Safety Literature 24th July 2022

Can two multimodal psychomotor exercise programs improve attention, affordance perception, and balance in community dwellings at risk of falling? A randomized controlled trial

Abstract

BACKGROUND: Falls are associated with cognitive and physical function deterioration. Attention decline, inaccurate affordance perception, and balance impairment are considered to be risk factors for falls. Furthermore, few studies have reported psychomotor intervention as a fall prevention program. This study aimed to investigate the effects of two multimodal programs on attention, perceptual and stepping-forward boundaries, and balance in community-dwelling older adults at risk of falling.

METHODS: Fifty-one community-dwelling older adults were recruited to participate in a 24-week randomized controlled trial. Participants (75.4 ± 5.6 years) were randomly assigned to one of three groups: the 1) multimodal psychomotor program [EG1], 2) combined program (multimodal psychomotor program + whole-body vibration program) [EG2], and 3) control group. Participants were assessed at baseline, at post-intervention, and after a 12-week no-intervention follow-up period.

RESULTS: The within-group comparisons showed significant improvements in attention and balance in EG1 and EG2 after the intervention ($p < 0.05$). The magnitudes of the treatment effects were similar in both EGs, ranging from medium to large. Decreases in the fall rate were also observed in EG1 (- 44.2%) and EG2 (- 63.0%) ($p < 0.05$). During the follow-up period, these improvements in attention were maintained, while those in balance were reversed in both EGs. No significant differences between groups were found.

CONCLUSIONS: These study results suggest that both multimodal exercise programs were effective for fall prevention and were well tolerated by the participants. Specifically, EG1 and EG2 showed identical improvements in attention, and EG2 presented a slightly larger enhancement in balance and a larger decrease in the fall rate. Our findings demonstrate the benefits of maintaining the psychomotor intervention program by itself or in combination with the whole-body vibration program to prevent cognitive and physical function deterioration. TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT03446352. Date of registration: February 26, 2018.
Language: en

Keywords

Exploring older adults' nighttime trips to the bathroom under different lighting conditions: an exploratory field study

Abstract

PURPOSE: The field study was to understand older adults' reactions to and use of different low-light conditions while walking to bathrooms in the dark in their homes. Low-light conditions included participants' usual nightlights and a destination-based LED strip lighting system.

BACKGROUND: Older adults encounter fall accidents while going to bathrooms at night due to low illuminance levels. They also fear falling due to previous fall histories or visual impairments. This field study tested and compared a destination-based LED strip lighting system with their usual nightlights on their movement and fear of falls.

METHODS: Fifteen older adults from an independent living facility participated in the within-subject design experiment, walking under two scenarios in random order: with usual nightlights turned on or with the destination-based LED strip lighting system turned on. Body-worn sensors were used to collect participants' movement behaviors, and subjective questionnaires were used to understand participants' anxiety under the two low-light conditions. Further, semi-structured interviews were conducted to understand their nightlight usage patterns and their evaluations of the destination-based LED strip lighting system.

RESULTS: Participants walked more smoothly under the destination-based LED strip lighting system scenario. However, the anxiety states were not statistically different between the two scenarios.

CONCLUSION: Visual cues in the dark can benefit older adults' safe movement. However, the application of the lab-effective LED strip lighting system in home settings should consider older adults' floor plans and their furniture layout, both indoor and outdoor ambient lighting sources, and their lifestyles.

Language: en

Falls prediction using the nursing home minimum dataset

Boyce RD, Kravchenko OV, Perera S, Karp JF, Kane-Gill SL, Reynolds CF, Albert SM, Handler SM. J. Am. Med. Inform. Assoc. 2022; ePub(ePub): ePub.

Abstract

OBJECTIVE: The purpose of the study was to develop and validate a model to predict the risk of experiencing a fall for nursing home residents utilizing data that are electronically available at the more than 15000 facilities in the United States.

MATERIALS AND METHODS: The fall prediction model was built and tested using 2 extracts of data (2011 through 2013 and 2016 through 2018) from the Long-term Care Minimum Dataset (MDS) combined with drug data from 5 skilled nursing facilities. The model was created using a hybrid Classification and Regression Tree (CART)-logistic approach.

RESULTS: The combined dataset consisted of 3985 residents with mean age of 77 years and 64% female. The model's area under the ROC curve was 0.668 (95% confidence interval: 0.643-0.693) on the validation subsample of the merged data.

DISCUSSION: Inspection of the model showed that antidepressant medications have a significant protective association where the resident has a fall history prior to admission, requires assistance to balance while walking, and some functional range of motion impairment in the lower body; even if the patient exhibits behavioral issues, unstable behaviors, and/or are exposed to multiple psychotropic drugs.

