAX. Clinical risk factors were documented for 735 men and 602 women (age 40-90 yr) assessed at follow-up (2006-2010 and 2000-2003, respectively) of the Geelong Osteoporosis Study. FRAX scores with and without BMD were calculated. A falls risk score was determined at the time of BMD assessment and self-reported incident falls were documented from questionnaires returned one year later. Multivariable analyses were performed to determine: (i) cross-sectional association between FRAX scores and falls risk score (Elderly Falls Screening Test, EFST) and (ii) prospective relationship between FRAX and time to a fall. There was an association between FRAX (hip with BMD) and EFST scores (β = 0.07, p < 0.001). After adjustment for sex and age, the relationship became non-significant (β = 0.00, p = 0.79). The risk of incident falls increased with increasing FRAX (hip with BMD) score (unadjusted HR 1.04, 95% CI 1.02,
1.07). After adjustment for age and sex, the relationship became non-significant (1.01, 95% CI 0.97, 1.05). There is a weak positive correlation between FRAX and falls risk score, that is likely explained by the inclusion of age and sex in the FRAX model. These data suggest that FRAX score may not be a robust surrogate for falls risk and that inclusion of falls in fracture risk assessment should be further explored. Copyright © 2015 Elsevier Inc. All rights reserved.

Title: Need for improved recognition of in-hospital newborn falls

Citation: Australian Nursing and Midwifery Journal, Jul 2015, vol. 23, no. 1, p. 28-31

Author(s): Teuten, Polly, Bolger, Sarah, Paul, Siba Prosad

Abstract: In-hospital newborn falls can be described as an event when a neonate falls to the hospital floor accidentally, either as a result of environmental factors or errors in judgement of the hospital staff or carer (Phalen and Smolenski, 2010; Paul et al. 2011). In-hospital newborn falls occur at a rate of 1.6 to 4.4 per 10,000 live births (Helsley et al. 2010), however this is likely to be an underestimate given that this remains an under-reported entity. The incidence data highlighted is based on studies from the United States but the findings can be reasonably transferred to the United Kingdom (UK) and other developed countries. A local guideline (from two tertiary maternity units in the UK) released in response to in-hospital newborn falls, has revealed an incidence figure of 15 per 10,000 births (Janiszewski and Lee, 2014).

Title: A theoretical and empirical review of psychological factors associated with falls-related psychological concerns in community-dwelling older people.

Citation: International Psychogeriatrics, Jul 2015, vol. 27, no. 7, p. 1071-1087

Author(s): Hughes, C. C., Kneebone, I. I., Jones, F., Brady, B.

Abstract: Background: Four constructs are encompassed by the term “falls-related psychological concerns” (FrPC); “fear of falling” (FOF), “falls-related self-efficacy” (FSe), “balance confidence” (BC) and “outcome expectancy” (OE). FrPC are associated with negative consequences including physical, psychological, and social. Identifying factors associated with FrPC could inform interventions to reduce these concerns. Methods: Sixty-two empirical papers relating to psychological factors associated with FrPC in community-dwelling older people (CDOP) were reviewed. Four levels of evidence were used when evaluating the literature: good, moderate, tentative, and none. Results: Evidence that anxiety predicted FOF, BC, and OE was tentative. Moderate evidence was found for anxiety predicting FSe. Good evidence was found for depression predicting FSe. Moderate evidence was found for depression predicting both FOF and BC. No evidence was found for depression predicting OE. Tentative evidence was found for FSe predicting depression. Good and moderate evidence was found for quality of life (QoL) being predicted by FOF and BC respectively. Tentative evidence was found for FSe predicting QoL. Moderate evidence was found for QoL predicting both FSe and BC. No evidence was found for QoL predicting FOF. Good and moderate evidence was found for activity avoidance/restriction (AA/AR) being
predicted by FOF and FSe respectively. Tentative evidence was found for BC and OE predicting AA/AR, as well as for AA/AR predicting FOF. Moderate evidence for activity level (AL) predicting FOF was identified, however the evidence of this predicting FSe and BC was tentative. Evidence for FOF, FSe, and BC predicting AL was tentative as was evidence to suggest FOF predicted coping. Conclusions: Mixed evidence has been found for the association of psychological factors in association with FrPCs. Future research should employ theoretically grounded concepts, use multivariate analysis and longitudinal designs.

