

Safety Literature 6th October 2019

A community program of integrated care for frail older adults: +AGIL Barcelona

Pérez LM, Enfedaque-Montes MB, Cesari M, Soto-Bagaria L, Gual N, Burbano MP, Tarazona-Santabalbina FJ, Casas RM, Diaz F, Martin E, Gomez A, Orfila F, Inzitari M. J. Nutr. Health Aging 2019; 23(8): 710-716.

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DOI

10.1007/s12603-019-1244-4

PMID

31560028

Abstract

OBJECTIVES: To assess the 3-month impact on physical function of a program for community-dwelling frail older adults, based on the integration of primary care, geriatric medicine, and community resources, implemented in "real life".

DESIGN: Interventional cohort study. **SETTING:** Primary care in Barcelona, Spain.

PARTICIPANTS: Individuals aged ≥ 80 years ($n=134$), presenting at least one sign of frailty (i.e., slow gait speed, weakness, memory complaints, involuntary weight loss, poor social support). **INTERVENTION:** After frailty screening by the primary care team, candidates were referred to a geriatric team (geriatrician + physical therapist), who performed a comprehensive geriatric assessment and designed a tailored multidisciplinary intervention in the community, including a) multi-modal physical activity (PA) sessions, b) promotion of adherence to a Mediterranean diet c) health education and d) medication review.

MEASUREMENTS: Participants were assessed based on a comprehensive geriatric assessment including physical performance (Short Physical Performance Battery -SPPB- and gait speed), at baseline and at a three month follow-up.

RESULTS: A total of 112 (83.6%) participants (mean age=80.8 years, 67.9% women) were included in this research. Despite being independent in daily life, participants' physical performance was impaired (SPPB=7.5, SD=2.1, gait speed=0.71, SD=0.20 m/sec). After three months, 90.2% of participants completed ≥ 7.5 physical activity sessions. The mean improvements were +1.47 (SD 1.64) points ($p<0.001$) for SPPB, +0.08 (SD 0.13) m/sec ($p<0.001$) for gait speed, -5.5 (SD 12.10) sec ($p<0.001$) for chair stand test, and 53% ($p<0.001$) improved their balance.

RESULTS remained substantially unchanged after stratifying the analyses according to the severity of frailty.

CONCLUSIONS: Our results suggested that a "real-world" multidisciplinary intervention, integrating primary care, geriatric care, and community services may improve physical function, a marker of frailty, within 3 months. Further studies are needed to address the long-term impact and scalability of this implementation program.

Keywords

Frailty; integrated care; physical activity; primary care

Association between lower urinary tract symptoms and falls in adults males: based on the Korean Community Health Survey

Hwang TY, Kim SK, Kim KH, Kim JY. *Asia Pac. J. Public Health* 2019; ePub(ePub): ePub.

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(Copyright © 2019, Asia-Pacific Academic Consortium for Public Health, Publisher SAGE Publishing)

DOI

10.1177/1010539519878361

PMID

31561710

Abstract

This study aimed to investigate the correlation between lower urinary tract symptoms (LUTSs) and falls considering places where falls can occur in adult males. We analyzed 101 862 males in the 2011 Korean Community Health Survey. LUTSs were assessed using the International Prostate Symptom Score system. The rate of total and indoor falls significantly increased with the LUTS severity, respectively. After adjusting for age and other confounding variables, the odds ratios (ORs) for total falls were significantly high for the mild (OR = 1.63, 95% confidence interval [CI] = 1.54-1.71), moderate (OR = 2.35, 95% CI = 2.16-2.56), and severe groups (OR = 2.83, 95% CI = 2.49-3.22), relative to the normal group. Indoor fall experience was the same for the mild (OR = 1.56, 95% CI = 1.36-1.79), moderate (OR = 2.37, 95% CI = 1.97-2.85), and severe groups (OR = 3.77, 95% CI = 3.00-4.72). Nocturia, hesitancy, and urgency were significantly associated with indoor falls. The association between falls and the degree of LUTS was observed in both the young and the elderly. Therefore, further studies are needed to determine the effects of treatment of LUTS on the risk of falls and the effectiveness of the fall prevention program.

Language: en

Keywords

International Prostate Symptom Score; falls; lower urinary tract symptoms; males; the Korean Community Health Survey

Cognitive performances better identify fallers than mobility assessment among older adults with fear of falling

Langeard A, Desjardins-Crépeau L, Lemay M, Payette MC, Bherer L, Grenier S. *Aging Clin. Exp. Res.* 2019; ePub(ePub): ePub.

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(Copyright © 2019, Editrice Kurtis)

DOI

10.1007/s40520-019-01338-9

PMID

31576516

Abstract

BACKGROUND: Half of the people with fear of falling (FoF) are non-fallers, and the reason why some people considered non-fallers are afraid of falling is unknown, but reduced mobility or cognition, or both concurrently must be considered as potential risk factors.

AIM: The study aimed to determine if mobility and/or cognitive abilities could identify people with a history of falls in older adults with FoF.

METHODS: Twenty-six older adults with FoF participated in this study. Full cognitive and mobility assessments were performed assessing global cognitive impairments (MoCA score < 26), executive functions, memory, processing speed, visuospatial skills, mobility impairment (TUG time > 13.5 s), gait, balance and physical capacity. Information about falls occurring during the year prior to the inclusion was collected. Logistic regression analyses were performed to explore the association between falls and cognitive and mobility abilities.

RESULTS: No significant differences in age, sex, level of education or body mass index were detected between fallers and non-fallers. Cognitive impairments (MoCA score < 26) distinguished between fallers and non-fallers ($p = 0.038$; $R^2 = 0.247$). Among specific cognitive functions, visuospatial skills distinguished between fallers and non-fallers ($p = 0.027$; $R^2 = 0.258$). Mobility impairments (TUG time > 13.5 s), gait, balance and physical capacity were not related to past falls.

DISCUSSION/CONCLUSION: In older adults with FoF, global cognitive deficits detected by the MoCA are important factors related to falls and more particularly visuospatial skills seem to be among the most implicated functions. These functions could be targeted in multifactorial interventions.

Language: en

Keywords

Aged 65 and over; Balance; Composite scores; Gait; Visuospatial skills

Creating and validating a shortened version of the Community Balance and Mobility Scale for application in people who are 61 to 70 years of age

Gordt K, Mikolaizak AS, Taraldsen K, Bergquist R, Van Ancum JM, Nerz C, Pijnappels M, Maier AB, Helbostad JL, Vereijken B, Becker C, Schwenk M. *Phys. Ther.* 2019; ePub(ePub): ePub.

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(Copyright © 2019, American Physical Therapy Association)

DOI 10.1093/ptj/pzz132

PMID

31581286

Abstract

BACKGROUND: The Community Balance & Mobility Scale (CBM) was shown to be reliable and valid for detecting subtle balance and mobility deficits in people who are 61 to 70 years of age. However, item redundancy and assessment time call for a shortened version.

OBJECTIVE: The objective was to create and validate a shortened version of the CBM (s-CBM) without detectable loss of psychometric properties.

DESIGN: This was a cross-sectional study.

METHODS: Exploratory factor analysis with data from 189 young seniors (66.3 ± 2.5 , 61-70 years) was used to create the s-CBM. Sixty-one young seniors (66.5 ± 2.6 , 61-70 years) were recruited to assess construct validity (Pearson correlation coefficient) by comparing the CBM-versions with Fullerton Advance Balance Scale, Timed Up-and-Go, habitual and fast gait speed, 8 Level Balance Scale, 3 meter tandem walk, and 30 seconds chair stand test. Internal consistency (Cronbach's alpha), ceiling effects, and discriminant validity (area under the curve (AUC)) between fallers and non-fallers, and self-reported high and low function (Late-Life Function & Disability Index) and balance confidence (Activities-Specific Balance Confidence Scale), respectively, were calculated.

