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A cost-effectiveness analysis of a randomized control trial of a tailored, multifactorial program to prevent falls among the community-dwelling elderly

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Abstract

OBJECTIVE: To perform a cost-effectiveness analysis of a multifactorial, tailored intervention to reduce falls among a heterogeneous group of high-risk elderly.

DESIGN: Randomized control trial

SETTINGS: Communities

PARTICIPANTS: Adults aged at least 65 years (N=354) seen at the ED for a fall or fall-related injury and discharged home.

INTERVENTIONS: The intervention group received a tailored program of physical therapy focused on progressive training in strength, balance, and gait for a period of 3 months. They also received screening and referrals for low vision, polypharmacy, and environmental hazards. The Short Physical Performance Battery (SPPB) test was assessed at regular intervals to allocate participants into either a home-based or group centre-based program. The control group received usual care prescribed by a physician and educational materials on falls prevention.

MAIN OUTCOME MEASURES: The incremental cost-effectiveness ratio (ICER) over the 9-month study period based on intervention costs and utility in terms of quality-adjusted life years (QALYs) calculated from EuroQol-5D scores.

RESULTS: The ICER was S\$ 120, 667 per QALY gained (S\$ 362 / 0.003 QALYs), above benchmark values (S\$ 70,000). However, the intervention was more effective and cost-saving among those with SPPB scores of greater than 6 at baseline, higher cognitive function, better vision and no more than 1 fall in the preceding 6 months. The intervention was also cost-effective among those with 0-1 critical comorbidities (\$ 22, 646 / QALY).

CONCLUSION: The intervention was, overall, not cost-effective, compared to usual care. However, the program was cost-effective among healthier subgroups, and even potentially cost-saving among individuals with sufficient reserve to benefit.

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PDF Y Endnote Y

Anti-hypertensive medications and injurious falls in an older population of low socioeconomic status: a nested case-control study

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Abstract

BACKGROUND: This study aimed to determine whether the number of anti-hypertensive medication classes or any change in anti-hypertensive medication were associated with injurious fall among the community-dwelling older population of low socioeconomic status.

METHODS: Using data from electronic medical records, we performed a nested case-control study among older Singapore residents (≥ 60) of low socioeconomic status ($N = 210$). Controls ($n = 162$) were matched to each case ($n = 48$) by age and gender. Variables with $p < 0.10$ in univariate analysis were included in multivariate analysis. We used conditional logistic regression to assess the associations of the number of anti-hypertensive medication classes and change in anti-hypertensive medication with injurious falls. We also performed stepwise regressions as sensitivity analyses. $p < 0.05$ was considered statistically significant.

RESULTS: The mean (\pm SD) age of participants was 78.1 (± 8.33) years; 127 (60.4%) were female, 189 (90.0%) were Chinese. Those on ≥ 2 anti-hypertensive medication classes had an increased risk of experiencing an injurious fall compared to those not on any anti-hypertensive medication (OR = 5.45; CI:1.49-19.93; $p = 0.01$). Among those who were taking anti-hypertensive medication, those who had a change in the medication 180-day prior to injurious fall had a significantly increased risk of experiencing an injurious fall compared to those that did not report any change in anti-hypertensive medication (OR = 3.88; CI:1.23-12.19; $p = 0.02$). Sensitivity analyses generated consistent findings.

CONCLUSION: Both ≥ 2 anti-hypertensive medication classes and change in anti-hypertensive medication were associated with an increased risk of experiencing an injurious fall among the older population of low socioeconomic status. Our findings could guide prescribers to exercise caution in the initiation of anti-hypertensive medications or in making medication changes, especially among the older population of low socioeconomic status.

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Associations between gait-related falls and gait adaptations when stepping onto a curb: a prospective falls study

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J. Aging Phys. Act. 2018; ePub(ePub): ePub.

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Abstract

OBJECTIVES: To examine gait regulation during the approach to stepping onto a curb for older adults who did or did not report gait-related falls over a 12-month follow-up.

METHODS: Ninety-eight participants aged 60 years and older were analyzed. Primary outcomes were step length adaptations (lengthening or shortening) during a curb approach and the occurrence of a gait-related fall during a 12-month follow-up.



RESULTS: Linear-mixed effects modelling indicated stronger adaptations towards the end of the approach. Participants who reported experiencing a gait-related fall showed a stronger relationship between the adjustment required and adjustment produced; indicating different gait adaptations during the step leading onto the curb.

DISCUSSION: The link between prospective gait-related falls and gait-adaptations indicated that older adults with reduced capabilities require stronger adaptations to complete tasks reminiscent of everyday life. This finding may provide insight into the mechanisms of falls in older adults and should inform new falls prevention interventions.

PDF Y Endnote Y

Causes and correlates of 30 day and 180 day readmission following discharge from a medicine for the elderly rehabilitation unit

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DOI 10.1186/s12877-018-0883-3 **PMID** 30153802

Abstract

BACKGROUND: Recently hospitalized patients experience a period of generalized risk of adverse health events. This study examined reasons for, and predictors of, readmission to acute care facilities within 30 and 180 days of discharge from an inpatient rehabilitation unit for older people.

METHODS: Routinely collected, linked clinical data on admissions to a single inpatient rehabilitation facility over a 13-year period were analysed. Data were available regarding demographics, comorbid disease, admission and discharge Barthel scores, length of hospital stay, and number of medications on discharge. Discharge diagnoses for the index admission and readmissions were available from hospital episode statistics. Univariate and multivariate Cox regression analyses were performed to identify baseline factors that predicted 30 and 180-day readmission.