**Title:** Functional assessments for predicting a risk of multiple falls in independent ambulatory patients with spinal cord injury.

**Citation:** The journal of spinal cord medicine, Jul 2015, vol. 38, no. 4, p. 439-445

**Author(s):** Srisim, Kitiyawadee, Saengsuwan, Jiamjit, Amatachaya, Sugalya

**Abstract:** Many ambulatory patients with spinal cord injury (SCI) encountered multiple falls and serious consequences after falls, but there was no quantitative practical measure for early identification of individuals at a risk of multiple falls. This study compared the utility of the Berg Balance Scale, Timed "Up & Go" Test, 10-Meter Walk Test, Functional Reach Test (FRT), Step Test, and Five Times Sit-to-Stand Test to predict risk of multiple falls (fall ≥2 times) in these individuals. Eighty-three independent ambulatory subjects with SCI were assessed for their functional abilities using the six tests. Then, their fall data were monitored prospectively every 2 weeks for 6 months in total. The first 25 subjects were also involved in the reliability tests. The FRT showed the best predictive ability for the risk of multiple falls (cut-off score ≥20 cm, sensitivity = 73%, specificity = 55%, area under the receiver characteristic curve = 0.64, and adjusted odd ratio = 3.18, P < 0.05), excellent inter-tester reliability, and good feasibility. The FRT may be used as a screening tool to predict risk of multiple falls in independent ambulatory individuals with SCI. However, with a moderate level of specificity, a further comprehensive test may be needed to clearly indicate individuals at a risk of falls. In addition, the findings suggest that a higher level of ability increases the risk of multiple falls. Thus, programs for functional integration in an actual environment may be needed to reduce the risk of falls for these individuals.

**Title:** Understanding the Relationship Between Walking Aids and Falls in Older Adults: A Prospective Cohort Study.

**Citation:** Journal of geriatric physical therapy (2001), Jul 2015, vol. 38, no. 3, p. 127-132

**Author(s):** Roman de Mettelinge, Tine, Cambier, Dirk

**Abstract:** A substantial proportion of older adults living in residential aged care facilities are use wheelchairs or walk with aids. The relationship between using walking aids and falling is somewhat inconsistent and poorly understood. To investigate the use of walking aids as a risk factor for future falls among older adults living in residential aged care facilities and to identify spatiotemporal gait parameters that mediate the potential relationship between walking aids and falling. Forty-three older adults (22 using walking aids and 21 not using walking aids) living in residential aged care facilities were enrolled in this study. Fall history,
fear of falling, and the use of psychotropic agents were registered. Spatiotemporal gait (GAITRite®), grip strength (Jamar®), and cognitive status (Mini-Mental State Examination and Clock Drawing Test) were assessed. Falls were prospectively recorded during a 12-month follow-up period using monthly calendars. Individuals using walking aids were older (P = .012), had a greater fear of falling (P = .017), and demonstrated a more conservative gait pattern compared with those not using walking aids. They walked slower (P < .001) and had a lower cadence (P < .001) and shorter step length (P = .018) and step time (P = .003). Twenty-two participants (15 using walking aids vs 7 not using walking aids) reported at least one fall ("fallers"). Univariate logistic regression identified using walking aids as a risk factor for future falls (odds ratio, 3.98; 95% confidence interval, 1.10-14.37; P = .035). A lower cadence, increased stance percentage, decreased swing percentage, increased age, and greater psychotropic drug intake were mediators that reduced the odds ratio of the relationship between using walking aids and faller status the most. Using walking aids is a risk factor for future falls among the older population living in residential settings. A substantial proportion of the relationship between walking aids and future falls could be explained by an altered spatiotemporal gait pattern, increased age, and psychotropic drug intake. This finding supports the aim of extensive training periods and appropriate instructions on the proper use of walking aids in terms of adequate and safe gait patterns.

