

FALLS LINKS

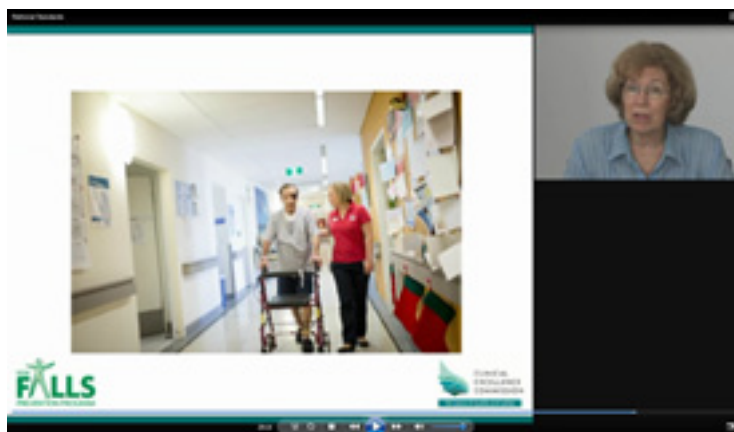
Volume 9, Issue 4, 2014

Newsletter of the NSW Falls Prevention Network

Welcome

This issue features:

- Resources for NSQHS Standard 10:
Preventing falls & harm from falls
- Published Research Highlight -
Perturbation training
- Websites, Meetings and Conferences
- Recent Abstracts from the research
literature



Excerpt from the Julia Poole presentation to support the NSQHS Standard 10: *Preventing Falls & Harm from falls*

“Falls Prevention is everyone’s business®”

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FOR YOUR DIARY:

ANZFPS Conference
16-18 November 2014

Luna Park Sydney

Earlybird registration closes 12th
September

<http://www.anzfpconference.com.au/>



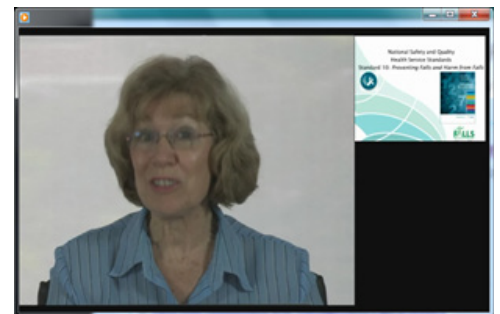
Resources to support the National Safety and Quality Health Services (NSQHS) Standard 10: Preventing falls and harm from falls

The National Safety and Quality Health Service Standards (NSQHSS) *Standard 10: Preventing falls and harm from falls* requires all patients admitted to hospital to be screened for falls risk (10.5) and if any falls risk is identified a Falls Assessment is required (10.6).

CEC NSW Falls Prevention Program undertook a review of falls risk screen tools and through consultation with LHDs confirmed the Ontario Modified Stratify - Sydney Scoring (OMS- SS) tool for falls risk screen. To support staff to implement appropriate interventions according to patient's identified fall risks a Falls Risk and Assessment and Management Plan (FRAMP) was developed. These tools have been approved through the State-wide Forms Committee consultation process.

A collaborative project between the NSW Falls Prevention Network, CEC Falls Prevention Program and Dr Julia Pool, CNC Aged Care Royal North Shore Hospital was the development and recording of 3 presentations to assist with staff education on Standard 10.

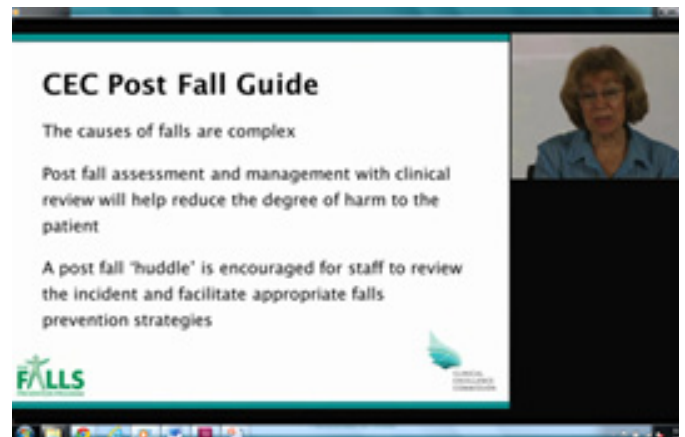
Presentation 1 demonstrates how to use the Ontario Modified STRATIFY (Sydney Scoring) Falls Risk Screen and the FRAMP with 2 Case Studies and runs for approximately 25 minutes.



Presentation 2 illustrates processes for managing falls on the ward and includes information on post fall assessment and management.

Presentation 3 provides information on carrying out falls audits and includes other useful resources.

This recording can be viewed on line on the [NSW Falls Prevention Network Website](#). It is available in CD/DVD format and copies are available from LHD Falls Co-ordinators - contact details are on next page.



The CEC Falls Prevention Program has also developed a range of resources to support the implementation of NSQHS Standard 10: *Preventing falls and harm from falls*. These include tools, flowchart - falls prevention in hospitals, a summary of falls prevention strategies, Post Fall Management, and Serious Incident (SAC2) Fall Incident Investigation Form. A suite of flyers for patients, families and their Carers are also available. These can be accessed at:

<http://www.cec.health.nsw.gov.au/programs/falls-prevention/resources-hospital>

If you have any further questions please contact Ingrid Hutchinson, Project Officer, NSW Falls Prevention Program at falls@cec.health.nsw.gov.au

NSW LHD Falls Coordinators list

Local Health District	Coordinators Name	Position Title	Phone	Email address
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Published Research Highlight - Perturbation Training: Pai et al 2014

Dr Daina Sturnieks, Senior Research Officer, NeuRA, UNSW and Professor Rod Barrett, Deputy Director Centre for Musculoskeletal Research, Griffith University

(email regarding this article to d.sturnieks@neura.edu.au).

Exercise programs that challenge balance are considered a key strategy for preventing falls in older people [1]. Current recommendations are that balance training be practiced for at least two hours per week and be ongoing (for at least six months). However, recent studies have examined the potential for low-dose perturbation training for protecting against falls in older people.

Perturbation training involves practising the recovery of balance (reactive response) after an induced loss of balance (an unexpected trip, slip or shove, for example). Whereas conventional balance training involves activities that are voluntary, slow, and mostly within the limits of stability, perturbation training is reactive, fast, and highly challenging to balance. Perturbation training simulates many real-world falls, providing a greater threat to balance and enhanced opportunity for learning how to avoid a fall.

Studies to understand fall risk have moved from assessing balance during standing to more ecological paradigms that measure slipping, tripping, stopping and obstacle negotiation [2-5]. Stepping underpins these activities and is the most effective means of maintaining balance, particularly for older people and those with balance and movement disorders. Inappropriate step responses are significantly more prevalent in older compared to younger people. For example, while young people respond to a force platform perturbation by taking a single step, older people take multiple shorter steps [6,7] and are more likely to contact the contralateral limb, further increasing the risk of a fall [8,9]. Impaired stepping is even more common in older people at risk of falls and those with balance impairments.

Older people have been shown to quickly improve dynamic balance responses from a single session of perturbation training [10-14], a much lower exercise dose than conventional balance training [11]. Long term retention [15] and generalisation [16-18] of improved balance responses have also been demonstrated following perturbation training. However, these studies did not uncover the potential transfer of this training to preventing real world falls.

Rosenblatt and colleagues [19], showed a 50% reduction in trip-related falls in the 12-months following a 2-week intervention involving repeated trip perturbations delivered while older women walked on a treadmill. While encouraging, these findings must be considered in light of numerous methodological issues and calls for verification in an appropriately designed and conducted randomised controlled trial. The current paper by Pai and colleagues [20], seems to have gone some of the way to offer that.

In recent months, Pai and colleagues [20] (abstract on page 23 of this newsletter) published results from a randomised controlled trial of slip perturbation training in 212 men and women, aged ≥ 65 years. Participants were randomly assigned to receive one training session of either 24 repeated slips (training group) or only a single slip (control group). Participants repeatedly walked over the laboratory walkway, which was embedded with two low-friction, movable platforms that could be locked (normal walking trials) or unlocked so that foot slid forward upon foot contact (slipping trials). The training and control groups fell with a similar proportion upon the first slip. The training group appeared to quickly adopt effective responses to the subsequent slip trials, with no one falling on the final (24th) slip ($p < .001$). In the next 12 months, the control group had a higher proportion of fallers than the training group (25% versus 13% $p = .019$, for intention-to-treat analysis). Compared to fall history rates, the control group were twice as likely to fall during the 12 months following the intervention than the training group ($p = .048$), however this is an unconventional way to report falls outcomes.

