Safety Literature 21st November 2021

Adherence to Mediterranean diet and its associations with circulating cytokines, musculoskeletal health and incident falls in community-dwelling older men: the Concord Health and Ageing in Men Project

Cervo MMC, Scott D, Seibel MJ, Cumming RG, Naganathan V, Blyth FM, Le Couteur DG, Handelsman DJ, Ribeiro RV, Waite LM, Hirani V. Clin. Nutr. 2021; 40(12): 5753-5763.

DOI 10.1016/j.clnu.2021.10.010 **PMID** 34763260

Abstract

BACKGROUND & AIMS: Mediterranean dietary patterns may exert favourable effects on various health conditions. This study aimed to determine associations of adherence to Mediterranean diet as well as its components, with circulating cytokine levels, musculoskeletal health and incident falls in community-dwelling older men.

METHODS: Seven hundred ninety-four (794) community-dwelling men with mean age 81.1 ± 4.5 years, who participated in the five-year follow-up of the Concord Health and Ageing in Men Project (CHAMP) were included in the cross-sectional analysis, and 616 attended follow-up three years later. Adherence to Mediterranean diet was assessed using MEDI-LITE (literature-derived Mediterranean diet) score which was obtained using a validated diet history questionnaire. Twenty-four evaluable circulating cytokines were analyzed using Bio-Plex Pro Human Cytokine 27-plex Assay kit. Appendicular lean mass (ALM) and bone mineral density (BMD) were measured using dual-energy x-ray absorptiometry (DXA). Three-year changes in gait speed and hand grip strength were assessed by walking a 6-m course and using a dynamometer respectively and analyzed using linear mixed-effects models. Incident falls over three years were determined through telephone interviews every four months. Multivariable linear regression was utilized to determine the cross-sectional associations between MEDI-LITE scores and circulating cytokines, bone mineral density, ALM, and ALM(BMI). Linear mixed-effects models were performed to estimate associations between MEDI-LITE scores and three-year change in hand grip strength and gait speed while negative binomial regression was applied to estimate associations between MEDI-LITE scores and three-year incident falls as well as associations between each MEDI-LITE component and three-year incident falls. Adjustments for multiple comparisons were performed using Benjamini-Hochberg adjustment for multiple testing.

RESULTS: A higher MEDI-LITE score, indicating greater adherence to Mediterranean diet, was associated with higher appendicular lean mass adjusted for body mass index (ALM(BMI)) (β: 0.004 kg; 95% CI: 0.000, 0.008), and lower incident falls rates (IRR: 0.94; 95% CI: 0.89, 0.99). Higher consumption of monounsaturated fatty acids (IRR: 0.76; 95% CI: 0.59, 0.98) and monounsaturated fatty acids to saturated fatty acids ratio (IRR: 0.72; 95% CI: 0.57, 0.90) were associated with 24%, and 28% lower falls risk in older men respectively. MEDI-LITE scores were not associated with BMD or physical function parameters.

CONCLUSIONS: Adherence to a Mediterranean diet is associated with higher ALM(BMI), and fewer falls in community-dwelling older men. Monounsaturated and saturated fatty acids were the most important contributors to the association between Mediterranean diet and falls risk.

Language: en

Keywords

Falls; Appendicular lean mass; Bone mineral density; Cytokines; MEDI-LITE score; Mediterranean diet

Aging safely in Alentejo - understanding for action - preventing falls and violence against older people: study rationale, aims, design, and preliminary results

Pereira C, Bravo J, Reis G, Mendes F. BMC Public Health 2021; 21(Suppl 2): e861.

DOI 10.1186/s12889-021-10807-8 **PMID** 34758786

Abstract

BACKGROUND: Falls and violence against older people might represent a joint public health problem, as both may result in injury, fear, social isolation, sedentary behavior and dependence or even death. The ESACA project "Aging safely in Alentejo - Understanding for action" was designed to promote the healthy aging of older people in Alentejo by preventing the occurrence of falls and violence. This study aimed to report the ESACA protocol and the preliminary outcomes.

METHODS: The ESACA study has a twofold design as a cross-sectional study that included retrospective and prospective surveys. The participants were 508 community-dwelling older people. Assessments included falls, the risk of violence against older people, sociodemographic characteristics, health-related measurements, fear of falling, anthropometric measures and body composition, functional physical fitness, physical activity, and environmental hazards.

RESULTS: Among the participants, 43% were fallers, 21% were recurrent fallers, and 22% were victims of one or more kinds of violence (psychological: 17.1%, physical: 5.6%, and patrimonial: 3.0%). Moreover, the cumulative results suggested high risk on several risk factors for falling (7 factors: 0.6% to 2 factors: 17.4%) and of violence (26.7%).

CONCLUSIONS: In the ESACA project, a wide range of potential influencing factors on falls and violence risk factors were measured, and comprehensive quality control measures were applied. Overall, the results suggest that for falls and violence prevention strategies to be effective, it is essential to evaluate, diagnose, and inform all stakeholders in a directed and useful way. Moreover, we believe that our project outcomes may help change mindsets and behaviors by involving people in active aging and well-being programs that promote exercise and avoid isolation.

