

Safety Literature 20th February 2022

'It is designed for everybody to find their own level and to improve themselves'; views of older people and instructors of the Falls Management Exercise (FaME) programme

Citation

Gumber L, Timmons S, Coupland C, Gladman J, Iliffe S, Kendrick D, Lafond N, Logan P, Masud T, Skelton D, Orton E. Age Ageing 2022; 51(2).

(Copyright © 2022, Oxford University Press)

DOI 10.1093/ageing/afac023 PMID 35150581

Abstract

BACKGROUND: Older adults are at increased risk of falls due to ageing, decreased muscle strength and impaired balance. Clinical trials have demonstrated the efficacy and effectiveness of the Falls Management Exercise (FaME) programme in improving functioning and preventing falls. However, programme completion is often low, impacting the potential benefits of FaME.

OBJECTIVE: To explore the barriers and facilitators for participation and completion of the FaME programme from an instructor and participant perspective.

METHODS: Semi-structured interviews were conducted with 20 FaME users and seven Postural Stability Instructors from the East Midlands region of England, UK. Interviews were conducted using a topic guide and explored their views of the programme, intended benefits, reasons for participating, instructor's approach and venue facilities. Data were transcribed verbatim and analysed using thematic analysis. Written informed consent was obtained from all participants and instructors.

RESULTS: Common themes identified by participants and instructors for adherence related to perceived health benefits, psychological well-being, intervention characteristics, cost, instructors' qualities, opportunity to socialise, venue accessibility and facilities. Further factors such as maintaining independence, discipline, relationship with peers and caring responsibilities influenced participants' engagement with the programme. Instructor factors such as progression were also reported as important predictors.

CONCLUSIONS: Instructor and participant factors influence uptake, attendance and adherence of FaME. The findings from this study can inform the development and improvement of additional falls-prevention programmes. It can also guide marketing strategies to promote uptake of exercise-based falls-prevention programmes among older adults.

Language: en

Keywords

aged; physical activity; exercise; accidental falls; health behaviour; older people; qualitative; views

A CT-derived measurement of sarcopenia fails to predict falls

Dalal S, Tucker S, Zielonka T, Kinney JL, Magdich A, Parr D, Parulekar M, Blatt M, Hawkins S, Kuo YH, Cohn SM. Am. Surg. 2022; ePub(ePub): ePub.

(Copyright © 2022, Southeastern Surgical Congress)

DOI 10.1177/00031348221075593 **PMID** 35142564

Abstract

Sarcopenia and frailty have both emerged as risk factors for elderly falls. We investigated whether radiologic sarcopenia or frailty are associated with falls in a high-risk geriatric outpatient population. We reviewed 114 patients followed at the Center for Healthy Senior Living who had undergone a computerized tomography (CT) of the abdomen and pelvis for any reason from 2013 to 2019. Sarcopenia was determined by psoas muscle cross-sectional area at L3 on CT scan. Their individual frailty score was calculated. The primary outcome was admission to hospital for falls. There were no statistical differences in frailty score or sarcopenia between the 2 groups (left/right psoas muscle: no hospital admission = $6.8 \pm 2.4/6.4 \pm 2.5$ vs falls requiring hospital admission $6.5 \pm 2.3/6.5 \pm 2.3$ cm²). We concluded that neither frailty score nor sarcopenia predicted the occurrence of falls in our high-risk geriatric outpatient population.

Language: en

Keywords

elderly; falls; sarcopenia

A novel telerehabilitation with an educational program for caregivers using telelecture is feasible for fall prevention in elderly people: a case series

Moriichi K, Fujiya M, Ro T, Ota T, Nishimiya H, Kodama M, Yoshida N, Hattori Y, Hosokawa T, Hishiyama H, Kunimoto M, Hayashi H, Hirokawa H, Yoshida A. *Medicine (Baltimore)* 2022; 101(6): e27451.

(Copyright © 2022, Lippincott Williams and Wilkins)

DOI 10.1097/MD.00000000000027451 PMID 35147084

Abstract

BACKGROUND: The importance of fall prevention rehabilitations has been well recognized. Recently telerehabilitation was developed, however, there have been no reports on telerehabilitation with direct support from specialists for fall prevention among the elderly. We herein reported telerehabilitation by caregivers educated by our novel educational program.