RESULTS: The s-CBM, consisting of 4 items, correlated excellent with the CBM ($r = 0.97$). Correlations between s-CBM and other assessments ($r = 0.07-0.72$), and CBM and other assessments ($r = 0.06-0.80$) were statistically comparable in 90% of the correlations. Cronbach's alpha was .84 for the s-CBM, and .87 for the CBM. No CBM-version showed ceiling effects. Discriminative ability of the s-CBM was statistically comparable to the CBM (AUC = 0.66-0.75 vs AUC = 0.65-0.79). **LIMITATIONS:** Longitudinal studies with larger samples should confirm the results and assess the responsiveness for detecting changes over time.

CONCLUSIONS: The psychometric properties of the s-CBM were similar to those of the CBM. The s-CBM can be recommended as a valid and quick balance and mobility assessment in young seniors.

Keywords

Mobility; Outcome Assessment; Postural Balance; Psychometrics

Dance-based exergaming for upper extremity rehabilitation and reducing fall-risk in community-dwelling individuals with chronic stroke. A preliminary study

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DOI

10.1080/10749357.2019.1625545

PMID

31576774

Abstract

Background: Post-stroke, individuals demonstrate persistent upper extremity (UE) motor impairments that impact functional movements and change-in-support strategies essential for recovery from postural instability.

OBJECTIVES: This study primarily aims to quantify the effect of dance-based exergaming (DBExG) intervention on improving paretic UE movement control. The secondary aim is to assess if these improvements in UE movement control if observed, could partially account for improved fall-risk. **Methods:** Thirteen adults with chronic stroke received DBExG training using the commercially available Kinect dance gaming "Just Dance 3". Surface electromyography of shoulder muscle activity during the stand-reaching task and UE shoulder kinematics for a dance trial were recorded. Changes in balance control were determined using the Activities-specific Balance Confidence scale [ABC] and Timed-Up-and-Go test [TUG]. **Results:** Post-training, participants demonstrated improvements in shoulder muscle activity in the form of performance (reaction time, burst duration, and movement time) and production outcomes (peak acceleration) ($p < .05$). There was also a post-training increase in shoulder joint excursion (Ex) and peak joint angles (\angle) during dance trials ($p < .05$). Participants exhibited positive post-intervention correlations between ABC and shoulder joint Ex [R² of 0.43 ($p < .05$)] and between TUG and peak joint \angle [R² of 0.51 ($p < .05$)].

CONCLUSION: Findings demonstrated the beneficial effect of DBExG for improving UE movement and the training-induced gains were also positively correlated with improvements in fall-risk measures in people with chronic stroke. Thus, DBEx training could be used as a meaningful clinical application for this population group.

Language: en

Keywords

Functional arm reaching; dance-based exergaming; shoulder joint kinematics; stroke

Dehydroepiandrosterone sulfate and fall risk in older people: sex differences in the Pro.V.A. longitudinal study

Carrer P, Trevisan C, Franchin A, Volpe ED, Rancan A, Zanforlini BM, Maggi S, Noale M, Corti MC, Perissinotto E, Manzano E, Sergi G. *Maturitas* 2019; 128: 43-48.

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(Copyright © 2019, Elsevier Publishing)

DOI

10.1016/j.maturitas.2019.07.003

PMID

31561822

Abstract

BACKGROUND: The effect of dehydroepiandrosterone sulfate (DHEA-S) on fall risk in older age is still unclear, as is the effect of sex on any relationship between the two. Our aim was to evaluate the association between DHEA-S and the risk of falls and risk of recurrent falls in community-dwelling older men and women.

METHODS: We included 1949 (781 M, 1168 F) older adults enrolled in the Progetto Veneto Anziani study. Baseline serum DHEA-S levels were analyzed by immunoassay. The number of falls reported in the year preceding the 4.4-year follow-up assessment was collected. The association between DHEA-S and falls was analyzed by multinomial logistic regression, adjusting for potential confounders and considering death as alternative outcome.

RESULTS: After the follow-up, 548 (36.8%) individuals reported at least one fall in the previous year, and 214 (14.4%) reported ≥ 2 falls (recurrent falls). Each 1-standard deviation (SD) increase in log-transformed DHEA-S level reduced the odds of experiencing at least one fall by 9% (95%CI:0.88-0.95), and the risk of recurrent falls by 16% (95%CI:0.79-0.89). The highest DHEA-S tertile was 27% (95%CI:0.65-0.83) less likely to experience recurrent falls than the lowest tertile. The analyses, stratified by sex, suggested a strong association between DHEA-S and the fall risk for women (OR = 0.91; 95%CI:0.87-0.95 for at least one fall; OR = 0.83, 95%CI:0.78-0.89 for recurrent falls per each 1-SD increase in log-transformed DHEA-S); non-significant results were observed among men.

CONCLUSIONS: Higher levels of DHEA-S are associated with a lower risk of falls and recurrent falls in older people, especially women.

Language: en

Keywords

Dehydroepiandrosterone sulfate; Falls; Older age; Sex differences

Development of a value-based algorithm for inpatient triage of elderly hip fracture patients

Konda SR, Lott A, Egol KA. J. Am. Acad. Orthop. Surg. 2019; ePub(ePub): ePub.

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(Copyright © 2019, American Academy of Orthopaedic Surgeons)

DOI

10.5435/JAAOS-D-18-00400

PMID

31567901

Abstract

INTRODUCTION: The purpose of this study was to combine a validated middle-age and geriatric trauma risk assessment tool (STTGMA) with a novel cost-prediction tool to create an objective triage tool for elderly hip fractures that would guide value-based care initiatives.

METHODS: From October 2014 to January 2018, all patients aged ≥ 55 years who were admitted with a primary diagnosis of hip fracture to a single level 1 trauma center were enrolled. Upon evaluation in the emergency department, demographics, injury severity, and functional status were recorded to calculate the trauma triage score (STTGMARisk). A model to predict high-cost hip fracture patients was created using similar variables (STTGMACost).

RESULTS: Three hundred sixty-one consecutive operative hip fracture patients were enrolled. Inpatient mortalities were skewed toward STTGMARisk3 with 21.4% of patients in this high-risk group ultimately expiring during their hospitalization. High-cost patients were correctly skewed to the STTGMACost2 and STTGMACost3 groups with 88.9% of all high-cost operatively treated hip fracture correctly triaged to these cohorts. Statistically significant variations were found in cost within each STTGMARisk group.

CONCLUSIONS: A simple risk score calculated upon admission (STTGMARisk and STTGMACost) was able to be used as a triage tool not only to differentiate increased mortality risk but also to predict high-cost patients based on resource utilization in hip fracture patients. **LEVEL OF EVIDENCE:** Prognostic, level II.

Language: en

Diagnostic test accuracy of an automated device as a screening tool for fall risk assessment in community-residing elderly: a STARD compliant study

Castellini G, Gianola S, Stucovitz E, Tramacere I, Banfi G, Moja L. *Medicine (Baltimore)* 2019; 98(39): e17105.

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DOI

10.1097/MD.00000000000017105

PMID

31574809

Abstract

We aimed to determine the accuracy and failure of OAK device, an automated screening, for the assessment of fall risk in a prospective cohort of healthy adults aged over 65 years. The algorithm for fall risk assessment of the centers for disease control and prevention (CDC) was used as reference standard. Of the 183 individuals recruited, the CDC algorithm classified 80 as being at moderate/high risk and 103 at low risk of falling. OAK device failure incidence was 4.9% (confidence interval [CI] upper limit 7.7%), below the preset threshold for futility-early termination of the study (i.e., not above 15%). The OAK device showed a sensitivity of 84% and a specificity of 67% (receiver operating characteristic [ROC] area 82%; 95% confidence interval [CI] 76-88%), not reaching the preplanned target sensitivity (not lower than 85%). Diagnostic accuracy was not far from the sensitivity levels similar to those obtained with other fall risk assessment. However, some limitations can be considered. [ClinicalTrials.gov identifier: NCT02655796](https://clinicaltrials.gov/ct2/show/study/NCT02655796).

