Safety Literature 2nd February 2020

A pooled analysis of fall incidence from placebo-controlled trials of denosumab

Chotiyarnwong P, McCloskey E, Eastell R, McClung MR, Gielen E, Gostage J, McDermott M, Chines A, Huang S, Cummings SR. J. Bone Miner. Res. 2020; ePub(ePub): ePub.

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DOI 10.1002/jbmr.3972 **PMID** 31999376

Abstract

Recent studies suggest that the RANK/RANKL system impacts muscle function and/or mass. In the pivotal placebo-controlled fracture trial of the RANKL inhibitor denosumab in women with postmenopausal osteoporosis, treatment was associated with a lower incidence of non-fracture-related falls (p = 0.02). This ad hoc exploratory analysis pooled data from five placebo-controlled trials of denosumab to determine consistency across trials, if any, of the reduction of fall incidence. The analysis included trials in women with postmenopausal osteoporosis and low bone mass, men with osteoporosis, women receiving adjuvant aromatase inhibitors for breast cancer, and men receiving androgen deprivation therapy for prostate cancer. The analysis was stratified by trial, and only included data from the placebo-controlled period of each trial. A time-to-event analysis of first fall and exposure-adjusted subject incidence rates of falls were analyzed. Falls were reported and captured as adverse events. The analysis comprised 10,036 individuals; 5,030 received denosumab 60 mg subcutaneously once every 6 months for 12-36 months and 5,006 received placebo. Kaplan-Meier estimates showed an occurrence of falls in 6.5% of subjects in the placebo group compared with 5.2% of subjects in the denosumab group (hazard ratio [95% CI]: 0.79 [0.66, 0.93]; p = 0.0061). Heterogeneity in study designs did not permit overall assessment of association with fracture outcomes. In conclusion, denosumab may reduce the risk of falls in addition to its established fracture risk reduction by reducing bone resorption and increasing bone mass. These observations require further exploration and confirmation in studies with muscle function or falls as the primary outcome.

Language: en

Keywords

Antiresorptives; aging; fracture prevention; osteoporosis

Association between characteristics of injurious falls and fall preventive interventions in acute medical and surgical units

Francis-Coad J, Hill AM, Jacques A, Chandler AM, Richey PA, Mion LC, Shorr RI. J. Gerontol. A Biol. Sci. Med. Sci. 2020; ePub(ePub): ePub.

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DOI 10.1093/gerona/glaa032 **PMID** 31996903

Abstract

BACKGROUND: Hospital falls remain common and approximately 30% of falls in hospital result in injury. The aims of the study were to; i) identify the association between fall interventions present at the time of the injurious fall and injurious faller characteristics; ii) identify the association between fall preventive interventions present at the time of the injurious fall and the injurious fall circumstances.

METHODS: Secondary data analysis of de-identified case series of injurious falls across 24 acute medical/surgical units in the US. Variables of interest were falls prevention interventions (physical therapy, bed alarm, physical restraint, room change or a sitter) in place at the time of fall. Data were analyzed using logistic regression and hazard ratios.

RESULTS: There were 1033 patients with an injurious fall, occurrence peaked between day one and day four, with 46.8% of injurious falls having occurred by day three of admission. Injurious fallers with a recorded mental state change 24 hours prior to the fall were more likely to have a bed alarm provided (adjusted OR 2.56, 95% CI 1.61, 4.08) and receive a physical restraint as fall prevention interventions (adjusted OR 6.36, 95% CI 4.35, 9.30). Injurious fallers restrained fell later (stay day six) than those without a restraint (stay day four) (p=0.007) and had significantly longer lengths of stay (13 days versus nine days).

CONCLUSIONS: On medical/surgical units, injurious falls occur early following admission suggesting interventions should be commenced immediately. Injurious fallers who had a physical restraint as an intervention had longer lengths of stay.

Language: en

Keywords

Accidental falls; Hospitals; Inpatients; Wounds and injuries

Effects of training with a custom-made visual feedback device on balance and functional lower-extremity strength in older adults: a randomized controlled trial

Oungphalachai T, Siriphorn A. J. Bodyw. Mov. Ther. 2020; 24(1): 199-205.