CONCLUSION: The novel hybrid CART-logit algorithm is an advance over the 22 fall risk assessment tools previously evaluated in the nursing home setting because it has a better performance characteristic for the fall prediction window of ≤90 days and it is the only model designed to use features that are easily obtainable at nearly every facility in the United States.

Language: en

Keywords

Impact of physical activity programs and services for older adults: a rapid review

Pinheiro MB, Oliveira JS, Baldwin JN, Hassett L, Costa N, Gilchrist H, Wang B, Kwok W, Albuquerque BS, Pivotto LR, Carvalho-Silva APMC, Sharma S, Gilbert S, Bauman A, Bull FC, Willumsen J, Sherrington C, Tiedemann A. Int. J. Behav. Nutr. Phys. Act. 2022; 19(1): 87.

Abstract

BACKGROUND: Knowledge of which physical activity programs are most effective for older adults in different sub-populations and contexts is limited. The objectives of this rapid review were to: 1) Overview evidence evaluating physical activity programs/services for older adults; and 2) Describe impact on physical activity, falls, intrinsic capacity (physical domain), functional ability (physical, social, and cognitive/emotional domains), and quality of life.

METHODS: We conducted a rapid review of primary studies from 350 systematic reviews identified in a previous scoping review (March 2021: PEDro, MEDLINE, CINAHL, Cochrane Database). For Objective 1, we included intervention studies investigating physical activity programs/services in adults ≥ 60 years. Of these, we included good quality ($\geq 6/10$ PEDro scale) randomised controlled trials (RCTs) with ≥ 50 participants per group in Objective 2.

RESULTS: Objective 1: Of the 1421 intervention studies identified from 8267 records, 79% were RCTs, 87% were in high income countries and 39% were good quality.

OBJECTIVE 2: We identified 87 large, good quality RCTs (26,861 participants). Overall activity promotion, structured exercise and recreation/sport had positive impacts ($\geq 50\%$ between-group comparisons positive) across all outcome domains. For overall activity promotion (21 intervention groups), greatest impacts were on physical activity (100% positive) and social outcomes (83% positive). Structured exercise (61 intervention groups) had particularly strong impacts on falls (91% positive), intrinsic capacity (67% positive) and physical functioning (77% positive). Recreation/sport (24 intervention groups) had particularly strong impacts on cognitive/emotional functioning (88% positive). Multicomponent exercise (39 intervention groups) had strong impacts across all outcomes, particularly physical activity (95% positive), falls (90% positive) and physical functioning (81% positive).

RESULTS for different populations and settings are presented.

CONCLUSION: Evidence supporting physical activity for older adults is positive. We outline which activity types are most effective in different populations and settings. Language: en

Keywords

Impact of socioeconomic status and health risk on fall inequality among older adults

Abstract

Socio-economic status (SES) is one of the important indicators reflecting individual social participation and resource allocation, and it plays an important role in individual health shock. Health shock indicates the body being in a non-healthy state, such as illness, injury and death. This study used data from the China Health and Retirement Longitudinal Study conducted in 2013, 2015 and 2018 and utilised the panel logit model, causal step-by-step analysis and path analysis to empirically test the impact of SES on fall inequality among the elderly and the mediating effect of health shock. The results demonstrated obvious group inequality in the fall risk among older adults, the core of which was the impact of SES on health, causing health inequality and affecting fall inequality. The activities of daily living and pain rate of the high-income group were 61.16% and 28.69%, respectively, that of the low-income group. The evaluation of good sight and hearing were 3.6833 and 3.8572 times, respectively, that of the low-income group. The non-depressive status was 38.4638 times of the low-income group. The path effect confirmed the mediating role of health shock. Therefore, this study concluded that SES had an important impact on the risk of falls among the elderly, and this impact was mainly from health shock. This study proposed that to reduce the incidence of falls among the elderly, differences in health shock risks among the elderly with different SES must be actively monitored and accurate and effective policy interventions should be implemented from the level of group heterogeneity.

Language: en

Keywords

older adults; socioeconomic status; path analysis; falls; health shock

Impact of upgraded lighting on falls in care home residents

Grant LK, St Hilaire MA, Heller JP, Heller RA, Lockley SW, Rahman SA. J. Am. Med. Dir. Assoc. 2022; ePub(ePub): ePub.

Abstract

OBJECTIVES: Falls in care home residents have major health and economic implications. Given the impact of lighting on visual acuity, alertness, and sleep and their potential influence on falls, we aimed to assess the impact of upgraded lighting on the rate of falls in long-term care home residents.