Regardless, these findings, along with the related and growing body of evidence showing beneficial effects of perturbation training are certainly encouraging and suggest that future fall prevention efforts are likely to benefit from complementary perturbation training (see [21] for review).

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Websites, Meetings & Conferences

ProFouND - Prevention of Falls Network for Dissemination <http://profound.eu.com/>

This website has a range of evidence based best-practice resources (some are available in English, French and Italian) for use by professionals in practice.

ProFouND have also developed a Falls Prevention Campaigning pack and usage documents. The pack is available to download and edit as required.

<http://profound.eu.com/profound-falls-awareness-campaign-ideas-pack-2014/>

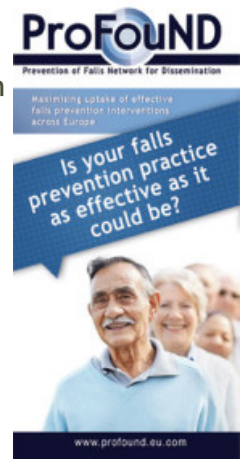
Frailty Net

<http://www.frailty.net/>



Frailty.net is an international educational resource that aims to help health care professionals involved in the care of older persons implement frailty into clinical practice.

This website includes a range of resources on frailty including guidelines and algorithms, clinical cases, recorded webcasts and e-learning lessons.



CONFERENCE

Australian and New Zealand Falls Prevention Society

6th Biennial Australasian Falls Prevention Conference, Sydney , 16-18 November 2014

<http://www.anzfpconference.com.au>

The Australian and New Zealand Falls Prevention Society 6th Biennial Conference will be held at Luna Park Sydney NSW, 16th – 18th November. An exciting program is being developed, with the following high profile speakers already confirmed:

- Professor Stephen Robinovitch, *Simon Fraser University, Canada*
- Professor Jeffrey Hausdorff, *Tel Aviv Sourasky Medical Center, Israel*
- Dr Anna Barker, *Monash University*
- Professor Adrian Bauman, *University of Sydney*
- Professor Henry Brodaty, *University of New South Wales*
- Associate Professor Lesley Day, *Monash University*
- Dr Anne-Marie Hill, *Notre Dame University*
- Dr Jasmine Menant, *Neuroscience Research Australia*

- Dr Sabrina Pit, *University of Sydney*
- Professor Cathie Sherrington, *University of Sydney*
- Dr Morag Taylor, *Prince of Wales Clinical School*
- Ms Caroline Gall, *Manager Public Insurance, Accident Compensation Corporation, NZ*

For further information see the website or contact conference organisers – East Coast Conferences
Phone: (+61 2) 6650 9800 or
email fallsconference@eastcoastconferences.com.au

www.anzfpconference.com.au

Abstracts

Recent abstracts from the research literature

Reviews

New methods for fall risk prediction

Ejupi A, Lord SR, Delbaere K.

Curr. Opin. Clin. Nutr. Metab. Care 2014; ePub(ePub): ePub.

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Vienna University of Technology, Vienna, Austria Neuroscience Research Australia, University of New South Wales, Sydney, Australia.

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Abstract

PURPOSE OF REVIEW: Accidental falls are the leading cause of injury-related death and hospitalization in old age, with over one-third of the older adults experiencing at least one fall or more each year. Because of limited healthcare resources, regular objective fall risk assessments are not possible in the community on a large scale. New methods for fall prediction are necessary to identify and monitor those older people at high risk of falling who would benefit from participating in falls prevention programmes.

RECENT FINDINGS: Technological advances have enabled less expensive ways to quantify physical fall risk in clinical practice and in the homes of older people. Recently, several studies have demonstrated that sensor-based fall risk assessments of postural sway, functional mobility, stepping and walking can discriminate between fallers and nonfallers.

SUMMARY: Recent research has used low-cost, portable and objective measuring instruments to assess fall risk in older people. Future use of these technologies holds promise for assessing fall risk accurately in an unobtrusive manner in clinical and daily life settings.

Automatic fall monitoring: a review

Pannurat N, Thiemjarus S, Nantajeewarawat E.

Sensors (Basel) 2014; 14(7): 12900-12936.

Affiliation: Sirindhorn International Institute of Technology, Thammasat University, Pathumthani 12121, Thailand.
ekawit@siit.tu.ac.th. (Copyright © 2014, Multidisciplinary Digital Publishing Institute)

Abstract

Falls and fall-related injuries are major incidents, especially for elderly people, which often mark the onset of major deterioration of health. More than one-third of home-dwelling people aged 65 or above and two-thirds of those in residential care fall once or more each year. Reliable fall detection, as well as prevention, is an important research topic for monitoring elderly living alone in residential or hospital units. The aim of this study is to review the existing fall detection systems and some of the key research challenges faced by the research community in this field. We categorize the existing platforms into two groups: wearable and ambient devices; the classification methods are divided into rule-based and machine learning techniques. The relative merit and potential drawbacks are discussed, and we also outline some of the outstanding research challenges that emerging new platforms need to address.

Tai chi for improvement of motor function, balance and gait in Parkinson's disease: a systematic review and meta-analysis

Yang Y, Li XY, Gong L, Zhu YL, Hao YL.

PLoS One 2014; 9(7): e102942.

Affiliation: Department of Neurology, Affiliated Hospital of Jining Medical University, Jining, Shandong, China.
(Copyright © 2014, Public Library of Science)

Abstract

BACKGROUND: Recently, several studies assessed the effectiveness of Tai Chi for Parkinson's disease (PD), but the role of Tai Chi in the management of PD remained controversial. Therefore, the purpose of this systematic review is to evaluate the evidence on the efficacy of Tai Chi for PD.

Abstracts Continued

Recent abstracts from the research literature

METHODS: Six English and Chinese electronic databases, up to April 2014, were searched to identify relevant studies. The risk of bias in eligible studies was assessed by Cochrane Collaboration's tools. The primary outcomes were motor function, balance and gait in individuals with PD. Standardized mean difference (SMD) and 95% confidence intervals (CI) of random-effect model were calculated. And heterogeneity was assessed based on the statistics.

RESULTS: 7 randomized controlled trials and 1 non-randomized controlled trial were eligible. The aggregated results suggested that Tai Chi showed beneficial effects in improving motor function (SMD, -0.57; 95% CI -1.11 to -0.04; $p=0.03$), balance (SMD, 1.22; 95% CI 0.80 to 1.65; $p<0.00001$) and functional mobility (SMD, 1.06; 95% CI 0.68 to 1.44; $p<0.00001$) in patients with PD, but not in improving gait velocity (SMD, -0.02; 95% CI -0.58 to 0.54; $p=0.94$), step length (SMD, -0.00; 95% CI -0.57 to 0.56; $p=0.99$), or gait endurance (SMD, 0.53; 95% CI -0.07 to 1.12; $p=0.08$). Comparing with other active therapies, however, Tai Chi only showed better effects in improving balance (SMD, 0.74; 95% CI 0.38 to 1.10; $p<0.0001$).

CONCLUSION: Tai Chi should be a valid complementary and alternative therapy for PD, especially in improving motor function and balance. However, more studies with long follow-up are warrant to confirm the current finding of Tai Chi for PD.

Exercise and physical training improve physical function in older adults with visual impairments but their effect on falls is unclear: a systematic review

Gleeson M, Sherrington C, Keay L.

J. Physiother. 2014; ePub(ePub): ePub.

Affiliation: Sydney Medical School, The George Institute for Global Health, The University of Sydney, Australia. (Copyright © 2014, Australian Physiotherapy Association)

Abstract

Question: Can exercise or physical training improve physical function and prevent falls in older adults with visual impairments? **Design:** Systematic review of randomised controlled trials with meta-analysis. **Participants:** Older adults (≥ 60 years) with visual impairments.

Intervention: Individual or group exercise or physical training classes in any settings. **Outcome measures:** Mobility, balance, strength and proprioception measured with performance tests or questionnaires and/or falls with calendars or incident reports.

RESULTS: Four eligible trials with a total of 522 participants were identified. Multimodal group exercise ($n = 50$ and 41) and Tai Chi ($n=40$) improved physical function among residents of care settings. Meta-analysis of data from two trials indicated a significant positive impact of multimodal exercise on the Berg Balance Score (weighted mean difference 3.9 points, 95% CI 1.8 to 6.0), but not on the Timed Up and Go test (weighted mean difference 1.5seconds, 95% CI -1.7 to 4.6). One trial ($n=41$) found that multimodal exercise reduced the time to first fall ($p=0.049$). A factorial trial ($n=391$) among community dwellers did not find a significant effect on falls from a home-based exercise intervention, although clinically relevant effects in either direction were not excluded by the study (incidence rate ratio=1.15, 95% CI 0.82 to 1.61).