RESULTS: A total of 3984 patients were included in the analysis. The cohort had a mean age of 84.1 years (SD 7.4), and 39.7% were male. Overall, 5.6% (n = 222) and 23.2% (n = 926) of the patients were readmitted within 30 days and 180 days of discharge respectively. For patients readmitted to hospital, 26.6% and 21.1% of patients were readmitted with the same condition as their initial admission at 30 days and 180 respectively. For patients readmitted within 30 days, 13.5% (n = 30) were readmitted with the same condition with the most common diagnoses associated with readmission being chest infection, falls/immobility and stroke. For patients readmitted within 180 days, 12.4% (n = 115) of patients were readmitted with the same condition as the index condition with the most common diagnoses associated with readmission being falls/immobility, cancer and chest infections. In multivariable Cox regression analyses, older age, male sex, length of stay and heart failure predicted 30 or 180-day readmission. In addition, discharge from hospital to patients own home predicted 30-day readmission, whereas diagnoses of cancer, previous myocardial infarction or chronic obstructive pulmonary disease predicted 180-day readmission.

CONCLUSION: Most readmissions of older people after discharge from inpatient rehabilitation occurred for different reasons to the original hospital admission. Patterns of predictors for early and late readmission differed, suggesting the need for different mitigation strategies.

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Community-dwelling older men with dementia are at high risk of hip fracture, but not any other fracture: the Concord Health and Aging in Men Project

Hsu B, Bleicher K, Waite LM, Naganathan V, Blyth FM, Handelsman DJ, Le Couteur DG, Seibel MJ, Cumming RG.

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Abstract

AIM: The aim of the present longitudinal study of community-dwelling older men was to examine the association between cognitive status at baseline, and falls, fractures and bone loss over time. **METHODS:** In the Concord Health and Aging in Men Project, 1705 community-dwelling men aged 70-97 years had detailed baseline clinical assessment of cognitive status (dementia, mild cognitive impairment [MCI] and normal cognition), as well as depression, physical activity, neuromuscular function, health status, sociodemographics, comorbidities, medication use and serum 25 hydroxyvitamin D, 1,25 dihydroxyvitamin D and parathyroid hormone levels. During a mean follow-up period of 6 years, participants were contacted 4-monthly to ascertain incident falls and fractures, the latter being confirmed by radiographic reports. Bone mineral density was measured by dual X-ray absorptiometry at multiple time-points.

RESULTS: At baseline, 120 men were assessed to have MCI and 93 men to have dementia. Over time, there were 162 first incident fractures, including 43 hip and 32 vertebral fractures. In univariate models, baseline dementia, but not MCI, predicted an increased incidence of hip fracture (HR 6.95, 95% CI 3.47-13.96), but not vertebral (HR 2.26, 95% CI 0.79-6.46) or non-hip non-vertebral fracture (HR 0.73, 95% CI 0.27-1.99). The strong risk of hip fractures associated with dementia remained after accounting for potential confounders (HR 4.44, 95% CI 1.97-9.98). In multivariate analyses, dementia (incidence rate ratio 2.26, 95% CI 1.70-2.99), but not MCI, was associated with an increased risk of falls compared with normal cognition. There was no association between baseline dementia and change in bone mineral density.

CONCLUSIONS: Older men with dementia, but not MCI, have a greater tendency to fall and sustain hip fractures, but not any other types of fractures. *Geriatr Gerontol Int* 2018; ●●: ●●-●●.

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Differentiating cognitive or motor dimensions associated with the perception of fall-related self-efficacy in Parkinson's disease

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DOI 10.1038/s41531-018-0059-z **PMID** 30155514 **PMCID** PMC6102294

Abstract

In Parkinson's disease (PD), concurrent declines in cognitive and motor domain function can severely limit an individual's ability to conduct daily tasks. Current diagnostic methods, however, lack precision in differentiating domain-specific contributions of cognitive or motor impairments based on a patients' clinical manifestation. Fear of falling (FOF) is a common clinical manifestation among the elderly, in which both cognitive and motor impairments can lead to significant barriers to a patients' physical and social activities. The present study evaluated whether a set of analytical and machine-learning approaches could be used to help delineate boundary conditions and separate cognitive and motor contributions to a patient's own perception of self-efficacy and FOF. Cognitive and motor clinical scores, in conjunction with FOF, were collected from 57 Parkinson's patients during a multi-center rehabilitation intervention trial. Statistical methodology was used to extract a subset of uncorrelated cognitive and motor components associated with cognitive and motor predictors, which were then used to independently identify and visualize cognitive and motor dimensions associated with FOF. We found that a central cognitive process, extracted from tests of executive, attentional, and visuoperceptive function, was a unique and significant independent cognitive predictor of FOF in PD. In addition, we provide evidence that the approaches described here may be used to computationally discern specific types of FOF based on separable cognitive or motor models. Our results are consistent with a contemporary model that the deterioration of a central cognitive mechanism that modulates self-efficacy also plays a critical role in FOF in PD.

PDF Y Endnote Y

Dynamic balance assessment using an unstable board in community-dwelling elderly people

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J. Phys. Ther. Sci. 2018; 30(8): 1086-1091.