Language: en

Keywords

Prevention; Risk factors; Elderly; Accidental fall; Elder abuse

Are wearable devices effective for preventing and detecting falls: an umbrella review (a review of systematic reviews)

Warrington DJ, Shortis EJ, Whittaker PJ. BMC Public Health 2021; 21(1): e2091.

DOI 10.1186/s12889-021-12169-7 **PMID** 34775947

Abstract

BACKGROUND: Falls are a common and serious health issue facing the global population, causing an estimated 646,000 deaths per year globally. Wearable devices typically combine accelerometers, gyroscopes and even barometers; using the data collected and inputting this into an algorithm that decides whether a fall has occurred. The purpose of this umbrella review was to provide a comprehensive overview of the systematic reviews on the effectiveness of wearable electronic devices for falls detection in adults.

METHODS: MEDLINE, Embase, Cochrane Database of Systematic Reviews (CDSR), and CINAHL, were searched from their inceptions until April 2019 for systematic reviews that assessed the accuracy of wearable technology in the detection of falls.

RESULTS: Seven systematic reviews were included in this review. Due to heterogeneity between the included systematic reviews in their methods and their reporting of results, a meta-analysis could not be performed. Most devices tested used accelerometers, often in combination with gyroscopes. Three systematic reviews reported an average sensitivity of 93.1% or greater and an average specificity of 86.4% or greater for the detection of falls. Placing sensors on the trunk, foot or leg appears to provide the highest accuracy for falls detection, with multiple sensors increasing the accuracy, specificity, and sensitivity of these devices.

CONCLUSIONS: This review demonstrated that wearable device technology offers a low-cost and accurate way to effectively detect falls and summon for help. There are significant differences in the effectiveness of these devices depending on the type of device and its placement. Further high-quality research is needed to confirm the accuracy of these devices in frail older people in real-world settings.

Language: en

Keywords

Aged; Accidental falls; Falls management; Falls prevention; Wearable electronic devices

Belmont village senior living comprehensive fall management using new artificial intelligence program in memory care

Easton-Garrett S, Gephart S, Nickels S. Geriatr. Nurs. 2021; ePub(ePub): ePub.

DOI 10.1016/j.gerinurse.2021.10.004 **PMID** 34750012

Abstract

[The publisher has not provided an abstract for this article.]

Language: en

Change in medication-associated fall risk among older adults after admission for fall-related trauma

Gross A, Elliott DP, Lasky T, Samanta D, Kafka W, Murphy M, Patel A. J. Trauma Nurs. 2021; 28(6): 363-366.

DOI 10.1097/JTN.0000000000000615 **PMID** 34766931

Abstract

BACKGROUND: As the population ages, it is predicted that approximately 40% of all patients who experience fall-related trauma will be 65 years of age and older. Most injuries in older adults are caused by falls that are the result of multiple contributing factors including home hazards, comorbidities, frailty, and medications. A variety of medications have been associated with falls, specifically those with sedating and anticholinergic effects. The drug burden index can be used to quantify sedating and anticholinergic drug burden, with higher scores being associated with reduced psychomotor function.

OBJECTIVE: Assess the medication-associated fall risk on admission and discharge for older patients admitted to a trauma nurse practitioner service.

METHODS: Retrospective, observational study of patients managed by trauma nurse practitioners at a Level 1 trauma center between January 1, 2018, and December 31, 2019. Patients were included if they were at least 65 years of age, the primary diagnosis for the admission was fall-related trauma, and length of stay was at least 7 days.

RESULTS: A total of 172 patients were included in the study. The drug burden index was significantly higher at discharge than admission (M = 1.4, SD = 0.9 vs. M = 1.9, SD = 0.9) as was the total number of medications (M = 11.0, SD = 5.2 vs. M = 15.1, SD = 5.8).

CONCLUSIONS: Medication-related fall risk was increased during admission due to fall-related trauma. Patients were discharged with a higher sedating and anticholinergic burden than on admission, which increases risk for future falls.

Language: en

Combined interprofessional education and system intervention to improve screening older adults for dementia and falls

Litzelman DK, Butler DE, Iloabuchi T, Frank KI, Bo N, Tong Y, Garrison E, Roth S, Vannerson J. Gerontol. Geriatr. Educ. 2021; ePub(ePub): ePub.

DOI 10.1080/02701960.2021.2001336 **PMID** 34755583

Abstract

The objective of this study was to increase screening for falls and dementia by improving interprofessional (IP) providers' and staffs' knowledge and attitudes toward the care of older patients and team-based care. An intervention, including education about screening and an electronic health record (EHR) flowsheet, was rolled-out across eight Federally Qualified Health Centers (FQHC). Participants were 262 IP health providers who served 6670 patients ≥ age 65 > age 65. An EHR flowsheet with two-item screeners for falls and dementia triggered automatically for patients ≥ age 65. Documentation of screening for falls and dementia was abstracted from the EHR for the year prior to and the year after the interventions began. Baseline screening rates for falls and dementia were flat; from the start of education intervention until EHR live date, screening rates increased significantly; after EHR live date, the screening rates continued increasing significantly. A combined education-system intervention can improve screening for falls and dementia in FQHC.