CONCLUSION: Exercise interventions in residential care settings improve performance on some tests of physical function that are risk factors for falls but the impact on falls is not yet clear. The impact of exercise and training on physical function and falls in community-dwelling older adults with visual impairments also warrants further investigation.

Influences on modern multifactorial falls prevention interventions and fear of falling in non-frail older adults: a literature review

Svantesson UM, Babagbemi B, Foster L, Alricsson M.

J. Clin. Med. Res. 2014; 6(5): 314-320.

(Copyright © 2014, Canada-China Clinical Medicine Study Association, Publisher Elmer Press)

Abstracts Continued

Recent abstracts from the research literature

Abstract

This review explores underlying features that may influence fear of falling and the effectiveness of multifactorial falls prevention programs in community dwelling non-frail adults aged 65 and older. It also examines the interrelationship between fear of falling and multifactorial falls prevention interventions. A literature search of medical databases was conducted to identify articles that address the fear of falling and multifactorial programs as either a primary or secondary component of their findings. Multifactorial interventions were assessed in terms of their program content, design, demographics, implementation techniques, and cost-effectiveness. Falls are a common, but preventable, cause of morbidity and injury in older adults 65 and over. In addition to physiological variables, fear of falling and self-efficacy are psychosocial factors that impact the incidence of falls in this population. Addressing fear of falling in addition to physiological parameters may influence the success of multifactorial falls prevention programs for adults 65 and over.

Prevention of falls in Parkinson's disease: a review of fall risk factors and the role of physical interventions

Canning CG, Paul SS, Nieuwboer A.

Neurodegener. Dis. Manag. 2014; 4: 203-221.

Affiliation: Clinical & Rehabilitation Sciences Research Group, Faculty of Health Sciences, The University of Sydney, PO Box 170, Lidcombe, NSW 1825, Australia.

(Copyright © 2014, Future Medicine)

Abstract

Falls in people with Parkinson's disease (PD) are frequent and recurrent events with devastating and widespread consequences. Despite this, understanding of the predictive and explanatory value of fall risk factors, as well as the development and testing of interventions aimed at reducing falls, are in their infancy. This review focuses on fall prediction and risk factors that are potentially remediable with physical interventions. We show that falls can be predicted with high accuracy using a simple three-step clinical tool. Evidence from recently published randomized controlled trials supports the implementation of balance-challenging exercises in reducing falls. Larger scale trials utilizing technologically advanced monitoring methods will further elucidate those interventions most likely to be cost effective according to individual risk factor profiles.

Disease burden evaluation of fall-related events in the elderly due to hypoglycemia and other diabetic complications: a clinical review

Malabu UH, Vangaveti VN, Kennedy RL.

Clin. Epidemiol. 2014; 6: 287-294.

(Copyright © 2014, Dove Medical Press)

Abstract

A hypoglycemia-induced fall is common in older persons with diabetes. The etiology of falls in this population is usually multifactorial, and includes microvascular and macrovascular complications and age-related comorbidities, with hypoglycemia being one of the major precipitating causes. In this review, we systematically searched the literature that was available up to March 31, 2014 from MEDLINE/PubMed, Embase, and Google Scholar using the following terms: hypoglycemia; insulin; diabetic complications; and falls in elderly. Hypoglycemia, defined as blood glucose <4.0 mmol/L (70 mg/dL) requiring external assistance, occurs in one-third of elderly diabetics on glucose-lowering therapies. It represents a major barrier to the treatment of diabetes, particularly in the elderly population. Patients who experience hypoglycemia are at a high risk for adverse outcomes, including falls leading to bone fracture, seizures, cognitive dysfunction, and prolonged hospital stays. An increase in mortality has been observed in patients who experience any one of these events. Paradoxically, rational insulin therapy, dosed according to a patient's clinical status and the results of home blood glucose monitoring, so as to achieve and maintain recommended glycemic goals, can be an effective method for the prevention of hypoglycemia and falls in the elderly. Contingencies, such as clinician-directed hypoglycemia treatment protocols that guide the immediate treatment of hypoglycemia, help to limit both the duration and severity of the event. Older diabetic patients with or without underlying renal insufficiency or other severe illnesses represent groups that are at high risk for hypoglycemia-induced falls and, therefore, require lower insulin dosages. In this review, the risk factors of falls associated with hypoglycemia in elderly diabetics were highlighted and management plans were suggested. A

Abstracts Continued

Recent abstracts from the research literature

target hemoglobin A1c level between 7% and 8% seems to be more appropriate for this population. In addition, the first-choice drugs should have good safety profiles and have the lowest probability of causing hypoglycemia - such as metformin (in the absence of significant renal impairment) and incretin enhancers - while other therapies that may cause more frequent hypoglycemia should be avoided.

Falls in rural and remote community dwelling older adults: a review of the literature

Boehm J, Franklin RC, King JC.

Aust. J. Rural Health 2014; 22: 146-155.

Affiliation: School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Queensland, Australia.

(Copyright © 2014, Association for Australian Rural Nurses; National Rural Health Alliance, Publisher John Wiley and Sons)

Abstract

OBJECTIVE: Falls in older adults represent a significant challenge in Australia; however, the focus is often on urban-dwelling older adults. The aim of this review was to explore the literature on falls epidemiology and falls prevention interventions (FPI).

DESIGN: A literature review was conducted searching Medline, Scopus, Social Sciences Citation Index, Google Scholar, Google and the Australian Institute of Health and Welfare publication catalogue.

SETTING: Rural and remote Australia.

PARTICIPANTS: Rural and remote community dwelling Australians aged 50 years and older. **INTERVENTION:** Literature review.

MAIN OUTCOME MEASURES: Falls epidemiology and effective falls prevention interventions.

RESULTS: Twenty references were identified: 14 related to falls epidemiology and 7 to FPI. No significant differences were found between rural, remote and major cities residents in relation to falls hospitalisation, falls mortality or fall-related injuries sustained. There are a wide assortment of health professionals and non-health professionals who are involved in providing FPI in rural and remote Australia. However, there was limited information on the effectiveness of these interventions in influencing falls outcomes.

CONCLUSION: Few studies explored falls and their prevention in rural and remote Australia. The limited literature on the topic suggests that a change in focus to one that utilises existing services and resources will be required to create sustainable outcomes. Four areas are proposed for concentrated effort to reduce the impact of fall-related injury in rural and remote Australia: integration and collaboration among health professionals, promotion of physical activity across the lifespan, community involvement and ownership of interventions, and evaluation and publication of findings.

Physical therapies for improving balance and reducing falls risk in osteoarthritis of the knee: a systematic review

Mat S, Tan MP, Kamaruzzaman SB, Ng CT.

Age Ageing 2014; ePub(ePub): ePub.

Affiliation: Department of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

(Copyright © 2014, Oxford University Press)

Abstract

INTRODUCTION: osteoarthritis (OA) of knee has been reported as a risk factor for falls and reduced balance in the elderly. This systematic review evaluated the effectiveness of physical therapies in improving balance and reducing falls risk among patients with knee OA.

METHODS: a computerised search was performed to identify relevant studies up to November 2013. Two investigators identified eligible studies and extracted data independently. The quality of the included studies was assessed by the PeDro score.

Abstracts Continued

Recent abstracts from the research literature

RESULTS: a total of 15 randomised controlled trials involving 1482 patients were identified. The mean PeDro score was 7. The pooled standardised mean difference in balance outcome for strength training = 0.3346 (95% CI: 0.3207-0.60, $P = 0.01 < 0.00001$, P for heterogeneity = 0.85, $I(2) = 0\%$). Tai Chi = 0.7597 (95% CI: 0.5130-1.2043, $P < 0.0014$, P for heterogeneity = 0.26, $I(2) = 0\%$) and aerobic exercises = 0.6880 (95% CI: 0.5704-1.302, $P < 0.00001$, P for heterogeneity = 0.71, $I(2) = 0\%$). While pooled results for falls risk outcomes in, strength training, Tai chi and aerobics also showed a significant reduction in reduced risk of falls significantly with pooled result 0.55 (95% CI: 0.41-0.68, $P < 0.00001$, P for heterogeneity = 0.39, $I(2) = 6\%$).

CONCLUSION: strength training, Tai Chi and aerobics exercises improved balance and falls risk in older individuals with knee OA, while water-based exercises and light treatment did not significantly improve balance outcomes. Strength training, Tai Chi and aerobics exercises can therefore be recommended as falls prevention strategies for individuals with OA. However, a large randomised controlled study using actual falls outcomes is recommended to determine the appropriate dosage and to measure the potential benefits in falls reduction.