DESIGN: An observational study of 2 pairs of care homes (4 sites total). One site from each pair was selected for solid-state lighting upgrade, and the other site served as a control. SETTING AND PARTICIPANTS: Two pairs of care homes with 758 residents (126,479 resident-days; mean age (±SD) 81.0 ± 11.7 years; 57% female; 31% with dementia).

METHODS: One "experimental" site from each pair had solid-state lighting installed throughout the facility that changed in intensity and spectrum to increase short-wavelength (blue light) exposure during the day (6 am-6 pm) and decrease it overnight (6 pm-6 am). The control sites retained standard lighting with no change in intensity or spectrum throughout the day. The number of falls aggregated from medical records were assessed over an approximately 24-month interval. The primary comparison between the sites was the rate of falls per 1000 resident-days.

RESULTS: Before the lighting upgrade, the rate of falls was similar between experimental and control sites (6.94 vs 6.62 falls per 1000 resident-days, respectively; rate ratio [RR] 1.05; 95% CI 0.70-1.58; P =.82). Following the upgrade, falls were reduced by 43% at experimental sites compared with control sites (4.82 vs 8.44 falls per 1000 resident-days, respectively; RR 0.57; 95% CI 0.39-0.84; P =.004).

CONCLUSIONS AND IMPLICATIONS: Upgrading ambient lighting to incorporate higher intensity blue-enriched white light during the daytime and lower intensity overnight represents an effective, passive, low-cost, low-burden addition to current preventive strategies to reduce fall risk in long-term care settings.

Language: en

Keywords

Lighting; aging; falls; falls prevention; care homes; melanopic

Improving policy for the prevention of falls among community-dwelling older people-a scoping review and quality assessment of international national and state level public policies

Abstract

OBJECTIVES: Effective public policy to prevent falls among independent community-dwelling older adults is needed to address this global public health issue. This paper aimed to identify gaps and opportunities for improvement of future policies to increase their likelihood of success.

METHODS: A systematic scoping review was conducted to identify policies published between 2005-2020. Policy quality was assessed using a novel framework and content criteria adapted from the World Health Organization's guideline for Developing policies to prevent injuries and violence and the New Zealand Government's Policy Quality Framework.

RESULTS: A total of 107 articles were identified from 14 countries. Content evaluation of 25 policies revealed that only 54% of policies met the WHO criteria, and only 59% of policies met the NZ criteria. Areas for improvement included quantified objectives, prioritised interventions, budget, ministerial approval, and monitoring and evaluation.

CONCLUSION: The findings suggest deficiencies in a substantial number of policies may contribute to a disconnect between policy intent and implementation. A clear and evidence-based model falls prevention policy is warranted to enhance future government efforts to reduce the global burden of falls.

Language: en

Keywords

Prevalence and risk factors for fall among rural elderly: a county-based cross-sectional survey

Zhang H, Zhao Y, Wei F, Han M, Chen J, Peng S, Du Y. Int. J. Clin. Pract. 2022; 2022: e8042915.

Abstract

AIM: The aim of the study was to provide evidence for the prevention and reduction of falls in the elderly living in rural areas by analyzing epidemiological data of falls among the rural older people (>65 years old) and identifying the risk and protective factors.

METHODS: This study analyzed the sociodemographic characteristics, living environment, lifestyle, chronic disease condition, mental health, activities of daily living (ADL), and detailed information of falls of 3752 rural elderly. Rank tests, chi-square tests, and binary logistic regression were used for data analysis.

RESULTS: The prevalence of falls was 30.0%, and the 75-84-years age group had the highest fall rate (18.8%). According to the binary logistic regression analysis, six variables, including roughage intake frequency, age, gender, cane use, floor tiles, and IADL, were involved in the fall patterns. Low roughage intake (OR = 2.48, 95% CI 1.24-4.97), female gender (OR = 2.12, 95% CI 1.48-3.05), the use of a cane (OR = 2.11, 95% CI 1.08-4.10), and medium IADL (OR = 2.02, 95% CI 1.89-2.32) were the top four risk factors.

CONCLUSION: The fall in the rural elderly was mainly due to the poor living and working conditions. Routine fall assessment could address several preventable risk factors to reduce the prevalence and mitigate the harm of falls.

Language: en

Sentinel fall presenting to the emergency department (SeFallED) - protocol of a complex study including long-term observation of functional trajectories after a fall, exploration of specific fall risk factors, and patients' views on falls prevention

Stuckenschneider T, Koschate J, Dunker E, Reeck N, Hackbarth M, Hellmers S, Kwiecien R, Lau S, Levke Brütt A, Hein A, Zieschang T. BMC Geriatr. 2022; 22(1): 594.