Title: Medication use and fall-risk assessment for falls in an acute care hospital.

Citation: Geriatrics & gerontology international, Jul 2015, vol. 15, no. 7, p. 856-863

Author(s): Chiu, Ming-Huang, Lee, Hsin-Dai, Hwang, Hei-Fen, Wang, Shih-Chieh, Lin, Mau-Roung

Abstract: A nested case-control study was carried out to examine relationships of a fall-risk score and the use of single medications and polypharmacy with falls among hospitalized patients aged 50 years and older in Taiwan. There were 83 patients who experienced a fall during hospitalization in an acute-care hospital. Matched by age and sex, five control patients for each case were randomly selected from all other inpatients who had not experienced any fall at the time of the index fall. Patients who took tricyclic antidepressants, diuretics, and narcotics were 3.36-, 1.83- and 2.09-fold, respectively, more likely to experience a fall than their counterparts. Conversely, patients who took beta-blockers were 0.34-fold more likely than those who did not take them to experience a fall. Patients taking ≥6 medications were 3.08-fold more likely than those taking fewer medications to experience a fall, whereas those with anxiety were 4.72-fold more likely to experience a fall than those without. A high fall-risk score was not significantly associated with the occurrence of falls. Among older hospitalized patients, tricyclic antidepressants, diuretics, narcotics, and polypharmacy should be mindfully prescribed and reviewed on a regular basis. A fall-risk scale developed from community-dwelling older people might not accurately predict falls in hospitalized patients. Further research to validate the negative effect of beta-blocker use on falls is required.

Title: Fear of falling is common in patients with type 2 diabetes and is associated with increased risk of falls.
Abstract: Fear of falling is an important falls-related symptom that has received little attention in studies of falls risk in older adults with type 2 diabetes. Matched pairs of participants with diabetes or with normoglycaemia (n = 186 per group) recruited from a community-based survey underwent an assessment of fear of falling and associated falls risk factors. Multivariate methods examined associations between fear of falling and risk factors for history of recent falls. Compared with the normoglycaemic participants, those with diabetes had worse mobility (slow timed Up and Go test times: 16.2 versus 4.9%, P < 0.01), more fear of falling (24.2 versus 15.1%, P < 0.05) and more activity restriction from fear of falling (indoors: 14.0 versus 4.8%, P = 0.006), but there was no increase in reported recent falls. In the combined sample, a history of recent falls was negatively associated with fear-related limitation of outdoor activities (odds ratio (95% confidence interval): 0.30 (0.15-0.58), P < 0.001) and positively associated with age (1.65 (1.20-2.28) per 10-year increase, P = 0.002) and use of antidepressants (2.14 (1.02-4.50, P = 0.044). The frequency of falls in those with recurrent falls was negatively associated with measures of balance. Type 2 diabetes is associated with increased fear of falling and fear-associated activity restriction, and this modifies the risk of falls even in the face of increased falls risk factors including worse mobility. Future studies of falls in diabetes need to consider that fear of falling is an important modifier of the relationship between risk factors and falls.
Author(s): Ikutomo, Hisashi, Nagai, Koutatsu, Nakagawa, Norikazu, Masuhara, Kensaku

Abstract: There have been few reports on falls in patients who have undergone total hip arthroplasty (THA). In the present study, we aimed to investigate the incidence and circumstances of falls in post-THA patients and to identify the factors associated with falling. After excluding comorbidities, osteoarthritis without THA, and patients who had undergone THA within the previous 1 year, 214 patients [11 males, 203 females; mean (SD) age, 66.0 (8.7) years] living independently for at least 1 year after THA were analyzed as available data. Using a self-administered questionnaire, we investigated the number and circumstances of falls in the preceding year, as well as functional outcome and ambulatory ability via the Oxford Hip Score. Multivariate logistic regression analysis was used to identify factors influencing falls in post-THA patients. The incidence of at least one fall in the past year was 36 %. Falls were most often caused by tripping and falling forward during the daytime. In the present study, 37.7 % of falls resulted in injuries and 5.2 % resulted in fractures. Experience of fall was significantly related to medication [odds ratio (OR) 4.09, 95 % confidence interval (CI) 1.90-8.80, P < 0.001] and postoperative duration (OR 0.89, 95 % CI 0.81-0.98, P < 0.05). Thus, patients have an increased risk for falls and fall-induced injuries after THA. Falls in post-THA patients are associated with medication and shorter postoperative duration. Therefore, it is essential to prevent falls in patients who have undergone THA, particularly during the early postoperative period and among patients administered medications.

