

Associations between the impact of menopausal symptoms and fall-related self-efficacy

Espírito Santo J, Hita-Contreras F, Marques de Loureiro NE, Brandão Loureiro V, Aibar-Almazán A, Carcelén-Fraile MDC, Ortiz-Quesada R. Menopause 2023; ePub(ePub): ePub.

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Abstract

OBJECTIVE: To analyze the association between the severity of menopausal symptoms and two important fall risk factors, namely balance confidence and fear of falling, among Portuguese and Spanish postmenopausal women 65 years or older.

METHODS: A cross-sectional, observational study was conducted on 363 women (66.21 ± 9.00 y) from several Portuguese and Spanish locations. The Menopause Rating Scale was used to evaluate the severity of menopausal symptoms, while the Falls Efficacy Scale-International and Activities-specific Balance Confidence Scale-16 items were used to assess balance confidence and fear of falling, respectively. Anxiety and depression (evaluated by the Hospital Anxiety and Depression Scale), age, time since the onset of menopause, body mass index, history of falls, osteoporosis, smoking habit, physical activity level, and nocturia were considered as potential confounders. Independent associations were analyzed after adjusting for potential confounding variables. Student's t test, bivariate correlations, and multivariate linear regression analysis were performed.

RESULTS: A total of 363 women (66.21 ± 9.00 y) participated in the study, 192 from Portugal and 171 from Spain. Linear regression analysis indicates that more severe menopausal symptoms at a somatovegetative level (beta coefficient [β] = -0.25; 95% confidence interval [95% CI], -2.09 to -0.81; $P = <0.001$), a higher body mass index ($\beta = -0.16$; 95% CI, -1.22 to -0.22; $P = 0.005$), and osteoporosis ($\beta = 0.14$; 95% CI, 1.36 to 10.08; $P = 0.010$) were associated with lower balance confidence values. On the other hand, a higher score in the Menopause Rating Scale somatovegetative domain ($\beta = 0.22$; 95% CI, 0.27-0.79; $P = <0.001$), depression ($\beta = 0.36$; 95% CI, 0.59-1.08; $P = <0.001$), and years after the menopause onset ($\beta = 0.15$; 95% CI, 0.04-0.22; $P = 0.006$) were linked to increased fear of falling.

CONCLUSIONS: The findings of our study show that, after taking into account possible confounders, increased severity of menopausal symptoms at a somatic level was associated with heightened fear of falling and diminished balance confidence.

Language: en

Development and evaluation of syndromic surveillance definitions for fall- and hip fracture-related emergency department visits among adults aged 65 years and older, United States 2017-2018

Moreland B, Shakya I, Idaikkadar N. J. Public Health Manag. Pract. 2022; ePub(ePub): ePub.

(Copyright © 2022, Lippincott Williams and Wilkins)

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Abstract

OBJECTIVE: To develop syndromic surveillance definitions for unintentional fall- and hip fracture-related emergency department (ED) visits among older adults (aged ≥ 65 years) for use in the Centers for Disease Control and Prevention's National Syndromic Surveillance Program (NSSP) data and compare the percentage of ED visits captured using these new syndromes with ED visits from the Healthcare Cost and Utilization Project Nationwide Emergency Department Sample (HCUP-NEDS), a nationally representative administrative data set. **DESIGN/SETTING:** Syndromic definitions were developed using chief complaint terms and discharge diagnosis codes in NSSP data. The percentages of ED visits among older adults related to falls and hip fractures in NSSP were compared with the percentages in HCUP-NEDS in 2017 and 2018. **MEASURES:** Prevalence ratios were calculated as the relative difference in the percentage of ED visits related to falls or hip fractures in NSSP compared with HCUP-NEDS. Counts and percentages calculated using HCUP-NEDS were weighted to produce nationally representative estimates. Data were analyzed overall and by sex and age group.

RESULTS: The percentage of ED visits among older adults related to falls in NSSP was 12% less in 2017 (10.81%) and 7% less in 2018 (11.42%) compared with HCUP-NEDS (2017: 12.30%; 2018: 12.26%). The percentage of ED visits among older adults related to hip fractures in NSSP was 41% less in 2017 (0.65%) and 30% less in 2018 (0.76%) compared with HCUP-NEDS (2017: 1.10%; 2018: 1.09%). In both 2017 and 2018, a higher percentage of ED visits among older women and adults aged 85 years or older were related to falls or hip fractures compared with older men and younger age groups across both data sets.

CONCLUSION: A smaller percentage of older adults' ED visits met the falls and hip fracture definitions in NSSP compared with HCUP-NEDS in 2017 and 2018. However, demographic trends remained similar across both data sets.

Language: en

Diuretics, SGLT2 inhibitors and falls in older heart failure patients: to prescribe or to deprescribe? A clinical review

van Poelgeest EP, Handoko ML, Muller M, van der Velde N. Eur. Geriatr. Med. 2023; ePub(ePub): ePub.

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Abstract

PURPOSE: Both heart failure and its treatment with diuretics or SGLT2 inhibitors increase fall risk in older adults. Therefore, decisions to continue or deprescribe diuretics or SGLT2 inhibitors in older heart failure patients who have fallen are generally highly complex and challenging for clinicians. However, a comprehensive overview of information required for rationale and safe decision-making is lacking. The aim of this clinical review was to assist clinicians in safe (de)prescribing of these drug classes in older heart failure patients.