Language: en

Economic evaluation of exercise-based fall prevention programs for people with Parkinson's disease: a systematic review

Winser SJ, Paul LF, Magnus LKL, Yan S, Shenug TP, Sing YM, Cheing G. J. Altern. Complement. Med. 2019; ePub(ePub): ePub.

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DOI 10.1089/acm.2019.0148

PMID 31556689

Abstract

Objectives: Falls are common in Parkinson's disease (PD). Exercise interventions can prevent falls. This review aims to (1) explore the existing evidence regarding the cost-effectiveness of exercise-based fall prevention programs for people with PD and (2) discuss the implications of the review findings for future research and clinical practice.

Design: Databases AMED Allied and Complementary Medicine, CINAHL, CRD, EBSCO, EMBASE, MEDLINE, PubMed, Scopus, and Web of Science were searched from their inception until June 2019. Randomized and nonrandomized trials that included an economic evaluation of fall prevention programs for people with PD were considered. Quality of the economic evaluation was assessed using the Consensus on Health Economic Criteria list (CHEC-list), and the methodological quality was assessed using the Physiotherapy Evidence Database (PEDro) and Cochrane risk of bias tool.

Results: Nine hundred and sixty-five studies were screened to include three studies involving 556 participants. Quality of economic evaluation assessed using CHEC-list was high. The methodological quality was high for two studies and low for one study. Tested interventions included Tai Ji Quan, physiotherapist-led, supervised, weekly and monthly balance, and strengthening exercises. The duration of the interventions ranged from 10 weeks to 6 months, while the intervention frequency ranged from two sessions per week to one session per month. Treatment sessions lasted for 60 min in all three studies. One high economic and methodological quality study comparing Tai Ji Quan with resistance and stretching exercises reported least cost resource use among Tai Ji Quan group (USD 80,441) and greater incremental number of falls prevented. All three tested interventions had an 80% probability of being cost-effective with the corresponding country-specific threshold incremental cost-effectiveness ratio values.

Conclusions: The findings provide some evidence for exercise-based intervention as a cost-effective treatment option for preventing falls in PD; however, due to the limited number of available studies, heterogeneity of the interventions, and diversity of assessment settings, a firm conclusion cannot be established. Additional studies evaluating the cost-effectiveness of fall prevention programs involving larger samples and using different treatment parameters in various settings are warranted.

Language: en

Keywords: Parkinson's disease; Tai Ji Quan; cost-effectiveness; economic evaluation; exercise; fall prevention

Effects of chronic comorbidities on the health-related quality of life among older patients after falls in Vietnamese hospitals

Vu HM, Nguyen LH, Tran TH, Pham KTH, Phan HT, Nguyen HN, Tran BX, Latkin CA, Ho CSH, Ho RCM. *Int. J. Environ. Res. Public Health* 2019; 16(19): e16193623.

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DOI

10.3390/ijerph16193623

PMID

31569612

Abstract

Although comorbidities are prevalent in older people experiencing falls, there is a lack of studies examining their influence on health-related quality of life (HRQOL) in this population. This study examines the prevalence of comorbidities and associations between comorbidities and HRQOL in older patients after falls in Vietnamese hospitals. A cross-sectional design was employed among 405 older patients admitted to seven hospitals due to fall injuries in Thai Binh province, Vietnam. The EuroQol-5 Dimensions-5 Levels (EQ-5D-5L) was used to measure HRQOL. Socio-demographic characteristics were collected using a structured questionnaire, while comorbidities and other clinical characteristics were examined by physicians and extracted from medical records. Multivariate Tobit regression was used to determine the associations between comorbidities and HRQOL. Among 405 patients, 75.6% had comorbidities, of which hypertension and osteoarthritis were the most common. Lumbar spine/cervical spine diseases (Coefficient (Coef.) = -0.10; 95% CI = -0.18; 0.03) and stroke (Coef. = -0.36; 95% CI = -0.61; -0.10) were found to be associated with a significantly decreased EQ-5D index. Participants with three comorbidities had EQ-5D indexes 0.20 points lower (Coef. = -0.20; 95% CI = -0.31; -0.09) in comparison with those without comorbidities. This study underlined a significantly high proportion of comorbidities in older patients hospitalized due to fall injuries in Vietnam. In addition, the existence of comorbidities was associated with deteriorating HRQOL. Frequent monitoring and screening comorbidities are critical to determining which individuals are most in need of HRQOL enhancement.

Language: en

Keywords

Vietnam; comorbidity; fall; health-related quality of life; older

Fall-induced hospital-treated traumatic brain injuries among elderly Finns in 1970-2017

Kannus P, Niemi S, Parkkari J, Mattila V, Sievänen H. Arch. Gerontol. Geriatr. 2019; 86: 103958.

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DOI 10.1016/j.archger.2019.103958

PMID

31581022

Abstract

BACKGROUND: Fall-induced traumatic brain injuries (TBI) of elderly adults are a major public health concern.

METHODS: We determined the current trends in the absolute number and incidence (per 100,000 persons) of severe fall-induced TBI among 80-year-old or older Finns by taking into account all persons who were admitted to Finnish hospitals for primary treatment of such injury between 1970 and 2017.

RESULTS: The total number of hospitalized older Finns with a fall-induced TBI increased considerably between the years 1970 and 2017, from 60 (women) and 25 (men) in 1970 to 1622 (women) and 991 (men) in 2017. The age-adjusted incidence of TBI (per 100,000 persons) also showed a clear increase from 1970 to 2017: from 167.9 to 800.4 in women (377% increase), and from 176.8 to 927.3 in men (424% increase). If this trend in the age-adjusted incidence of hospital-treated TBI continues, and the size of the 80-year-old or older Finnish population increases as predicted (from 0.29 million in 2017 to 0.49 million in 2030), the number of these severe injuries among 80-year-old or older Finns will be approximately 1.8 times higher in 2030 (4811 injuries) compared with 2613 injuries in 2017.

CONCLUSIONS: The number and age-adjusted incidence of fall-induced hospital-treated TBI among elderly Finns increased considerably between 1970 and 2017. Wide-scale fall and injury prevention measures are urgently needed, because further aging of the population is likely to worsen the problem in the near future.

Language: en

Keywords

Elderly Finnish persons; Fall-induced traumatic brain injury; Secular trends

Falls among the elderly in Peruvian Andean Communities and the rural far South of Brazil: prevalence and associated factors

Meucci RD, Runzer-Colmenares FM, Parodi JF, De Mola CL. *J. Community Health* 2019; ePub(ePub): ePub.

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DOI

10.1007/s10900-019-00751-5

PMID

31559518

Abstract

Falls are the fifth leading cause of death and are one of the main causes of hospitalization. The literature about falls prevalence among older adults living in rural/remote communities in South America is scarce. To compare falls prevalence among the elderly in the Andes, Peru, and in the rural area of the municipality of Rio Grande, Rio Grande do Sul state, Brazil. Two separate cross-sectional studies were conducted in Peru, Andes (N = 413), and Brazil, Rio Grande, Rio Grande do Sul state (N = 1029). We stratified all data analysis according to location (Andes/Rio Grande). Characteristics of the samples were compared and the chi square test for proportions was used. Falls prevalence was then calculated for each independent variable and crude and adjusted prevalence ratios were estimated using Poisson Regression with robust variance. Falls prevalence in the last year was much higher in the Andes (64.1%) than in Rio Grande (25.3%). For most characteristics assessed, falls prevalence in Peru was at least double that found in Rio Grande. According to the adjusted analysis for the Andes, age (80 or more), being married, divorced and alcohol intake were significantly associated with falls. In Rio Grande, female gender and being in the 70-79 and 80 or more age ranges were associated with falls as well as those who self-rated their health as poor. This paper contributes to knowledge about falls prevalence among the elderly from rural and remote communities in two South American countries. Longitudinal multicentre studies with standardized methodologies are recommended.