Title: Assessment of functional capability and on-going falls-risk in older institutionalized people after total hip arthroplasty for femoral neck fractures.

Citation: Archives of gerontology and geriatrics, Jul 2015, vol. 61, no. 1, p. 14-20

Author(s): Zak, Marek, Krupnik, Szymon, Puzio, Grzegorz, Staszczak-Gawelda, Izabela, Czesak, Joanna

Abstract: To estimate functional capability and attendant falls-risk in older institutionalized people after total hip arthroplasty (THA) for femoral neck fractures. The study population comprised 149 consecutive patients (F104, M45; mean age 83.4 years) who were permanent residents of nursing care facilities four weeks after THA for femoral neck fractures. Individual mental and functional capability status was assessed using the Mini Mental State Examination (MMSE), Timed Up and Go test (TUG) and Tinetti’s Performance Oriented Mobility Assessment (POMA) which includes sub-scales for balance (B) and gait (G), in conjunction with identifying any concomitant disorders, reviewing individual pharmacotherapy and leisure time activities. The subjects’ mean MMSE was 23.1 points, whereas in Tinetti’s POMA they scored 19 points on average, which translated into a five-fold greater falls-risk, whereas average TUG scores of 23.9s effectively corroborated this assertion. Multiple regression analysis effectively highlighted that TUG scores were strongly correlated with the actual number of concomitant disorders, number of regularly taken medications, and usual manner of spending leisure time. Institutionalized older people after THA for femoral neck fracture continue to be exposed to high risk of recurrent, possibly
injurious falls, which is closely correlated with significantly diminished individual functional
capabilities.

**Title:** Translating a Fall Prevention Intervention Into Practice: A Randomized Community Trial

**Citation:** American Journal of Public Health, Jul 2015, vol. 105, no. 7, p. 1475-1481

**Author(s):** Guse, Clare E, Peterson, Donna J, Christiansen, Ann L, Mahoney, Jane, Laud, Purushottam, Layde, Peter M

**Abstract:** We examined whether community translation of an effective evidence-based fall prevention program via standard monetary support can produce a community-wide reduction in fall injuries in older adults and evaluated whether an enhanced version with added technical support and capacity building amplified the fall reduction effect. We completed a randomized controlled community trial among adults aged 65 and older in (1) 10 control communities receiving no special resources or guidance on fall prevention, (2) 5 standard support communities receiving modest funding to implement Stepping On, and (3) 5 enhanced support communities receiving funding and technical support. The primary outcome was hospital inpatient and emergency department discharges for falls, examined with Poisson regression. Compared with control communities, standard and enhanced support communities showed significantly higher community-wide reductions (9% and 8%, respectively) in fall injuries from baseline (2007-2008) to follow-up (2010-2011). No significant difference was found between enhanced and standard support communities. Population-based fall prevention interventions can be effective when implemented in community settings. More research is needed to identify the barriers and facilitators that influence the successful adoption and implementation of fall prevention interventions into broad community practice.

**Title:** Randomised controlled trial of the effectiveness of community group and home-based falls prevention exercise programmes on bone health in older people: the ProAct65+ bone study.