METHODS: Caregivers were educated with our educational program using a telelecture system and supported telerehabilitation following instructions from rehabilitation specialists in our university using the telemedicine system every two to four weeks for three months. Caregivers were assessed with our original questionnaire before and after the telelecture. Participants were assessed by the Berg Balance Scale (BBS), Timed Up & Go test (TUG test), Hand-held dynamometer (HHD) and Mini-Mental State Examination (MMSE) before and after telerehabilitation. Wilcoxon's signed-rank test was used for the statistical analyses. A value of $P < .05$ was considered statistically significant.

RESULTS: Nine elderly people were enrolled. The mean age was 84.7 (78-90) years old and the sex ratio was 1:8 (males:females). The average number of telerehabilitation sessions was 4.7. The average score of nineteen caregivers before the lecture was 15.3, while that after the lecture was 18.3. Caregivers' understanding was significantly increased after the telelecture ($P < .001$). No adverse events occurred during the study period. The median values of the BBSs, TUG test, right and left HHD and MMSE before and after 3 months' telerehabilitation were 43 (95% confidence interval [CI]: 40.10, 49.01) and 49 (95% CI: 41.75, 50.91), 17.89 (95% CI: 15.51, 23.66) and 18.53 (95% CI: 14.56, 25.67), 7.95 (95% CI: 4.38, 10.14) and 11.55 (95% CI: 7.06, 13.55), 9.85 (95% CI: 6.79, 12.59) and 13.20 (95% CI: 7.96, 14.42), and 19 (95% CI: 12.34, 21.66) and 16 (95% CI: 10.81, 21.00), respectively. Although approximately half of the participants showed improvement in the BBS, TUG test, right and left HHD and MMSE, no significant changes were observed ($P = .7239$, $P = .3446$, $P = .1023$, $P = .3538$ and $P = .8253$, respectively).

CONCLUSIONS: Our telerehabilitation program exhibited significant effects in elderly people and improved the degree of understanding concerning rehabilitation among caregivers in facilities for elderly people.

Language: en

Characteristics of injuries resulting from falls from height in the construction industry

Anantharaman V, Zuhary TM, Ying H, Krishnamurthy N. Singapore Med. J. 2022; ePub(ePub): ePub.

(Copyright © 2022, Singapore Medical Association)

DOI 10.11622/smedj.2022017 PMID 35139629

Abstract

INTRODUCTION: Falls from heights contribute to 34% of fatal accidents in Singapore. Of these, 51% of the accidents occur in the construction industry. This retrospective review, of all persons falling from heights in the construction industry from 2006 to 2012 and attending a major hospital, analysed injury patterns and related them to mechanisms and contributory factors.

METHODS: Information collected included injury and casualty characteristics, safety measures, pre-existing medical conditions and clinical outcomes.

RESULTS: Of 1,085 patients, 951 were male with a mean age of 39.8 years, mean height of 165.9 cm and mean weight of 69.7 kg. Most of the casualties fell between 0800 and 2000 hours. Among the severely injured patients, 2.4% had head injuries, 54.9% had chest injuries and 39.2% had abdominal and pelvic injuries. For these casualties, the mortality rate was 60.8%. For patients with less than major trauma, the commonest injuries were in the lower limbs (41.8%), upper limbs (40.8%) and spine (22.2%). All the casualties survived. Falls from scaffolding, formwork and platforms were the most common causes of severe injuries (41.1%). Safety helmets and harnesses were reported to be used in 1.8% and 4.1% of instances of falls, respectively.

CONCLUSION: Studying the patterns of injuries following falls at construction sites has the potential for injury prevention through safe practices, use of safety equipment and targeted training.

Language: en

Keywords

head injury; chest trauma; construction industry; falls from height; injury severity score

Older persons displaying Parkinsonian gait: prediction and explanation of the recurrent falling phenomenon and its related poor prognosis

Kiesmann M, Sauleau E, Ewald Martin R, Danan J, Sauer A, Konrad S, Blanc F, Vogel T, Kaltenbach G, Schmitt E. *Gerontology* 2022; ePub(ePub): ePub.

(Copyright © 2022, Karger Publishers)

DOI 10.1159/000521503 PMID 35152218

Abstract

INTRODUCTION: Parkinsonian gait in older persons is a major risk factor for recurrent falling. This prospective, longitudinal study (named EVAMAR-AGEX) aimed to validate the threshold value of two or more falls per year for distinguishing non-recurrent (NRF) from recurrent fallers (RF), to explore predictive factors for recurrent falling, and to identify factors which underlie the transition of patients from NRF to RF. The study took place over 2 years, with an intermediate analysis at 1 year of follow-up. Herein, we report results after 2 years of follow-up.