METHODS: We comprehensively searched and summarized published literature and international guidelines on the efficacy, fall-related safety issues, and deprescribing of the commonly prescribed diuretics and SGLT2 inhibitors in older adults.

RESULTS: Both diuretics and SGLT2 inhibitors potentially cause various fall-related adverse effects. Their fall-related side effect profiles partly overlap (e.g., tendency to cause hypotension), but there are also important differences; based on the currently available evidence of this relatively new drug class, SGLT2 inhibitors seem to have a favorable fall-related adverse effect profile compared to diuretics (e.g., low/absent tendency to cause hyperglycemia or electrolyte abnormalities, low risk of worsening chronic kidney disease). In addition, SGLT2 inhibitors have potential beneficial effects (e.g., disease-modifying effects in heart failure, renoprotective effects), whereas diuretic effects are merely symptomatic.

CONCLUSION: (De)prescribing diuretics and SGLT2 inhibitors in older heart failure patients who have fallen is often highly challenging, but this clinical review paper assists clinicians in individualized and patient-centered rational clinical decision-making: we provide a summary of available literature on efficacy and (subclass-specific) safety profiles of diuretics and SGLT2 inhibitors, and practical guidance on safe (de)prescribing of these drugs (e.g. a clinical decision tree for deprescribing diuretics in older adults who have fallen).

Language: en

Keywords

Falls; Deprescribing; Diuretics; Geriatric; Sodium-glucose cotransporter-2 inhibitors

Effect of 12-week-Zumba training on postural balance, lower limb strength, mood and quality of life in postmenopausal women

Lahiani M, Ben Waer F, Chaari F, Rebai H, Sahli S. Exp. Aging Res. 2023; ePub(ePub): ePub.

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DOI 10.1080/0361073X.2023.2172304 **PMID** 36726273

Abstract

We aimed to investigate 12-week-Zumba training effects on physical and psychological parameters, and quality of life (QoL) in postmenopausal women. Forty-two postmenopausal women were randomly allocated to a control group or a Zumba group (ZG). Postural balance, lower limb strength, mood level, and QoL were assessed before and after the 12-week-Zumba training. The ZG showed significantly better balance performances under all conditions such as on firm and foam surfaces with opened and closed eyes as well as improvements in limb strength, mood and QoL compared to their baselines. Thereby, 12-week-Zumba training was effective in improving postural balance, limb strength, mood and, QoL in postmenopausal women.

Language: en

Effect of ukemi practice in judo on fear of falling and mobility skills in healthy older adults

Odaka M, Kagaya H, Harada T, Futada Y, Yamaishi A, Sasaki M. J. Phys. Ther. Sci. 2023; 35(2): 146-150.

(Copyright © 2023, Society of Physical Therapy Science)

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Abstract

[Purpose] To examine whether fear of falling and mobility skills improved after judo ukemi practice in healthy older adults, and whether a relationship exists between improvements in fear of falling and changes in mobility skills. [Participants and Methods] Ten healthy older adults who participated in exercise classes for middle-aged and elderly people to promote health performed ukemi practice three times in total, increasing the degree of difficulty every week. [Results] No significant differences in fear of falling or 10-m walking times were noted in Steps 1, 2, and 3. A significant reduction in timed up and go test results was observed in Steps 2 and 3. No correlation was found between change in fear of falling and change in mobility skills before and after ukemi practice for all combinations. [Conclusion] The results suggest that judo ukemi practice improves mobility skills in healthy older individuals with relatively high physical ability. These changes may not be due to a reduced fear of falling but rather to quicker physical reactivity and other psychological factors.

Language: en

Keywords

Fear of falling; Mobility skill; Ukemi

Effectiveness of an evidence-based care pathway to improve mobility and participation in older patients with vertigo and balance disorders in primary care (MobilE-PHY2): study protocol for a multicentre cluster-randomised controlled trial

Horstmannshoff C, Skudlik S, Petermann J, Kiesel T, Döringer T, Crispin A, Hermsdörfer J, Köberlein-Neu J, Jahn K, Schädler S, Bauer P, Voigt K, Muller M. *Trials* 2023; 24(1): e91.

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Abstract

BACKGROUND: Vertigo, dizziness or balance disorders (VDB) are common leading symptoms in older people, which can have a negative impact on their mobility and participation in daily live, yet, diagnosis is challenging and specific treatment is often insufficient. An evidence-based, multidisciplinary care pathway (CPW) in primary care was developed and pilot tested in a previous study. The aim of the present study is to evaluate the effectiveness and safety of the CPW in terms of improving mobility and participation in community-dwelling older people with VDB in primary care.