**Citation:** Age and ageing, Jul 2015, vol. 44, no. 4, p. 573-579

**Author(s):** Duckham, Rachel L, Masud, Tahir, Taylor, Rachael, Kendrick, Denise, Carpenter, Hannah, Iliffe, Steve, Morris, Richard, Gage, Heather, Skelton, Dawn A, Dinan-Young, Susie, Brooke-Wavell, Katherine

**Abstract:** Exercise can reduce osteoporotic fracture risk by strengthening bone or reducing fall risk. Falls prevention exercise programmes can reduce fall incidence, and also include strengthening exercises suggested to load bone, but there is little information as to whether these programmes influence bone mineral density (BMD) and strength. To evaluate the skeletal effects of home (Otago Exercise Programme, OEP) and group (Falls Exercise Management, FaME) falls prevention exercise programmes relative to usual care in older people. Men and women aged over 65 years were recruited through primary care. They were randomised by practice to OEP, FaME or usual care. BMD, bone mineral content (BMC)
and structural properties were measured in Nottingham site participants before and after the 24-week intervention. Participants were 319 men and women, aged mean(SD) 72(5) years. Ninety-two percentage of participants completed the trial. The OEP group completed 58(43) min/week of home exercise, while the FaME group completed 39(16) and 30(24) min/week of group and home exercise, respectively. Femoral neck BMD changes did not differ between treatment arms: mean (95% CI) effect sizes in OEP and FaME relative to usual care arm were -0.003(-0.011,0.005) and -0.002(-0.010,0.005) g cm(-2), respectively; P = 0.44 and 0.53. There were no significant changes in BMD or BMC at other skeletal sites, or in structural parameters. Falls prevention exercise programmes did not influence BMD in older people. To increase bone strength, programmes may require exercise that exerts higher strains on bone or longer duration.

Title: Falls Associated with Muscle Strength in Patients with Knee Osteoarthritis and Self-reported Knee Instability.

Citation: The Journal of Rheumatology, Jul 2015, vol. 42, no. 7, p. 1218-1223


Abstract: We aimed to evaluate the associations between knee muscle strength (MS) and falls, controlling for knee joint proprioception, varus-valgus knee joint laxity, and knee pain, among patients with knee osteoarthritis (OA) reporting knee instability. A sample of 301 subjects (203 women, 98 men, 35-82 yrs) with established knee OA and self-reported knee instability was studied. The occurrence of at least 1 fall in the previous 3 months was assessed by questionnaire. Maximum knee extension and flexion strength were measured isokinetically. Additionally, proprioception, varus-valgus laxity, and pain were assessed. Student t tests were used to assess differences between subgroups. The association of muscle strength and falls was calculated using univariate and multivariate logistic regression analysis. Over 10% of the subjects (31 out of 301) reported a fall in the previous 3 months. High knee extension muscle strength (crude OR 0.3, 95% CI 0.1-0.8, p = 0.022) and high knee flexion muscle strength (crude OR 0.2, 95% CI 0.0-1.0, p = 0.048) were associated with a lower risk of falls. Proprioception and laxity did not confound this relationship. After adjusting for pain, extensor strength had an adjusted OR of 0.5 (95% CI 0.2-1.4, p = 0.212) for falls and flexor strength had an adjusted OR of 0.4 (95% CI 0.1-2.3, p = 0.312). High knee extension and flexion muscle strength decreased the risk of falls in patients with knee OA and self-reported knee instability. After considering the effect of pain, there was insufficient statistical power to detect an association between muscle strength and falls, which might be because of the low number of subjects who fell (n = 31).

Title: Reexamining the Effect of Antihypertensive Medications on Falls in Old Age.

Citation: Hypertension, Jul 2015, vol. 66, no. 1, p. 183-189

Author(s): Lipsitz, Lewis A, Habtemariam, Daniel, Gagnon, Margaret, Iloputaife, Ikechukwu, Sorond, Farzaneh, Tchalla, Achille E, Dantoine, Thierry F, Travison, Thomas G
Abstract: Conflicting data on the relationship between antihypertensive medications and falls in elderly people may lead to inappropriate undertreatment of hypertension in an effort to prevent falls. We aimed to clarify the relationships between the chronic use of different classes of antihypertensive medications and different types of falls, to determine the effect of medication dose, and to assess whether the risk of falls is associated with differences in cerebral blood flow. We assessed demographics, clinical characteristics, and chronic antihypertensive medication use in 598 community-dwelling people with hypertension, aged 70 to 97 years, then followed them prospectively for self-reported falls using monthly calendar postcards and telephone interviews. Antihypertensive medication use was not associated with an increased risk of falls. Participants reporting use of angiotensin-converting enzyme inhibitors had a significantly decreased 1-year risk of injurious falls (odds ratio, 0.62; 95% confidence interval, 0.39-0.96), whereas those using calcium channel blockers had a decreased risk of all falls (odds ratio, 0.62; 95% confidence interval, 0.42-0.91) and indoor falls (odds ratio, 0.57; 95% confidence interval, 0.36-0.91), compared with participants not taking these drugs. Larger doses of these classes were associated with a lower fall risk. Participants taking calcium channel blockers had higher cerebral blood flow than those not taking these medications. In relatively healthy community-dwelling elderly people, high doses of antihypertensive agents are not associated with an increased risk of falls.