METHODS: Participants over the age of 65, diagnosed with parkinsonian gait, were followed over the course of 2 years. Induced parkinsonian syndrome and uncontrolled orthostatic hypotension were excluded. Assessments of motor, visual, and cognitive functions were carried out during visits at baseline. Between visits at 12 and 24 months of follow-up, data were collected by phone call every 2 months (falls, traumatic falls, hospitalizations, cognitive fluctuations, delirium, and mortality). Odds ratios (ORs) for a panel of predictive factors for recurrent falling were established using a Bayesian model.

RESULTS: Sixty-six of the 79 initially enrolled participants progressed to the second year of the study, with a mean age of 80.57 (SD 6.3), 56% male, presenting parkinsonian gait (53% Parkinson's disease, 15% atypical neurodegenerative parkinsonism, 21% vascular parkinsonism, and 11% diffuse Lewy body disease). At 2 years of follow-up, 67% were RF. Univariate analysis revealed a previous history of falls to be the most significant predictive factor of recurrent falls (OR 13.16, credibility interval [CrI] [95%] 4.04-53.73), and this was reinforced at 2 years of follow-up compared to the intermediate 1-year analysis (OR 11.73, CrI [95%] 4.33-35.28). Multivariate analysis confirmed a previous history of falls (OR 13.20, CrI [95%] 3.29-72.08) and abnormal posture (OR 3.59, CrI [95%] 1.37-11.26) to be predictive factors for recurrent falling. Cognitive decline and fluctuating cognition were associated with the transition from NRF to RF (-3.5 MMSE points for participants transitioning from NRF to RF).

CONCLUSION: Within this population of older persons presenting parkinsonian gait, a previous history of falls and abnormal posture may be used to easily identify individuals at risk of recurrent falls. Cognitive decline and fluctuations may underlie the transition of NRF to RF.

Language: en

Keywords

Cognition; Gait assessment; Parkinson's disease; Parkinsonism

Professional guidelines and reported practice of audiologists performing fall risk assessment with older adults: a systematic review

van Rie KJ, Kanji A, Naudé A. Am. J. Audiol. 2022; ePub(ePub): ePub.

(Copyright © 2022, American Speech-Language-Hearing Association)

DOI 10.1044/2021_AJA-21-00148 **PMID** 35148482

Abstract

PURPOSE: This systematic review aimed to explore the recommended fall risk assessment practices in audiology, identify audiologists' reported practices in fall risk assessment, and recognize the barriers and facilitators affecting fall risk assessment in clinical practice.

METHOD: This systematic review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

RESULTS: CINAHL, PubMed, and gray literature yielded 262 articles. A total of 27 full-text articles were included in this review article. An additional 16 scope of practice and guideline documents were also reviewed. Pertinent data and findings from the review were tabulated and analyzed using a qualitative, inductive approach.

CONCLUSIONS: Results revealed that despite fall risk assessment measures and protocols being mentioned, discussed, and reportedly implemented clinically in audiology literature, many audiologists are not conducting fall risk assessments clinically. The main challenges presented appear to be due to limited guidance within audiology documentation and inadequate training and knowledge of audiologists on fall risk factors and measures. This review article highlighted that all audiologists have an important role to play in reducing the global crisis of falls in older adults. However, without further research to aid in the development of standardization of documentation and training programs, we may continue to see a lack of awareness and education on fall risk and on the audiologist's role in the screening and early detection hereof.

Language: en

The evaluation of postural stability and fall risk in patients with primary hip osteoarthritis

Yılmaz N, Bağcıer F. Indian J. Orthop. 2022; 56(2): 263-270.

(Copyright © 2022, Medknow Publications)

DOI 10.1007/s43465-021-00464-9 PMID 35140857

Abstract

BACKGROUND: The hip is a significant weight-bearing joint and hip osteoarthritis (HOA) is one of the common musculoskeletal disorders. HOA may affect postural stability and fall risk by disrupting joint biomechanics.