Language: en

Keywords

Elderly; Falls; Prevalence; Rural areas

Measures of balance and falls risk prediction in people with Parkinson's disease: a systematic review of psychometric properties

Winser SJ, Kannan P, Bello UM, Whitney SL. Clin. Rehabil. 2019; ePub(ePub): ePub.

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DOI

10.1177/0269215519877498

PMID

31571503

Abstract

OBJECTIVE: To investigate the psychometric properties of measures of balance and falls risk prediction in people with Parkinson's disease (PD). **DATA SOURCES:** PubMed, Embase, CINAHL, Ovid Medline, Scopus, and Web of Science were searched from inception to August 2019. **REVIEW METHOD:** Studies testing psychometric properties of measures of balance and falls risk prediction in PD were included. The four-point Consensus-based Standards for the selection of health Measurement INstruments (COSMIN) assessed quality.

RESULTS: Eighty studies testing 68 outcome measures were reviewed; 43 measures assessed balance, 9 assessed falls risk prediction, and 16 assessed both. The measures with robust psychometric estimation with acceptable properties were the (1) Mini-Balance Evaluation Systems Test (Mini-BEST), (2) Berg Balance Scale, (3) Timed Up and Go test, (4) Falls Efficacy Scale International, and (5) Activities-Specific Balance Confidence scale. These measures assess balance and falls risk prediction at the body, structure and function level, falls risk and balance, and falls risk at the activity level. The motor examination of the Unified Parkinson's Disease Rating Scale (UPDRS-ME) with robust psychometric analysis is a condition-specific measure with acceptable properties. Except the UPDRS-ME and Mini-BESTest, the responsiveness of the other four measures has yet to be established.

CONCLUSION: Six of the 68 outcome measures have strong psychometric properties for the assessment of balance and falls risk prediction in PD. Measures assessing balance and falls risk prediction at the participatory level are limited in number with a lack of psychometric validation.

Language: en

Keywords

Parkinson's disease; balance and falls; falls risk; reliability; validity

Measuring subtle cognitive decline to predict fall risks

Hensley LK. *Nursing* 2019; 49(10): 60-63.

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DOI

10.1097/01.NURSE.0000580720.25145.2b

PMID

31568086

Abstract

[Abstract unavailable]

Language: en

One-year mortality after a hip fracture: prospective study of a cohort of patients aged over 75 years old

Drevet S, Bornu BC, Bioteau C, Mazière S, Tonetti J, Merloz P, Couturier P, Gavazzi G. *Geriatr. Psychol. Neuropsychiatr. Vieil.* 2019; ePub(ePub): ePub.

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DOI 10.1684/pnv.2019.0821

PMID 31570328

Abstract

Hip fracture (HF) is a serious complication of the elderly who have suffered a fall. Studies focused on patients over 75 years old without excluding the most vulnerable are not frequent. Before we can think about the creation of an orthogeriatric unit, we evaluated the mortality rate one year after a HF only of patients over 75 years old and we identified associated factors with mortality, functional status and living.

METHODS: Prospective observational study of 75 years and older hospitalized for a HF in a conventional orthopaedic unit. Surgical and geriatric data collected was: instrumental activities of daily life ADL (IADL), comorbidity (cumulative illness rating scale-geriatric (CIRS-G)), mini nutritional assessment (MNA), severity, preoperative delay. A phone assessment one year after HF was about: vital and functional status, living place.

RESULTS: The mean age of 113 patients included was 87 years (76-100). The mortality rate was 35%. It was associated with low IADL day -15 ($p < 0.01$), elevated CIRS-G ($p < 0.01$), severity ($p = 0.05$) and malnutrition ($p = 0.05$). Preoperative delay average was 70.7 h (+/- 59) and 48.6% had surgery within 48 hours. Among survivors and from the data available, 45% had a functional decline one year after the HF and 11% were admitted in a nursing home.

CONCLUSION: Without any exclusion of frailty patients, the one-year mortality rate of HF of people aged 75 years and older was 35%. HF is a public health challenge due to its high prevalence, poor prognosis with considerable expense. The associated factors help to explain why geriatricians are required and support the project of creating an orthogeriatric unit. Nevertheless, geriatric care will not likely change prognosis of the most vulnerable patients but could improve the level of care.

Language: en

Keywords

comorbidity; elderly; functional status; hip fracture; mortality

Predictors of hip fracture despite treatment with bisphosphonates among frail older adults

Zullo AR, Sorial MN, Lee Y, Lary CW, Kiel DP, Berry SD. *J. Am. Geriatr. Soc.* 2019; ePub(ePub): ePub.

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(Copyright © 2019, John Wiley and Sons) DOI 10.1111/jgs.16176 PMID 31580488

Abstract

OBJECTIVES: Bisphosphonates are effective at preventing hip fractures among older adults, yet many patients still fracture while on treatment and may benefit from additional preventive interventions. Little data are specifically available to target such efforts among bisphosphonate users. We aimed to identify predictors of hip fracture unique to frail older adults initiating pharmacologic treatment for osteoporosis.

DESIGN: Retrospective cohort using 2008-2013 linked national Minimum Data Set assessments, Medicare claims, and nursing home (NH) facility data. **SETTING:** NHs in the United States. **PARTICIPANTS:** Long-stay NH residents 65 years or older who initiated treatment with a bisphosphonate (N = 17 753). Estimates for bisphosphonate initiators were contrasted with those for calcitonin initiators (control group; N = 5348). **MEASUREMENTS:** Hospitalized hip fracture outcomes were measured using Part A claims. Hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated for 36 a priori selected potential predictors.

RESULTS: The mean (SD) age of the study population was 84 (8) years, 85% were women, and 51% had moderate to severe cognitive impairment. Predictors associated with a higher risk of hip fracture despite bisphosphonate use included age 75 years or older to 85 years (vs ≥ 65 to < 75 y; HR = 1.25; 95% CI = 1.02-1.55), female sex (HR = 1.33; 95% CI = 1.06-1.67), white race (vs black race (HR = 1.87; 95% CI = 1.36-2.58), and body mass index = 18.5-24.9 (vs ≥ 30 ; HR = 1.93; 95% CI = 1.53-2.42). Independent ability to transfer (vs total dependence; HR = 3.11; 95% CI = 1.83-5.30) and occasional urinary incontinence (vs frequent; HR = 1.45; 95% CI = 1.18-1.78) were also important predictors. Dementia, diabetes, psychoactive drug use, and other characteristics were not associated with post-prescribing hip fracture. Predictors did not differ between bisphosphonate and calcitonin users.

CONCLUSION: Predictors of hip fracture among frail older adults did not differ between those who were new users of bisphosphonates vs calcitonin. Given the absence of risk factors unique to bisphosphonate users, targeting of fracture prevention efforts should extend beyond pharmacologic therapy to include existing nonpharmacologic therapies, particularly fall prevention strategies.

The prevalence of Beers criteria medication use and associations with falls in geriatric patients at a Level 1 trauma center

Walker BS, Collier BR, Bower KL, Lollar DI, Faulks ER, Matos M, Nussbaum MS, Hamill ME. *Am. Surg.* 2019; 85(8): 877-882.

(Copyright © 2019, Southeastern Surgical Congress)

DOI

unavailable

PMID

31560307

Abstract

The Beers Criteria for Potentially Inappropriate Medication (PIM) use is a list of medications with multiple risks in older patients. Approximately 24 per cent use rate is reported in prior studies. Our objective was to determine the local PIM use and subsequent fall risk in geriatric trauma patients. We conducted a retrospective analysis of PIM use in all geriatric patients evaluated at our Level 1 trauma center between 2014 and 2017. Patients were identified from our trauma database. Pre-admission medication use was determined through medication reconciliation from our electronic medical record (EMR). Patients not undergoing medication reconciliation were excluded. After initial analysis, patients were stratified by age into three groups: 65 to 74, 75 to 84, and ≥ 85 years. Multivariate logistic regression analyses were used to calculate odds ratios of falls for specific PIMs. In all, 2181 patients met the inclusion criteria. Overall, 71.2 per cent of geriatric trauma patients were prescribed at least one PIM-73.1 per cent of falls compared with 68.6 per cent for other mechanisms. Specific PIM use varied by age group. PIMs associated with fall risk in all patients included antipsychotics, benzodiazepines, and diclofenac. For those aged 65 to 74 years, antihistamines, diclofenac, proton pump inhibitors, and promethazine were associated. In those aged 75 to 84 years, alprazolam, antipsychotics, benzodiazepines, cyclobenzaprine, diclofenac, and muscle relaxants were implicated. No significant associations were found for patients aged ≥ 85 years. PIM use at our trauma center seems to be rampant and well above the national average. Geriatric falls were associated with using ≥ 1 PIM and multiple specific PIMs implicated. We are designing a targeted educational program for local primary care physicians (PCPs) that will attempt to decrease geriatric PIM use.