Language: en

Keywords

educational outcomes; federally qualified health centers; geriatric health; integration of geriatrics into primary care practice; interprofessional education and systems intervention; interprofessional relations; intervention; Screening for falls and dementia

Correlation between community balance and mobility scale (CB&M) with a battery of outcome measures to assess balance in Parkinson's disease - a cross-sectional study

Dsouza ZL, Rebello SR, Dsilva C. Arch. Physiother. 2021; 11(1): e25.

DOI 10.1186/s40945-021-00117-y **PMID** 34749815

Abstract

BACKGROUND: Evaluating balance in a functional context that integrates challenging tasks frequently performed in the community is essential to identify community-dwelling individuals who are at risk of falls in early Parkinson Disease (PD) than a simple balance measure. Community Balance and Mobility (CB&M) scale is one such measure that evaluates severe deficits in gait, balance, and mobility. The risk of falling and fear of fall is common among PD individuals and this affects the day to day functioning as well as the quality of life. Early identification of individuals who may be at risk to fall will lead to intervention strategies that can help to with balance issues. The aim of this study was to correlate between Community Balance and Mobility with a battery of outcome measures commonly used to assess balance in Parkinson's disease.

METHODS: A cross sectional study design; with individuals referred to Outpatient physiotherapy department, diagnosed with idiopathic Parkinson's disease, independently mobile and on a stable drug regimen referred by the neurologist; were screened and recruited by convenience sampling. With written informed consent, demographic data gathered and scales such as Berg Balance scale, Community balance & mobility scale, Functional Reach test and Timed up and go test were administered with an ample amount of rest.

RESULTS: The results obtained were documented and analysed using Karl Pearson's correlation coefficient. Significant correlation between CB&M and BBS ($r = 0.795$) was found, CB&M and TUG ($r = -0.755$), CB&M and FRT ($r = 0.772$).

CONCLUSION: CB&M is a useful measure which integrates items that challenge balance in the community context. It has been used to assess high functioning community dwelling individuals and hence may be apt for individuals with early Parkinson's, since the tasks to be performed in CB&M are challenging and these simulate community level activities where the risk of falls is higher. It may well be a good tool to assess early Parkinson's; their level of balance, community level activity and without need for sophisticated & expensive equipment.

Language: en

Keywords

Balance; Berg balance scale; Community Balance & Mobility; Functional reach test; Parkinson; Timed UP & GO

Development and validation of a continuous fall risk score in community-dwelling older people: an ecological approach

Bravo J, Rosado H, Tomas-Carus P, Carrasco C, Batalha N, Folgado H, Pereira C. BMC Public Health 2021; 21(Suppl 2): e808.

DOI 10.1186/s12889-021-10813-w **PMID** 34758784

Abstract

BACKGROUND: Fall risk assessment in older people is of major importance for providing adequate preventive measures. Current predictive models are mainly focused on intrinsic risk factors and do not adjust for contextual exposure. The validity and utility of continuous risk scores have already been demonstrated in clinical practice in several diseases. In this study, we aimed to develop and validate an intrinsic-exposure continuous fall risk score (cFRs) for community-dwelling older people through standardized residuals.

METHODS: Self-reported falls in the last year were recorded from 504 older persons (391 women: age 73.1 ± 6.5 years; 113 men: age 74.0 ± 6.1 years). Participants were categorized as occasional fallers (falls ≤1) or recurrent fallers (≥ 2 falls). The cFRs was derived for each participant by summing the standardized residuals (Z-scores) of the intrinsic fall risk factors and exposure factors. Receiver operating characteristic (ROC) analysis was used to determine the accuracy of the cFRs for identifying recurrent fallers.

RESULTS: The cFRs varied according to the number of reported falls; it was lowest in the group with no falls (- 1.66 ± 2.59), higher in the group with one fall (0.05 ± 3.13, $p < 0.001$), and highest in the group with recurrent fallers (2.82 ± 3.94, $p < 0.001$). The cFRs cutoff level yielding the maximal sensitivity and specificity for identifying recurrent fallers was 1.14, with an area under the ROC curve of 0.790 (95% confidence interval: 0.746-0.833; $p < 0.001$).

CONCLUSIONS: The cFRs was shown to be a valid dynamic multifactorial fall risk assessment tool for epidemiological analyses and clinical practice. Moreover, the potential for the cFRs to become a widely used approach regarding fall prevention in community-dwelling older people was demonstrated, since it involves a holistic intrinsic-exposure approach to the phenomena. Further investigation is required to validate the cFRs with other samples since it is a sample-specific tool.

Language: en

Keywords

Older adults; Dynamic fall risk assessment; Fall prevention; Intrinsic-exposure risk; Predictive accuracy

Effects of two 24-week multimodal exercise programs on reaction time, mobility, and dual-task performance in community-dwelling older adults at risk of falling: a randomized controlled trial

Rosado H, Bravo J, Raimundo A, Carvalho J, Marmeleira J, Pereira C. BMC Public Health 2021; 21(Suppl 2): e408.

DOI 10.1186/s12889-021-10448-x **PMID** 34758759

Abstract

BACKGROUND: Falls in older adults are considered a major public health problem. Declines in cognitive and physical functions, as measured by parameters including reaction time, mobility, and dual-task performance, have been reported to be important risk factors for falls. The aim of this study was to investigate the effects of two multimodal programs on reaction time, mobility, and dual-task performance in community-dwelling older adults at risk of falling.