Abstract

BACKGROUND: Falls are a leading cause for emergency department (ED) visits in older adults. As a fall is associated with a high risk of functional decline and further falls and many falls do not receive medical attention, the ED is ideal to initiate secondary prevention, an opportunity generally not taken. Data on trajectories to identify patients, who would profit the most form early intervention and to examine the impact of a fall event, are lacking. To tailor interventions to the individual's needs and preferences, and to address the whole scope of fall risks, we developed this longitudinal study using an extensive assessment battery including dynamic balance and aerobic fitness, but also sensor-based data. Additionally, participative research will contribute valuable qualitative data, and machine learning will be used to identify trips, slips, and falls in sensor data during daily life.

METHODS: This is a mixed-methods study consisting of four parts: (1) an observational prospective study, (2) a randomized controlled trial (RCT) to explore whether a diagnostic to measure reactive dynamic balance influences fall risk, (3) machine learning approaches and (4) a qualitative study to explore patients' and their caregivers' views. We will target a sample size of 450 adults of 60 years and older, who presented to the ED of the Klinikum Oldenburg after a fall and are not hospitalized. The participants will be followed up over 24 months (within four weeks after the ED, after 6, 12 and 24 months). We will assess functional abilities, fall risk factors, participation, quality of life, falls incidence, and physical activity using validated instruments, including sensor-data. Additionally, two thirds of the patients will undergo intensive testing in the gait laboratory and 72 participants will partake in focus group interviews.
DISCUSSION: The results of the SeFallED study will be used to identify risk factors with high predictive value for functional outcome after a sentinel fall. This will help to (1) establish a protocol adapted to the situation in the ED to identify patients at risk and (2) to initiate an appropriate care pathway, which will be developed based on the results of this study. TRIAL REGISTRATION: DRKS (Deutsches Register für klinische Studien, DRKS00025949). Prospectively registered on 4(th) November, 2021.
Language: en

Student coaching in a rural community fall prevention program: an exploratory study

Klima D, Austin N, Avila K, Savoy A, Rhoten N, Wehland E, Weimert J, Wolfe J. Gerontol. Geriatr. Educ. 2022; ePub(ePub): ePub.

Abstract

Falls are a significant cause of disability internationally. The purpose of this exploratory study was to examine the effectiveness of a community fall prevention program, Stepping On (SO), using nine student physical therapists and program faculty in a rural setting. A mixed-methods design was utilized. Students partnered with older adults to master exercises, demonstrate floor recovery techniques, and manage community navigation in line with program fidelity. A descriptive survey assessed program outcomes. Students participated in a follow-up focus group to discuss perspectives on their role in the program. One hundred and seventeen community-dwelling older adults (mean age: 75.2 ± 8.5) completed the program. Participants who lived alone were likely to limit their activities because of fear of falling ($p = .045$). Following SO most subjects (87.7%) described having a better understanding of falls and their causes, with a plan to arise from the floor (82.6%). Focus group themes underscored students' opportunity to facilitate, reinforce safety during mobility activities, and motivate participants. Furthermore, an increased awareness of other professions' contribution to fall prevention was noted. Following a community fall prevention program, older adults have a better understanding of fall prevention and plan for floor recovery. In turn, student coaching skills are reinforced.

Language: en

Keywords

Sustainable fall prevention across Europe: challenges and opportunities

van der Velde N, Seppala L, Petrovic M, Ryg J, Tan MP, Montero-Odasso M, Martin FC, Masud T. Aging Clin. Exp. Res. 2022; ePub(ePub): ePub.

Abstract

Falls and related injuries form a growing health-care problem in aging societies. Between 40 and 60% of older fallers in the last year report being injured [1]. Around 15-20% of falls result in serious (non-fracture) injuries including fractures [2]. Non-injurious falls have also been associated with adverse health effects, including accelerated functional decline, anxiety and depression, fear of falling, and social withdrawal [3]. Consequently, fall incidents have an impact on societal health-care expenditure, equaling 0.85-1.5% of the total health-care expenditure in Western countries [4].