Language: en

The role of attentional focus on walking efficiency among older fallers and non-fallers

Mak TCT, Young WR, Lam WK, Tse ACY, Wong TWL. *Age Ageing* 2019; ePub(ePub): ePub.

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(Copyright © 2019, Oxford University Press)

DOI 10.1093/ageing/afz113

PMID 31579906

Abstract

BACKGROUND: This study evaluated the effect of attentional focus instructions on movement efficiency during a level-ground walking task in older adults with and without a history of falls.

METHODS: One hundred and thirty-four community-dwelling older adults were categorised into older fallers (OF) (n = 37) and older non-fallers (ONF) (n = 97). Each participant was instructed to walk at a self-selected pace along a 6 m walkway under three attentional focus conditions (i.e. internal, goal-directed and control) for a total of nine trials. Average muscle activity indices of lower limb co-contractions were measured using surface electromyography.

RESULTS: Both shank and thigh muscle co-contractions were higher in OF than in ONF in all three conditions. OF also demonstrated higher shank muscle co-contraction under the internal relative to the goal-directed condition, with no such change observed in ONF.

CONCLUSION: Despite no significant between-group differences in functional balance and balance confidence, relative walking inefficiencies were observed in OF compared with ONF. This finding demonstrates the debilitating consequences of falling that can occur with relative independence from various physiological or psychological factors that are commonly associated with falling and used to rationalise behavioural change. We also provide evidence that OF are more susceptible to conditions that provoke them to allocate attention internally. Therefore, in clinical contexts (e.g. gait rehabilitation), verbal instructions that refer to body movements (internal focus) might serve to compromise movement efficiency in older adults with a history of falls. Such changes will, theoretically, lessen the ability to react efficiently to changing environments experienced in daily life.

Language: en

Keywords

attention; efficiency; falls; gait; muscle; older people

Using mobile technology to assess balance during a sit-to-stand maneuver among older adults with fall risk: a pilot study

Gray-Miceli D, Patel N, Sekar A, Smith ML. *J. Gerontol. Nurs.* 2019; 45(10): 18-23.

(Copyright © 2019, Healio)

DOI

10.3928/00989134-20190825-01

PMID

31560072

Abstract

Older adults age ≥ 65 are susceptible to balance impairment with subsequent reduced mobility and increased fall risk. Orthostatic hypotension or blood pressure drop with standing is a treatable condition associated with loss of balance and falls. To understand this phenomenon, the current project used an Android® device attached to participants' center of mass to determine body sway during a simple sit-to-stand maneuver, while researchers assessed participants' sitting and standing blood pressure and symptomology of dizziness. Analysis of study data from two older adult participants are presented illustrating the applicability for future development of a measure to assess balance during simple movements. The next step in the authors' research trajectory is to analyze larger samples using other computations of data provided by the inertial measurement unit sensing technology. [*Journal of Gerontological Nursing*, 45(10), 18-23.].

Copyright 2019, SLACK Incorporated.

Language: en

Walking meditation promotes ankle proprioception and balance performance among elderly women

Chatutain A, Pattana J, Parinsarum T, Lapanantasin S. J. Bodyw. Mov. Ther. 2019; 23(3): 652-657.

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DOI 10.1016/j.jbmt.2018.09.152 PMID 31563384

Abstract

BACKGROUND: Age-related change of proprioception affects body balance among the elderly. Walking meditation (WM)-a mindfulness practice-involves focusing on leg movements while walking slowly, possibly improving brain processes for perception and balance adjustments. This study investigates the WM's effects on ankle proprioception and balance among the elderly.

METHODS: Fifty-eight women aged 69.25 ± 6.06 were randomized into control ($n = 29$) and WM ($n = 29$) groups. The WM group engaged in 8 weeks of WM practice (30 min/day, 3 days/week). The absolute angular error of the ankle reposition test (AAE) was measured by an electrogoniometer. The balance performance was evaluated using the Berg Balance Scale (BBS), Functional Reach Test (FRT), and Timed Up and Go test (TUG). Data were analyzed using two-way ANOVA and Bonferroni post hoc test and BBS with nonparametric statistics.

RESULTS: At baseline, the WM group's AAE, BBS, FRT, and TUG were $4.2 \pm 1.6^\circ$, 51.3 ± 4.1 points, 21.7 ± 5.7 cm, and 11.1 ± 2.5 s, respectively, whereas those of the control group were $3.6 \pm 2.0^\circ$, 51.0 ± 5.0 points, 21.6 ± 5.2 cm, and 10.2 ± 3.1 s, respectively. Post-training, WM group showed significant decrease in AAE ($2.4 \pm 0.9^\circ$) and displayed improvements in BBS, FRT, and TUG (55.4 ± 0.9 points, 29.1 ± 5.8 cm, and 8.1 ± 1.1 s, respectively) ($p < 0.01$). Conversely, the control group presented no change in AAE, significant decreases in BBS and FRT, and slower TUG ($p < 0.01$). No difference was found between WM and control groups at the baseline. However, post-training, WM group demonstrated significant improvements in AAE, BBS, FRT, and TUG as compared to the control group ($p < 0.001$).

CONCLUSIONS: WM practice improved the balance and ankle reposition sense among the elderly. It can be used as an alternative form of training to promote balance and ankle proprioception. The results supported that balance performance worsens among the elders who do not engage in physical training.

Keywords

Ankle reposition; Berg balance scale; Functional reach; Old people; Timed up and go

Walking on stairs: experiment and model

Köster G, Lehmborg D, Kneidl A. Phys. Rev. E 2019; 100(2-1): e022310.

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(Copyright © 2019, American Physical Society)

DOI

10.1103/PhysRevE.100.022310

PMID

31574684

Abstract

An increasing global population forces urban planners to construct buildings and infrastructure that is extremely deep and high. Elevators and escalators serve skyscrapers and tunnels, but in an emergency people still have to walk on stairs. Computer simulations can mitigate risks of escape situations. For these situations, pedestrian locomotion models need to match reality well. Motion on stairs, however, is not nearly as well understood as motion in the plane. Publications are scarce and some are contradictory. As a result, movement on stairs is usually modeled by slowing down pedestrians by a fixed factor. But is this justified? And what happens at intermediate landings? This contribution aims to clarify inconclusive results of previous research and provide new information to directly incorporate empirical results into a parsimonious computer model. The algorithms are freely available through an open-source framework. After outlining the shortcomings of existing approaches, we present three experiments, from which we derive requirements for the computer model. Reenacting computer experiments shows the extent to which our model meets our observations. We conclude with an applied example, simulating an evacuation of Germany's famous Neuschwanstein Castle.

Language: en

An interesting unknown combined pathology in a patient with acute balance problem

Yetiser S, Karaman K. Case Rep. Otolaryngol. 2019; 2019: e6040852.

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(Copyright © 2019, Hindawi Publishing)

DOI

10.1155/2019/6040852

PMID

31559101

Abstract

A 54-year-old woman with acute-onset nausea and vomiting presented to outpatient clinic. She had headache for 3 weeks. She had difficulty during tandem gait and was falling to the right. Otherwise, her neurological examination was normal. She had normal hearing. VNG analysis revealed spontaneous nystagmus beating to the left with optical fixation. However, she had horizontal and slightly down-beating gaze-evoked nystagmus at primary gaze position. Temporal bone CT and MRI showed widespread encephalitis of the right side of the brain and isolated destruction of the right superior semicircular canal. The patient was treated with high-dose combined antibiotics. She had remarkable recovery within 3 weeks.