Epidemiology

Impact of dizziness and obesity on the prevalence of falls and fall-related injuries

Lin HW, Bhattacharyya N.

Laryngoscope 2014; ePub(ePub): ePub.

Affiliation: Department of Otolaryngology-Head & Neck Surgery, University of California, Irvine, California.

(Copyright © 2014, Lippincott Williams and Wilkins)

Abstract

OBJECTIVES/HYPOTHESIS: Quantify the relationships between dizziness, falls, and obesity among adults.

STUDY DESIGN: Cross-sectional analysis of a national health survey.

METHODS: Adult respondents in the 2008 National Health Interview Survey balance module were analyzed. With demographic information, data for balance and dizziness problems, reported falls, injuries from falls, and body mass index were extracted. Associations between balance/dizziness problems and falls or injuries from falls were determined. The additional association between obesity and falls or fall-related injuries in the setting of a balance/dizziness problem was determined.

RESULTS: Among 216.8 ± 3.5 million adult Americans, 24.2 ± 0.7 million reported dizziness in the past 12 months (11.1% ± 0.3%; mean age, 45.9 ± 0.2 years; 51.7% ± 0.5% female), 11.5% ± 0.3% had fallen in the prior 12 months, and 26.3% ± 0.4% were obese. Among individuals reporting dizziness, 34.3% ± 1.3% reported falls, whereas only 9.1% ± 0.3% of nondizzy individuals reported a fall (odds ratio [OR]: 5.1; $P < .001$). Among dizzy individuals who reported a fall, 45.8% ± 2.1% were injured by the fall versus 35.6% ± 1.4% nondizzy individuals who fell (OR: 1.5; $P < .001$). The addition of obesity to dizziness increased the odds of falling by 1.3 (95% confidence interval: 1.2-1.5; $P < .001$) but did not significantly increase the odds of fall-related injury ($P = .110$).

CONCLUSIONS: Dizziness/balance problems are strongly associated with both an increased tendency to fall and increased injury rate from falls among adults. The addition of obesity to dizziness was associated with a higher rate of falling but was not associated with a significantly higher rate of fall-related injury. Balance problems in conjunction with obesity need to be targeted in fall-prevention efforts. **LEVEL OF EVIDENCE:** 2b.

Medication and fall injury in the elderly population; do individual demographics, health status and lifestyle matter?

Helgadóttir B, Laflamme L, Monárrez-Espino J, Moller J.

BMC Geriatr. 2014; 14: 92.

(Copyright © 2014, BioMed Central)

Abstract

BACKGROUND: The simultaneous use of several medications is an important risk factor for injurious falls in older people. The aim of this study is to investigate the effect of the number of medications dispensed to elderly persons on fall injuries and to assess whether this relationship is explained by individual demographics, health habits and health status.

Abstracts Continued

Recent abstracts from the research literature

METHODS: A population-based, nested, case-control study on people 65 years and older (N = 20,906) was conducted using data from the Stockholm Public Health Cohort (SPHC) derived from self-administered surveys and linked at the individual level with various Swedish health registers. Fall injuries leading to hospitalization recorded in the Swedish National Patient Register (NPR) were considered as the outcome. The main exposure, obtained from the Swedish Prescribed Drug Register (SPDR), was the number of medications dispensed within 90 days prior to the injurious fall. The injury risk was estimated using adjusted odds ratios (ORs) from logistic regression. Results were adjusted by selected demographic, social circumstances, lifestyle and health status data extracted from the SPHC.

RESULTS: After adjusting for common risk factors within demographics, lifestyle, social circumstances and health status, using more than one medication increased the risk of fall injury but no clear dose-response relationship was observed, with point estimates ranging from 1.5-1.7 for the use of two, three, four or five or more medications as compared to using none. An increased risk remained, and was even elevated, after adjusting for the use of fall-risk-increasing drugs (FRIDs).

CONCLUSIONS: Using more than one medication affects the risk of injurious falls among older people. The effect of any given number of medications studied remains and is even strengthened after adjusting for individual demographics, health habits, health conditions and the use of FRIDs.

Fear of Falling

Concern about falling is associated with step length in persons with multiple sclerosis

Kalron A, Frid L, Gurevich M.

Eur. J. Phys. Rehabil. Med. 2014; ePub(ePub): ePub.

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(Copyright © 2014, Edizioni Minerva Medica)

Abstract

BACKGROUND: Fear of falling is one of the major concerns of people with multiple sclerosis (MS). Although, it is likely that associations between spatio-temporal gait parameters and fear of falling exist in the MS population, these relationships have never been extensively studied.

AIM: Determine if fear of falling is associated with spatio-temporal gait parameters in persons with MS.

DESIGN: Cross sectional study with a control group.

SETTINGS: Multiple Sclerosis Center, Sheba Medical Center, Tel-Hashomer, Israel.

METHODS: One-hundred and thirty relapsing-remitting patients diagnosed with MS, 79 women and 51 men aged 42.6 (S.D=11.9), participated in this investigation. Twenty-five healthy subjects, 14 women and 11 men aged 38.5 (S.D= 12.3), served as controls. Spatio-temporal parameters of gait were studied using the GAITRite™ system (CIR Systems, Inc. NJ, USA); Falls Efficacy Scale International (FES-I) was used to assess the level of concern relating to falls. Participants who scored >20 were classified as more concerned (n=83), while those scoring ≤20 were defined as less concerned (n=47).

RESULTS: More concerned participants walked slower, took smaller steps, prolonged double support phase, wider base of support and a shorter single support phase compared to the less concerned group. According to step one of the multiple linear regression model, the spatial gait component accounted for 30.9% of the variance related to fear of falls (F = 56.3, P < 0.001). Step two added the gait temporal component, thus increasing the variance to 36.7% (F = 36.2, P < 0.001). Step three added the gait asymmetry parameters, thus increasing the predictor model to account for 40.3% of the variance in fear of falling (F = 29.6, P < 0.001).

CONCLUSIONS: The present study provides quantitative evidence establishing spatio-temporal gait performance in individuals with MS relative to the level of fear of falling.

CLINICAL REHABILITATION IMPACT: Spatio-temporal gait parameters may aid in assessing the level of fear of falling in people with MS. Step length may also serve as a surrogate outcome for assessing outcomes of interventions aimed at reducing fear of falling in the MS population. performance in individuals with MS relative to the level of fear of falling.

Abstracts Continued

Recent abstracts from the research literature

Risk Assessment

Clinical relevance of the Humpty Dumpty Falls Scale in a pediatric specialty hospital

Pauley BJ, Houston LS, Cheng D, Johnston DM.

Pediatr. Nurs. 2014; 40: 137-142.

(Copyright © 2014, National Association of Pediatric Nurse Associates and Practitioners, Publisher Jannetti Publications)

Abstract

The Joint Commission requires pediatric hospitals to implement fall prevention programs and evaluate the efficacy of such programs. The Humpty Dumpty Falls Scale (HDFS), a seven-item assessment scale used to document age, gender, diagnosis, cognitive impairments, environmental factors, response to surgery/sedation, and medication usage, is one of several instruments developed to assess fall risk in pediatric patients. To determine the specificity and sensitivity of the HDFS in predicting falls in children hospitalized for pediatric specialty care, a team at a pediatric specialty hospital conducted a nonexperimental retrospective study that used a matched case-control design and chart review analysis. The discoveries suggest that the HDFS lacks accuracy in pediatric specialty patients. Using the HDFS cut-off score of 12 and above to indicate a high risk for falls in these children yields a high false-positive rate. Investigators and staff at pediatric specialty hospitals need to continue their pursuit of valid instruments and tools that contribute to fall reduction

Risk Factors

Hyponatremia as a fall predictor in a geriatric trauma population

Rittenhouse KJ, To T, Rogers A, Wu D, Horst M, Edavettal M, Miller JA, Rogers FB.

Injury 2014; ePub(ePub): ePub.

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Abstract

INTRODUCTION: Approximately one in three older adults fall each year, resulting in a significant proportion of geriatric traumatic injuries. In a hospital with a focus on geriatric fall prevention, we sought to characterize this population to develop targeted interventions. As mild hyponatremia, defined as a serum sodium <135meq/L, has been reported to be associated with falls, unsteadiness and attention deficits, we hypothesized that hyponatremia is associated with falls in our geriatric trauma population.