METHODS: Fourty patients with unilateral primary HOA and a control group consisting of 41 healthy subjects were included in the study. HOA was radiographically graded by Kellgren Lawrence (KL) HOA classification. There were 26 patients with mild HOA (KL grade ≤ 2) and 14 patients with moderate-severe HOA (KL grade ≥ 3). The falls efficacy scale-international was used to assess fear of falling. Postural stability and the fall risk were evaluated by using the Biodex Stability System.

RESULTS: The postural stability and the fall risk indices were statistically significantly higher in the study group. Also, there was a positive correlation between the number of falls in the last 1 year, weight, and body mass index; and these correlations were statistically significant (r 0.686, p 0.003; r 0.477, p 0.002; r 0.444, p 0.004). There was no statistically significant difference in fall risk by the HOA was mild or moderate-severe.

CONCLUSIONS: Determining the deterioration in postural stability and the fall risk in patients with both mild and moderate-severe HOA may be a stimulus for early initiation of postural stability exercises in HOA.

Language: en

Keywords

Fall risk; Fear of falling; Hip osteoarthritis; Postural stability

The reliability of four standardized concern for falling scales among adults with a major lower extremity amputation

Nugent K, Payne MW, Viana R, Hunter SW. PM R 2022; ePub(ePub): ePub.

(Copyright © 2022, American Academy of Physical Medicine and Rehabilitation, Publisher Elsevier Publishing)

DOI 10.1002/pmrj.12785 PMID 35150095

Abstract

INTRODUCTION: More than 52.4% of people with a lower extremity amputation (PLEA) will fall at least once each year. Previously established standardized scales which evaluate a concern for falling (CFF) were primarily developed among community dwelling older adults. The reliability of commonly used scales to evaluate a CFF among PLEA is needed.

OBJECTIVE: To evaluate test-retest relative and absolute reliability, and agreement of the Modified Survey of Activities and Fear of Falling in the Elderly (mSAFFE), Falls Efficacy Scale - International (FES-I), Consequences of Falling (COF) Scale, Perceived Control Over Falling (PCOF) Scale, and Perceived Ability to Manage Falls (PAMF) Scale among PLEA.

DESIGN: Web-based cross-sectional repeated measures study. **SETTING:** Rehabilitation hospital. **PARTICIPANTS:** Regularly scheduled appointments (N = 22, mean age ± SD, 63.5 ± 12.9 years) with a transtibial or transfemoral level amputation, completed a prosthetic rehabilitation program, and at minimum of one year using a prosthesis for ambulation.

INTERVENTIONS: Not applicable. **MAIN OUTCOME MEASURE(S):** Initial and re-test scores on the mSAFFE, FES-I, COF, PAMF, and PCOF.

RESULTS: Intraclass correlation coefficients (ICC) demonstrated excellent relative reliability of the mSAFFE [ICC = 0.92 (95% CI: 0.82-0.97)], good relative reliability of the FES-I [ICC = 0.87 (95% CI: 0.70-0.94)], and fair relative reliability of the COF [ICC = 0.78 (95% CI: 0.53-0.90)] and PAMF [ICC = 0.73 (95% CI: 0.46-0.88)] scales. The ICC value of the PCOF scale could not be validly calculated and was not further analyzed. Calculated SE of measurement values for the mSAFFE, FES-I, COF, and PAMF scales were small in magnitude and Bland-Altman graphs demonstrated good agreement of initial and re-test scores for all scales.

CONCLUSION: This study provides initial evidence on the suitability and reliable use of the mSAFFE, FES-I, COF, and PAMF scales within this population. Further evaluation of the validity of these scales is needed. This article is protected by copyright. All rights reserved.

Language: en

Keywords

falls; limb loss; Lower extremity amputation; standardized scales; test-retest reliability

The understanding and experience of falls among community-dwelling adults aged 50 and over living with mental illness: a qualitative study

Koh L, Mackenzie L, Meehan M, Grayshon D, Lovarini M. Aging Ment. Health 2022; ePub(ePub): ePub.

(Copyright © 2022, Informa - Taylor and Francis Group)

DOI 10.1080/13607863.2022.2036949 **PMID** 35139702

Abstract

OBJECTIVES: Compared to the general older population, older adults living with mental illness are at greater risk of falling and these risks can be present from middle age. This study aimed to explore the understanding of falls and the experiences community-dwelling adults aged 50 years and over living with mental illness who have had a fall, and to identify any falls prevention strategies valued by them.