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DOI 10.1589/jpts.30.1086 **PMID** 30154605 **PMCID** PMC6110225

Abstract

PURPOSE: A new method for measuring dynamic balance was developed. The aim of this study was to describe the use of a novel "unstable board" to evaluate the balance ability of community-dwelling elderly individuals.



PARTICIPANTS AND METHODS: The following balance outcomes were evaluated in 59 community-dwelling elderly people: anteroposterior and mediolateral stability indexes on the unstable board, Mini-Balance Evaluation Systems Test score, the Functional Reach Test score, Timed Up-and-Go time, and the Figure-8 Walk Test time.

RESULTS: With respect to the relationship between the stability indexes and functional balance scales, the anteroposterior stability index significantly correlated with the anticipatory postural adjustment component ($r=-0.422$), stability in the gait component ($r=-0.274$), and total score of the Mini-Balance Evaluation Systems Test ($r=-0.316$); timed up-and-go time ($r=0.320$); and figure-8 walk test time ($r=0.340$). No correlation was found between the mediolateral stability index and the functional balance scale scores.

CONCLUSION: The anteroposterior stability index correlated with the declines in postural adjustments and performance in the dynamic balance assessments. Therefore, the anteroposterior stability index, evaluated on an unstable board, could provide an efficient tool for predicting changes in dynamic balance capacity, which could not be identified using the most commonly used balance assessment tools.

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Fall prevention among community-dwelling older adults: current guidelines and older adult responses

Lach HW, Noimontree W.

J. Gerontol. Nurs. 2018; 44(9): 21-29.

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DOI 10.3928/00989134-20180808-06 **PMID** 30148529

Abstract

Older adults are vulnerable to falls that result in injury and disability, making fall prevention a national priority. The purpose of the current study was to evaluate community-dwelling older adults' perceptions about falls and fall prevention activities to guide interventions. Participants had high awareness of falls and believed that they could reduce their risk of falling. Approximately three fourths of participants reported taking actions to reduce risk of falling; however, participation in community fall prevention programs was low. The survey used provides a method to help nurses identify targets for fall prevention interventions to reduce this physical health disparity in vulnerable older populations. [Journal of Gerontological Nursing, 44(9), 21-29].

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Fall prevention knowledge and practice patterns among home healthcare professionals in southern Saudi Arabia: an observational study

Asiri F, ALMohiza MA, Faia Aseeri M, Mehtab Alam M, Ataalla SM, Alqahtani M, Alshahrani A.

J. Int. Med. Res. 2018; ePub(ePub): ePub.

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Abstract

OBJECTIVES To determine the knowledge of falls risk factors among home healthcare (HHC) professionals and the practice patterns of HHC professionals regarding falls prevention.

METHODS A modified version of a survey designed and validated for use in home healthcare settings was distributed to HHC professionals for self-completion. Responses were collected and analysed using descriptive methods.

RESULTS Out of 80 surveys distributed to 23 HHC centres, 52 returned surveys were included for analyses (completed by physicians, physical therapists [PTs] and nurses). In terms of practice patterns, 82.7% of participants always asked older adults if they have a history of falls, 81% always identified falls risk factors, 73% documented risk factors for falling and 71% always provided interventions to address falls risk factors. Environmental hazards were the most common risk factor identified by HHC professionals. Approximately one quarter of nurses felt they had little knowledge of falls risk factors.

CONCLUSION Over 70% of HHC professionals acknowledged the importance of falls, and over 80% of participants displayed knowledge of falls prevention factors. As HHC professionals most likely to encounter patients requiring intervention for falls prevention, physical therapists may benefit from training programmes to help identify important falls risk factors.

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Falls prevention through physical and cognitive training (falls PACT) in older adults with mild cognitive impairment: a randomized controlled trial protocol

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BMC Geriatr. 2018; 18(1): e193.

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Abstract

BACKGROUND: The presence of mild cognitive impairment (MCI) in older adults increases their fall risk. While physical exercise is effective in reducing falls rate and risk of falls, and cognitive training in improving cognitive functioning in healthy older adults, their effectiveness in preventing falls and reducing risks of falls in MCI when administered simultaneously is not yet established. Therefore, this study aims to determine the effectiveness of combined physical and cognitive training in preventing falls and decreasing risks of falls among community-dwelling older persons with MCI. **METHODS/DESIGN:** This is a single-blind, multicentre, randomized controlled trial. At least ninety-three community-dwelling older adults with MCI aged 60 or above will be recruited. They will be randomly allocated into four groups: Physical Training alone (PT), Cognitive Training alone (CT), combined Physical And Cognitive Training (PACT) and Waitlist Group (WG). The PT group will perform exercises (flexibility, endurance, strengthening, and balance training) for 60-90 min three



times per week for 12 weeks. The CT group will be involved in a paper-based training focusing on orientation, memory, attention and executive functioning for 60-90 min per session, once a week for 12 weeks. The PACT group will undergo cognitive training incorporated in physical exercise for 60-90 min three times per week for 12 weeks. The WG will receive the intervention, combined physical and cognitive training, at a later date. Assessors blinded to participant allocation will conduct pre-intervention, post-intervention, and 6-month follow-up assessments. The primary outcome measure will be falls rate. The secondary outcome measures will be Physiologic Profile Assessment and Falls Risk for Older Persons in the Community, and assessments that evaluate cognitive, physical and psychological factors related to falls.