To tackle this health-care issue, many countries with developed health-care services have established fall prevention services. Given its multifactorial nature, it is assumed that comprehensive geriatric assessment (CGA) leading to individually targeted interventions would be effective. Previous literature has shown that several good quality trials have resulted in a reduction in falls [5]. Despite local differences, these services generally address (1) risk stratification and (2) multifactorial assessment (MA) of risk factors and (3) accompanying interventions. Accordingly, several medical societies and organizations have published clinical practice guidelines for fall prevention and management and a recent systematic review found a high degree of agreement in several areas [6]. These guideline components are consistent with a recent systematic review and network meta-analyses showing that several single and multiple fall prevention interventions are associated with reduction in falls...

Language: en

Keywords

Systematic review and critical methodological appraisal of community-based falls prevention economic models

Abstract

BACKGROUND: Falls impose significant health and economic burdens on community-dwelling older persons. Decision modelling can inform commissioning of alternative falls prevention strategies. Several methodological challenges arise when modelling public health interventions including community-based falls prevention. This study aims to conduct a systematic review (SR) to: systematically identify community-based falls prevention economic models; synthesise and critically appraise how the models handled key methodological challenges associated with public health modelling; and suggest areas for further methodological research.

METHODS: The SR followed the 2021 PRISMA reporting guideline and covered the period 2003-2020 and 12 academic databases and grey literature. The extracted methodological features of included models were synthesised by their relevance to the following challenges: (1) capturing non-health outcomes and societal intervention costs; (2) considering heterogeneity and dynamic complexity; (3) considering theories of human behaviour and implementation; and (4) considering equity issues. The critical appraisal assessed the prevalence of each feature across models, then appraised the methods used to incorporate the feature. The methodological strengths and limitations stated by the modellers were used as indicators of desirable modelling practice and scope for improvement, respectively. The methods were also compared against those suggested in the broader empirical and methodological literature. Areas of further methodological research were suggested based on appraisal results.

RESULTS: 46 models were identified. Comprehensive incorporation of non-health outcomes and societal intervention costs was infrequent. The assessments of heterogeneity and dynamic complexity were limited; subgroup delineation was confined primarily to demographics and binary disease/physical status. Few models incorporated heterogeneity in intervention implementation level, efficacy and cost. Few dynamic variables other than age and falls history were incorporated to characterise the trajectories of falls risk and general health/frailty. Intervention sustainability was frequently based on assumptions; few models estimated the economic/health returns from improved implementation. Seven models incorporated ethnicity- and severity-based subgroups but did not estimate the equity-efficiency trade-offs. Sixteen methodological research suggestions were made.

CONCLUSION: Existing community-based falls prevention models contain methodological limitations spanning four challenge areas relevant for public health modelling. There is scope for further methodological research to inform the development of falls prevention and other public health models.

Language: en

Keywords

Systematic review for the prevention and management of falls and fear of falling in patients with Parkinson's disease

Liu WY, Tung TH, Zhang C, Shi L. Brain Behav. 2022; ePub(ePub): ePub.

Abstract

OBJECTIVE: To synthesize recent empirical evidence for the prevention and management of falls and fear of falling in patients with Parkinson's disease (PD). DATA SOURCE: Database from PubMed, Cochrane Library, and EMBASE. STUDY DESIGN: Systematic review. DATA COLLECTION: We searched the PubMed, Cochrane Library, and EMBASE databases for studies published from inception to February 27, 2021. Inclusion criteria were nonreview articles on prevention and management measures related to falls and fall prevention in Parkinson's disease patients. PRINCIPAL FINDINGS: We selected 45 articles and conducted in-depth research and discussion. According to the causes of falls in PD patients, they were divided into five directions, namely physical status, pre-existing conditions, environment, medical care, and cognition. In the cognitive domain, we focused on the fear of falling. On the above basis, we constructed a fall prevention model, which is a tertiary prevention health care network, based on The Johns Hopkins Fall Risk Assessment Tool to provide ideas for the prevention and management of falling and fear of falling in PD patients in clinical practice CONCLUSIONS: Falls and fear of falls in patients with Parkinson's disease can be reduced by effective clinical prevention and management. Future studies are needed to explore the efficacy of treatment and prevention of falls and fear of falls.