Language: en

Association of clinical frailty scores with hospital readmission for falls after index admission for trauma-related injury

Hatcher VH, Galet C, Lilienthal M, Skeete DA, Romanowski KS. JAMA Netw. Open 2019; 2(10): e1912409.

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(Copyright © 2019, American Medical Association)

DOI

10.1001/jamanetworkopen.2019.12409

PMID

31577357

Abstract

IMPORTANCE: Falls have been associated with morbidity and mortality in elderly patients. Assessment of frailty at hospital admission may help health care professionals evaluate fall risk in patients with trauma-related injury.

OBJECTIVE: To determine whether frailty assessed using the Canadian Study of Health and Aging Clinical Frailty Scale is associated with readmission for falls after index admission for trauma-related injury in patients aged 50 years and older.

DESIGN, SETTING, AND PARTICIPANTS: This retrospective cohort study reviewed the medical records of 804 patients aged 50 years and older with trauma-related injury who were admitted to the University of Iowa Hospitals and Clinics between July 1, 2010, and June 30, 2015. Records were reviewed from May 30 to August 1, 2017, and patient demographics, admission data, injury severity scores, history of falls, and postindex readmission data for ground-level falls were recorded. Frailty scores were calculated using the Canadian Study of Health and Aging Clinical Frailty Scale. Patients with a score of 5 or higher were classified as frail.

MAIN OUTCOMES AND MEASURES: Frailty assessed using the Canadian Study of Health and Aging Clinical Frailty Scale and readmission for falls after index admission for trauma-related injury.

RESULTS: A total of 804 patients with trauma-related injury were included in the study. The mean (SD) age was 70 (13.4) years; 744 patients (93.4%) were white, and 380 (47.3%) were men. Among the total population, the mortality rate was 3.7%; 255 patients (31.7%) were classified as frail and 549 (68.3%) as nonfrail. The mean (SD) injury severity score was 9.8 (7.9), and the score was similar between frail and nonfrail patients. Of 255 frail patients, 179 (70.2%) were women, and frail patients were significantly older than nonfrail patients (mean [SD], 79.2 [12.1] years vs 66.2 [11.9] years, respectively; $P < .001$). The percentages of frail

patients presenting to the hospital with a history of falls and readmitted for falls after index admission were higher than those of nonfrail patients (63 [24.8%] vs 53 [9.6%] and 55 [21.6%] vs 58 [10.6%], respectively; both $P < .001$). Frailty was associated with discharge to the home with health care (odds ratio [OR], 4.82; 95% CI, 2.10-11.01; $P < .001$), to a skilled nursing facility (OR, 5.47; 95% CI, 3.40-8.80; $P < .001$), and to a hospice care facility (OR, 8.47; 95% CI, 2.09-34.42; $P = .003$) compared with discharge to the home with self-care. Frailty was also associated with readmission for falls after index admission (OR, 2.26; 95% CI, 1.39-3.66; $P = .001$) and the number of falls within 1 year after index admission (OR, 1.32; 95% CI, 1.04-1.67; $P = .02$) compared with nonfrailty. The frailty analysis was controlled for age, body mass index, sex, and falls at index admission.

CONCLUSIONS AND RELEVANCE: Measurement of frailty at hospital admission may be an effective tool to assess fall risk and discharge disposition among patients with trauma-related injury aged 50 years and older.

Language: en

Burden associated with nonfatal slip and fall injuries in the surface stone, sand, and gravel mining industry

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(Copyright © 2019, Elsevier Publishing)

DOI

10.1016/j.ssci.2019.08.007

PMID

31555024

Abstract

Slips, trips, and falls (STFs) pose a significant financial burden to employers and account for over 33% of the total nonfatal workers' compensation cost in the United States. Previous analyses documenting the burden of STF incidents in the mining industry have focused on occupational fatalities or STFs during equipment ingress, egress. There is limited information on the burden of nonfatal STF incidents in the mining industry and most of it is outdated. Hence, to increase awareness and highlight the importance of STFs in the mining industry, this analysis documents the burden associated with nonfatal STF incidents at surface stone, sand, and gravel (SSG) mines from 2008 through 2017. In this time frame, nonfatal STF incidents occurred at a rate of 62 per 10,000 full-time equivalent (FTE) employees per year. Pits had a higher prevalence of injuries, but plants had a higher incidence rate. In addition, nonfatal STF incidents at surface SSG mines led to approximately 23,800 total days lost per year with an estimated cost to the mining industry of \$17.5 million per year. Assessed violations that are not related to reported injuries but are related to STF hazards identified during Mine Safety and Health Administration (MSHA) inspections cost the mining industry approximately \$3 million per year from 2013 through 2017. Based on the data analyzed in this study, falls to the lower level pose a higher burden in terms of cost; however, falls to the same level have a higher number of incidents and incidence rate.

Language: en

Keywords

Burden; Cost; Fall; Injury; Mining; Slip

Comparison of processing speed, balance, mobility and fear of falling between hypertensive and normotensive individuals

Ozaldemir I, Iyigun G, Malkoc M. Rev. Bras. Fisioter. 2019; ePub(ePub): ePub.

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DOI 10.1016/j.bjpt.2019.09.002 PMID 31570266

Abstract

BACKGROUND: Hypertension (HT) contributes substantially to poor physical function, cognitive dysfunction, cardiovascular problems and to all-cause mortality. Performance in activities requiring attention, speed and coordination might also be affected in individuals with HT.

OBJECTIVE: This study compared the processing speed, static and dynamic balance, functional mobility and fear of falling between individuals with hypertension (HT group) and normotensive individuals (NT group).

METHODS: One-hundred and twenty-eight individuals were included in the NT group (n = 64) and HT group (n = 64). The Choice Stepping Reaction Time Test was used for the evaluation of processing speed, Single Leg Stance test for static balance evaluation, "Y" Balance Test for dynamic balance evaluation, Timed Up and Go test with single and dual tasking for the evaluation of functional mobility and Falls Efficacy Scale for assessing fear of falling.

RESULTS: The processing speed of the HT group was slower than that of the NT group; the total response time (RsT) in Stepping Reaction Test (SRT) (mean difference [MD] = -0.2, 95%CI = -0.3 to 0), and Stroop Test (ST) [ST-A (MD = -0.4, 95%CI = -0.5 to -0.2), ST-B (MD = -0.5, 95%CI = -0.7 to -0.2) and ST-C (MD = -0.6, 95%CI = -0.8 to -0.3). Additionally, the static [single leg stance, eyes open, right side (MD = 12.7, 95%CI = 6.3-19.0) and left side (MD = 13.6, 95%CI = 7.2-19.9)] and dynamic balance [Y balance test, composite score, right lower extremity (MD = 8.5, 95%CI = 4.4-12.5) and left lower extremity (MD = 5.2, 95%CI = 1.5-8.8) scores of the HT group were lower than those of the NT group. The HT group required a longer time to complete the functional mobility test measured with Timed Up And Go Test during both single task (MD = -0.8, 95%CI = -1.1 to -0.4), cognitive dual task (MD = -1.5, 95%CI = -2.4 to -0.5) and manual dual task (MD = -0.9, 95%CI = -1.3 to -0.4) in comparison to the NT group. Also, the HT group had higher levels of fear of falling (MD = -7.6, 95%CI = -10.9 to -4.2).

CONCLUSION: Hypertensive individuals present slower processing speed, reduced static and dynamic balance, decreased functional mobility and higher fear of falling in comparison to normotensive individuals.