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DOI 10.1016/j.jbmt.2019.03.018 **PMID** 31987545

Abstract

INTRODUCTION: Training with a slow and sustained mechanical load, such as standing on one leg, is an effective method for improving balance and increasing lower-extremity strength. Also, visual feedback during motor learning is important in facilitating efficient postural responses and balance skills. In this study, a custom-made visual feedback device was invented to provide the training modality and program based on single-leg standing combined with augmented visual feedback training. This study aimed to investigate the effects of visual feedback training using the custom-made visual feedback device on balance and functional lower-extremity strength in older adults.

METHODS: Thirty-four independent older adults were randomly allocated to a training group (TG) and a control group (CG). The participants in the TG received training with the custom-made visual feedback device. The training duration was three sessions per week, for four weeks. The participants in the CG continued their routine activities. Balance (static and dynamic balances, and balance confidence) and functional lower-extremity strength were assessed pre- and post-training.

RESULTS: Improvements in static balance (sway velocity and limit of balance during one-leg standing with eyes open) and dynamic balance (directional control of limits of stability in the backward direction) were found after training in the TG compared with the CG. No significant differences in balance confidence or functional lower-extremity strength were found between groups after training.

CONCLUSION: In older adults, training with a custom-made visual feedback device could be used to improve both static and dynamic balances, but not balance confidence and

Language: en

Keywords

Lower-extremity strength; Older adults; Visual feedback training; balance

Efficacy and generalizability of falls prevention interventions in nursing homes: a systematic review and meta-analysis

Gulka HJ, Patel V, Arora T, McArthur C, Iaboni A. J. Am. Med. Dir. Assoc. 2020; ePub(ePub): ePub.

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DOI 10.1016/j.jamda.2019.11.012 **PMID** 31982358

Abstract

OBJECTIVES: To determine the efficacy of fall intervention programs in nursing homes (NHs) and the generalizability of these interventions to people living with cognitive impairment and dementia.

DESIGN: Systematic review and meta-analysis. SETTING AND PARTICIPANTS: NH residents (n = 30,057) living in NHs defined as residential facilities that provide 24-hours-a-day surveillance, personal care, and some clinical care for persons who are typically aged ≥65 years with multiple complex chronic health conditions.

METHODS: Meta-analysis of falls prevention interventions on number of falls, fallers, and recurrent fallers.

RESULTS: Thirty-six studies met inclusion criteria for the systematic review. Overall, fall prevention interventions reduced the number of falls [risk ratio (RR) = 0.73, 95% confidence interval (CI) = 0.60-0.88], fallers (RR = 0.80, 95% CI = 0.72-0.89), and recurrent fallers (RR = 0.70, 95% CI = 0.60-0.81). Subanalyses revealed that single interventions have a significant effect on reducing fallers (RR = 0.78, 95% CI = 0.69-0.89) and recurrent fallers (RR = 0.60, 95% CI = 0.52-0.70), whereas multiple interventions reduce fallers (RR = 0.69, 95% CI = 0.39-0.97) and multifactorial interventions reduce number of falls (RR = 0.65, 95% CI = 0.45-0.94).

CONCLUSIONS AND IMPLICATIONS: Exercise as a single intervention reduced the number of fallers and recurrent fallers by 36% and 41%, respectively, in people living in NHs. Other effective interventions included staff education and multiple and multifactorial interventions. However, more research on exercise including people with cognitive impairment and dementia is needed to improve the generalizability of these interventions to the typical NH resident.

Language: en

Keywords

Nursing homes; cognitive impairment; dementia; fall prevention; falls; long-term care

Evaluation of a falls and fire safety program for community-dwelling older adults

Casteel C, Bruening R, Carson M, Berard-Reed K, Ashida S. J. Community Health 2020; ePub(ePub): ePub.