Language: en

Keywords

prevention; management; Parkinson's disease; systematic review; falls; fear of fall

A retrospective cohort study of factors associated with severity of falls in hospital patients

Abstract

Severity of falls in hospital patients are threat to patient safety which can result in a financial burden on the patient's family and health care services. Both patient specific and environmental and organisational factors are associated with severity of falls in hospital. It is important to continuously analyse the factors associated with severity of fall which can inform the implementation of any fall preventive strategies. This study aims to identify factors associated with the severity of falls in hospitalised adult patients in Western Australia. This study involved a retrospective cohort analysis of inpatient falls records extracted from the hospital's Clinical Incident Database from May 2014 to April 2019. Severity of falls were classified as three Severity Assessment Code (SAC): SAC 1 was "high" causing serious harm or death; SAC 2 was "medium" causing moderate or minor harm; and SAC 3 was "low" indicating no harm. Univariable and multivariable generalised ordinal logistic regression models were used to quantify the magnitude of effects of the potential risk factors on severity of falls at 5% level of significance and reported the crude odds and adjusted odds ratio of falling at a higher severity level. There were 3705 complete reported cases of falls with the average age of the patients was 68.5 ± 17.0 years, with 40.2% identified as female. The risk of falling at a higher level of severity increased by patient age over 50 years. Females were 15.1% more likely to fall at higher severity level compared to females. Fall incidents occurred during toileting and showering activities and incidents in a communal area were 14.5% and 26% more likely to occur at a higher severity respectively. Similarly, depression (167%), influence of alcohol or illicit drugs (more than 300%), use of medications (86%) and fragile skin (75%) significantly increased the odds of falling at higher level of severity. Identification of underlying risk factors associated with fall severity provides information which can guide nurses and clinicians to design and implement effective interventional strategies that mitigate the risk of serious fall injuries. The results suggest that fall prevention strategies should target patients with these risk factors to avoid severity of falls.

Language: en

Adherence and barriers to drug therapy: relationship with the risk of falls in older adults

Abstract

OBJECTIVE: to verify the association of adherence and barriers to drug therapy with the risk of falls and the sociodemographic, clinical and economic variables.

METHOD: a cross-sectional study, carried out with 117 aged individuals in a Medical Clinic of Specialties for Older Adults in the Southeast region of the city of São Paulo (SP), from March to November 2019. The following scales were applied: Downton Fall Risk, Morisky-Green Test and Brief Medication Questionnaire. Logistic regression was use to verify the association between adherence to the treatment and types of barriers to adherence and the risk of falls. A 5% significance level was used.

RESULTS: the older adults with low adherence to the drug treatment presented 5.57 times more chances of having a high risk of falling when compared to those with greater adherence, and those with a barrier in the recall domain had 22.75 times more chances of having a high risk of falling, in relation to the aged individuals without barriers in the recall domain.

CONCLUSION: low and average adherence to drug therapy and the barrier related to the recall domain were associated with high risk of falls in the older adults.

Language: en

Keywords

Accident due to falls; Adherence to medications; Barriers to accessing health care; Cooperation and adherence to the treatment; Older adult

Assessment of the predictive ability of the Johns Hopkins Fall Risk Assessment Tool (Chinese Version) in inpatient settings

Abstract

AIMS: This study was to assess the predictive ability of the Johns Hopkins Fall Risk Assessment Tool (Chinese Version) in inpatient settings.

DESIGN: A case-control study.

METHODS: This study was conducted in a tertiary hospital based on 2019 data. With a case-control design in a 1:2 ratio, the predictive ability of the Johns Hopkins Fall Risk Assessment Tool (Chinese Version) was determined by ROC curve. The best cut point was identified based on sensitivity, specificity, positive predict value and negative predict value. Conditional logistical regression analysis was conducted to test the predictive ability of each indicator.

RESULTS: The study included 309 patients, with 103 in the case group and 206 in the control groups. Generally, the predictive ability was acceptable with the area under ROC curve value at 0.73 (95% CI: 0.67-0.79). Positive predict value and negative predict value performed best at the cut point of 13. Sensitivity at cut point 6 was much higher than that at cut point 13, though specificity was lower. Except for age, all indicators in the Johns Hopkins Fall Risk Assessment Tool (Chinese Version) demonstrated significant predictive ability as to occurrence of fall.

CONCLUSION: The Johns Hopkins Fall Risk Assessment Tool (Chinese Version) is a reliable assessment instrument in the inpatient settings. IMPACT: This is the first study that evaluated the predictive ability of the Johns Hopkins Fall Risk Assessment Tool (Chinese version) in the inpatient settings, and proved that the instrument is reliable for assessing inpatient fall risks. Further studies could be carried out to assess the predict ability of Johns Hopkins Fall Risk Assessment Tool (Chinese version) among specific populations.

Language: en

Comparison of fracture risk calculators in elderly fallers: a hospital-based cross-sectional study

Abstract

OBJECTIVE: Elderly patients presenting with falls are known to carry an extremely high risk of future fragility fractures. Current osteoporosis guidelines recommend using fracture risk calculators such as FRAX, QFracture or Garvan to guide management. However, they differ considerably in their inputs and may therefore provide contrasting risk estimations in certain individuals. In this study, we compare these risk calculators in a high-risk cohort of elderly patients admitted to hospital with falls.