Title: Effectiveness of a home hazard modification program for reducing falls in urban community-dwelling older adults: A randomized controlled trial.

Citation: Japan journal of nursing science : JJNS, Jul 2015, vol. 12, no. 3, p. 184-197

Author(s): Kamei, Tomoko, Kajii, Fumiko, Yamamoto, Yuko, Irie, Yukako, Kozakai, Rumi, Sugimoto, Tomoko, Chigira, Ayako, Niino, Naoakira

Abstract: To evaluate the potential improvement of fall prevention awareness and home modification behaviors and to decrease indoor falls by applying a home hazard modification program (HHMP) in community-dwelling older adults followed up to 1 year in this randomized controlled trial. The present authors randomly assigned 130 older adults living in the Tokyo metropolitan region to either the HHMP intervention group (n = 67) or the control group (n = 63). Both groups received four, 2 h fall prevention multifactorial programs including education regarding fall risk factors, food and nutrition, foot self-care, and exercise sessions. However, only the HHMP group received education and practice regarding home safety by using a model mock-up of a typical Japanese home. The mean age of the HHMP group was 75.7 years and the control group 75.8. The HHMP group showed a 10.9% reduction in overall falls, and falls indoors showed an 11.7% reduction at 52 weeks. Those aged 75 years and over showed a significant reduction in both overall falls and indoor falls at 12 weeks. Fall prevention awareness and home modifications were significantly improved in the HHMP group. HHMP has the potential to improve fall prevention awareness and home modification behaviors, and specifically decreased overall and indoor falls in 12 weeks in those aged 75 years and older in community-dwelling older adults.

Title: AF is associated with self-reported syncope and falls in a general population cohort.
**Citation:** Age and ageing, Jul 2015, vol. 44, no. 4, p. 598-603

**Author(s):** Jansen, Sofie, Frewen, John, Finucane, Ciaran, de Rooij, Sophia E, van der Velde, Nathalie, Kenny, Rose Anne

**Abstract:** Syncope is an important, but underestimated clinical problem in older persons. It is often overlooked in clinical practice or mistaken for falls. Atrial fibrillation (AF) is the most common cardiac arrhythmia, but little evidence exists regarding the association between AF, falls and syncope in the general population. Cross-sectional analyses within a population sample of people aged 50+, taken from The Irish Longitudinal Study on Ageing. Ten-minute electrocardiogram recordings (n = 4,885) were analysed to detect AF. Syncope (self-reported faints or blackouts) and falls in the past year, co-morbidities, health measures and medications were gathered through computer-aided personal interviews. Multivariable logistic regression was performed to study associations between AF, falls and syncope. Mean age was 62 years (range: 50-91), 54% were female. Prevalence of AF was 3%, increasing to 8% in participants aged 75+. Of participants, 5% (n = 223) reported syncope and 20% (n = 972) reported falls. After adjustment for confounders, AF was significantly associated with faints and blackouts (odds ratio (OR) 2.0 [95% confidence interval (CI) 1.0-3.9]). After stratification by age category, we found that this association was strongest and only significant in participants aged 50-64 years (OR 4.4 [1.5-12.6]). Stratified for age group, AF was significantly associated with falls in participants aged 65-74 years (OR 2.0 [1.0-4.1]). Adults aged 50+ with self-reported syncope and adults aged 65-74 years with falls are twice as likely to have AF at physical examination. These associations are independent of stroke, cardiovascular and psychotropic drugs and other confounders. Further longitudinal studies are needed to explore this association and potential causality further.