Keywords Blood pressure; Dual task; Falling; Reaction time; Rehabilitation

Educational and exercise intervention to prevent falls and improve participation in subjects with neurological conditions: the NEUROFALL Randomized Controlled Trial

Cattaneo D, Gervasoni E, Pupillo E, Bianchi E, Aprile I, Imbimbo I, Russo R, Cruciani A, Turolla A, Jonsdottir J, Agostini M, Beghi E. *Front. Neurol.* 2019; 10: e865.

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(Copyright © 2019, Frontiers Research Foundation)

DOI

10.3389/fneur.2019.00865

PMID

31572282

Abstract

Background: Falls, mobility impairments and lack of social support lead to participation restrictions in people with neurological conditions. The aim of this multicenter, single blinded randomized controlled trial was to test whether an educational program focusing on fall prevention and safe mobility reduces falls and increases social participation among people with neurological conditions. **Methods:** Ninety people with Stroke ($n = 25$), multiple sclerosis ($n = 33$) and Parkinson disease ($n = 32$), median age 63 (31-89), were randomized. A permuted block algorithm stratified by field center was used to allocate participants to an education group (EG, $n = 42$) consisting of an educational program focused on fall prevention and tailored balance exercises and a control group (CG, $n = 48$) receiving usual treatments. After baseline assessment, each participants was followed for 6 months with telephone contacts by blinded interviewers. Being fallers (>1 fall) and time to become a faller were used as primary outcomes. Community Integration Questionnaire (CIQ) and Instrumental Activities of Daily Living (IADL) scales assessed treatment effects on social integration and daily living activities. **Results:** Over a median (Interquartile Range) follow-up of 189 (182-205) days, [EG = 188 (182-202), CG = 189 (182-209)] fallers were 10 in the CG and 11 in the EG (hazard ratio 0.95, 95% confidence interval (CI) 0.45 to 2.5; $P = 0.94$). At follow-up the EG scored significantly better than CG on the CIQ (+1.7 points, CI: 0.1 to 3.3) and IADL (+2.2 points, CI: 0.4 to 4.0). **Conclusions:** This educational program did not reduce the risk of falls but it improved the ability to carry out activities of daily living and decreased participation restrictions in people with neurological conditions.

Language: en

Keywords

falls; neurological disease; participation; prevention; rehabilitation

Effectiveness of Wii Fit Balance board in comparison with other interventions for post-stroke balance rehabilitation. Systematic review and meta-analysis

Garcia-Munoz C, Casuso-Holgado MJ. Rev. Neurol. 2019; 69(7): 271-279.

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(Copyright © 2019, Revista de Neurologia)

DOI

10.33588/rn.6907.2019091

PMID

31559625

Abstract

INTRODUCTION: Virtual reality is a booming therapeutic tool within the neurorehabilitation field. Among the different non-immersive virtual reality systems, the most outstanding is the platform, Wii Fit Balance.

AIM: To review the scientific literature published in recent years about the effectiveness of Wii Fit Balance tool. The use of this platform for balance training in patients who have suffered a stroke compared to conventional therapies is going to be analyzed from a quantitative and qualitative point of view.

SUBJECTS AND METHODS: A search of the databases has been carried out: PubMed, Lilacs, PEDro, Scopus, Web of Science and Cochrane Library. Descriptors employed were "Wii Fit Balance", "Wii", "stroke", "ictus" and "balance". Studies were analyzed methodologically by PEDro Scale. For those possible variables a meta-analysis was elaborated.

RESULTS: Sixteen randomized clinical trials were selected for the systematic review and six of them were included in the meta-analysis.

RESULTS for the descriptive analysis were heterogeneous. This situation is confirmed through the meta-analysis results, because the analyzed variables for static and dynamic balance show intra-group improvement and no significant differences between groups post-intervention.

CONCLUSION: Wii Fit Balance, virtual reality platform, is an available therapeutic tool which has been shown at least as effective as conventional balance training in post-stroke patients.

Language: es

Falls resulting in mild traumatic brain injury and focal traumatic brain injury: a biomechanical analysis

Post A, Kendall M, Cournoyer J, Taylor K, Hoshizaki TB, Gilchrist MD, Brien S, Cusimano MD, Marshall S. *Int. J. Crashworthiness* 2018; 23(3): 278-289.

(Copyright © 2018, Informa - Taylor and Francis Group)

DOI

10.1080/13588265.2017.1316048

PMID

unavailable

Abstract

This research focuses on describing the differences between mild traumatic brain injury (mTBI) and focal traumatic brain injury (fTBI). The purpose of this research was to compare clinical mTBI and fTBI groups who incurred brain injury from falls to hard surfaces to identify clinical and biomechanical factors that may delineate between these two outcomes. Reconstructions of mTBI (n = 11) and fTBI (n = 20) cases that resulted from falls presented themselves at the hospital were conducted using computational and physical models. The cases were compared using peak and component dynamic response, brain injury criterion (BrIC), Gadd severity index and head injury criterion. Peak resultant rotational acceleration had the best percentage correct classification with 50% risk of severe TBI was found to be 21 krad/s². The BrIC and component acceleration and rotational velocity of impact were also found to have significant predictions of risk between the two groups. This data provides information to improve risk thresholds for fTBI with application to helmet standards/development.

Language: en

Keywords

biomechanics; falls; Mild traumatic brain injury; prediction; traumatic brain injury

Interventions for preventing falls in people after stroke

Denissen S, Staring W, Kunkel D, Pickering RM, Lennon S, Geurts AC, Weerdesteyn V, Verheyden GS. *Cochrane Database Syst. Rev.* 2019; 10: CD008728.

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DOI

10.1002/14651858.CD008728.pub3

PMID

31573069

Abstract

BACKGROUND: Falls are one of the most common complications after stroke, with a reported incidence ranging between 7% in the first week and 73% in the first year post stroke. This is an updated version of the original Cochrane Review published in 2013.

OBJECTIVES: To evaluate the effectiveness of interventions aimed at preventing falls in people after stroke. Our primary objective was to determine the effect of interventions on the rate of falls (number of falls per person-year) and the number of fallers. Our secondary objectives were to determine the effects of interventions aimed at preventing falls on 1) the number of fall-related fractures; 2) the number of fall-related hospital admissions; 3) near-fall events; 4) economic evaluation; 5) quality of life; and 6) adverse effects of the interventions.

SEARCH METHODS: We searched the trials registers of the Cochrane Stroke Group (September 2018) and the Cochrane Bone, Joint and Muscle Trauma Group (October 2018); the Cochrane Central Register of Controlled Trials (CENTRAL; 2018, Issue 9) in the Cochrane Library; MEDLINE (1950 to September 2018); Embase (1980 to September 2018); CINAHL (1982 to September 2018); PsycINFO (1806 to August 2018); AMED (1985 to December 2017); and PEDro (September 2018). We also searched trials registers and checked reference lists.

SELECTION CRITERIA: Randomised controlled trials of interventions where the primary or secondary aim was to prevent falls in people after stroke.

DATA COLLECTION AND ANALYSIS: Two review authors (SD and WS) independently selected studies for inclusion, assessed trial quality and risk of bias, and extracted data. We resolved disagreements through discussion, and contacted study authors for additional information where required. We used a rate ratio and 95% confidence interval (CI) to compare the rate of falls (e.g. falls per person-year) between intervention and control groups.

For risk of falling we used a risk ratio and 95% CI based on the number of people falling (fallers) in each group. We pooled results where appropriate and applied GRADE to assess the quality of the evidence. **MAIN RESULTS:** We included 14 studies (of which six have been published since the first version of this review in 2013), with a total of 1358 participants. We found studies that investigated exercises, pre-discharge home visits for

hospitalised patients, the provision of single lens distance vision glasses instead of multifocal glasses, a servo-assistive rollator and non-invasive brain stimulation for preventing falls. Exercise compared to control for preventing falls in people after stroke. The pooled result of eight studies showed that exercise may reduce the rate of falls but we are uncertain about this result (rate ratio 0.72, 95% CI 0.54 to 0.94, 765 participants, low-quality evidence). Sensitivity analysis for single exercise interventions, omitting studies using multiple/multifactorial interventions, also found that exercise may reduce the rate of falls (rate ratio 0.66, 95% CI 0.50 to 0.87, 626 participants). Sensitivity analysis for the effect in the chronic phase post stroke resulted in little or no difference in rate of falls (rate ratio 0.58, 95% CI 0.31 to 1.12, 205 participants). A sensitivity analysis including only studies with low risk of bias found little or no difference in rate of falls (rate ratio 0.88, 95% CI 0.65 to 1.20, 462 participants).