METHODS: For this multicentre cluster randomised controlled clinic trial, general practitioners (GP) will be recruited in two regions of Germany. A total of 120 patients over 60 years old with VDB will be included. The intervention is an algorithmized CPW. GPs receive a checklist for standardise clinical decision making regarding diagnostic screening and treatment of VDB. Physiotherapists (PT) receive a decision tree for evidence-based physiotherapeutic clinical reasoning and treatment of VDB. Implementation strategies comprises educational trainings as well as a workshop to give a platform for exchange for the GPs and PTs, an information meeting and a pocket card for home care nurses and informal caregivers and telephone peer counselling to give all participants the capability, opportunity and the motivation to apply the intervention. In order to ensure an optimised usual care in the control group, GPs get an information meeting addressing the national guideline. The primary outcome is the impact of VDB on participation and mobility of patients after 6 month follow-up, assessed using the Dizziness Handicap Inventory (DHI) questionnaire. Secondary outcomes are physical activity, static and dynamic balance, falls and fear of falling as well as quality of life. We will also evaluate safety and health economic aspects of the intervention. Behavioural changes of the participants as well as barriers, facilitating factors and mechanisms of impact of the implementation will be investigated with a comprehensive process evaluation in a mixed-methods design.

DISCUSSION: With our results, we aim to improve evidence-based health care of community-dwelling older people with VDB in primary care. **TRIAL REGISTRATION:** DRKS, DRKS00028524 retrospectively registered on March 24, 2022.

Language: en

Keywords

Aged; Evidence-Based Medicine; Humans; Middle Aged; Randomized Controlled Trials as Topic; Primary care; Mobility; Fear; Dizziness; *Quality of Life; *Dizziness/diagnosis/therapy; Balance disorder; Care pathway; Complex intervention; Critical Pathways; Multicenter Studies as Topic; Multicentre cluster randomised controlled trial; Physiotherapy; Primary Health Care/methods; Vertigo; Vertigo/diagnosis/therapy

Falls assessment and prevention in the nursing home and community

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DOI 10.12968/bjcn.2023.28.2.68 **PMID** 36735363

Abstract

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

Language: en

Fear of falling: scoping review and topic analysis protocol

Kolpashnikova K, Desai S. BMJ Open 2023; 13(2): e066652.

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DOI 10.1136/bmjopen-2022-066652 **PMID** 36750285

Abstract

INTRODUCTION: Fear of falling (FoF) is a major challenge for the quality of life among older adults. Despite extensive work in previous scoping and systematic reviews on separate domains of FoF and interventions related to FoF, very little attention has been devoted to a comprehensive scoping review mapping the range and scope of this burgeoning area of study, with only a few exceptions. This scoping review aims to provide an overarching review mapping FoF research by identifying main topics, gaps in the literature and potential opportunities for bridging different strains of research on FoF. Such a comprehensive scoping review will allow the subsequent creation of an interdisciplinary theoretical and empirical framework, which may help push forward policy and practice innovations for people living with FoF.

METHODS AND ANALYSIS: Following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses-Extension for Scoping Reviews (PRISMA-ScR), seven main databases will be searched from 2000 to the date of the start of the review: Cochrane Database of Systematic Reviews, CINAHL, Embase, MEDLINE, PsycInfo, Scopus and Web of Science. The review will include original research in English, published between 2000 and January 2023. Quality checks will be conducted collegially. Data will be extracted and analysed using PRISMA-ScR charting tools and conventions.

ETHICS AND DISSEMINATION: No ethics approval is required for the review. The results will be submitted to a peer-reviewed journal and presented at academic conferences. The outcomes will be disseminated through social media, opinion pieces and science communication platforms to reach a wider audience.

REGISTRATION: The scoping review was registered with the Open Science Framework (<https://osf.io/gyzjq>).

Language: en

Keywords

Health policy; PUBLIC HEALTH; SOCIAL MEDICINE

Frailty, falls and poor functional mobility predict new onset of activity restriction due to concerns about falling in older adults: a prospective 12-month cohort study

Ellmers TJ, Delbaere K, Kal EC. Eur. Geriatr. Med. 2023; ePub(ePub): ePub.

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Abstract

PURPOSE: Concerns about falling are common in older adults and often cause activity restriction. This can lead to physical deconditioning, falls and social isolation. However, not every concerned older adult will restrict their activities. This 12-month longitudinal study investigated the physical and psychosocial factors that predict the new onset of activity restriction due to concerns about falling in older people.

METHODS: Participants were 543 older adults ($M(\text{age}) = 80.3 \pm 4.4$ years, range: 75-98) who did not report activity restriction due to concerns about falling at Timepoint-1 (negative response to the following question: "Do concerns about falling stop you going out-and-about?"). Participants completed a battery of physical and psychological assessments at Timepoint-1. Using binary logistic regression, we then assessed which of these variables predicted whether participants reported having started restricting their activity due to concerns about falling at the 12-month follow-up (Timepoint 2).

RESULTS: 10.1% of the sample started to restrict activity due to concerns about falling at Timepoint 2. Three key predictors significantly predicted activity restriction group status at 12-month follow-up: greater frailty at Timepoint-1 (Fried Frailty Index; OR = 1.58, 95% CI 1.09-2.30), experiencing a fall between Timepoint-1 and 2 (OR = 2.22, 95% CI 1.13-4.38) and poorer functional mobility at Timepoint-1 (Timed up and Go; OR = 1.08, 95% CI 1.01-1.15).

CONCLUSIONS: Frailty, experiencing a fall and poorer functional mobility all predicted the onset of activity restriction due to concerns about falling. Clinicians working in balance and falls-prevention services should regularly screen for frailty, and patients referred to frailty services should likewise receive tailored treatment to help prevent the development of activity restriction due to concerns about falling.