METHODS: In this randomized controlled trial, fifty-one participants (75.4 ± 5.6 years) were allocated into two experimental groups (EGs) (with sessions 3 times per week for 24 weeks), and a control group: EG1 was enrolled in a psychomotor intervention program, EG2 was enrolled in a combined exercise program (psychomotor intervention program + whole-body vibration program), and the control group maintained their usual daily activities. The participants were assessed at baseline, after the intervention, and after a 12-week no-intervention follow-up period.

RESULTS: The comparisons revealed significant improvements in mobility and dual-task performance after the intervention in EG1, while there were improvements in reaction time, mobility, and dual-task performance in EG2 ($p \leq 0.05$). The size of the interventions' clinical effect was medium in EG1 and ranged from medium to large in EG2. The comparisons also showed a reduction in the fall rate in both EGs (EG1: -44.2%; EG2: - 63.0%, $p \leq 0.05$) from baseline to post-intervention. The interventions' effects on reaction time, mobility, and dual-task performance were no longer evident after the 12-week no-intervention follow-up period.

CONCLUSIONS: The results suggest that multimodal psychomotor programs were well tolerated by community-dwelling older adults and were effective for fall prevention, as well as for the prevention of cognitive and physical functional decline, particularly if the programs are combined with whole-body vibration exercise. The discontinuation of these programs could lead to the fast reversal of the positive outcomes achieved. TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT03446352. Date of registration: February 07, 2018.
Language: en

Keywords
Falls; Aging; Cognitive function; Physical function; Psychomotor intervention; Whole-body vibration

Evaluating the association between hearing loss and falls in adults with vestibular dysfunction or nonvestibular dizziness

Huang RJ, Pieper CF, Whitson HE, Garrison DB, Pavon JM, Riska KM. Ear Hear. 2021; ePub(ePub): ePub.

DOI 10.1097/AUD.0000000000001156 **PMID** 34751678

Abstract

OBJECTIVES: Although emerging evidence suggests that hearing loss (HL) is an independent risk factor for falls, it is unclear how HL may impact falls risk in adults with vestibular dysfunction and nonvestibular dizziness. The purpose of this study was to characterize the impact of HL on falls in patients with vestibular dysfunction and nonvestibular dizziness relative to a group of patients without dizziness. In addition, this study aimed to evaluate whether there was an interactive effect between HL and vestibular dysfunction or nonvestibular dizziness on the odds of falling.

DESIGN: The authors conducted a retrospective cross-sectional study of 2,750 adult patients with dizziness evaluated at a tertiary care center vestibular clinic between June 1, 2015, and October 7, 2020. Only patients with available self-reported falls status, as extracted from the electronic medical record, were included. Patients were classified into the following diagnostic groups based on rotary chair testing and videonystagmography: benign paroxysmal positional vertigo (BPPV, n = 255), unilateral vestibular hypofunction (UVH, n = 456), bilateral vestibular hypofunction (BVH, n = 38), central dysfunction (n = 208), multiple diagnoses (n = 109), and dizzy, nonvestibular (n = 1,389). A control group of patients without dizziness (n = 295) was identified by a random sample of audiology patients. Degree of HL was characterized by the 4-frequency pure tone average (PTA) (0.5, 1, 2, and 4 kHz) of the better hearing ear. Demographic variables, comorbidities, cognitive impairment status, and falls-associated medications were extracted from the electronic medical record and included as covariates during analysis. Potential associations between PTA and falls status and possible interactions between diagnostic group and PTA were explored using multivariate logistic regression.

RESULTS: The BVH and central dysfunction groups had the highest rates of self-reported falls at 26.3% and 26.9%, respectively. The control group had the lowest rate of self-reported falls at 6.4%. With the exception of the multiple diagnoses group, all diagnostic groups had elevated odds of falling compared with the control group, when adjusting for demographics, comorbidities, cognitive impairment status, and falls-associated medications. There was no significant association between degree of HL and falls status (odds ratio [OR] = 1.02; 95% confidence interval [CI] = 0.93, 1.11; p = 0.713) when adjusting for diagnostic group and all other covariates. Furthermore, there were no significant interactions between diagnostic group and degree of HL on the odds of falling.

CONCLUSIONS: These results indicate that HL was not associated with falls in patients with vestibular dysfunction or nonvestibular dizziness, while adjusting for demographics,

comorbidities, and falls-associated medications. There was no significant interactive effect observed between HL and vestibular dysfunction or nonvestibular dizziness on the odds of falling. As previously reported, vestibular dysfunction and nonvestibular dizziness were independently associated with falls relative to a group of patients without dizziness. A population-based study utilizing more robust falls data is needed to explore a potential association between HL and falls in those with vestibular dysfunction.

Language: en

Gait ability and muscle strength in institutionalized older persons with and without cognitive decline and association with falls

Dixe MDA, Madeira C, Alves S, Henriques MA, Baixinho CL. Int. J. Environ. Res. Public Health 2021; 18(21): e11543.