METHODS: Gender, age, pre-existing conditions (cardiac disease, diabetes, hematologic disorder, liver disease, malignancy, musculoskeletal disorder, neurological disorder, obesity, psychiatric disorder, pulmonary disease, renal disease, thyroid disease), mechanism of injury and admitting serum sodium level were queried for all geriatric trauma admissions from 2008 to 2011. Mechanism of injury was coded as falls admissions and non-falls admissions. Admitting serum sodium levels were coded as hyponatremic (<135mmol/L) and not hyponatremic (≥135mmol/L).

RESULTS: Of the 2370 geriatric trauma admissions during the study period, there were 1841 (77.7%) falls admissions and 293 (12.4%) patients who were hyponatremic. Gender, age, neurological disorder, hematologic disorder, and hyponatremia were found to be significant predictors of falls in both univariate and multivariable analyses.

CONCLUSION: Hyponatremic patients are significantly more likely to be admitted for a fall than non-hyponatremic patients, when adjusting for age, neurological disorder, and hematologic disorder. Consequently, hyponatremia identification and management should be an integral part of any geriatric trauma fall prevention programme. Additionally, if hyponatremia is found during a geriatric fall workup, it should be corrected prior to discharge and closely monitored by a primary care physician to prevent recurrent episodes of falls.

Abstracts Continued

Recent abstracts from the research literature

Drug-related falls in older patients: implicated drugs, consequences, and possible prevention strategies

de Jong MR, van der Elst M, Hartholt KA.

Ther. Adv. Drug Saf. 2013; 4: 147-154.

Affiliation: Department of Surgery, Reinier de Graaf Group, Delft, and Department of Geriatrics, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands.

(Copyright © 2013, SAGE Publications)

Abstract

Falls are the leading cause of injuries among older adults, aged 65 years and older. Furthermore, falls are an increasing public health problem because of ageing populations worldwide due to an increase in the number of older adults, and an increase in life expectancy. Numerous studies have identified risk factors and investigated possible strategies to prevent (recurrent) falls in community-dwelling older people and those living in long-term care facilities. Several types of drugs have been associated with an increased fall risk. Since drugs are a modifiable risk factor, periodic drug review among older adults should be incorporated in a fall prevention programme.

Cognitive dysfunction associated with falls in progressive supranuclear palsy

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Gait Posture 2014; ePub(ePub): ePub.

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(Copyright © 2014, Elsevier Publishing)

Abstract

BACKGROUND: Attentional and executive dysfunctions are associated with falls in community-dwelling elderly individuals and patients with PD. Frontal cognitive dysfunction and falls are frequent symptoms of PSP. We studied to identify the cognitive domains associated with recurrent falls in patients with PSP.

METHODS: We performed a battery of neuropsychological tests in 59 individuals with probable PSP. We categorized patients into infrequent fall (\leq one fall during the last 12 months, $n=29$) or recurrent fall (\geq two falls during the last 12 months, $n=30$) groups.

RESULTS: UPDRS subscores for axial deficits were significantly higher in the recurrent fall group than the infrequent fall group, but there were no significant differences in UPDRS total motor scores or subscores for bradykinesia, rigidity, and tremor. There was no difference between groups in MMSE scores. ANCOVA with adjustment for confounding factors showed that, recurrent falls were associated with abnormalities in alternating hand movement, alternating square and triangle, RCFT copying task, and ideomotor apraxia. Group difference of abnormalities in Stroop test was marginal ($p=0.054$). However, there were no group differences in the frequency of abnormalities in forward or backward digit span, motor impersistence, fist-edge-palm, contrast programming, go-no-go, Luria loop drawing, or Controlled Oral Word Association Tests. Recurrent falls were not associated with memory or language dysfunction.

CONCLUSIONS: Recurrent falls in patients with PSP were associated mainly with executive and visuospatial dysfunctions, including (1) impaired coordinated alternating uni- and bimanual motor programming and execution, (2) deficit of attention and decision making in the presence of interference, (3) visuospatial misperception and (4) ideomotor apraxia.

Interventions

A hospital system approach at decreasing falls with injuries and cost

Trepanier S, Hilsenbeck J.

Nurs. Econ. 2014; 32: 135-141. (Copyright © 2014, Jannetti Publications)

Abstract

Falls and fall-related injuries continue to challenge every health care organization. Falls are a nurse-sensitive

Abstracts Continued

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quality outcome. Patient falls are a leading cause of injuries in hospitals, considered to be among the most expensive adverse event, and continue to be a patient safety concern. Researchers analyzed the impact of a standardized fall prevention program across 50 acute care hospitals in 11 states. The implementation of a standardized multifactorial program for adult patients appears to have reduced falls with injuries by 58.3% over a 2-year period, allowing for a potential cost avoidance reduction of \$776,064 in 2013 dollars.

Balance exercise program reduced falls in people with multiple sclerosis - a single group pretest posttest trial

Nilsagard, Elisabet Y, Lena Kristina VK, Malin N, Susanne FA.

Arch. Phys. Med. Rehabil. 2014; ePub(ePub): ePub.

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(Copyright © 2014, Elsevier Publishing)

Abstract

OBJECTIVE: To evaluate the effects of a balance exercise program on falls in people with mild-to-moderate multiple sclerosis (MS).

DESIGN: Multi-center, single-blinded single group pretest posttest trial.

SETTING: Seven rehabilitation units within five county councils.

PARTICIPANTS: Community-dwelling adults with MS (N=32) able to walk 100 meters but unable to maintain 30-second tandem stance with arms alongside the body. **INTERVENTION:** Seven weeks of twice-weekly physiotherapist-led 60-minute sessions of group-based balance exercise targeting core stability, dual tasking, and sensory strategies (CoDuSe).

MAIN OUTCOME MEASURES: Primary outcomes: number of prospectively-reported falls and proportion of participants classified as fallers during 7 pre-intervention weeks, intervention period, and 7 post-intervention weeks. Secondary outcomes: balance performance on the Berg Balance Scale, Four Square Step Test, Sit-to-Stand Test, Timed Up and Go test (alone and with cognitive component), and Functional Gait Assessment Scale; perceived limitations in walking on the 12-item MS Walking Scale; and balance confidence on the Activities-specific Balance Confidence Scale rated 7 weeks before intervention directly after intervention, and 7 weeks later.

RESULTS: Number of falls (166 to 43; $p \leq 0.001$) and proportion of fallers (17/32 to 10/32; $p \leq 0.039$) decreased significantly between the pre-intervention and post-intervention periods. Balance performance improved significantly. No significant differences were detected for perceived limitations in walking, balance confidence, the Timed Up and Go test, or Sit-to-Stand Test.

CONCLUSIONS: The CoDuSe program reduced falls and proportion of fallers and improved balance performance in people with mild-to-moderate MS, but did not significantly alter perceived limitations in walking and balance confidence.

Church-based social marketing to motivate older adults to take balance classes for fall prevention: cluster randomized controlled trial

DiGuseppi CG, Thoreson SR, Clark L, Goss CW, Marosits MJ, Currie DW, Lezotte DC.

Prev. Med. 2014; ePub(ePub): ePub.

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(Copyright © 2014, Elsevier Publishing)

Abstract

OBJECTIVE: Determine whether a church-based social marketing program increases older adults' participation in balance classes for fall prevention.

METHODS: In 2009-10, 51 churches (7101 total members aged ≥ 60) in Colorado, U.S.A., were randomized to receive no intervention or a social marketing program. The program highlighted benefits of class participation

Abstracts Continued

Recent abstracts from the research literature

(staying independent, building relationships), reduced potential barriers (providing convenient, subsidized classes), and communicated marketing messages through church leaders, trained „messengers,” printed materials and church-based communication channels. Between-group differences in balance class enrollment and marketing message recall among congregants were compared using Wilcoxon Two-Sample Test and regression models.

RESULTS: Compared to 25 control churches, 26 churches receiving the social marketing program had a higher median proportion (9.8% vs. 0.3%; $p < 0.001$) and mean number (7.0 vs. 0.5; IRR=11.2 [95%CI: 7.5, 16.8]) of older adult congregants who joined balance classes. Intervention church members were also more likely to recall information about preventing falls with balance classes (AOR=6.2; 95% CI: 2.6, 14.8) and availability of classes locally (AOR=7.7; 95% CI: 2.6, 22.9).

CONCLUSIONS: Church-based social marketing effectively disseminated messages about preventing falls through balance classes and, by emphasizing benefits and reducing barriers and costs of participation, successfully motivated older adults to enroll in the classes.

Tablet-based strength-balance training to motivate and improve adherence to exercise in independently living older people: part 2 of a phase II preclinical exploratory trial

van Het Reve E, Silveira P, Daniel F, Casati F, de Bruin ED.