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DOI 10.1007/s10900-019-00786-8 **PMID** 31974806

Abstract

Remembering When™ (RW) is a falls and fire prevention program delivered by fire service personnel and homecare organizations to help older adults live safely at home for as long as possible. This study evaluated changes in falls prevention and fire safety behaviors and perceptions and social support associated with falls and residential fires among older adults following delivery of the RW program by fire service personnel. In a convenience sample of adults 65 + years residing in five Iowa communities, 70 received the RW program during a home visit and 75 received the RW program in a group presentation followed by a home visit. Baseline and follow-up telephone interviews were conducted to assess changes in falls and fire safety behaviors, perceptions and social support. Changes were assessed using McNemar's exact test and paired sample t-tests. To control for dependence of 26 households with two participants, one participant was randomly selected and included in the analysis ($n = 119$). The RW program improved falls and residential fire prevention behaviors among older adults. Perceived efficacy to prevent falls increased from baseline ($p = 0.047$). Perceived susceptibility ($p = 0.021$) and control of fires ($p = 0.000$) increased while perceived severity ($p = 0.025$) and fear of residential fires ($p = 0.019$) decreased when compared to baseline. The proportion of participants reporting discussing falls with friends and family increased ($p < 0.001$), and more participants reported discussing fire prevention with healthcare professionals ($p = 0.039$). Fire service personnel can be effective deliverers of falls prevention information to older adults.

Language: en

Keywords

Falls prevention; Fire prevention; Older adults; Remembering when

Review of balance recovery in response to external perturbations during daily activities

Tokur D, Grimmer M, Seyfarth A. Hum. Mov. Sci. 2020; 69: e102546.

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DOI 10.1016/j.humov.2019.102546 **PMID** 31989948

Abstract

Balance is an essential capability to ensure upright standing and locomotion. Various external perturbations challenge our balance in daily life and increase the risk for falling and associated injury. Researchers try to identify the human mechanisms to maintain balance by intentional perturbations. The objectives of this work were to point out which areas of perturbation based research are well covered and not well covered and to extract which coping mechanisms humans use to respond to external perturbations. A literature review was performed to analyze mechanisms in response to external perturbations such as pushes to the body or ground level changes during standing, walking, running and hopping. To get a well-structured overview on the two dimensions, the perturbation type and the task, the Perturbation Matrix (PMA) was designed. We found that multiple studies exist for the tasks walking and standing, while hopping and running are covered less. However, all tasks still offer opportunities for both in-depth and fundamental research. Regarding the recovery mechanisms we found that humans can recover from various types of perturbations with versatile mechanisms using combinations of trunk, as well as upper and lower limb movements. The recovery movements will adapt depending on the perturbation intensity, direction and timing. Changes in joint kinetics, joint kinematics and muscle activity were identified on the joint level and leg stiffness and leg length on the global leg level. We believe that the insights from the extracted mechanisms may be applied to the hardware and control of robotic limbs or lower limb exoskeletons to improve the balance and robustness during standing or locomotion.

Language: en

Keywords

Balance mechanisms; Coping strategies; Daily activities; External perturbations; Motion tasks; Risk for falling

Sarcopenia is associated with cognitive decline and falls but not hospitalization in community-dwelling oldest old in China: a cross-sectional study

Xu W, Chen T, Shan Q, Hu B, Zhao M, Deng X, Zuo J, Hu Y, Fan L. Med. Sci. Monit. 2020; 26: e919894.

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DOI 10.12659/MSM.919894 **PMID** 31980594