DOI 10.3390/ijerph182111543 **PMID** 34770057

Abstract

Falls are a complex problem, given their multifactorial nature, the comorbidities involved, and due to the dependency of older persons living in nursing homes. Risk, fear of falling, falls themselves, and their recurrence are the main factors behind fragility fractures, lack of independence, and increases in pain prevalence, and other comorbidities in older populations. The objectives of the present quantitative and longitudinal study were: (a) to characterize the cognitive state and fall frequency of older persons living in nursing homes; (b) to analyze the relationship between cognitive status and some fall risk factors; and (c) to associate cognitive decline, gait ability, and muscle strength of the examined institutionalized older persons with fall occurrence and recurrence over 12 months. The participants were 204 older persons who lived in Portuguese nursing homes, and data were collected from January 2019 to February 2020 by consulting medical records and applying the following instruments: the Mini-Mental State Examination, Timed Up and Go Test, and Medical Research Council Manual Muscle Testing Scale. Fall prevalence, assessed in two periods, 12 months apart, was similar in both samples (with and without cognitive decline) and close to 42%, and the annual recurrence rate was 38.3%. Older persons with no cognitive decline showed an association between gait speed and occurrence of first fall and recurrent fall ($p < 0.05$). Muscle strength and use of gait aid devices were not related to falls and their recurrence, regardless of mental state.

Language: en

Keywords

falls; aging population; gait; muscle strength; nursing home

Key factor cutoffs and interval reference values for stratified fall risk assessment in community-dwelling older adults: the role of physical fitness, body composition, physical activity, health condition, and environmental hazards

Pereira C, Veiga G, Almeida G, Matias AR, Cruz-Ferreira A, Mendes F, Bravo J. BMC Public Health 2021; 21(Suppl 2): e977.

DOI 10.1186/s12889-021-10947-x **PMID** 34758785

Abstract

BACKGROUND: Fall risk assessment and determination of older adults' individual risk profiles are crucial elements in fall prevention. As such, it is essential to establish cutoffs and reference values for high and low risk according to key risk factor outcomes. This study main objective was to determine the key physical fitness, body composition, physical activity, health condition and environmental hazard risk outcome cutoffs and interval reference values for stratified fall risk assessment in community-dwelling older adults.

METHODS: Five-hundred community-dwelling Portuguese older adults (72.2 ± 5.4 years) were assessed for falls, physical fitness, body composition, physical (in) activity, number of health conditions and environmental hazards, and sociodemographic characteristics.

RESULTS: The established key outcomes and respective cutoffs and reference values used for fall risk stratification were multidimensional balance (low risk: score > 33, moderate risk: score 32-33, high risk: score 30-31, and very high: score < 30); lean body mass (low risk: > 44 kg, moderate risk: 42-44 kg, high risk: 39-41 kg, and very high: < 39 kg); fat body mass (low risk: < 37%, moderate risk: 37-38%, high risk: 39-42%, and very high: > 42%); total physical activity (low risk: > 2800 Met-min/wk., moderate risk: 2300-2800 Met-min/wk., high risk: 1900-2300 Met-min/wk., and very high: < 1900 Met-min/wk); rest period weekdays (low risk: < 4 h/day, moderate risk: 4-4.4 h/day, high risk: 4.5-5 h/day, and very high: > 5 h/day); health conditions (low risk: n < 3, moderate risk: n = 3, high risk: n = 4-5, and very high: n > 5); and environmental hazards (low risk: n < 5, moderate risk: n = 5, high risk: n = 6-8, and very high: n > 8).

CONCLUSIONS: Assessment of community-dwelling older adults' fall risk should focus on the above outcomes to establish individual older adults' fall risk profiles. Moreover, the design of fall prevention interventions should manage a person's identified risks and take into account the determined cutoffs and respective interval values for fall risk stratification.

Language: en

Keywords

Risk assessment; Cutoffs; Elderly; Falling; Risk stratification

Patterns of balance loss with systematic perturbations in Parkinson's disease and multiple sclerosis

Allen DD, Gadayan J, Hughes R, Magdalin C, Jang C, Schultz A, Scott K, Vivero L, Lazaro RL, Widener GL. NeuroRehabilitation 2021; ePub(ePub): ePub.

DOI 10.3233/NRE-210200 **PMID** 34776428

Abstract

BACKGROUND: Multiple sclerosis (MS) and Parkinson's disease (PD) may affect balance differently. However, no studies have compared loss of balance (LOB) patterns following multi-directional perturbations.

OBJECTIVE: 1) determine reliability of LOB ratings following standardized manual perturbations; 2) compare LOB ratings in MS, PD, and healthy control (HC) groups following perturbations at upper/lower torso, in anterior/posterior, right/left, and rotational directions.

METHODS: 1) reviewers rated videotaped LOB following perturbations applied by 4 clinicians in 6-10 HCs. 2) three groups (64 MS, 42 PD and 32 HC) received perturbations. LOB ratings following perturbations were analyzed using two-factor mixed ANOVAs for magnitude and prevalence.

RESULTS: 1) LOB ratings showed moderate to good ICC and good to excellent agreement. 2) MS group showed greater magnitude and prevalence of LOB than PD or HC groups ($p < .001$). All groups showed greater LOB from right/left versus anterior/posterior perturbations ($p < .01$). PD showed greater LOB from perturbations at upper versus lower torso; MS and HC showed greater LOB from posterior versus anterior perturbations.