Language: en

Keywords

Activity avoidance; Concerns about falling; Deconditioning; Falls prevention; Fear of falling

Physical activity based on dance movements as complementary therapy for Parkinson's disease: effects on movement, executive functions, depressive symptoms, and quality of life

Duarte JDS, Alcantara WA, Brito JS, Barbosa LCS, Machado IPR, Furtado VKT, Santos-Lobato BLD, Pinto DS, Krejcová LV, Bahia CP. PLoS One 2023; 18(2): e0281204.

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DOI 10.1371/journal.pone.0281204 **PMID** 36730266

Abstract

BACKGROUND: Parkinson's disease (PD) is a progressive, neurodegenerative disease with motor symptoms that are well understood, but non-motor symptoms may be present and appear at different temporal stages of the disease. Physical activity based on dance movements is emerging as a complementary therapeutic approach to a range of PD symptoms as a multidimensional activity that requires rhythmic synchronization and more neuromuscular functions.

OBJECTIVE: To evaluate the effects of physical activity based on dance movements on the movement, executive functions, depressive symptoms, quality of life, and severity of PD in individuals diagnosed with PD.

METHODS: 13 individuals with PD (Hoehn & Yahr I-III, MDS-UPDRS 67.62 ± 20.83), underwent physical activity based on dance movements (2x week for 6 months). Participants were assessed at baseline and after 6 months on movement (POMA, TUG and MDS-UPDRS Part III), executive function (FAB), depressive symptoms (MADRS), quality of life (PDQ-39), and severity of PD (MDS-UPDRS TOTAL). Student's t-test was used to compare pre and post-intervention results.

RESULTS: We observed a significant improvement in the movement (balance and gait) by the POMA test, $p = 0.0207$, executive function by the FAB test, $p = 0.0074$, abstract reasoning and inhibitory control by the FAB, Conceptualization test, $p = 0.0062$, and Inhibitory Control, $p = 0.0064$, depressive symptoms assessed by the MADRS test significantly reduced, $p = 0.0214$, and the quality of life by the PDQ-39 had a significant increase after the intervention, $p = 0.0006$, showed significant improvements between the pre-and post-intervention periods of physical activity based on dance movements.

CONCLUSION: Physical activity based on dance movements contributed to significant improvements in movement (balance and gait), executive functions, especially in cognitive flexibility and inhibitory control, and the quality of life too. Sensorimotor integration, most cognitive processing and social skills may have contributed to the results. **TRIAL**

REGISTRATION: The study was registered in the Brazilian registry of clinical trials: RBR-3bhbrb5.

Language: en

Reliability and validity of the Arabic version of the modified falls efficacy scale

Hasan S, Chevidikunnan MF, Khan F. Disabil. Rehabil. 2023; ePub(ePub): ePub.

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DOI 10.1080/09638288.2023.2175045 **PMID** 36727527

Abstract

PURPOSE: The purpose of this study was to adapt Modified Falls Efficacy Scale (MFES) into Arabic and determine the reliability and validity of the instrument.

MATERIALS AND METHODS: The study was conducted in two phases: (i) translation and adaptation by the systematic approach of the 'forward-back' translation method and (ii) psychometric testing of the Arabic version of the Modified Falls Efficacy Scale among 207 community-dwelling older adults (≥ 60 years).

RESULTS: The Arabic version of the Modified Falls Efficacy Scale demonstrated excellent internal consistency (Cronbach's $\alpha = 0.98$) and test-retest reliability scores (ICC = 0.96, 95% CI; 0.95-0.97). And also showed strong correlations with both the Falls Efficacy International ($r = -0.82$) and the activities-specific Balance Confidence Scale ($r = 0.87$). Sampling adequacy for factor analysis was proven by a Kaiser-Meyer-Olkin value of 0.962. Goodness-of-fit (GFI) statistics for the model were in the acceptable range (Chi-Square/Degree of Freedom (CMIN/DF) = 2.59, Goodness-of-fit index (GFI) = 0.9, Comparative Fit Index (CFI) = 0.97, Root Mean Square Error of Approximation (RMSEA) = 0.79).

CONCLUSION: The Arabic version of the Modified Falls Efficacy Scale has demonstrated excellent psychometric qualities to measure the level of fear of falling.

IMPLICATIONS FOR REHABILITATION: Modified falls efficacy scale (MFES) is a commonly used scale for assessment of fear of fall in elderly. The translated and adapted Arabic version of (A-MFES) will enhance the assessment of fear of fall in Arabic older adults, though it is a patient response scale. This scale can assess the fear of falling in indoor and outdoor activities which makes this scale comprehensive in nature.

Language: en

Keywords

reliability; validity; Fall; fear of falling; Arabic

Telephone-based assessment of the fear of falling in older people and factors associated

Duarte DON, Soares Cordeiro IC, de Freitas MAS, Silva GKK, Soares Pires LE, Siqueira Silva V, Avelino PR, de Menezes KKP. *Int. J. Rehabil. Res.* 2023; ePub(ePub): ePub.