**Title:** Ankle dorsiflexion may play an important role in falls in women with fibromyalgia.

**Citation:** Clinical biomechanics (Bristol, Avon), Jul 2015, vol. 30, no. 6, p. 593-598

**Author(s):** Góes, Suelen M, Leite, Neiva, Stefanello, Joice M F, Homann, Diogo, Lynn, Scott K, Rodacki, André L F

**Abstract:** Fibromyalgia is a chronic pain condition, which involves reduced range of motion. This leads to gait changes and high incidence of falls. The understanding of the gait patterns in subjects with fibromyalgia and their relationship with falls may be useful when designing intervention programs. The purpose of this study was to evaluate the range of motion of the hip and ankle joints during gait in women with and without fibromyalgia. Further, we determined the relationship between joint range of motion and falls in this population. Middle-aged women (16 with fibromyalgia and 16 as control group) were recruited. Pain intensity, physical activity level, and fall prevalence were assessed. Three dimensional gait analysis provided temporal and joint kinematic variables. In general, hip and ankle range of motion were similar between groups, except that fibromyalgia group showed higher plantar flexion during toe-off (P<0.05) and reduced dorsiflexion during stance phase (P<0.05). Additionally, in the fibromyalgia group the higher number of falls was correlated to reduced dorsiflexion during stance phase. This limitation in dorsiflexion was related to longer length
of time with fibromyalgia symptoms. Women with fibromyalgia showed a higher number of falls, reduced dorsiflexion during stance phase, and increased plantar flexion during toe-off. Also, the higher number of falls reported in the fibromyalgia group was related to reduced dorsiflexion during stance phase, which was correlated to a longer length of time living with fibromyalgia symptoms. These data suggest that improving ankle kinematics in patients with fibromyalgia may help prevent falls and improve mobility.

**Title:** What works to prevent falls in older adults dwelling in long term care facilities and hospitals? An umbrella review of meta-analyses of randomised controlled trials.

**Citation:** Maturitas, Jul 2015, vol. 81, no. 3, p. 335-342

**Author(s):** Stubbs, Brendon, Denkinger, Michael D, Brefka, Simone, Dallmeier, Dhayana

**Abstract:** Preventing falls in long term care facilities (LTCF) and hospitals is an international priority. Many interventions have been investigated and summarised in meta-analyses (MA) and there is a need to synthesise the top of the hierarchy of evidence in one place. Therefore we conducted an umbrella review of MA of randomised controlled trials (RCTs) of falls prevention interventions LTCF and hospitals. Two independent reviewers searched major electronic databases from inception till October 2014 for MA containing ≥3 RCTs investigating any intervention to prevent falls in LTCF or hospitals in older adults aged ≥60 years. Methodological quality was assessed by the AMSTAR tool and data were narratively synthesised. The methodological quality of the MA was moderate to high across the 10 included MA. Nine MA provided data for LTCF and only two considered hospital settings. Only one MA defined a fall and two reported adverse events (although minor). Consistent evidence suggests that multifactorial interventions reduce falls (including the rate, risk and odds of falling) in LTCF and hospitals. Inconsistent evidence exists for exercise and vitamin D as single interventions in LTCF, whilst no MA has investigated this in hospitals. No evidence exists for hip protectors and medication review on falls in LTCF. In conclusion, multifactorial interventions appear to be the most effective interventions to prevent falls in LTCF and hospital settings. This is not without limitations and more high quality RCTs are needed in hospital settings in particular. Future RCTs and MA should clearly report adverse events.

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**Title:** More falls in cerebellar ataxia when standing on a slow up-moving tilt of the support surface.