J. Med. Internet. Res. 2014; 16(6): e159.

(Copyright © 2014, Centre for Global eHealth Innovation)

Abstract

BACKGROUND: Home-based exercise programs can improve physical functioning and health status of elderly people. Successful implementation of exercise interventions for older people presents major challenges and supporting elderly people properly while doing their home-based exercises is essential for training success. We developed a tablet-based system—ActiveLifestyle—that offers older adults a home-based strength-balance training program with incorporated motivation strategies and support features.

OBJECTIVE: The goal was to compare 3 different home-based training programs with respect to their effect on measures of gait quality and physical performance through planned comparisons between (1) tablet-based and brochure-based interventions, (2) individual and social motivation strategies, and (3) active and inactive participants.

METHODS: A total of 44 autonomous-living elderly people (mean 75, SD 6 years) were assigned to 3 training groups: social (tablet guided, $n=14$), individual (tablet guided, $n=13$), and brochure (brochure guided, $n=17$). All groups joined a 12-week progressive home-based strength-balance training program. Outcome measures were gait performance under single and dual task conditions, dual task costs of walking, falls efficacy, and physical performance as measured by the Short Physical Performance Battery (SPPB). Furthermore, active ($\geq 75\%$ program compliance) and inactive ($< 75\%$ program compliance) individuals were compared based on their characteristics and outcome measures.

RESULTS: The tablet groups showed significant improvements in single and dual task walking, whereas there were no significant changes observable in the brochure group. Between-groups comparisons revealed significant differences for gait velocity ($U=138.5$; $P=.03$, $r=.33$) and cadence ($U=138.5$, $P=.03$, $r=.34$) during dual task walking at preferred speed in favor of the tablet groups. The brochure group had more inactive participants, but this did not reach statistical significance ($U=167$, $P=.06$, $r=.29$). The active participants outperformed the inactive participants in single and dual task walking, dual task costs of walking, and SPPB scores. Significant between-groups differences were seen between the tablet groups and the brochure group, in favor of the tablet groups.

CONCLUSIONS: A tablet-based strength-balance training program that allows monitoring and assisting autonomous-living older adults while training at home was more effective in improving gait and physical performance when compared to a brochure-based program. Social or individual motivation strategies were equally effective. The most prominent differences were observed between active and inactive participants. These findings suggest that in older adults a tablet-based intervention enhances training compliance; hence, it is an effective way to improve gait.

Abstracts Continued

Recent abstracts from the research literature

The influence of tai chi and yoga on balance and falls in a residential care setting: a randomised controlled trial

Saravanakumar P, Higgins IJ, Van Der Riet PJ, Marquez J, Sibbritt D.

Contemp. Nurse 2014; 2014: 5231-5255.

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(Copyright © 2014, John Libbey Eurotext)

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 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 3-arm RCT with frail older people in a residential care setting to test the hypothesis that a 14 week modified tai chi or yoga program 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.

An introduction to the Centers for Disease Control and Prevention's (CDC) efforts to prevent older adult falls

Kaniewski M, Stevens J, Parker E, Lee R.

Front. Public Health 2014; 2: e119.

(Copyright © 2014, Frontiers Editorial Office)

Abstract

The Centers for Disease Control and Prevention's National Center for Injury Prevention and Control (CDC) envisions a society where older adults (persons 65 and older) can live long, safe, and healthy lives. Falls are a threat to older adults' health and can significantly limit their ability to live independently. One in three older adults falls each year, resulting in over \$30 billion in direct medical costs (Stevens 2006). For more than 20 years, CDC has been conducting research to help prevent falls and resulting injuries among older adults. Research has identified important and modifiable risk factors. These include muscle weakness, gait and balance problems, psychoactive medication use, poor vision, and environmental hazards (Rubenstein 2006). Building on this knowledge, various falls interventions have been developed and tested. A recent Cochrane Review (Gillespie 2012) identified 159 randomized controlled trials (RCT) of falls interventions that included nearly 80,000 participants. This meta-analysis found that group exercise programs (e.g., tai chi), home-based exercise programs (e.g., Otago), and home safety modifications (e.g., installing bathroom grab bars), combined with behavioral changes recommended by an occupational therapist, significantly reduced falls among older adults. Implementing these interventions on a large scale and increasing older adults' access to these interventions can prevent a substantial number of falls and fall-related injuries. Medical providers also play an important role by identifying older adults who are likely to fall and providing clinical preventive services to help reduce fall risks.

To aid medical providers, the American and British Geriatrics Societies (AGS/BGS) developed a clinical practice guideline that 1) encourages providers to conduct fall risk assessments to identify patients who are at risk of falling, and 2) describes evidence-based interventions that can be incorporated into a patient's plan of care (AGS/BGS 2010). Recommended interventions include interventions delivered in clinical settings (e.g., medication review and modification, gait and balance assessment with referral to physical therapy) as well as participation in community-based fall prevention programs. Linking clinical medicine to community fall prevention programs

Abstracts Continued

Recent abstracts from the research literature

can be an important step in improving uptake of evidence-based practices to prevent older adult falls. Based on this information, CDC developed a fall prevention approach that integrates clinical practice and evidence-based community fall prevention programs. The approach expands current health care practice by supporting providers in making fall prevention a routine part of clinical care and encouraging providers to link clinical practice with community-based fall prevention programs. To this end, CDC's Injury Center provides targeted technical and programmatic assistance to several state health departments and medical providers to help them implement fall prevention programs and measure impact.

Within the community, CDC funded grantees--the Oregon Health Authority, New York State Department of Health, and Colorado Health Department of Public Health and Environment--are implementing evidence-based programs that reduce older adult falls. Supported programs include Tai Chi: Moving for Better Balance (Li 2008), Stepping On (Clemson 2004), the Otago Exercise Program (Campbell 1997, Campbell 1999), YMCA's Moving for Better Balance Program, and the Tai Chi for Arthritis program (Voukelatos 2007). These state grantees are also leveraging additional resources from the Area Agencies on Aging (AAA) senior services network, the YMCA, and other community programs developed for seniors.

Within the clinical setting, the CDC grantees and their partners are helping healthcare providers implement the AGS/BGS clinical practice guideline by providing the STEADI (Stopping Elderly Accidents, Deaths, and Injuries) tool kit (Stevens 2013). Based on the AGS/BGS guideline, the STEADI tool kit gives clinicians the tools they need to conduct standardized fall risk assessments and recommend appropriate interventions. In addition to addressing a patient's specific fall risk factors, such as hypotension and underlying chronic conditions, suitable patients may be referred to community fall prevention programs based on their level of fall risk. Linking clinical care with community programs based on an older adult's risk level Scaling up and sustaining this approach is challenging and requires bringing health care and public health together. Indeed, healthcare management organizations, health care plans, health care providers, state health departments, and community organizations all have a role in this integrated approach to fall prevention. The combined contribution of all these sectors helps expand reach, reduce barriers to implementing clinical and community approaches, and maximize public health impact.

To help make older adult fall prevention a routine part of clinical care CDC is supporting efforts to increase market penetration of the STEADI tool kit and to scale up its use by health care providers. For example, to accomplish this, CDC's Injury Center is creating electronic clinical decision support modules that can be adopted by most electronic health record (EHR) systems. The goal is to integrate fall prevention activities into EHR systems so that users can efficiently manage patient workflow, care, referrals, and billing. The STEADI EHR modules will incorporate the Centers for Medicare and Medicaid Services (CMS) incentive programs which reward providers and health care organizations for screening patients for fall risk and implementing fall prevention strategies for their high-risk patients. For providers dedicated to promoting the health and well-being of their older patients, this offers an opportunity to receive incentive payments for their efforts to deliver evidence-based health care.

Additionally, EHR modules will incorporate the reimbursable ICD-10 diagnostic codes that clinicians will be able to use when addressing fall risk with their patients. A STEADI online training course will soon be available that will teach clinicians (physicians, physician assistants and nurse practitioners) to conduct fall risk assessments and recommend appropriate interventions using materials from the STEADI tool kit. The online training will also provide information on the EHR modules and information on how medical staff can operationalize the EHR modules in their practice. As the U.S. population ages, fall injuries will increase (WISQARS 2010).

The efforts of the CDC, state health departments, AAA's, researchers, advocacy organizations, professional organizations, health care professionals, and many others are critical to reducing older adult falls. CDC's efforts and the contributions described in this journal issue will help further fall prevention research and practice. Policy makers and practitioners should find this issue helpful in improving and increasing their efforts to prevent older adult falls.

Abstracts Continued

Recent abstracts from the research literature

The effects of different exercises on balance, fear and risk of falling among adults aged 65 and over

Irez GB.