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DOI 10.1097/MRR.0000000000000568 **PMID** 36727964

Abstract

This study aimed to validate the telephone-based application of the Falls Efficacy Scale-International (FES-I) for the assessment of the fear of falling in older people, and to investigate, among personal and environmental factors, which ones can explain this fear in this population. Participants answered the FES-I on two randomized occasions, face-to-face and by telephone. Intraclass correlation coefficient (ICC3,1) was used to investigate the levels of agreement between the two occasions. The possible factors associated were sex, age, previous history of falls, family arrangement, practice of physical activity, presence of orthopedic pathologies, use of walking aids, presence of visual impairment, and presence of stairs in the home environment. Linear regression analysis was applied to investigate which of these factors could explain the fear of falling in older people. One hundred twenty-two individuals were included. There was no significant difference in the mean difference obtained between the two applications of the FES-I (1 point; 95% confidence interval, -4 to 6), with a high level of agreement (ICC = 0.88). Sex and presence of orthopedic pathologies explained 14% of the model. The FES-I showed to be a reliable scale to be applied for telephone assessments of fear of falling in older people. In addition, women with orthopedic pathologies are the profile of older people with most afraid of falling.

Language: en

The 'Bermuda Triangle' of orthostatic hypotension, cognitive impairment and reduced mobility: prospective associations with falls and fractures in the Irish Longitudinal Study on Ageing

Donnell DO, Romero-Ortuno R, Kennelly SP, O'Neill D, Donoghue PO, Lavan A, Cunningham C, McElwaine P, Kenny RA, Briggs R. Age Ageing 2023; 52(2): afad005.

(Copyright © 2023, Oxford University Press)

DOI 10.1093/ageing/afad005 **PMID** 36735845

Abstract

BACKGROUND: Orthostatic hypotension (OH), cognitive impairment (Cog) and mobility impairment (MI) frequently co-occur in older adults who fall. This study examines clustering of these three geriatric syndromes and ascertains their relationship with future falls/fractures in a large cohort of community-dwelling people ≥ 65 years during 8-year follow-up.

METHODS: OH was defined as an orthostatic drop ≥ 20 mmHg in systolic blood pressure (from seated to standing) and/or reporting orthostatic unsteadiness. CI was defined as Mini Mental State Examination ≤ 24 and/or self-reporting memory as fair/poor. MI was defined as Timed Up and Go ≥ 12 s. Logistic regression models, including three-way interactions, assessed the longitudinal association with future falls (explained and unexplained) and fractures.

RESULTS: Almost 10% (88/2,108) of participants had all three Bermuda syndromes. One-fifth of participants had an unexplained fall during follow-up, whereas 1/10 had a fracture. There was a graded relationship with incident unexplained falls and fracture as the number of Bermuda syndromes accumulated. In fully adjusted models, the cluster of OH, CI and MI was most strongly associated with unexplained falls (odds ratios (OR) 4.33 (2.59-7.24); $P < 0.001$) and incident fracture (OR 2.51 (1.26-4.98); $P = 0.045$). Other clusters significantly associated with unexplained falls included OH; CI and MI; MI and OH; CI and OH. No other clusters were associated with fracture.

DISCUSSION: The 'Bermuda Triangle' of OH, CI and MI was independently associated with future unexplained falls and fractures amongst community-dwelling older people. This simple risk identification scheme may represent an ideal target for multifaceted falls prevention strategies in community-dwelling older adults.

Language: en

Keywords

falls; cognitive impairment; older people; fracture; mobility; orthostatic hypotension

Analyzing a multifactorial fall prevention program using ARIMA models

Mulkey DC, Fedo MA, Loresto FLJ. J. Nurs. Care Qual. 2022; ePub(ePub): ePub.

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DOI 10.1097/NCQ.0000000000000681 **PMID** 36729964

Abstract

BACKGROUND: Preventing inpatient falls is challenging for hospitals to improve and often leads to patient injury.

PURPOSE: To describe multifactorial patient-tailored interventions and to evaluate whether they were associated with a sustained decline in total and injury falls.

METHODS: A multifactorial fall prevention program was instituted over the course of several years. An interrupted time series design was used to assess the effect of each intervention on total and injury fall rates. ARIMA models were built to assess the step and ramp change.

RESULTS: Total fall rates decreased from 4.3 to 3.6 falls per 1000 patient days (16.28% decrease), and injury fall rates decreased from 1.02 to 0.8 falls per 1000 patient days (21.57% decrease). All the interventions contributed to fall reduction, with specific interventions contributing more than others.

CONCLUSIONS: Using multiple interventions that are sustained long enough to demonstrate success reduced the total fall rate and injury fall rate.

Language: en

Associations between the impact of menopausal symptoms and fall-related self-efficacy

Espírito Santo J, Hita-Contreras F, Marques de Loureiro NE, Brandão Loureiro V, Aibar-Almazán A, Carcelén-Fraile MDC, Ortiz-Quesada R. Menopause 2023; ePub(ePub): ePub.

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Abstract

OBJECTIVE: To analyze the association between the severity of menopausal symptoms and two important fall risk factors, namely balance confidence and fear of falling, among Portuguese and Spanish postmenopausal women 65 years or older.

METHODS: A cross-sectional, observational study was conducted on 363 women (66.21 ± 9.00 y) from several Portuguese and Spanish locations. The Menopause Rating Scale was used to evaluate the severity of menopausal symptoms, while the Falls Efficacy Scale-International and Activities-specific Balance Confidence Scale-16 items were used to assess balance confidence and fear of falling, respectively. Anxiety and depression (evaluated by the Hospital Anxiety and Depression Scale), age, time since the onset of menopause, body mass index, history of falls, osteoporosis, smoking habit, physical activity level, and nocturia were considered as potential confounders. Independent associations were analyzed after adjusting for potential confounding variables. Student's t test, bivariate correlations, and multivariate linear regression analysis were performed.