METHODological limitations mean that we have very low confidence in the results of these sensitivity analyses. For the outcome of number of fallers, we are very uncertain of the effect of exercises compared to the control condition, based on the pooled result of 10 studies (risk ratio 1.03, 95% CI 0.90 to 1.19, 969 participants, very low quality evidence). The same sensitivity analyses as described above gives us very low certainty that there are little or no differences in number of fallers (single interventions: risk ratio 1.09, 95% CI 0.93 to 1.28, 796 participants; chronic phase post stroke: risk ratio 0.94, 95% CI 0.73 to 1.22, 375 participants; low risk of bias studies: risk ratio 0.96, 95% CI 0.77 to 1.21, 462 participants). Other interventions for preventing falls in people after stroke. We are very uncertain whether interventions other than exercise reduce the rate of falls or number of fallers. We identified very low certainty evidence when investigating the effect of pre-discharge home visits (rate ratio 0.85, 95% CI 0.43 to 1.69; risk ratio 1.48, 95% CI 0.71 to 3.09; 85 participants), provision of single lens distance glasses to regular wearers of multifocal glasses (rate ratio 1.08, 95% CI 0.52 to 2.25; risk ratio 0.74, 95% CI 0.47 to 1.18; 46 participants) and a servo-assistive rollator (rate ratio 0.44, 95% CI 0.16 to 1.21; risk ratio 0.44, 95% CI 0.16 to 1.22; 42 participants). Finally, transcranial direct current stimulation (tDCS) was used in one study to examine the effect on falls post stroke. We have low certainty that active tDCS may reduce the number of fallers compared to sham tDCS (risk ratio 0.30, 95% CI 0.14 to 0.63; 60 participants). **AUTHORS' CONCLUSIONS:** At present there exists very little evidence about interventions other than exercises to reduce falling post stroke. Low to very low quality evidence exists that this population benefits from exercises to prevent falls, but not to reduce number of fallers. Fall research does not in general or consistently follow methodological gold standards, especially with regard to fall definition and time post stroke. More well-reported, adequately-powered research should further establish the value of exercises in reducing falling, in particular per phase, post stroke.

Language: en

The "headstrike" protocol: a retrospective review of a single trauma center's operational change in the management of anticoagulated ground-level falls

Keyes M, Alley A, Muertos K, Anderson B, Howerton S, Burns A, Pepe A. Am. Surg. 2019; 85(8): 821-829.

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DOI

unavailable

PMID

31560301

Abstract

Anticoagulated older adults suffering ground-level falls are a specialty trauma population at risk for intracranial hemorrhage (ICH). Delays in diagnosis or initiation of anticoagulation reversal can lead to increased morbidity/mortality. A novel "Headstrike" protocol was implemented to improve the treatment efficacy and disposition of these patients. The study objective was to determine effectiveness of the "Headstrike" protocol in providing these patients with timely treatment and disposition, while maintaining positive outcomes. A trauma performance improvement database was queried for all "Headstrike" activations for a 12-month period after implementation. Demographics, patient care, and health data were collected. Descriptive statistics were used for cohort analysis. Five hundred fifteen patients were activated as a "Headstrike" during the study period. Thirty eight patients were diagnosed with ICH (7.4%), 35 of whom were identified on initial imaging. Anticoagulation reversal was ordered for 84.6 per cent of these patients. Of the patients with negative initial CT, only three patients (0.8%) were found to have a delayed ICH on routine follow-up imaging. No anticoagulant/antiplatelet agent was associated with a significantly higher risk of ICH. Implementation of the "Headstrike" protocol resulted in trauma service line resources being used more efficiently, while ensuring high-quality, expeditious care to this population.

Language: en

The association between gait variability with the energy cost of walking depends on the fall status in people with multiple sclerosis without mobility aids

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DOI 10.1016/j.gaitpost.2019.09.021

PMID 31563824

Abstract

BACKGROUND: Falls, gait variability and increased energy cost of walking are common in people with multiple sclerosis (PwMS). However, no studies have as yet examined this triple association in PwMS or in other neurological populations. **RESEARCH QUESTION:** Does a relationship exist between gait variability, falls and the energy cost of gait in PwMS?

METHODS: This cross sectional study included 88 PwMS (50 women), mean age 39.8 (S.D = 13.0) and mean disease duration of 6.2 (SD = 8.2) years since diagnosis. Energy expenditure during walking was collected via a portable metabolic device (COSMED K5, COSMED Srl, Roma, Italy). Gait variability was measured by an electronic walkway (GAITRite™). Participants were divided into groups based on fall history (fallers and non-fallers). Differences between groups in terms of energy expenditure measures and gait variability metrics were determined by the analysis of variance test. The relationship between gait variability and energy cost of walking was examined by the Pearson's correlation coefficient test.

RESULTS: Thirty-three PwMS were classified as fallers and 55 as non-fallers. Non-significant differences between groups were observed in the energy expenditure measures, including cost of walking. Fallers demonstrated higher step length variability compared with non-fallers (4.58 (S.D. = 2.42 vs. 3.40 (S.D. = 1.40); p-value = 0.005). According to the Pearson's correlation coefficient analysis, a significant relationship was found between step length variability and energy cost of walking in the non-fallers group (Rho = 0.372, P-value = 0.006) and the total group (Rho = 0.296, p-value = 0.005), but not in those PwMS with a history of falls. **SIGNIFICANCE:** We demonstrated a significant relationship between increased gait variability and energy expenditure while walking only in MS patients without a history of falls. This is important as there is evidence of the clinical relevance of increased gait variability, poor fitness level and high risk of falling in the MS population.

Language: en

Keywords

Energy cost of walking; Falls; Gait variability; Multiple sclerosis

The Fall Risk with Alpha blockers Given Initial dose or Elderly status (FRAGILE) study

McDonnell CC, Rogers KC, Regen SM, Finks SW. *Ann. Pharmacother.* 2019; ePub(ePub): ePub.

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DOI

10.1177/1060028019880305

PMID

31578074

Abstract

Background: α -1 adrenergic antagonists are commonly prescribed, but there is question regarding their safety in patients at increased fall risk. **Objective:** The purpose of the FRAGILE study was to determine the risk for developing adverse drug events (ADEs) in veterans prescribed α -1 blockers. **Methods:** A single-center, retrospective, observational cohort analysis was conducted of veterans newly initiated on α -1 antagonists. Veterans were categorized into at-risk (patients who met at least 1 of 2 criteria: age 65 or older or high initial dose of α blockade) or control (veterans without either risk factor) groups. The primary outcome was the composite all-cause ADEs, including hospitalizations or emergency department (ED) visits. Secondary outcomes included number of fall-related ADEs and medication discontinuation rates with follow-up for 12 months. **Results:** A total of 300 veterans were evaluated. There was no significant difference in the composite outcome of all-cause ED visits between at-risk ($n = 169$) versus control ($n = 131$) groups (0.81 vs 1.17, $P = 0.09$) or all-cause hospitalizations (0.28 vs 0.39, $P = 0.25$). Seventy-three veterans in the at-risk group experienced an all-cause ADE versus 64 in the control group ($P = 0.36$). No significant differences in secondary outcomes were found. Fall-related side effects occurred in 8% of the total cohort. **Conclusion and Relevance:** Rates of all-cause or fall-related ADEs were not significantly different. An 8% discontinuation rate resulting from fall-related ADEs and high rates of coadministered medications that could increase fall risk. Pharmacists can play a key role in optimizing α -1 blocker administration.

Language: en

Keywords

elderly; fall; prazosin; syncope; α -blocker