**Citation:** The Cerebellum, Jul 2015,

**Author(s):** Paquette, Caroline, Franzén, Erika, Horak, Fay B.

**Abstract:** We investigated how subjects with cerebellar ataxia (CA) adapt their postural stability and alignment to a slow and small tilt of the support surface allowing for online postural corrections. Eight subjects with CA and eight age- and gender-matched healthy control subjects participated in the study. Subjects stood eyes closed for 1 min after which the support surface was tilted 5° toes-up at a ramp velocity of 1°/s. The toes-up position was held for 2.5 min after which the surface rotated back down to level with identical tilt characteristics. As reflected by the large number of falls, subjects with CA had marked
difficulty adapting their posture to the up-moving incline in contrast to control subjects. Subjects with CA who lost their balance had faster trunk velocity and excessive backward trunk reorientation beginning within the first second after onset of the tilting surface. In contrast, the down-moving tilt to level did not result in instability in CA subjects. These results suggest that instability and falls associated with CA derive from an inability to maintain trunk orientation to vertical while standing on a slow-moving or unstable surface. This study underscores the importance of the cerebellum in the online sensory control of the upper body orientation during small amplitude and slow velocity movements of the support surface.

Title: Older Adult Inpatient Falls in Acute Care Hospitals: Intrinsic, Extrinsic, and Environmental Factors.

Citation: Journal of gerontological nursing, Jul 2015, vol. 41, no. 7, p. 29

Author(s): Zhao, Yunchuan Lucy, Kim, Heejung

Abstract: The current integrative literature review of 23 studies aimed to identify multidimensional risk factors of falls among older adult patients in acute care hospitals. The incidence rate of fall-related injuries ranged from 6.8% to 72.1%. Advanced age was a major intrinsic risk factor, whereas being a patient in a geriatric unit was a significant extrinsic factor for inpatient falls and fall-related injuries based on statistical significance obtained from quantitative data analyses. Other critical risk factors were: (a) cognitive impairment; (b) impaired mobility; (c) prolonged length of hospital stay; and (d) fall history. Environmental/situational factors, such as patient ambulation and fall locations, also contributed to inpatient falls. In clinical practice, nurses need to know who are the most vulnerable patients in the hospital and develop comprehensive interventions to decrease intrinsic, extrinsic, and environmental risk factors. Prospective mixed-methods studies are needed to examine psychosocial factors and consequences of falls.

Title: Longitudinal patient-oriented outcomes in neuropathy: Importance of early detection and falls.

Citation: Neurology, Jul 2015, vol. 85, no. 1, p. 71-79

Author(s): Callaghan, Brian, Kerber, Kevin, Langa, Kenneth M, Banerjee, Mousumi, Rodgers, Ann, McCammon, Ryan, Burke, James, Feldman, Eva

Abstract: To evaluate longitudinal patient-oriented outcomes in peripheral neuropathy over a 14-year time period including time before and after diagnosis. The 1996-2007 Health and Retirement Study (HRS)-Medicare Claims linked database identified incident peripheral neuropathy cases (ICD-9 codes) in patients ≥65 years. Using detailed demographic information from the HRS and Medicare claims, a propensity score method identified a matched control group without neuropathy. Patient-oriented outcomes, with an emphasis on self-reported falls, pain, and self-rated health (HRS interview), were determined before and after neuropathy diagnosis. Generalized estimating equations were used to assess differences in longitudinal outcomes between cases and controls. We identified 953
Peripheral neuropathy cases and 953 propensity-matched controls. The mean (SD) age was 77.4 (6.7) years for cases, 76.9 (6.6) years for controls, and 42.1% had diabetes. Differences were detected in falls 3.0 years before neuropathy diagnosis (case vs control; 32% vs 25%, p = 0.008), 5.0 years for pain (36% vs 27%, p = 0.002), and 5.0 years for good to excellent self-rated health (61% vs 74%, p < 0.0001). Over time, the proportion of fallers increased more rapidly in neuropathy cases compared to controls (p = 0.002), but no differences in pain (p = 0.08) or self-rated health (p = 0.9) were observed. In older persons, differences in falls, pain, and self-rated health can be detected 3-5 years prior to peripheral neuropathy diagnosis, but only falls deteriorates more rapidly over time in neuropathy cases compared to controls. Interventions to improve early peripheral neuropathy detection are needed, and future clinical trials should incorporate falls as a key patient-oriented outcome.

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