DISCUSSION: Considering the possible physical, social, financial and psychological consequences of a fall, we hope to provide insights on the effectiveness of combining physical and cognitive training on falls and fall-related factors for older adults with MCI. It is projected that the combined interventions will lead to significantly lower falls rate and reduced risk of falls compared to using single or no intervention. **TRIAL REGISTRATION:** ClinicalTrials.gov NCT03167840. Registered on May 30, 2017.

PDF Y Endnote Y

High-intensity interval training using TRX lower-body exercises improve the risk of falls in healthy older people

Jiménez-García JD, Hita-Contreras F, de la Torre-Cruz M, Fábrega-Cuadros R, Aibar-Almazán A, Cruz-Díaz D, Martínez-Amat A.

J. Aging Phys. Act. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Human Kinetics Publishers)

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Abstract

The objective of this study was to compare the effects of high-intensity interval training (HIIT) and moderate intensity interval training (MIIT) programs, both with a suspension training system, on several fall risk factors in healthy older adults. A total of 82 participants (68.49 ± 5.18 years) were randomized to HIIT ($n=28$), MIIT ($n = 27$), or control ($n = 27$) groups. Balance confidence (Activities-specific Balance Confidence Scale), fear of falling (Falls Efficacy Scale International), dynamic balance (Timed Up and Go Test) and gait analysis (OptoGait optical detection system) were assessed. Statistical analysis showed improvements after the intervention in HIIT group compared with MIIT and control group regarding the fear of falling ($p <.05$ and $<.01$ respectively), gait (both $p <.05$), and dynamic balance ($p <.05$ and $<.01$ respectively), while both HIIT and MIIT improved balance confidence compared to group control ($p <.01$ and $p <.05$ respectively). We can conclude that HIIT has significant beneficial effects of fall risk in older adults.

PDF Y Endnote Y

Home-based balance training using Wii Fit™: a pilot randomised controlled trial with mobile older stroke survivors

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Pilot Feasibility Stud. 2018; 4: e143.

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DOI 10.1186/s40814-018-0334-0 **PMID** 30155268 **PMCID** PMC6109315

Abstract

BACKGROUND: Several studies have reported that using the Wii™ Balance Board can provide added value regarding balance (re-)training in neurological diseases. However, for the large group of mobile older stroke survivors, there is no evidence regarding the feasibility of an unsupervised Wii™ Balance Board training in the home setting. The aim of this study was to investigate the feasibility of a home-based Wii™ balance training for these patients and to identify methodological challenges for randomised controlled trials in the future.

METHODS: We conducted a pilot randomised controlled trial with two intervention arms in participants' homes. Mobile stroke survivors (aged 60 years or above; 12 weeks after discharge from hospital) received a 6-week (once per week) supervised balance training at the study centre, followed by a 6-week (three times per week) unsupervised balance training at home. We used the Nintendo Wii™ Balance Board for one intervention arm and conventional balance exercises for the other intervention arm. Feasibility was assessed by recruiting rates, appropriateness of assessments regarding sensitivity to changes and acceptance of the intervention by the participants.

RESULTS: In two German hospital stroke units, 349 stroke survivors were screened over a period of 6 months, 91 were eligible and 52 were interested. Twelve weeks after discharge, 14 participants agreed and 11 completed the intervention (7 men and 4 women, mean age 74 years). The Berg Balance Scale and Dynamic Gait Index showed ceiling effects already at baseline measure. The participants in both intervention arms evaluated the unsupervised training positively and feasible for self-application. No falls or injuries occurred over the intervention period, while the required scope of the exercises could largely be achieved.

CONCLUSIONS: In this pilot study, the recruitment of participants and the chosen assessments were not satisfactory due to selection bias and corresponding ceiling effects. However, the two home-based balance interventions proved feasible for mobile older stroke survivors with low functional limitations. **TRIAL REGISTRATION:** ClinicalTrials.gov, NCT02251470. Registered 29 September 2014.

PDF Y Endnote Y

Knee osteoarthritis at the early stage: the four-week effect of lateral wedge insole on pain and risk of falls

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(Copyright © 2018, Tehran University of Medical Sciences)

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Abstract

Background: Knee osteoarthritis (KOA) is associated with a decrease in function, increase in pain and risk of falls. Lateral wedge insole (LWI) is commonly prescribed in KOA to improve pain and function. Our study aimed to 1) evaluate the clinical symptoms and risk of falls in early KOA and compare with controls; 2) evaluate the immediate and four-week effect of LWI.

Methods: A sample of 20 Persian dwelling individuals with early KOA and 19 matched controls were recruited. Pain with Visual Analogue Scale (VAS), Quality of life (QOL) with the knee injury and osteoarthritis outcome score, risk of falls with the Timed Up and Go (TUG) and static One-leg Balance (OLB) tests were assessed. The four-week effect of 5° LWI was considered for individuals with KOA. Independent t-test was done to report the between-group differences, and paired t-test was used to report the four-week effect of LWI.

Results: At baseline, statistically significant higher scores for pain, lower scores for QOL, and higher risk of falls were observed in KOA compared to controls ($p < 0.001$). A significant statistical decrease was observed in pain, and risk of falls, and an increase in QOL in KOA after four-week effect of LWI compared to baseline ($p < 0.001$).

Conclusion: People with early KOA showed higher pain and lower level of QOL that were associated with higher risk of falls. LWI may have the potential to improve clinical symptoms and reduce the risk of falls at the early stage of KOA.