Anthropologist 2014; 18(1): 129-134.

(Copyright © 2014, Kamla-Raj Enterprises)

Abstract

This study compared the effects of Pilates and a walking exercise program on dynamic balance, flexibility, and muscle strength, fear of falling and falling risk among an elderly population. A total of 45 volunteers aged 65 years and older were recruited from a live-in community center in the province of Mugla in southwestern Turkey. Participants were invited to attend a 14-week exercise program of either Pilates or walking for 1 hour 3 times per week. Dynamic balance, flexibility, muscle strength, fear of falling and risk of falling were measured before and after the 14-week exercise program and at the same time in a control group that did not join either exercise program. Significant differences ($p < 0.05$) were found between pre- and post-exercise scores for all parameters in the Pilates group and in the flexibility scores in the walking group. No significant differences were found in the control group. Thus, it may be concluded that in comparison to walking, Pilates offers a more efficient way of improving certain physical fitness parameters among the elderly.

Drug-related falls in older patients: implicated drugs, consequences, and possible prevention strategies

de Jong MR, van der Elst M, Hartholt KA.

Ther. Adv. Drug Saf. 2013; 4: 147-154.

Affiliation: Department of Surgery, Reinier de Graaf Group, Delft, and Department of Geriatrics, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands.

(Copyright © 2013, SAGE Publications)

Abstract

Falls are the leading cause of injuries among older adults, aged 65 years and older. Furthermore, falls are an increasing public health problem because of ageing populations worldwide due to an increase in the number of older adults, and an increase in life expectancy. Numerous studies have identified risk factors and investigated possible strategies to prevent (recurrent) falls in community-dwelling older people and those living in long-term care facilities. Several types of drugs have been associated with an increased fall risk. Since drugs are a modifiable risk factor, periodic drug review among older adults should be incorporated in a fall prevention programme.

Functional benefits of tai chi training in senior housing facilities

Manor B, Lough M, Gagnon MM, Cupples A, Wayne PM, Lipsitz LA.

J. Am. Geriatr. Soc. 2014; 62: 1484-1489.

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(Copyright © 2014, John Wiley and Sons)

Abstract

OBJECTIVES: To determine the effects of tai chi training on functional performance and walking with and without the addition of the performance of a cognitive task, in older adults living in supportive housing facilities.

DESIGN: Secondary data analysis comparing a single-blind, randomized controlled trial of tai chi training with an attention-matched educational control intervention with crossover to tai chi. **SETTING:** Two supportive housing facilities.

PARTICIPANTS: Sixty-six men and women living in supportive housing facilities entered the study, and 57 aged 87 ± 7 completed all study procedures.

INTERVENTION: Interventions consisted of two 1-hour-long instructor-led group sessions per week for 12 weeks.

Abstracts Continued

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Tai chi training consisted of movements based upon the Yang-style short form. Educational sessions consisted of lectures and discussions of age-related health topics. MEASUREMENTS: Subjects were tested for physical function (Short Physical Performance Battery, SPPB), balance (Berg Balance Scale, BBS), mobility (timed up-and-go, TUG), and walking speed under normal and cognitive dual-task conditions.

RESULTS: The tai chi group exhibited greater improvement in SPPB scores (baseline 8.1 ± 2.9 , follow-up 9.0 ± 2.6) than controls (baseline 8.2 ± 2.6 , follow-up 8.2 ± 2.6) ($P = .005$). Tai chi also increased normal and dual-task walking speed ($P < .001$) yet did not affect BBS ($P = .02$) or TUG ($P = .02$) after accounting for multiple comparisons. The dual-task cost (percentage change) to walking speed was unaffected. After the crossover tai chi intervention, the control group improved performance in the SPPB, BBS, and TUG, and increased walking speed under normal and dual-task conditions ($P = .008$).

CONCLUSION: Tai chi training may be a safe and effective therapy to help improve physical function and dual-task walking in very old adults living in supportive housing facilities.

Multicentre cluster randomised trial comparing a community group exercise programme and home-based exercise with usual care for people aged 65 years and over in primary care

Iliffe S, Kendrick D, Morris R, Masud T, Gage H, Skelton D, Dinan S, Bowling A, Griffin M, Haworth D, Swanwick G, Carpenter H, Kumar A, Stevens Z, Gawler S, Barlow C, Cook J, Belcher C.

Health Technol. Assess. 2014; 18: 1-106.

Affiliation: Division of Primary Care, University of Nottingham, Nottingham, UK.

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Abstract

BACKGROUND: Regular physical activity (PA) reduces the risk of falls and hip fractures, and mortality from all causes. However, PA levels are low in the older population and previous intervention studies have demonstrated only modest, short-term improvements.

OBJECTIVE: To evaluate the impact of two exercise promotion programmes on PA in people aged ≥ 65 years.

DESIGN: The ProAct65+ study was a pragmatic, three-arm parallel design, cluster randomised controlled trial of class-based exercise [Falls Management Exercise (FaME) programme], home-based exercise [Otago Exercise Programme (OEP)] and usual care among older people (aged ≥ 65 years) in primary care.

SETTING: Forty-three UK-based general practices in London and Nottingham/Derby.

PARTICIPANTS: A total of 1256 people ≥ 65 years were recruited through their general practices to take part in the trial.

INTERVENTIONS: The FaME programme and OEP. FaME included weekly classes plus home exercises for 24 weeks and encouraged walking. OEP included home exercises supported by peer mentors (PMs) for 24 weeks, and encouraged walking.

MAIN OUTCOME MEASURES: The primary outcome was the proportion that reported reaching the recommended PA target of 150 minutes of moderate to vigorous physical activity (MVPA) per week, 12 months after cessation of the intervention. Secondary outcomes included functional assessments of balance and falls risk, the incidence of falls, fear of falling, quality of life, social networks and self-efficacy. An economic evaluation including participant and NHS costs was embedded in the clinical trial.

RESULTS: In total, 20,507 patients from 43 general practices were invited to participate. Expressions of interest were received from 2752 (13%) and 1256 (6%) consented to join the trial; 387 were allocated to the FaME arm, 411 to the OEP arm and 458 to usual care. Primary outcome data were available at 12 months after the end of the intervention period for 830 (66%) of the study participants. The proportions reporting at least 150 minutes of MVPA per week rose between baseline and 12 months after the intervention from 40% to 49% in the FaME arm, from 41% to 43% in the OEP arm and from 37.5% to 38.0% in the usual-care arm. A significantly higher proportion in the FaME arm than in the usual-care arm reported at least 150 minutes of MVPA per week at 12 months after the intervention [adjusted odds ratio (AOR) 1.78, 95% confidence interval (CI) 1.11 to 2.87; $p = 0.02$]. There was no significant difference in MVPA between OEP and usual care (AOR 1.17, 95% CI 0.72 to 1.92; $p = 0.52$). Participants in the FaME arm added around 15 minutes of MVPA per day to their baseline physical activity level. In

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the 12 months after the close of the intervention phase, there was a statistically significant reduction in falls rate in the FaME arm compared with the usual-care arm (incidence rate ratio 0.74, 95% CI 0.55 to 0.99; $p = 0.042$). Scores on the Physical Activity Scale for the Elderly showed a small but statistically significant benefit for FaME compared with usual care, as did perceptions of benefits from exercise. Balance confidence was significantly improved at 12 months post intervention in both arms compared with the usual-care arm. There were no statistically significant differences between intervention arms and the usual-care arm in other secondary outcomes, including quality-adjusted life-years. FaME is more expensive than OEP delivered with PMs (£269 vs. £88 per participant in London; £218 vs. £117 in Nottingham). The cost per extra person exercising at, or above, target was £1919.64 in London and £1560.21 in Nottingham (mean £1739.93).

CONCLUSION: The FaME intervention increased self-reported PA levels among community-dwelling older adults 12 months after the intervention, and significantly reduced falls. Both the FaME and OEP interventions appeared to be safe, with no significant differences in adverse reactions between study arms. **TRIAL REGISTRATION:** This trial is registered as ISRCTN43453770.

Can a tailored exercise and home hazard reduction program reduce the rate of falls in community dwelling older people with cognitive impairment: protocol paper for the i-FOCIS randomised controlled trial

Close JC, Wesson J, Sherrington C, Hill KD, Kurrle S, Lord SR, Brodaty H, Howard K, Gitlin LN, O'Rourke SD, Clemson L.

BMC Geriatr. 2014; 14: 89.