METHODS: A qualitative descriptive approach was adopted. Ten adults with past experience of falls were recruited at a community mental health service in Sydney, Australia. Semi-structured interviews were conducted between July and September 2018. Interviews were transcribed verbatim and data were thematically analysed.

RESULTS: Three major themes emerged: (1) making sense of falls, (2) being self-reliant and enduring the consequences of falls, and (3) preventing future falls - perceptions and strategies. Most participants in this study were uncertain about the cause of their falls and seemed to have limited understanding of falls risk factors. They were also less likely to seek help after a fall, despite an injury. Consequences of falls included physical injuries and negative emotional impacts experienced following a fall. Most participants expressed a certain degree of concern regarding future falls, however, their strategy to prevent falls was to simply "be careful." **CONCLUSION:** Adults aged over 50 years and living with mental illness in the community need support to identify and manage their falls risk. Fall prevention interventions tailored to the needs of this population are needed.

Language: en

Keywords

mental health; aged; accidental falls; independent living; middle aged

Underlying mechanisms of fall risk on stairs with inconsistent going size

Francksen N, Ackermans T, Holzer D, Maganaris C, Hollands M, Roys M, O'Brien T. *Appl. Ergon.* 2022; 101: e103678.

(Copyright © 2022, Elsevier Publishing)

DOI 10.1016/j.apergo.2022.103678 PMID 35151119

Abstract

Serious falls occur frequently on stairs with inconsistent dimensions. Inconsistent smaller goings are thought to reduce user's foot clearances and foot contact lengths since individuals do not detect and alter their behaviour prior to the inconsistency, increasing the risk of a trip, heel-catch or over-step and potential slip on the stairs. So far, these mechanisms for a stair fall remain theoretical only. The aim of this paper was to identify the underlying mechanisms by which steps with inconsistent going size increase the risk of falls. For this study twenty-seven younger adults (24 ± 3 y, 1.74 ± 0.09 m, 71.41 ± 11.04 kg) and thirty-three older adults (70 ± 4 y, 1.68 ± 0.08 m, 67.90 ± 14.10 kg) ascended and descended a seven-step instrumented staircase in two conditions: 1) consistent dimensions with 200 mm risers and 250 mm goings and 2) inconsistent going dimensions where the going of the third step was reduced by 10 mm, and consequently the going of the second step was larger by 10 mm. Five repeated trials on the inconsistent stairs were performed to assess if there was an adaptation effect after first exposure. In descent in the first inconsistent trial, foot contact lengths were not significantly different between conditions for the younger and older adults on the inconsistently shorter step ($\sim 1\%$, $p = .121$). Foot trajectories were pulled further back in the last 22% of swing before contact ($p = .025$), contradicting previous expectations. Younger adults then had reduced clearances over the next step (~ 5 mm, $p = .027$), which was inconsistently longer, increasing the risk of a heel-catch, whereas foot clearances for older adults were not different. With repeated inconsistent trials the foot contact length of older adults reduced on the shorter step ($p = .024$). In ascent, in the first inconsistent trial, interaction effects were detected between groups and conditions on three steps: the inconsistently longer step ($p = .003$), the shorter step ($p = .004$), the next step ($p = .006$), as well as on the walkway ($p = .048$). Older adults positioned themselves further away from the stairs on the walkway compared to younger adults and then had a reduced foot contact length on the inconsistently shorter step ($\sim 2.8\%$, $p = .026$), increasing the chances of under-stepping and slipping off the shorter step. Whereas younger adults were positioned closer to the stairs on the walkway, had increased foot contact lengths on the inconsistently longer step and contact lengths that were not different on the inconsistently shorter step. With repeated inconsistent trials, foot contact lengths were reduced on the longer step ($p = .006$) and then on the shorter step ($p = .018$). These findings contradict previous assumptions that individuals do not adapt to inconsistent goings on stairs. In descent on the first trial, both groups adjusted their stepping behaviour late in the swing prior to contact with the first inconsistent step. In ascent younger adults made changes to their position and stepping behaviour before stepping on the stairs. These behaviours to mitigate the risk of the inconsistent step, did not persist in the repeat trials. Future investigations should establish the magnitude at which

inconsistencies are detectable and can be acted upon and should include a wider range of individuals. This type of research could help inform future initiatives to prevent serious stair falls.

Language: en

Keywords

Inconsistent going; Stair; Stepping behaviour