CONCLUSIONS: Our reliable rating scale showed differences in patterns of LOB following manual perturbations in MS, PD, and HC. Clinically accessible and reliable assessment of LOB could facilitate targeted perturbation-based interventions and reduce falls in vulnerable populations.

Language: en

Keywords

assessment; reliability; balance; multiple sclerosis; Parkinson’s disease; perturbations

SARC-F and the risk of falling in middle-aged and older community-dwelling postmenopausal women

Alzar-Teruel M, Hita-Contreras F, Martínez-Amat A, Lavilla-Lerma ML, Fábrega-Cuadros R, Jiménez-García JD, Aibar-Almazán A. Int. J. Environ. Res. Public Health 2021; 18(21): e11570.

DOI 10.3390/ijerph182111570 **PMID** 34770084

Abstract

(1) Background: The objective of the present study was to determine the ability of the SARC-F questionnaire to identify individuals at risk of falling among middle-aged and older community-dwelling postmenopausal women. (2) Methods: An analytical cross-sectional study was conducted on 157 women (70.80 ± 8.37 years). The SARC-F questionnaire was used to screen for risk of sarcopenia. Fear of falling and balance confidence, as measured by the Falls Efficacy Scale-International (FES-I) and the Activities-Specific balance Scale-16 items (ABC-16) respectively, were used to assess risk of falling. Anxiety and depression (Hospital Anxiety and Depression Scale), fatigue (Fatigue Severity Scale), body mass index, waist-to-hip ratio, and sleep duration were also determined. (3) Results: Logistic regression showed that higher risk of falling as assessed by FES-I was associated with higher SARC-F scores (OR = 1.656), anxiety levels (OR = 1.147), and age (OR = 1.060), while increased SARC-F scores (OR = 1.612), fatigue (OR = 1.044), and shorter sleep duration (OR = 0.75) were related to ABC-16 scores. In addition, a SARC-F cutoff of 1.50 (83.33% sensitivity and 59.13% specificity) and 3.50 (44.44% sensitivity and 89.26% specificity) were shown to be able to discriminate participants at risk of falling according to the FES-I and the ABC-16, respectively. (4) Conclusions: our results show that SARC-F is an independent predictor of the risk of falling among middle-aged and older community-dwelling postmenopausal women.

Language: en

Keywords

depression; anxiety; balance confidence; fear of falling; sarcopenia

Assessing the fidelity of the independently getting up off the floor (IGO) technique as part of the ReTrain pilot feasibility randomised controlled trial for stroke survivors

Hollands L, Calitri R, Warmoth K, Shepherd A, Allison R, Dean S. Disabil. Rehabil. 2021; ePub(ePub): ePub.

DOI 10.1080/09638288.2021.1998672 **PMID** 34767488

Abstract

PURPOSE: Hemiparesis and physical deconditioning following stroke lead to an increase in falls, which many individuals cannot get up from. Teaching stroke survivors to independently get off the floor (IGO) might mitigate long-lie complications. IGO was taught as part of a community-based, functional rehabilitation training programme (ReTrain). We explore the feasibility of teaching IGO and assess participant's level of mastery, adherence, and injury risk.

MATERIALS AND METHODS: Videos of participants (n = 17) performing IGO at early, middle, and late stages of the ReTrain programme were compared to a manualised standard. A visual, qualitative analysis was used to assess technique mastery, adherence, and injury risk.

RESULTS: Most participants (64%) achieved independent, safe practice of IGO. A good (73%) level of adherence to IGO and low incidence of risk of injury (6.8%) were observed. Deviations were made to accommodate for non-stroke related comorbidities.

CONCLUSIONS: IGO was successfully and safely practised by stroke survivors including those with hemiparesis. Trainers should be aware of comorbidities that may impede completion of IGO and modify teaching to accommodate individual need. Further research should assess if IGO can be utilised by individuals who have other disabilities with unilateral impairments and whether IGO has physical, functional and economic benefit.Implications for rehabilitationFalls are common in stroke survivors, and many are unable to get up despite being uninjured, leading to long-lie complications or ambulance call-outs but non-conveyance to hospital.Teaching the independently getting up off the floor (IGO) technique to stroke survivors was possible for those with or without hemiparesis, and remained safe despite modifications to accommodate an individual's needs.Individual assessment is needed to check if a stroke survivor is suitable for learning IGO including, but not limited to, their ability to safely get to the floor and to temporarily stand (without support) at the end of the technique.

Language: en

Keywords

Falls; adherence; hemiparesis; physical rehabilitation; stroke

Comparing the causes, circumstances and consequences of falls across mobility statuses among individuals with spinal cord injury: a secondary analysis

Singh H, Cheung L, Chan K, Flett HM, Hitzig SL, Kaiser A, Musselman KE. J. Spinal Cord Med. 2021; 44(Suppl 1): S193-S202.

DOI 10.1080/10790268.2021.1956252 **PMID** 34779733

Abstract

OBJECTIVE: To compare the occurrence of falls and fall-related injuries, and the circumstances of falls among individuals with spinal cord injury (SCI) who ambulate full-time, use a wheelchair full-time and ambulate part-time.