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Abstract

BACKGROUND: The rate of falls in community dwelling older people with cognitive impairment (CI) is twice that of a cognitively intact population, with almost two thirds of people with CI falling annually. Studies indicate that exercise involving balance and/or a home hazard reduction program are effective in preventing falls in cognitively intact older people. However the potential benefit of these interventions in reducing falls in people with CI has not been established. This randomised controlled trial will determine whether a tailored exercise and home hazard reduction program can reduce the rate of falls in community dwelling older people with CI. We will determine whether the intervention has beneficial effects on a range of physical and psychological outcome measures as well as quality of life of participants and their carers. A health economic analysis examining the cost and potential benefits of the program will also be undertaken.

METHODS and design: Three hundred and sixty people aged 65 years or older living in the community with CI will be recruited to participate in the trial. Each will have an identifiable carer with a minimum of 3.5 hours of face to face contact each week.

Participants will undergo an assessment at baseline with retests at 6 and 12 months. Participants allocated to the intervention group will participate in an exercise and home hazard reduction program tailored to their cognitive and physical abilities. The primary outcome measure will be the rate of falls which will be measured using monthly falls calendars. Secondary outcome measures will include the risk of falling, quality of life, measures of physical and cognitive function, fear of falling and planned and unplanned use of health services. Carers will be followed up to determine carer burden, coping strategies and quality of life.

DISCUSSION: The study will determine the impact of this tailored intervention in reducing the rate of falls in community dwelling older people with CI as well as the cost-effectiveness and adherence to the program. The results will have direct implications for the design and implementation of interventions for this high-risk group of older people. **Trial registration:** The protocol for this study is registered with the Australian New Zealand Clinical Trials Registry - ACTRN12614000603617.

Community-based falls prevention: lessons from an interprofessional mobility clinic

Bauman CA, Milligan JD, Patel T, Pritchard S, Labreche T, Dillon-Martin S, Ilich A, Riva JJ.

JCCA J. Can. Chiropr. Assoc. 2014; 58(3): 300-311.

(Copyright © 2014, Canadian Chiropractic Association)

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Abstract

Falls are a common and serious risk with an aging population. Chiropractors commonly see firsthand the effects of falls and resulting injuries in their senior patients and they can reduce falls risk through active screening. Ongoing research has provided proven approaches for making falls less likely. Screening for falls should be done yearly for all patients 65 years and older or in those with a predisposing medical condition. Additional specific falls prevention professional education would enable the chiropractor to best assist these patients. Collaboration and communication with the patient's family physician offers an opportunity for improved interprofessional dialogue to enhance patient care related to falls risk. Frequently falls prevention strategies are implemented by an interprofessional team. Chiropractors increasingly contribute within multidisciplinary teams. Collaboration by the chiropractor requires both simple screening and knowledge of health care system navigation. Such awareness can permit optimal participation in the care of their patient and the best outcome.

Effects of "Fit fOR The Aged" (FORTA) on pharmacotherapy and clinical endpoints-a pilot randomized controlled study

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Eur. J. Clin. Pharmacol. 2014; ePub(ePub): ePub.

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Abstract

PURPOSE: The feasibility of applying the Fit fOR The Aged (FORTA) list, a drug classification combining positive and negative labeling of drugs, should be studied in geriatric patients and medication quality and clinical endpoints measured. FORTA labels range from A (indispensable), B (beneficial), C (questionable) to D (avoid).

METHODS: A prospective randomized controlled pilot trial was performed in hospitalized geriatric patients in whom the FORTA instrument or standard care was applied. Patients were randomly admitted to an intervention and a control ward. Changes of FORTA label distributions between admission and discharge, over- and under-prescription rates, clinical endpoints including the number of falls during the hospitalization, and Barthel Index (BI) at admission and discharge were measured.

RESULTS: Polypharmacy persisted in both groups. At discharge, a higher rate of A drugs was prescribed in the intervention group (58 patients, median age 84 years) vs. standard care (56 patients, median age 83 years, $p < 0.02$), and both over- and under-prescriptions were significantly lower in the FORTA than in the control group ($p < 0.03$). Two (3.4 %) intervention, but 12 (21.4 %) control, patients fell at least once ($p < 0.001$). The fall rate per 1,000 patient years was 1.5 ± 8.3 in the intervention and 10.6 ± 25.4 in the control group ($p < 0.004$).

CONCLUSIONS: This pilot study shows that the application of the FORTA list is feasible in geriatric patients. In this small study, the medication quality improved in the intervention group, but polypharmacy persisted in both groups. The fall rate was significantly lower in the intervention group. These encouraging results must be interpreted carefully.

Falls prevention focused medication review by a pharmacist in an acute hospital: implications for future practice

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Int. J. Clin. Pharm. 2014; ePub(ePub): ePub.

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Abstract

BACKGROUND: Patients at risk of falling are regularly prescribed medicines which increase falls risk. Medication review is a widely advocated risk reduction strategy.

OBJECTIVE: The objectives of this descriptive study were to determine the number and types of falls risk medicines suitable for intervention, and to develop guidance to optimise the effectiveness of future medication related falls

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prevention initiatives. Setting An Irish acute teaching hospital and tertiary referral centre.

METHODS: 50 hospital in-patients at risk of falls underwent medication review focused on falls prevention by a pharmacist. Falls risk medicines were identified, and reviewed. If scope to discontinue, dose reduce or switch to a safer alternative was identified by the pharmacist, the suggested medication changes were communicated to the patient's care team. Main outcome measure Identification of the classes of falls risk medicines and types of prescriptions with greatest potential for intervention.

RESULTS: The mean number of falls risk medicines prescribed to each patient was 4.8 (± 2.8) and the total number prescribed to the 50 patients was 238. Following medication review, the pharmacist identified 48 (20 %) as suitable for intervention. Consequently, 34 medication changes (70.8 %) were implemented. Four medication classes accounted for over 80 % of medication changes. These were anti-emetics, opioid analgesics, anti-cholinergic agents acting on the bladder and benzodiazepines/hypnotics. Intervention was statistically significantly more likely to be possible in the case of p.r.n. medicines compared to regular medicines ($p < 0.001$, Chi square test). Medication reviews focused on falls prevention took an average of 23.5 min per patient to complete.

CONCLUSION: Medication reviews focused on falls prevention involve striking a balance between minimising medicines associated with falls and effectively treating medical conditions. We found only 20 % of falls risk medicines were suitable for change, and reviews were time consuming and resource intensive. However, targeting four medication classes, and being particularly alert to the potential to discontinue 'as required' medicines, has the potential to achieve most of the benefits of more comprehensive reviews. This information will guide the development of future falls risk medicine review initiatives in our hospital, increasing their feasibility in the acute hospital setting.

Perturbation training can reduce community-dwelling older adults' annual fall risk: a randomized controlled trial

Pai YC, Bhatt T, Yang F, Wang E.

J. Gerontol. A Biol. Sci. Med. Sci. 2014; ePub(ePub): ePub.

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(Copyright © 2014, Gerontological Society of America)

Abstract

BACKGROUND: Previous studies indicated that a single session of repeated-slip exposure can reduce over 40% of laboratory-induced falls among older adults. The purpose of this study was to determine to what degree such perturbation training translated to the reduction of older adults' annual falls risk in their everyday living.

METHODS: Two hundred and twelve community-dwelling older adults (≥ 65 years old) were randomly assigned to either the training group ($N = 109$), who then were exposed to 24 unannounced repeated slips, or the control group ($N = 103$), who merely experienced one slip during the same walking in the same protective laboratory environment. We recorded their falls in the preceding year (through self-reported history) and during the next 12 months (through falls diary and monitored with phone calls).

RESULTS: With this single session of repeated-slip exposure, training cut older adults' annual risk of falls by 50% (from 34% to 15%, $p < .05$). Those who experienced merely a single slip were 2.3 times more likely to fall during the same 12-month follow-up period ($p < .05$) than those who experienced the 24 repeated slips. Such training effect was especially prominent among those who had history of falls.

CONCLUSION: A single session of repeated-slip exposure could improve community-dwelling older adults' resilience to postural disturbances and, hence, significantly reduce their annual risk of falls.

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.

Falls Network Information

fallsnetwork.neura.edu.au

Joining the Network

To join the NSW Falls Prevention Network listserv, send an email to:

majordomo@lists.health.nsw.gov.au

In the body of the message type

subscribe nsw-falls-network

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

You need to be a subscriber to the listserv to send an email that will be distributed to all members of the listserv. Remember to put a short description in the subject line.

Recently some posts to the listserv have bounced due to email address changes, you need to re-subscribe with your new e-mail address and unsubscribe from your old address following the Join the Network instructions as shown on this page.

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.

“Falls Prevention is everyone’s business®”

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