Abstract

BACKGROUND The aim of this study was to investigate the association between sarcopenia and cognitive decline, falls, and hospitalization in a Chinese elderly population. MATERIAL AND METHODS This cross-sectional survey was conducted between November 2018 and May 2019, and enrolled only older adults aged 80 years or over (oldest old). We diagnosed sarcopenia using the Asian Working Group for Sarcopenia criteria. Demographic characteristics, disease history, smoking status, drinking status, cognitive function, falls, and hospitalization events in the previous 12 months were acquired by face-to-face interview. Cognitive status was evaluated by the Montreal Cognitive Assessment. Falls was ascertained by the question "Have you fallen down in the last 12 months?" Hospitalization was ascertained by the question "Have you received inpatient care in the past year?" RESULTS A total of 582 participants (aged 80-99 years and 42.3% male) were included. The prevalence of sarcopenia was 21.7% (95% confidence interval [CI]: 17.3-26.2%) and 33.3% (95% CI: 27.4-39.3%) for females and males, respectively. Among the study population, the prevalence of cognitive decline was 60.8%; the proportions of the oldest old who had falls or hospitalization in the past 12 months were 18.1% and 34.3%, respectively. Multivariate analyses showed that sarcopenia was significantly and independently associated with cognitive decline [odds ratio (OR)=1.96, 95% CI: 1.17-3.27] and falls (OR=2.00, 95% CI: 1.17-3.43) but not associated with hospitalization (OR=1.32, 95% CI: 0.83-2.08).

CONCLUSIONS Our results showed that sarcopenia was significantly and independently associated with cognitive decline and falls, but not associated with hospitalization, in the community-dwelling oldest old.

Language: en

Surface perturbation training to prevent falls in older adults: a highly pragmatic, randomized controlled trial

Lurie JD, Zagaria AB, Ellis L, Pidgeon D, Gill-Body KM, Burke C, Armbrust K, Cass S, Spratt KF, McDonough CM. Phys. Ther. 2020; ePub(ePub): ePub.
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DOI 10.1093/ptj/pzaa023 **PMID** 31998949
Abstract
BACKGROUND: Falls are the leading cause of injuries among older adults and trips and slips are major contributors to falls.

OBJECTIVE: Compare the effectiveness of adding a component of surface-perturbation training to usual gait/balance training for reducing falls and fall-related injury in high-risk older adults referred to physical therapy.

DESIGN: This was a multi-center, pragmatic, randomized, comparative effectiveness trial. SETTING: Treatment took place within 8 outpatient physical therapy clinics. PATIENTS: This study included 506 patients aged 65+ at high fall risk referred for gait/balance training. INTERVENTION: This trial evaluated surface-perturbation treadmill training integrated into usual multimodal exercise-based balance training at the therapist's discretion versus usual multimodal exercise-based balance training alone. MEASUREMENTS: Falls and injurious falls were assessed with a prospective daily fall diary, which was reviewed via telephone interview every 3 months for 1 year.

RESULTS: 211/253 (83%) of patients randomized to perturbation-training and 210/253 (83%) randomized to usual treatment provided data at 3-month follow-up. At 3 months, the perturbation-training group had significantly reduced chance of fall-related injury (5.7% vs. 13.3%; relative risk 0.43, $p < 0.01$) but no significant reduction in the risk of any fall (28% vs. 37% ST; relative risk 0.78 $p<0.07$) compared to usual treatment. Time to first injurious fall showed reduced hazard in the first 3 months, but no significant reduction when viewed over the entire first year ($p=0.67$). LIMITATIONS: The limitations of this trial included lack of blinding and variable application of interventions across patients based on pragmatic study design.

CONCLUSION: The addition of some surface perturbation training to usual physical therapy significantly reduced injurious falls up to 3 months post-treatment. Further study is warranted to determine the optimal frequency, dose, progression and duration of surface perturbation aimed at training postural responses for this population.

Language: en

Keywords

Accidental Falls; Balance; Gait: Gait Training; Rehabilitation

Tai Chi for improving balance and reducing falls: an overview of 14 systematic reviews

Zhong D, Xiao Q, Xiao X, Li Y, Ye J, Xia L, Zhang C, Li J, Zheng H, Jin R. Ann. Phys. Rehabil. Med. 2020; ePub(ePub): ePub.

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DOI 10.1016/j.rehab.2019.12.008 **PMID** 31981834

Abstract

BACKGROUND: Falls play a pivotal role in the cause of injury or death and have become a public health problem, especially for older people. Tai Chi may be an effective approach to improving balance and reducing falls. However, the conclusions of systematic reviews (SRs) have been inconsistent and the quality needs to be appraised critically.