DESIGN: A secondary analysis. SETTING: Community. PARTICIPANTS: Adults with SCI. INTERVENTION: None. OUTCOME MEASURES: The occurrence and circumstances of falls and fall-related injuries were tracked over six-months using a survey. Participants were grouped by mobility and fall status. A chi-square test compared the occurrence of falls and fall-related injuries, and the time and location of falls, and a negative binomial regression was used to predict the likelihood of falls by mobility status. Kaplan-Meier analysis was used to determine differences in the time to first fall based on mobility status. Group characteristics and causes of falls were described.

RESULTS: Data from individuals who ambulated full-time ($n = 30$), used a wheelchair full-time ($n = 27$) and ambulated part-time ($n = 8$) were analyzed. Mobility status was a significant predictor of falls ($P < 0.01$); individuals who used a wheelchair full-time had a third of the likelihood of falling than those who ambulated full-time ($P < 0.01$). Type of fall-related injuries differed by mobility status. Those who ambulated full-time fell more in the daytime ($P < 0.01$). Individuals who ambulated full-time and part-time commonly fell while walking due to poor balance, and their legs giving out, respectively. Those who used a wheelchair full-time typically fell while transferring when rushed.

CONCLUSION: Mobility status influences the likelihood and circumstances of falls. Mobility status should be considered when planning fall prevention education/training for individuals with SCI.

Language: en

Keywords

Spinal cord injuries; Accidental falls; Surveys and questionnaires

Current and emerging trends in the management of fall risk in people with lower limb amputation

Clemens S, Doerger C, Lee SP. Curr. Geriatr. Rep. 2020; 9(3): 134-141.

DOI 10.1007/s13670-020-00328-4 **PMID** 34790518

Abstract

PURPOSE OF REVIEW: People living with lower limb amputation are at an increased risk of falling compared with the healthy geriatric population. Factors of increased age and increased number of comorbidities could compound the already increased risk. The purpose of this article is to highlight recent research associated with fall risk in amputees and provide the reader with evidence to help guide clinical interventions. RECENT FINDINGS: Though research on the topic of falls in people with amputation is becoming more common, there is still a dearth of evidence regarding what contributes to increased fall risk and how to address it in this population. There are recent studies that have examined therapy and prosthetic interventions that could mitigate fall risk in people with amputation, yet there is not enough evidence to develop a consensus on the topic. More research is required to determine what contributes to increased fall rates in people with amputation, and what detriments to an amputee's function or psyche may result after incurring a fall.

SUMMARY: Borrowing from what is known about geriatric fall risk and combining the information with novel and existing approaches to fall mitigation in amputees can offer clinicians the opportunity to develop evidence-based programs to address fall risk in their patients with lower limb amputation.

Language: en

Keywords

Prosthetics; Amputation; Fall risk; Limb loss

Falls occurring after a spinal cord injury: a scoping review

Marshall K, Gustafsson L, McKittrick A, Fleming J. Am. J. Occup. Ther. 2021; 75(3): e043695.

DOI 10.5014/ajot.2021.043695 **PMID** 34781344

Abstract

IMPORTANCE: Falls have a considerable physical and psychological impact on people with spinal cord injury (SCI). Occupational therapy practitioners require evidence to support the timely development of occupation-based programs that can be applied to fall prevention in daily life.

OBJECTIVE: To determine what is known about falls after SCI, including wheelchair users and people who are ambulatory, and to understand elements of fall prevention to be addressed by occupational therapy practitioners. We applied the Canadian Measure of Occupational Performance and Engagement to understand elements to be addressed in fall education and prevention with this population. DATA SOURCES: We searched eight databases using the key words falls and spinal cord injury with no limit set on dates. Study Selection and Data Collection: Studies were included that reported on falls among adults with SCI and measured one or more of the following: incidence of falls, consequences of falls, contributing factors for falls, the person's experience of falls, and strategies to prevent falls.

FINDINGS: Thirty-five articles were included. The majority of the articles included information on the incidence (n = 20), consequences (n = 26), and contributing factors (n = 30) of falls. Two articles analyzed the person's experience of falls, and 1 study reviewed a fall prevention program for people with SCI specifically.

CONCLUSIONS AND RELEVANCE: Research on participants' experience of falls and fall prevention programs used in spinal cord rehabilitation is extremely limited. Future research on the lived experience of falls for people with SCI is warranted. What This Article Adds: This review of evidence on falls after SCI highlights gaps in the current available evidence.

Language: en

Nurses' perceptions of recommended fall prevention strategies: a rapid review

Garcia A, Bjarnadottir RRI, Keenan GM, Macieira TGR. J. Nurs. Care Qual. 2021; ePub(ePub): ePub.

DOI 10.1097/NCQ.0000000000000605 **PMID** 34775419

Abstract

BACKGROUND: Limited studies have synthesized evidence on nurses' perceptions of recommended fall prevention strategies and potential differences between those and the practiced strategies.

PURPOSE: To synthesize evidence about nurses' perceptions of recommended fall prevention strategies for hospitalized adults.

METHODS: Using PubMed, 50 records underwent abstract and full-text screening, and 10 studies were retained. Narrative synthesis was conducted to identify common themes across studies. Quality assessment was not performed.

RESULTS: Nurses are aware of effective fall prevention strategies but identified unit-level barriers and facilitators to implementing these in their practice. Unit culture and policies, educational offerings, nursing interventions, and style of communication and collaboration were seen to influence fall prevention.