PDF Y Endnote Y

Long-term weight trajectory and risk of hip fracture, falls, impaired physical function, and death

LeBlanc ES, Rizzo JH, Pedula KL, Yaffe K, Ensrud KE, Cauley JA, Cawthon PM, Cummings SR, Hillier TA. *J. Am. Geriatr. Soc.* 2018; ePub(ePub): ePub.

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Abstract

OBJECTIVES: To determine the association between weight trajectory, health status, and mortality in older women.

DESIGN: Cohort study.

SETTING: Study of Osteoporotic Fractures.

PARTICIPANTS: Older community-dwelling women (age: baseline (1986-88), mean 68, range 65-81; Year 20 (2006-08), mean 88, range 83-102 (N = 1,323)).

MEASUREMENTS: Body weight measured repeatedly over 20 years (mean 8 times). Logistic and Cox proportional hazard models were used to evaluate whether 20-year weight trajectory measures were associated with hip fracture, falls, physical performance, and mortality.

RESULTS: In models adjusted for age, clinic, calcium use, Year 20 weight, walking speed, comorbidity score, smoking, self-reported health, and walking for exercise, women with moderate weight loss (>9.0 kg) over 20 years had a 74% greater risk of death (hazard ratio (HR) = 1.74, 95% confidence

interval (CI) = 1.37-2.20) in the 5 years after the Year 20 visit than those with no weight loss and more than twice the risk of hip fracture (HR = 2.56, 95% CI = 1.39-4.70). They were 3.6 times (odds ratio (OR) = 3.60, 95% CI = 1.86-6.95) as likely to have poor physical function at the Year 20 visit as women with no weight loss but no greater risk of 2 or more falls in the 1.5 years after the Year 20 visit. Weight variability and abrupt weight decline were not associated with adverse health outcomes (falls, fractures, mortality), but those in the highest quartile of variability were 2.3 times (OR = 2.26, 95% CI = 1.34-3.80) as likely to have poor physical function scores.

CONCLUSION: In women surviving past 80 years of age, moderate weight loss over 20 years was associated with greater risk of hip fracture, poor physical function, and mortality but not of falls. Future work should separate voluntary from involuntary weight loss.

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Prevalence of sarcopenia and associated factors in institutionalised older adult patients

Bravo-José P, Moreno E, Espert M, Romeu M, Martínez P, Navarro C.

Clin. Nutr. ESPEN 2018; 27: 113-119.

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Abstract

BACKGROUND & AIMS: Sarcopenia is a syndrome characterised by a progressive and generalised loss of skeletal muscle mass and strength with a risk of adverse outcomes such as physical disability, poor quality of life and death. The main aim of the present study was to establish the prevalence of sarcopenia using EWGSOP-defined criteria in institutionalised older adult patients in long-term care institutions. A secondary purpose was to identify the risk factors that develop Sarcopenia in this population.

METHODS: A Multicentre cross-sectional study was conducted in 334 institutionalised older adult patients, where the prevalence of sarcopenia and its relation with certain risk factors were measured. Physical performance was measured by gait speed, muscle strength measured by a handheld dynamometer and skeletal muscle mass measured using bioimpedance analysis. Different variables were collected: body mass index (BMI), diseases documented in the clinical record, the numbers of falls, the level of activity and functional ability.

RESULTS: Two hundred eighty five individuals were included. According the EWGSOP algorithm and the cut-off points proposed by Masanes et al. for the Spanish population, 118 (41.4%) participants presented sarcopenia, of which 32 patients (27%) suffered from moderate sarcopenia, 78 patients (66%) were identified as severe sarcopenia patients and only 8 (7%) were classified as sarcopenic obesity. More female residents (96 females (81.4%) vs. 22 males (18.6%), $p < 0.0001$) tended to be sarcopenic. Patients diagnosed with sarcopenia tended to be more functionally impaired and had a more unfavourable BMI than those who were not sarcopenic (Barthel score 40.93 vs, 49.22,

$p = 0.0034$ and BMI 23.57 vs, 27.61, $p < 0.0001$).

RESULTS from regression analysis indicated that those older than 85 years old (OR 2.495, 95% CI 1.401-4.441), the female gender, (OR 3.215, 95%CI 1.635-6.324) and whose BMI was lower than 22 (OR 5.973, 95% CI 2.932-12.165) appeared to be associated with sarcopenia, whereas the Barthel Index and other factors were not.

CONCLUSION: The present study suggests that sarcopenia is highly prevalent in patients living in long-term care institutions, especially in female patients. Our findings support that the muscle mass was negatively associated with poor nutritional status and poor capacity to develop basic activities of daily living that indicates high dependency of these patients and high necessity of care.

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Randomized controlled trial to evaluate a prevention program for frail community-dwelling older adults: a D-SCOPE protocol

Lambotte D, De Donder L, De Roeck EE, Hoeyberghs LJ, van der Vorst A, Duppen D, Van der Elst M, Fret B, Dury S, Smetcoren AS, Kardol MJM, Engelborghs S, De Deyn PP, De Witte N, Schols JMGA, Kempen GIJM, Zijlstra GAR, De Lepeleire J, Schoenmakers B, Verté D, Dierckx E.