OBJECTIVE: To provide an overview of the methodological quality, risk of bias and reporting quality as well as quality of evidence of SRs of Tai Chi for improving balance and reducing falls.

METHODS: We conducted a systematic search of English- and Chinese-language SRs in 8 electronic databases, from inception to October 2019. The methodological quality, risk of bias, reporting quality and the quality of evidence were independently assessed by 2 reviewers who used the A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR 2), Risk of Bias in Systematic reviews (ROBIS), the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and Grades of Recommendations, Assessment, Development and Evaluation (GRADE). Primary outcomes were fall rate and the Berg Balance Scale score in older people and people with Parkinson disease. Secondary outcomes included these outcomes in stroke, osteoarthritis and heart failure.

RESULTS: A total of 14 relevant SRs was included: 13 were rated critically low quality and 1 was rated low quality by AMSTAR 2. By the ROBIS, all SRs were rated low risk in Phase 1 (assessing relevance) and Domain 1 of Phase 2 (study eligibility criteria). With regard to Domain 2, assessing the identification and selection of studies, 3 (21.4%) SRs were rated low risk. 11 (71.4%) were rated low risk in Domain 3 (data collection and study appraisal), 11 (71.4%) were rated low risk in Domain 4 (synthesis and findings), and 9 (64.3%) were rated low risk in Phase 3 (risk of bias in the review). According to PRISMA, the reporting was relatively complete, but there were still some reporting flaws in the topic of protocol and registration (2/14, 14.3%), search strategy (5/14, 35.7%), risk of bias (6/14, 42.9%), additional analyses (6/14, 42.9%) and funding (4/14, 28.6%). Among the 14 SRs, Tai Chi had benefits for improving balance and reducing falls in older people and people with Parkinson disease; however, no definitive conclusions could be drawn for its effectiveness in stroke, osteoarthritis and heart failure. The level of evidence for fall rate was "moderate" to "high" for older people and "low" for those with Parkinson disease. The level of evidence of the

Berg Balance Scale was "low" to "moderate" for older people and "low" for those with Parkinson disease. Among the downgraded factors, imprecision was the most common, followed by inconsistency and publication bias.

CONCLUSIONS: Tai Chi may be beneficial for improving balance and reducing falls in older people and those with Parkinson disease. Because of limitations and inconsistent conclusions, further rigorous, normative and comprehensive SRs are needed to provide robust evidence for definitive conclusions.

Language: en

Keywords

AMSTAR 2; GRADE; PRISMA; ROBIS; Tai Chi; balance; falls; overview

The effects of Ai Chi for balance in individuals with chronic stroke: a randomized controlled trial

Ku PH, Chen SF, Yang YR, Lai TC, Wang RY. Sci. Rep. 2020; 10(1): e1201.

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DOI 10.1038/s41598-020-58098-0 **PMID** 31988384

Abstract

This study investigated the effectiveness of Ai Chi compared to conventional water-based exercise on balance performance in individuals with chronic stroke. A total of 20 individuals with chronic stroke were randomly allocated to receive either Ai Chi or conventional water-based exercise for 60 min/time, 3 times/week, and a total of 6 weeks. Balance performance assessed by limit of stability (LOS) test and Berg balance scale (BBS). Fugl-Meyer assessment (FMA) and gait performance were documented for lower extremity movement control and walking ability, respectively. Excursion and movement velocity in LOS test was significantly increased in anteroposterior axis after receiving Ai Chi ($p = 0.005$ for excursion, $p = 0.013$ for velocity) but not conventional water-based exercise. In particular, the improvement of endpoint excursion in the Ai Chi group has significant inter-group difference ($p = 0.001$). Both groups showed significant improvement in BBS and FMA yet the Ai Chi group demonstrated significantly better results than control group ($p = 0.025$). Ai Chi is feasible for balance training in stroke, and is able to improve weight shifting in anteroposterior axis, functional balance, and lower extremity control as compared to conventional water-based exercise.