RESULTS: A total of 363 women (66.21 ± 9.00 y) participated in the study, 192 from Portugal and 171 from Spain. Linear regression analysis indicates that more severe menopausal symptoms at a somatovegetative level (beta coefficient [β] = -0.25; 95% confidence interval [95% CI], -2.09 to -0.81; $P = <0.001$), a higher body mass index ($\beta = -0.16$; 95% CI, -1.22 to -0.22; $P = 0.005$), and osteoporosis ($\beta = 0.14$; 95% CI, 1.36 to 10.08; $P = 0.010$) were associated with lower balance confidence values. On the other hand, a higher score in the Menopause Rating Scale somatovegetative domain ($\beta = 0.22$; 95% CI, 0.27-0.79; $P = <0.001$), depression ($\beta = 0.36$; 95% CI, 0.59-1.08; $P = <0.001$), and years after the menopause onset ($\beta = 0.15$; 95% CI, 0.04-0.22; $P = 0.006$) were linked to increased fear of falling.

CONCLUSIONS: The findings of our study show that, after taking into account possible confounders, increased severity of menopausal symptoms at a somatic level was associated with heightened fear of falling and diminished balance confidence.

Language: en

Balancing new technology: virtual reality for balance measurement case report

Weissberger O, Orr E, Levy M, Kimel-Naor S, Plotnik M, Arbel T. Medicine (Baltimore) 2023; 102(5): e32799.

(Copyright © 2023, Lippincott Williams and Wilkins)

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PMID 36749243

Abstract

RATIONALE: Falling and the inability to maintain balance are the second leading cause of unintentional injury deaths globally. There are a number of chronic and acute conditions characterized by balance difficulties, including neurological diseases, and sport injuries. Therefore, methods to monitor and quantify balance are critical for clinical decision-making regarding risk management and balance rehabilitation. New advances in virtual reality (VR) technology has identified VR as a novel therapeutic platform. VRSway is a VR application that uses sensors attached to a virtual reality headset, and handheld remote controllers for measurement and analysis of postural stability by measuring changes in spatial location relative to the center of mass and calculates various postural stability indexes. This case report evaluates balance measures in 2 healthy participants with no previous history of balance disorders using the VRSway software application and compares to output generated by the current gold standard of balance measurement, force platform technology. **CASE PRESENTATION:** The primary objective of this case study was to validate the VRSway stability score for evaluation of balance. Here, we present posturography measures of the VRSway in comparison with force plate readouts in 2 healthy participants. Body Sway measurements were recorded simultaneously in both the force plate and VRSway systems. Data calculated by proprietary software is highly correlative to the data generated by force plates for each of the following measurements for participant-1 and participant-2, respectively: Sway index ($r_1 = 0.985$, $P < .001$; $r_2 = 0.970$, $P < .001$), total displacement ($r_1 = 0.982$, $P < .001$; $r_2 = 0.935$, $P < .001$), center of pressure mean velocity ($r_1 = 0.982$, $P < .001$; $r_2 = 0.935$, $P < .001$), ellipse radius 1 ($r_1 = 0.979$, $P < .001$; $r_2 = 0.965$, $P < .001$), ellipse radius 2 ($r_1 = 0.982$, $P < .001$; $r_2 = 0.969$, $P < .001$), and ellipse area ($r_1 = 0.983$, $P < .001$; $r_2 = 0.969$, $P < .001$).

CONCLUSIONS: Data from this case study suggest that VRSway measurements are highly correlated with output from force plate technology posing that VRSway is a novel approach to evaluate balance measures with VR. More research is required to understand possible uses of VR-based use for balance measurement in a larger and more diverse cohort.

Language: en

Correction to: Clinical and biomechanical factors associated with falls and rheumatoid arthritis: baseline cohort with longitudinal nested case-control study

The editors. Rheumatology (Oxford) 2023; ePub(ePub): ePub.

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Abstract

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This is a correction to: Toby O Smith, Celia Clarke, Jacob Wells, Jack R Dainty, Laura Watts, Max Yates, Valerie M Pomeroy, Emma Stanmore, Terence W O'Neill, Alexander J Macgregor, Clinical and biomechanical factors associated with falls and rheumatoid arthritis: baseline cohort with longitudinal nested case-control study, Rheumatology, Volume 61, Issue 2, February 2022, Pages 679-687, <https://doi.org/10.1093/rheumatology/keab388>

The author list has been updated to add Jacob Wells as third author.

The SafetyLit database has been updated to include Jacom Wells as the third author.

Language: en

Fall detection from a manual wheelchair: preliminary findings based on accelerometers using machine learning techniques

Abou L, Fliflet A, Presti P, Sosnoff JJ, Mahajan HP, Frechette ML, Rice LA. Assist. Technol. 2023; ePub(ePub): ePub.