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Abstract

BACKGROUND: Frail community-dwelling older adults, whom might experience problems regarding physical, cognitive, psychological, social and environmental factors, are at risk for adverse outcomes such as disability, institutionalization and mortality. People in need of help do not always find their way to care and support services and are left undetected. The aim of the D-SCOPE project is to detect frail community-dwelling older adults who previously went unnoticed and to improve their access to care and support. Goal is to increase their frailty-balance, quality of life, meaning in life, life satisfaction, mastery, community inclusion and ageing well in place.

METHODS/DESIGN: The study is a prospective, longitudinal randomized four-armed controlled trial with follow-up at 6 months. The study group aims to include 900 community-dwelling older adults aged 60 years and over from 3 municipalities in Flanders (Belgium). While selecting the study group, risk profiles for frailty will be taken into account. Participants will be randomly selected from the census records in each municipality. Data will be collected prospectively at baseline (T0) and at follow-up, 6 months after baseline (T1). At baseline, participants who are at least mild frail on one of the 5 domains of frailty (CFAI-plus) or feel frail based on the subjective assessment of frailty will be randomly assigned to (1) the study group or (2) the control group. A mixed method design with the inclusion of quantitative and qualitative data analyses will be used to evaluate the efficacy and experiences of the detection and prevention program on frailty.



DISCUSSION: The study will contribute to an innovative vision concerning the organization of care and support, and a timely and accurate detection and support of community-dwelling older adults at risk for frailty. TRIAL REGISTRATION: This trial was registered at ClinicalTrials.gov, on May 26, 2017, identifier: NCT03168204.

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Resilience as a factor of longevity and gender differences in its effects

Lakomý M, Kafková MP.

Sociol. Cas. 2017; 53(3): 369-392.

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Abstract

Various explanations for longevity and mortality differences have been repeatedly tested and discussed in the context of worldwide population ageing. This study contributes to this field of research by testing the potential of resilience as a capacity to adapt in the face of adversity through individual and social resources and is the first European study to investigate how resilience predicts survival in later life. Panel data from the Survey of Health, Ageing and Retirement in Europe are used to determine the predictors of survival among people over the age of 75 between waves 1, 2, 4, and 5. The results of a multilevel logistic regression show that resilience is a strong predictor of survival among the oldest old and that this is true even when controlling for the amount and severity of adversity. Resilience is found on its own to be a stronger predictor of survival in women, while the amount and severity of adversity is more important in men. Resilience is therefore found to be an important factor in longevity and survival in later life and the stronger effect of resilience in women can partly explain the 'gender paradox'. To sum up, resilience is observed to be protective against disease, especially through the use of social resources, which are stronger among women and which are not measured in most traditionally used resilience scales.

PDF Y Endnote Y

Sleep duration and sleep disturbances in association with falls among the middle-aged and older adults in China: a population-based nationwide study

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(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

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Abstract

BACKGROUND: Falls pose major health problems to the middle-aged and older adults and may potentially lead to various levels of injuries. Sleep duration and disturbances have been shown to be associated with falls in literature; however, studies of the joint and distinct effects of those sleep problems are still sparse. To fill this gap, we aimed to determine the association between sleep



duration, sleep disturbances and falls among middle-aged and older adults in China controlling for psychosocial, lifestyle, socio-demographical factors and comorbidity.

METHODS: Data were derived from the China Health and Retirement Longitudinal Study (CHARLS) based on multi-stage sampling designs, with respondents aged 50 and older. Associations were evaluated by using multiple logistic regression adjusting for confounders and complex survey design. To further determine if the association of sleep duration/disturbance and falls depends on age groups, the study data were divided into two samples (age 50-64 vs. age 65+) and comparison was made between the two age groups.

RESULTS: Of the 12,759 respondents, 2172 (17%) had falls within the last 2 years. Our findings indicated that the participants who had nighttime sleep duration ≤ 5 were more likely to report falls than those who had nighttime sleep duration ≥ 6 h; whereas no association between nighttime sleep duration > 8 h and falls. Participants having sleep disturbances 1-2 days, or 3-4 days, and 5-7 days per week were also more likely to report falls than those who had no sleep disturbance. The nap sleep duration was not significantly associated with falls. Although the combined sample found both sleep duration and sleep disturbance to be strongly associated with falls after adjusting for various confounders, sleep disturbance was not significantly related to falls among participants aged 65 + .

CONCLUSIONS: Our study suggested that there is an independent association between falls and short sleep duration and disturbed sleep among middle-aged and older adults in China.

FINDINGS underscore the need for evidence-based prevention and interventions targeting sleep duration and disturbance among this study population.

PDF Y Endnote Y

The Ironbark program: implementation and impact of a community-based fall prevention pilot program for older Aboriginal and Torres Strait Islander people

Lukaszyc C, Coombes J, Sherrington C, Tiedemann A, Keay L, Mackean T, Clemson L, Cumming R, Broe T, Ivers R.

Health Promot. J. Austr. 2018; 29(2): 189-198.

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(Copyright © 2018, Australian Health Promotion Association, Publisher CAIRO Publishing)

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Abstract

AIM: To document the implementation and investigate within-group impact of The Ironbark Program: a community-based, Aboriginal-specific fall prevention program, in New South Wales, Australia.

ETHODS: The Ironbark Program was trialled in six Aboriginal communities over a three- to six-month period. A mixed methods approach was used for program evaluation: strength, balance and gait were assessed to measure participant physical function and BMI was monitored. Semi-structured participant interviews investigated program suitability, relevance and impact.