DESIGN: Hospital-based cross-sectional study. SETTING: Secondary care, London, UK. PARTICIPANTS: Data from 120 consecutive elderly patients who had falls presenting to a single hospital over 4 months were collected. 10-year major and hip fracture risks were calculated using FRAX, QFracture and Garvan. 1-year major and hip fracture risks from QFracture were assessed against prospective incidence of fracture.

RESULTS: Median 10-year major fracture risk was: FRAX 19.5%, QFracture 26.0%, Garvan 32.5%. Median 10-year hip fracture risk was: FRAX 9.6%, QFracture 21.1%, Garvan 6.5%. Correlation between FRAX and QFracture was r=0.672 for major, r=0.676 for hip fracture (both p<0.0001); FRAX and Garvan r=0.778 (p<0.0001) for major, r=0.128 (p=0.206) for hip fracture; QFracture and Garvan r=0.658 (p<0.0001) for major, r=0.318 (p<0.001) for hip fracture. QFracture 1-year predicted major and hip fracture rates were 1.8% and 1.2%, respectively, compared with actual rates of 2.1% and 0%, respectively.

CONCLUSIONS: Although strong correlations between calculators were observed in the study cohort, there were differences of up to 13% between estimated risks. QFracture captured several elderly-specific inputs not considered by other calculators and so projected higher fracture risk than the other calculators. QFracture provided 1-year fracture risks that were comparable with the prospective observed fracture incidence in the cohort. This study has important clinical implications for the use of fracture risk calculators to guide treatment decisions, particularly in the high-risk cohort of elderly patients admitted to hospital following falls.

Language: en

Don't watch your step: gaze behavior adapts with practice of a target stepping task

Abstract

Vision plays a vital role in locomotor learning, providing feedback information to correct movement errors and feedforward information to inform learned movement plans. Gaze behavior, or the distribution of fixation locations, can quantify how visual information is used during the motor learning process. But how gaze behavior adapts during motor learning and in response to changing motor performance is poorly understood. The present study examines if and how an individual's gaze behavior adapts during a sequence learning, target stepping task. We monitored the gaze behavior of 12 healthy young adults while they walked on a treadmill and attempted to precisely step on moving targets with variable step length. Participants completed a total of 11 trial blocks of 102 steps each. We hypothesized that both mean fixation distance would increase (participants would look farther ahead), and step error would decrease with experience. Following practice, participants significantly increased their fixation distance (p<0.001) by 0.27±0.18 steps and decreased their step error (p<0.001) by 4±1.7 cm, supporting our hypothesis. Our results suggest that early in the learning process participants gaze behavior emphasized gathering visual information necessary for feedback motor control. As motor performance improved with experience participants shifted their gaze fixation farther ahead placing greater emphasis on the visual information used for feedforward motor control. These findings provide important information about how gaze behavior changes in parallel with improvements in walking performance.

Language: en

Keywords

Face masks and falls

Abstract

Over the past 20 months, many New Zealanders have been wearing face masks to reduce the transmission of COVID-19. Masks are thought to be beneficial in terms of reducing the chance of transmitting respiratory borne viruses including COVID-19...

Language: en

Implementation of falls risk evaluation at one-year after total hip arthroplasty: a cross-sectional study

Abstract

BACKGROUND: Research has demonstrated an increased risk of falls after total hip arthroplasty (THA). Yet, people's knowledge on falls risk factors and how falls prevention strategies are being used after THA have not been examined. If a person's knowledge of falls and self-efficacy about falls prevention strategies is low this would indicate a pressing need for interventions to lessen risk. The study objectives were: 1) to determine the falls knowledge and what fall prevention strategies people used after (THA) and 2) to determine the outcomes of a falls risk assessment at 12-months after unilateral THA.

METHODS: Overall, 108 people completed the Falls Risk for Older People - Community Setting (FROP-Com) scale, a falls questionnaire (covered occurrence of falls, knowledge on falls risk factors, falls prevention strategies implemented after THA surgery), 6-m Walk Test (6mWT), 30-Second Chair Stand Test (30CST), Timed-up and Go (TUG) Test, and Activities-specific Balance Confidence Scale (ABC).