(Copyright © 2023, Rehabilitation Engineering and Assistive Technology Society of North America, Publisher Informa - Taylor and Francis Group)

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Abstract

Automated fall detection device for individuals who use wheelchairs to minimize consequences of falls is lacking. This study aimed to develop and train a fall detection algorithm to differentiate falls from wheelchair mobility activities using machine learning techniques. Thirty, healthy, ambulatory, young adults simulated falls from a wheelchair and performed other wheelchair-related mobility activities in a laboratory. Neural Network classifiers were used to train the algorithm developed based on data retrieved from accelerometers mounted at the participant's wrist, chest, and head.

RESULTS indicate excellent accuracy to differentiate between falls and wheelchair mobility activities. The sensors mounted at the wrist, chest, and head presented with an accuracy of 100%, 96.9%, and 94.8%, respectively using data from 258 falls and 220 wheelchair mobility activities. This pilot study indicates that a fall detection algorithm developed in a laboratory setting based on fall accelerometer patterns can accurately differentiate wheelchair-related falls and wheelchair mobility activities. This algorithm should be integrated into a wrist-worn devices and tested among individuals who use a wheelchair in the community.

Language: en

Keywords

accidental falls; activity recognition; Fall detection; wearable sensor; wheelchair

Fall risk prediction models during the initial COVID-19 surge: could predictive analytics be used in a resource-constrained environment?

Arnold LA, Carroll C, Eberlein B, Naidech AM, Colfer K, Ramsey K, Sturgeon C. *Comput. Inform. Nurs.* 2023; ePub(ePub): ePub.

(Copyright © 2023, Lippincott Williams and Wilkins)

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Abstract

During the first COVID surge, multiple changes in nurse staffing and workflows were made to support care delivery in a resource-constrained environment. We hypothesized that there was a higher rate of inpatient falls during the COVID surge. Furthermore, we predicted that an automated predictive analytic algorithm would perform as well as the Johns Hopkins Fall Risk Assessment. A retrospective review of falls for 3 months before and the first 3 months of the first COVID surge was conducted. We determined the total number of falls and the overall fall rate and examined the distribution of scores and accuracy of fall predictive models for both groups. There was a statistically significant increase in fall rate during the first 3 months of the COVID surge compared with the 3 prior months (2.48/1000 patient-days vs 1.89/1000 patient-days respectively; $P = .041$). The Johns Hopkins instrument had a greater sensitivity of 78.9% compared with 57.0% for the predictive analytic model. Specificity and accuracy of the predictive analytic model were higher than the Johns Hopkins instrument (71.3% vs 54.1% and 71.2% vs 54.3%, respectively). These findings suggest that the automated predictive analytic model could be used in a resource-constrained environment to accurately classify patients' risk of fall.

Language: en

Falls downstairs: the impact on a UK major trauma centre

Callon J, Thomas D, Mercer SJ. Trauma (Sage) 2022; 24(3): 243-247.

(Copyright © 2022, SAGE Publishing)

DOI 10.1177/14604086211002989 **PMID** unavailable

Abstract

INTRODUCTION Major trauma centres are increasingly managing a significant injury burden in older patients, with falling downstairs being a prevalent mechanism of injury. Literature evaluating the impact of falls on stairs upon UK trauma networks is limited. Gaining a greater understanding of this may allow for more effective planning of services and improvements in training and education. This study evaluates the impact of falls downstairs on a UK major trauma centre.

METHODS A single centre retrospective service evaluation of local major trauma data over a 3-year period from 01/01/2017 to 31/12/2019. Included were patients who activated a trauma call whose mechanism of injury recorded at the time of admission was a fall downstairs. We excluded patients less than 16 years of age.

RESULT There were 4480 major trauma patients who presented in the study period and of these, 860 (19.2%) sustained injuries following a fall downstairs. The most common age group presenting was 70-79 years; younger patients (<60 years) made up 43.3% with the majority (56.7%) being older. All but one patient were managed by a consultant-led trauma team, 6.4% of patients were admitted to critical care and 1% received an urgent operation. The overall mortality rate was 8.5%. Older patients made up 85% of those who died and had nearly four times longer average length of stay than younger patients (9.69 v 2.49 days).

CONCLUSION Falls downstairs place a significant burden on the major trauma centre. There is a stark contrast in the use of hospital resources and outcomes between older and younger patients.

Language: en

Head impact location, speed and angle from falls and trips in the workplace

Yu X, Baker CE, Ghajari M. Ann. Biomed. Eng. 2023; ePub(ePub): ePub.