RESULTS: Ninety-eight Aboriginal people aged 40+ years registered for the pilot program, 77 (79%) of whom were present at all assessment time points. There were significant improvements in participant leg strength (average time to complete five repetition sit-to-stand: 14 seconds to

11 seconds), balance (timed single-leg stance: 5.6 seconds to 7.8 seconds), gait (timed 4 m walk: 0.51 m/s to 0.94 m/s) and a significant decrease in BMI (32.0 to 31.6) was observed. Participants reported enjoying the program and stated they would recommend it to others.

CONCLUSION: The evaluation of the Ironbark Program demonstrated acceptability, and showed significant improvements in physical function. If proven to be effective in a definitive trial, this program could be used widely to prevent falls in older Aboriginal people. **IMPLICATIONS:** Key features of the Ironbark Program were local Aboriginal management, culturally relevant resources, ongoing availability and enabling program use for people aged less than 65 years. These features should be retained on the program's upscale, and may be incorporated into other healthy ageing programs developed for the Aboriginal population.

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The risk of fall accidents for home dwellers with dementia-a register- and population-based case-control study

*Petersen JD, Siersma VD, Christensen RD, Storsveen MM, Nielsen CT, Waldorff FB. *Alzheimers Dement. (Amst)* 2018; 10: 421-428.*

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(Copyright © 2018, The Author(s), Publisher Elsevier Publishing)

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Abstract

INTRODUCTION: Institutionalized people with dementia have an increased risk of fall accidents, but little is known about whether this increased risk holds for home dwellers.

METHODS: This register- and population-based study comprised 115,584 cases and 394,679 controls. Cases were individuals with any fall between 2009 and 2014, and matched with up to six controls on age, sex, and geographic location. Individuals were excluded if they (1) had any fall in 2008, or (2) lived in a nursing home on the date of the fall. Dementia, other chronic diseases, and sedative medicines were assessed from Danish national registers.

RESULTS: After adjusting for potential confounders, older people with dementia living at home had a 1.89-fold higher risk of fall (odds ratio = 1.89, 95% confidence interval [1.84-1.94], $P < .001$).

DISCUSSION: Dementia almost doubles the risk of fall for older Danish people living at home. This highlights the need for effective fall preventions that target people with dementia.

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Vegetable and fruit intake and injurious falls risk in older women: a prospective cohort study

Sim M, Blekkenhorst LC, Lewis JR, Bondonno CP, Devine A, Zhu K, Woodman RJ, Prince RL, Hodgson JM.

Br. J. Nutr. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Nutrition Society, Publisher CABI Publishing)

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Abstract

The role of vegetable and fruit intake in reducing falls risk in elderly populations is uncertain. This study examined the associations of vegetable and fruit intake with falls-related hospitalisations in a prospective cohort study of elderly women (n 1429, ≥70 years), including effects on muscular function, which represented a potential causal pathway. Muscular function, measured using grip strength and timed-up-and-go (TUG), and vegetable and fruit intake, quantified using a validated FFQ, were assessed at baseline (1998). Incident falls-related hospitalisation over 14.5-year follow-up was captured by the Hospital Morbidity Data Collection, linked via the Western Australian Data Linkage System. Falls-related hospitalisation occurred in 568 (39.7 %) of women. In multivariable-adjusted models, falls-related hospitalisations were lower in participants consuming more vegetables (hazard ratio (HR) per 75 g serve: 0.90 (95 % CI 0.82, 0.99)), but not fruit intake (per 150 g serve: 1.03 (95 % CI 0.93, 1.14)). Only total cruciferous vegetable intake was inversely associated with falls-related hospitalisation (HR: per 20 g serve: 0.90 (95 % CI 0.83, 0.97)). Higher total vegetable intake was associated with lower odds for poor grip strength (OR: 0.87 (95 % CI 0.77, 0.97)) and slow TUG (OR: 0.88 (95 % CI 0.78, 0.99)). Including grip strength and TUG in the multivariable-adjusted model attenuated the association between total vegetable intake and falls-related hospitalisations. In conclusion, elderly women with higher total and cruciferous vegetable intake had lower injurious falls risk, which may be explained in a large part by better physical function. Falls reduction may be considered an additional benefit of higher vegetable intake in older women.

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Watch your step! Who can recover stair climbing independence after stroke?

Morone G, Matamala-Gomez M, Sanchez-Vives MV, Paolucci S, Iosa M.

Eur. J. Phys. Rehabil. Med. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Edizioni Minerva Medica)

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Abstract

BACKGROUND: After discharge, most patients who have suffered a stroke remain with some limitations in their stair climbing ability. This is a critical factor in order to be independent in real-life mobility. Although there are several studies on prognostic factors for gait recovery, few of them have focused on to the recovery of stair climbing.

AIM: The aim of this study was to identify prognostic risk factors for the recovery of stair climbing ability in a large sample of subjects with subacute stroke.

DESIGN: Observational study.

SETTING: Neurorehabilitation Inpatient Unit.

METHODS: We evaluated subjects within the first month after stroke that had been admitted to an



inpatient rehabilitation unit and discharged after an intensive inpatient rehabilitation. Demographical and clinical data were collected. Barthel Index (BI), Trunk Control Test and Motricity Index (MI) scores were recorded at admission and at discharge. Patients received two daily 40-minute sessions of motor rehabilitation, six days per week, during approximately two months. Forward Binary Logistic regressions were used to identify the role of risk factors, using as dependent variables the recovery of stair climbing ability and walking ability at discharge. As independent variables we used age, gender, onset-to-admission interval, side of hemiparesis, trunk control, motricity index (MI), presence of obesity, presence of neglect, presence of depression, classification of cerebral infarction (total anterior circulation, partial anterior circulation, posterior circulation or lacunar infarcts), degree of independence in activities of daily living, and cognitive state, all assessed at admission.