RESULTS: Twenty-five (23.2%) people fell at least once in the 12 months after THA. Scores on the FROP-Com ranged from 2-20 with an average of 8.2 ± 3.6 indicating a mild falls risk. The importance of falling compared to other health concerns was rated as moderate to high (6.8 ± 2.9) and the majority of participants (n = 98, 90.7%) believed falls can be prevented after THA. Total scores on the ABC scale ranged from 30.6% to 100.0% with an average score of $84.4 \pm 15.5\%$, indicating high function. Only 47 people (43.5%) reported receiving falls prevention education. A total of 101 falls prevention strategies were completed by 67 people (62%), the most common strategy was environmental modifications (e.g., installation of grab bars) at 37.4%, while exercise was mentioned by only 2%. The majority of people had functional deficits in 30CST (62%) and TUG (76.9%) at 12-months after unilateral THA.

CONCLUSIONS: Almost a quarter of the sample had experienced a fall in the 12-months after THA and functional deficits were common. The majority of the sample had proactively implemented falls prevention strategies after the surgery. Yet importantly, people after THA had limited exposure to falls prevention education and implemented a limited range of prevention strategies.

Language: en

Keywords

Aged; Accidental falls; Hip arthroplasty; Osteoarthritis

Investigation of changes in the physical activity and fall experience before and after the COVID-19 pandemic

Abstract

This study aimed to investigate the changes in physical activity levels and the rate of falls during the COVID-19 pandemic in the Korean population. The Korean Community Health Survey (KCHS) conducted in 2019 was compared with that conducted in 2020. Simple or multiple linear regression with complex sampling was conducted to calculate the estimated value (EV) of physical activity in the 2020 group vs. the 2019 group. The odds ratio (OR) of fall histories was calculated using simple or multiple logistic regression with complex sampling for the 2020 group compared to the 2019 group. The time spent on vigorous and moderate physical activity was lower in the 2020 group than in the 2019 group (EV = -10.0, 95% CI = -12.1 to -8.0, P < 0.001 for vigorous exercise and EV = -24.0, 95% CI = -26.7 to -21.4, P < 0.001 for moderate exercise). The rate of falls was lower in the 2020 group than in the 2019 group (OR = 0.66, 95% CI = 0.62 to 0.70, P < 0.001). Vigorous and moderate exercise decreased after the COVID-19 pandemic compared to before the pandemic. The occurrence of falls was lower during the COVID-19 pandemic than in the pre-pandemic period.

Language: en

Keywords

Physical activity; COVID-19; falls; case-control studies; cohort studies

Physical activity and fall prevention in geriatric inpatients in an acute care unit (AGIR Study): protocol for a usability study

Abstract

BACKGROUND: Falls are one of the world's top 10 risks associated with disability in people older than 60 years. They also represent more than two-thirds of adverse events in hospitals, mainly affecting patients older than 65 years. Physical activity is a central intervention in fall prevention for older people. Whatever the details of the prevention strategy that is adopted (ie, how a mono- or multifactorial intervention is evaluated, the category of person the intervention targets, and where it is used), it is important to ensure that the proposed intervention is feasible and usable for the patient and the health care team.
OBJECTIVE: The primary objective is to study the usability of carrying out a physical activity intervention, including 3 types of exercises, in older patients hospitalized in a geriatric acute care unit and categorized according to 3 fall risk levels: low, moderate, and high. The secondary objectives are to determine the difficulty of the physical exercise for patients with different fall risk levels, to study the health care team's perceptions of the intervention's feasibility, and to study the benefits for patients.
METHODS: This is an open-label, unicenter, nonrandomized, usability prospective clinical trial. The intervention tested is a daily physical activity program. It consists of 3 types of physical exercise: staying out of bed for at least 3 hours, performing balance exercises while standing for 2 minutes, and the Five Times Sit to Stand transfer exercise. These exercises are carried out under the supervision of the health care team. Fall risk in the patients is classified with the Brief Geriatric Assessment tool. The exercise program starts on the second day of hospitalization after inclusion in the study. Patient assessment continues until the last day of hospitalization or the 20th day of hospitalization, whichever is earlier. For each fall-risk group and each type of exercise, the intervention will be defined as usable if at least 80% of the participants complete 75% or more of the exercises (ie, the ratio between the number of days when the patient completes a type of exercise and the total number of hospitalization days). The perceived feasibility by the health care team is measured with 2 scales, measuring perceived difficulty and time spent with the patient. The intervention benefit is evaluated using the performance of the Five Times Sit to Stand test before and after the intervention.
RESULTS: The first patient was recruited on March 16, 2015. The study enrolled 266 patients, including 75 with low fall risk, 105 with moderate risk, and 85 with high risk.
CONCLUSIONS: We have not yet analyzed the results, but our observations suggest that the usability of each type of exercise for a given patient will depend on their fall risk level.
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