CONCLUSIONS: Nurses recognize falls as a multifactorial issue suggesting that prevention efforts be tailored to the unit and involve all employees. We recommend that future research emphasize identifying and understanding the combination of factors that produce successful unit-level fall prevention strategies.

Language: en

Simplified decision-tree algorithm to predict falls for community-dwelling older adults

Makino K, Lee S, Bae S, Chiba I, Harada K, Katayama O, Tomida K, Morikawa M, Shimada H. J. Clin. Med. 2021; 10(21): e5184.

DOI 10.3390/jcm10215184 **PMID** 34768703

Abstract

The present study developed a simplified decision-tree algorithm for fall prediction with easily measurable predictors using data from a longitudinal cohort study: 2520 community-dwelling older adults aged 65 years or older participated. Fall history, age, sex, fear of falling, prescribed medication, knee osteoarthritis, lower limb pain, gait speed, and timed up and go test were assessed in the baseline survey as fall predictors. Moreover, recent falls were assessed in the follow-up survey. We created a fall-prediction algorithm using decision-tree analysis (C5.0) that included 14 nodes with six predictors, and the model could stratify the probabilities of fall incidence ranging from 30.4% to 71.9%. Additionally, the decision-tree model outperformed a logistic regression model with respect to the area under the curve (0.70 vs. 0.64), accuracy (0.65 vs. 0.62), sensitivity (0.62 vs. 0.50), positive predictive value (0.66 vs. 0.65), and negative predictive value (0.64 vs. 0.59). Our decision-tree model consists of common and easily measurable fall predictors, and its white-box algorithm can explain the reasons for risk stratification; therefore, it can be implemented in clinical practices. Our findings provide useful information for the early screening of fall risk and the promotion of timely strategies for fall prevention in community and clinical settings.

Language: en

Keywords

fall prevention; machine learning; decision-tree; risk prediction

The impact of falls and fear of falling on participation, autonomy, and life satisfaction among individuals with spinal cord injury: a brief report

Singh H, Chan K, Cheung L, Hitzig SL, Musselman KE. J. Spinal Cord Med. 2021; 44(Suppl 1): S234-S239.

DOI 10.1080/10790268.2021.1943251 **PMID** 34779724

Abstract

CONTEXT: Qualitative research suggests that falls can have a negative psychosocial impact on the lives of individuals with spinal cord injury (SCI). However, it is unclear whether these qualitative findings are supported by quantitative psychosocial metrics. This paper examines whether falling and/or having a fear of falling impacts participation, autonomy, and life satisfaction among individuals with SCI.

METHODS: Falls and fear of falling were tracked over six months using a survey and phone check-ins conducted approximately every three to four weeks. The Life Satisfaction 9 and Impact on Participation and Autonomy Questionnaires were administered at baseline and after six months. Responses on the questionnaires were statistically compared between fallers and non-fallers as well as participants with and without a fear of falling during the tracking period.

FINDINGS: Of the 65 community-dwelling adults with chronic SCI, 38 were categorized as fallers (aged 54.29 ± 13.73, 19.55 ± 14.20 years post-SCI, AIS A-D) and 27 were non-fallers (aged 57.78 ± 12.21, 17.93 ± 17.24 years post-SCI, AIS A-D). Our results revealed no significant differences between fallers and non-fallers in their perceived participation, autonomy, or life satisfaction at baseline or after six months. At the last check-in, 34 participants denied a fear of falling, while 31 had a fear of falling. Perceived autonomy outdoors (P=0.02), total life satisfaction (P=0.04), satisfaction with life as a whole (P=0.00) and self-care (P=0.01) differed between participants with and without a fear of falling after six months.

CONCLUSION: Fear of falling, rather than falls, may impact participation, autonomy, and life satisfaction in the SCI population.

Language: en

Keywords

Falls; Quality of life; Spinal cord injury; Autonomy; Fear of falling; Participation

Treatment of vestibular disorders (inner ear balance problems): how does your physical therapist treat dizziness related to inner ear balance problems?

Hall CD, Herdman SJ, Whitney SL, Anson ER, Carender WJ, Hoppes CW. J. Neurol. Phys. Ther. 2021; ePub(ePub): ePub.

DOI 10.1097/NPT.0000000000000385 **PMID** 34775435

Abstract

Dizziness is very common, but it is never normal. Dizziness can make performing daily activities, work, and walking difficult. Inner ear balance problems can make people dizzy when they turn their head, which can cause problems during walking and make people more likely to fall. Most of the time dizziness is not from a life-threatening disease. Often, dizziness is related to a problem of the vestibular (or inner ear balance) system. Vestibular disorders can be caused by infections in the ear, problems with the immune system, medications that harm the inner ear, and rarely from diabetes or stroke because of a lack of blood flow to the inner ear. Stress, poor sleep, migraine headaches, overdoing some activities, and feeling anxious or sad can increase symptoms of dizziness. Updated guidelines for the treatment of inner ear disorders are published in this issue of the Journal of Neurologic Physical Therapy. The guideline recommends which exercises are best to treat the dizziness and balance problems commonly seen with an inner ear problem.

Language: en