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Abstract

Traumatic brain injury (TBI) is a common injury in the workplace. Trips and falls are the leading causes of TBI in the workplace. However, industrial safety helmets are not designed for protecting the head under these impact conditions. Instead, they are designed to pass the regulatory standards which test head protection against falling heavy and sharp objects. This is likely to be due to the limited understanding of head impact conditions from trips and falls in workplace. In this study, we used validated human multi-body models to predict the head impact location, speed and angle (measured from the ground) during trips, forward falls and backward falls. We studied the effects of worker size, initial posture, walking speed, width and height of the tripping barrier, bracing and falling height on the head impact conditions. Overall, we performed 1692 simulations. The head impact speed was over two folds larger in falls than trips, with backward falls producing highest impact speeds. However, the trips produced impacts with smaller impact angles to the ground. Increasing the walking speed increased the head impact speed but bracing reduced it. We found that 41% of backward falls and 19% of trips/forward falls produced head impacts located outside the region of helmet coverage. Next, we grouped all the data into three sub-groups based on the head impact angle: $[0^\circ, 30^\circ]$, $(30^\circ, 60^\circ]$ and $(60^\circ, 90^\circ]$ and excluded groups with small number of cases. We found that most trips and forward falls lead to impact angles within the $(30^\circ, 60^\circ]$ and $(60^\circ, 90^\circ]$ groups while all backward falls produced impact angles within $(60^\circ, 90^\circ]$ group. We therefore determined five representative head impact conditions from these groups by selecting the 75th percentile speed, mean value of angle intervals and median impact location (determined by elevation and azimuth angles) of each group. This led to two representative head impact conditions for trips: 2.7 m/s at 45° and 3.9 m/s at 75° , two for forward falls: 3.8 m/s at 45° and 5.5 m/s at 75° and one for backward falls: 9.4 m/s at 75° . These impact conditions can be used to improve industrial helmet standards.

Language: en

Keywords

Falls; Brain injury; Head impact condition; Helmet standards; Multi-body dynamics; Work-related injury

In-hospital newborn falls and suffocation associated with parental drug-related fatigue

Hofstaedter CE, Mi SJ, Hughes Driscoll CA. Clin. Pediatr. 2023; ePub(ePub): ePub.

(Copyright © 2023, SAGE Publishing)

DOI 10.1177/00099228231151404 **PMID** 36744717

Abstract

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

Language: en

Incidence and risk factors of falls in patients undergoing hemodialysis: a multicenter survey in northern China

Liang J, Wang Y, Zhang W, Ding H, Gao Y, Wang R, Sun X, Peng Y, Gan L, Zuo L.
Hemodial. Int. 2023; ePub(ePub): ePub.

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DOI 10.1111/hdi.13064 **PMID** 36744400

Abstract

INTRODUCTION: Patients undergoing hemodialysis (HD) are at a higher risk of falls than healthy individuals. Further knowledge regarding the risk of falls could lead to better risk prevention strategies. We designed a multicenter, prospective cohort study according to the strengthening of the reporting of observational studies in epidemiology (STROBE) guidelines to investigate the incidence and risk factors of falls in patients undergoing hemodialysis in Northern China.

METHODS: Patients undergoing hemodialysis in six hemodialysis units were recruited from January 2019 to January 2020. Data on demographics and disease conditions were collected at baseline. Data on other variables, the incidence of falls, and related conditions were collected every 3 months during a 1-year follow-up. The Generalized Estimating Equation model was used to evaluate factors associated with falls.

FINDINGS: This study included 472 patients. The incidence of falls was 0.31 per patient year. In patients aged 45-64 years ($p = 0.01$; odds ratio [OR]: 14.801; 95% confidence interval [CI]: 1.897-115.453) and ≥ 65 years ($p = 0.007$; OR: 16.562; 95% CI: 2.118-129.521), anemia ($p = 0.015$; OR: 2.122; 95% CI: 1.154-3.902) and moderately ($p = 0.003$; OR: 5.439; 95% CI: 1.791-16.516) and severely abnormal timed up and go test (TUGT) levels ($p = 0.001$; OR: 7.032; 95% CI: 2.226-22.216) were identified as independent risk factors of falls.

DISCUSSION: Falls are prevalent among patients undergoing in-center hemodialysis. Advanced age, anemia, and moderately and severely abnormal TUGT levels may be risk factors of falls.

Language: en

Keywords

risk factors; incidence; falls; hemodialysis; timed up and go test

Morning Walk(®)-assisted gait training improves walking ability and balance in patients with ataxia: a randomized controlled trial

Jung C, Kim DY, Kwon S, Chun MH, Kim JY, Kim SH. Brain Neurorehabil. 2020; 13(3): e23.

(Copyright © 2020, Korean Society for Neurorehabilitation)

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Abstract

This study aimed to investigate walking ability and balance improvement of patients with ataxia caused by brain lesions after end-effector type robot (Morning Walk(®))-assisted gait training. This study randomly assigned 19 patients to one of two groups: 30 minutes of Morning Walk(®) training with 1 hour of conventional physiotherapy (Morning Walk(®) group; n = 10) or 1.5 hours of conventional physiotherapy (Control group; n = 9). Five treatment sessions per week were given for 3 weeks. The primary outcomes were walking ability and balance, which were assessed by the functional ambulation category (FAC) and Berg Balance Scale (BBS), respectively. The secondary outcomes included 10-meter Walk Test (10mWT), Rivermead Mobility Index (RMI), Motricity Index (MI), and Modified Barthel Index (MBI). At baseline, there was no statistically significant difference between the two groups except MBI. After the treatment, the Morning Walk(®) group showed significant improvement in the FAC, BBS, 10mWT, RMI and MBI. The control group showed significant improvement in the BBS, 10mWT, RMI and MBI. Inter-group comparison demonstrated that the Δ FAC, Δ 10mWT and Δ RMI of the Morning Walk(®) group were significantly higher than those of the control group. Our results suggest that the patients with ataxia receiving Morning Walk(®)-assisted gait training might improve greater in walking ability and balance than those trained with conventional physiotherapy.

Language: en

Keywords

Ataxia; Gait; Neurologic Rehabilitation; Postural Balance; Robotics