RESULTS: A total of 257 subjects were enrolled. BI-score, MI-score and presence of unilateral spatial neglect at admission were able to explain 83% of variance for the recovery of stair climbing ability. Subjects with a BI > 40 at admission were about 17 times more likely to be able to climb stairs again than other patients, and those with MI \geq 25 were about 9 times more likely than the rest. The presence of unilateral spatial neglect reduced this possibility of recovering stair climbing ability by about 5.5 times. Of these factors, only MI \geq 25, together with a score at Trunk Control Test > 12, significantly predicted also walking recovery.

CONCLUSIONS: This study highlights the different prognostic factors for recovering stair climbing and walking abilities, with a major role of unilateral spatial neglect in the former.

CLINICAL REHABILITATION IMPACT: There is a need for specific rehabilitation of stair climbing, also for improving the independence in activities of daily living, especially in patients who the clinical staff already knows should manage stairs in their community after being discharged.

PDF Y Endnote Y

White matter hyperintensities are associated with falls in older people with dementia

Taylor ME, Lord SR, Delbaere K, Wen W, Jiang J, Brodaty H, Kurrle SE, Stefanie Mikolaizak A, Close JCT.

Brain Imaging Behav. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

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Abstract

White Matter Hyperintensities (WMHs) are associated with impaired gait, balance and cognition and increased fall risk in cognitively healthy older people. However, few studies have examined such relationships in older people with dementia. Understanding the role of WMHs in falls may assist in developing effective fall prevention strategies. We investigated the relationship between baseline WMHs, cognitive and sensorimotor function and prospective falls in older people with dementia. Twenty-eight community-dwelling older people with mild-moderate dementia (MMSE 11-23; ACE-R < 83) underwent magnetic resonance imaging and assessment of sensorimotor and cognitive

(global and processing speed) function at baseline. WMHs, were quantified using a fully automated segmentation toolbox, UBO Detector (<https://cheba.unsw.edu.au/group/neuroimaging-pipeline>). Falls were ascertained prospectively for 12-months using monthly calendars with the assistance of carers. The median age of the participants was 83 years (IQR 77-86); 36% were female; 21 (75%) fell during follow-up. Using Generalized Linear Models, larger volumes of total WMHs were found to be significantly associated with poorer global cognitive and sensorimotor function. Using modified Poisson regression, total, periventricular and deep WMHs were each associated with future falls while controlling for age, sex, intracranial volume and vascular risk. Each standard deviation increase in total and periventricular WMH volume resulted in a 33% (RR 1.33 95%CI 1.07-1.66) and 30% (RR 1.30 95%CI 1.06-1.60) increased risk of falling, respectively. When the deep WMH volume z-scores were dichotomized at the median, individuals with greater deep WMH volumes had an 81% (RR 1.81 95% CI 1.02-3.21) increased risk of falling. WMHs were associated with poorer sensorimotor and cognitive function in people with dementia and total, periventricular and deep WMHs were associated with falls. Further research is needed to confirm these preliminary findings and explore the impact of vascular risk reduction strategies on WMHs, functional performance and falls.

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Effects of external perturbations on anticipatory and compensatory postural adjustments in patients with multiple sclerosis and a fall history

Tajali S, Rouhani M, Mehravar M, Negahban H, Sadati E, Oskouei AE.

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(Copyright © 2018, Clinicians Group)

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Abstract

BACKGROUND: Although previous studies have investigated postural adjustment mechanisms in patients with multiple sclerosis (MS), it seems that no study has yet investigated the relationship between anticipatory and compensatory postural adjustments (APAs and CPAs, respectively) and falls.

METHODS: Seventeen MS fallers, 17 MS nonfallers, and 15 controls were exposed to a series of expected and unexpected backward pull perturbations applied at the trunk level. The electrical activity of 12 leg and trunk muscles as well as center of pressure displacement were recorded.

RESULTS: The MS fallers had delayed muscle activity onsets compared with MS nonfallers and controls. In addition, a significantly lower level of muscle activity during APAs was detected in MS fallers compared with controls. Moreover, in the unexpected condition of perturbation, significantly smaller CPA was observed in MS fallers compared with controls. Both groups of patients with MS required more time to stabilize their center of pressure after both types of perturbations compared with controls.

CONCLUSIONS: The inability to produce efficient APAs and CPAs during perturbations may explain the high rates of postural instability and falls in patients with MS.

FINDINGS from this study provide a background for the development of perturbation-based training

programs aimed at balance improvement and fall prevention by restoring mechanisms underlying balance impairments.

PDF Y Endnote Y

What predicts falls in Parkinson disease? Observations from the Parkinson's Foundation Registry (Erratum)

Neurol. Clin. Pract. 2018; 8(4): 278.

(Copyright © 2018, Lippincott Williams and Wilkins)

DOI 10.1212/CPJ.0000000000000496 **PMID** 30140575 **PMCID** PMC6105064

Abstract [This corrects the article on p. 214 in vol. 8, PMID: 30105161.].

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