Language: en

Consumption analysis of smartphone based fall detection systems with multiple external wireless sensors

González-Cañete FJ, Casilari E. Sensors (Basel) 2020; 20(3): e622.

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DOI 10.3390/s20030622 **PMID** 31979189

Abstract

Fall Detection Systems (FDSs) based on wearable technologies have gained much research attention in recent years. Due to the networking and computing capabilities of smartphones, these widespread personal devices have been proposed to deploy cost-effective wearable systems intended for automatic fall detection. In spite of the fact that smartphones are natively provided with inertial sensors (accelerometers and gyroscopes), the effectiveness of a smartphone-based FDS can be improved if it also exploits the measurements collected by small low-power wireless sensors, which can be firmly attached to the user's body without causing discomfort. For these architectures with multiple sensing points, the smartphone transported by the user can act as the core of the FDS architecture by processing and analyzing the data measured by the external sensors and transmitting the corresponding alarm whenever a fall is detected. In this context, the wireless communications with the sensors and with the remote monitoring point may impact on the general performance of the smartphone and, in particular, on the battery lifetime. In contrast with most works in the literature (which disregard the real feasibility of implementing an FDS on a smartphone), this paper explores the actual potential of current commercial smartphones to put into operation an FDS that incorporates several external sensors. This study analyzes diverse operational aspects that may influence the consumption (as the use of a GPS sensor, the coexistence with other apps, the retransmission of the measurements to an external server, etc.) and identifies practical scenarios in which the deployment of a smartphone-based FDS is viable.

Language: en

Keywords

Android; accelerometers; battery consumption; fall detection system; gyroscopes; inertial sensors; smartphones

Cost-effectiveness of "Tele-Square Step exercise" for falls prevention in fibromyalgia patients: a study protocol

Carlos-Vivas J, Pérez-Gómez J, Delgado-Gil S, Campos-López JC, Granado-Sánchez M, Rojo-Ramos J, Muñoz-Bermejo L, Barrios-Fernandez S, Mendoza-Muñoz M, Prado-Solano A, Garcia-Gordillo MÁ, Adsuar JC. Int. J. Environ. Res. Public Health 2020; 17(3): e695.

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DOI 10.3390/ijerph17030695 **PMID** 31973115

Abstract

BACKGROUND: Women with fibromyalgia (FM) have 2.5 falls per year compared to the 0.5 falls in people without FM. This fact poses a significant health expense. Square Stepping Exercise (SSE) is a balance training system that has been shown to be effective in preventing falls in the elderly. However, there are neither studies in people with FM nor studies that apply SSE through video-conferencing (Tele-SSE). The objectives of this project are 1) to investigate the applicability, safety, decrease in the number of falls, and incremental cost-effectiveness ratio of prevention of falls program through Tele-SSE in women with FM, and 2) to study the transfer of obtained results to the public and private socio-health economy of Extremadura.

METHODS/Design: A randomized controlled trial with experimental (Tele-SSE) and control (usual treatment) groups will be carried out. The application of Tele-SSE will be performed for 12 months (three times per week) and one additional follow-up month after the intervention. A focus group including agents to identify key points to transfer the findings to the public and private sectors in Extremadura. One-hundred and eighteen women with FM will be recruited and randomly distributed into the two groups: Experimental (Tele-SSE; n = 59) and control group (Usual care; n = 59). Primary outcome measures will be: 1) Applicability; 2) safety; 3) annual number of falls; and 4) incremental cost-effectiveness ratio. Secondary outcomes will be: 1) Balance; 2) fear of falling; 3) socio-demographic and clinical information; 4) body composition; 5) physical fitness; 6) physical activity and sedentary behavior; 7) quality of life-related to health, mental health, and positive health; 8) pain; 9) disability level; 10) cognitive aspects; and 11) depressive symptoms. Regarding the focus group, the acceptability of the Tele-SSE will be evaluated in social-sanitary agents and will include Tele-SSE in their services offer. A statistical analysis will be carried out by treatment intention and protocol. In addition, a cost-effectiveness analysis from the perspective of the health system will be performed.

DISCUSSION: This project aims to improve the efficiency and equity of physical therapy services based on tele-exercise in preventing falls in people with FM. Furthermore, orientations will be given in order to transfer the obtained findings into the social-sanitary system and market.

Language: en

Keywords

balance; cognitive aspects; cost-effectiveness; depression; falls prevention; fibromyalgia; happiness; pain; square stepping exercise; strength

Educating health professionals to optimise falls screening in hospitals: protocol for a mixed methods study

Shaw L, Kiegaldie D, Morris ME. BMC Health Serv. Res. 2020; 20(1): e54.
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DOI 10.1186/s12913-020-4899-y **PMID** 31969145
Abstract
BACKGROUND: Falls in hospitals remain a major challenge to patient safety. All hospitalised adults are at risk of falling during their inpatient stay, though this risk is not always realised by patients and clinicians. This study will evaluate the outcomes of a hospital clinician education program that teaches clinicians how to screen for falls risk and assign mitigation strategies using clinical reasoning, rather than relying on a standardised falls risk assessment tool (FRAT). The education program aims to increase clinician knowledge, motivation and confidence in screening falls risk and selecting individual falls prevention interventions. Perceptions of the education intervention will also be examined.

METHODS: Participants will be a sample of convenience of nurses and allied health professionals from five Australian hospitals. For each hospital there will be two cohorts. Cohort 1 will be clinical leaders who shall receive a three-hour education program on the latest evidence in hospital falls risk assessment and how to implement a new falls screening and management tool. They will also be taught practical skills to enable them to deliver an effective one-hour in-service training session to Cohort 2. Cohort 2 will be recruited from the workforce as a whole and include nurses and other health professionals involved in routine hospital falls screening and prevention. The investigation will be framed on Keller's Model of Motivational Design and Kirkpatrick's evaluation framework. It will involve a mixed methods pre and post-test questionnaire design inclusive of semi-structured telephone interviews, to triangulate the data from multiple approaches.

DISCUSSION: This study will quantify the outcomes of a high-quality clinician education program to increase knowledge of evidence-based practice for falls prevention. It is predicted that positive behavioural changes will occur in health professionals, leading to organisational change and improved patient outcomes. Furthermore, the findings from the study will inform the future refinement of educational delivery to health professionals across hospital sites.
TRIAL REGISTRATION: The study has also been approved by the Australian New Zealand Clinical Trials Registry: Preventing Hospital Falls: Optimal Screening UTN U1111-1225-8450. Universal Trial Number (UTN): U1111-1228-0041 (obtained 5/2/19). Australian New Zealand Clinical Trials Registry (ANZCTR): ACTRN12619000200189 (obtained 12/2/19).

Language: en

Keywords
Education; Evidence-based; Falls; Falls prevention; Health professionals; Hospital; Nursing; Physiotherapy

Effect of different forms of physical activity on balance in older women

Filar-Mierzwa K, Długosz-Boś M, Marchewka A, Aleksander-Szymanowicz P. J. Women Aging. 2020; ePub(ePub): ePub.

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DOI 10.1080/08952841.2020.1718579 **PMID** 31977290

Abstract

The aim of this study was to analyze the effect of two types of physical activity, dance, and general exercises, on balance in older women. Study participants comprised two groups of women. The participants attended 45-min DMT (n = 20) or GRE sessions (n = 19) three times per week for 12 weeks. Before and after the training, the participants underwent the Postural Stability Test, the Limits of Stability Test, and the Fall Risk Test. Improvement of the balance was confirmed for only one test both for the dance group and the general exercises group.

Language: en

Keywords

Dance; fall risk; general exercises; older adults; postural stability

Evaluating the Humpty Dumpty Fall Scale: an international, multisite study

Gonzalez J, Hill-Rodriguez D, Hernandez LM, Cordo JA, Esteves J, Wang W, Salyakina D, Sarik DA. J. Nurs. Care Qual. 2020; ePub(ePub): ePub.

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DOI 10.1097/NCQ.0000000000000458 **PMID** 31972778

Abstract

BACKGROUND: The Humpty Dumpty Falls Prevention Program was developed to address an unmet need to identify pediatric patients at risk of a fall event.

PURPOSE: The aim of this study was to evaluate the performance of the Humpty Dumpty Fall Scale-Inpatient (HDFS) across a diverse, international pediatric population. In addition, the characteristics of patients who experienced a fall were analyzed.

METHODS: A retrospective, cross-sectional design was used to assess fall risk across 16 hospitals and 2238 pediatric patients. Multiple and simple logistic regressions were performed to evaluate association of individual scale items and total score with falls during hospitalization. Reliability, sensitivity, and specificity of the HDFS were also assessed.

RESULTS: Several of the HDFS items were significantly associated with the risk of falls in the pediatric population, but specificity of the tool is a concern to consider for future tool enhancement.

CONCLUSIONS: Characteristics for further refinement of the HDFS were identified.

Language: en

Falls in progressive supranuclear palsy

Brown FS, Rowe JB, Passamonti L, Rittman T. Mov. Disord. Clin. Pract. (Hoboken) 2020; 7(1): 16-24.

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DOI 10.1002/mdc3.12879 **PMID** 31970205

Abstract

BACKGROUND: Despite falls being an almost universal clinical feature and central to the presentation and diagnostic criteria of progressive supranuclear palsy, our understanding of falls is surprisingly limited and there are few effective treatment options.

OBJECTIVES: To provide an overview of the topic of the impact, assessment, mechanism, and management of falls in progressive supranuclear palsy.

METHODS: We performed a literature search for "falls" and "progressive supranuclear palsy" and included additional relevant literature known to us. We synthesized this literature with experience from clinical practice.

RESULTS: We review current understanding of the pathophysiology of falls, highlighting the roles of the indirect pathway and the pedunculopontine nucleus. We go on to identify shortcomings in commonly used assessments to measure falls. We discuss medical and nonmedical fall prevention strategies, and finally we discuss balancing falls risk against promoting independence.

CONCLUSION: Falls are central to progressive supranuclear palsy presentation and diagnosis. Indirect locomotor and pedunculopontine nucleus dysfunction are thought to be the neural substrate of falls in this condition. Attempts to measure and prevent falls, by medical and nonmedical means, are currently limited. A personalized approach is advocated in the management of falls.

Language: en

Keywords

Falls; progressive supranuclear palsy

Pilates exercise and postural balance in older adults: a systematic review and meta-analysis of randomized controlled trials

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Abstract

INTRODUCTION: The effects of exercising with the Pilates method on aspects such as balance for the general population have been reported by recent systematic reviews. However, whereas the effects of the Pilates method on improving general balance have been well studied, less is known about postural balance and the respective determinants of Pilates effects.

OBJECTIVES: (1) provide more up-to-date evidence to determine the effects of Pilates on postural balance and (2) examine the effects of length of intervention, Pilates amount per week (times per week X session duration), and study quality (risk of bias) on postural balance in older adults.

METHODS: A systematic electronic search in Medline and Scientific Electronic Library Online (SciELO) was completed in December 2018 identifying randomized controlled trials investigating the effect of a Pilates method on postural balance in healthy older adults. A subsequent meta-analysis was performed.

RESULTS: The meta-analysis involved 6 studies and 261 individuals (128 Pilates and 133 control groups). We observed an overall effect favoring the Pilates group SMD95% = 0.89 [0.29-1.49]. The subgroup mean effects were similar for "length of intervention" (low vs high) [P = 0.557], "Pilates amount per week" (low vs high) [P = 0.565], and "study quality" (low vs high) [P = 0.869].

CONCLUSION: Accordingly, our findings suggest that a Pilates training program can be considered as an effective form of exercise to improve balance in older adults. Additionally, length of intervention, Pilates amount per week, and study quality were not related to the magnitude of effect on postural balance.

Language: en

Keywords

Exercise movement techniques; Pilates training; Postural balance