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Age-related changes in attention control and their relationship with gait performance in older adults with high risk of falls

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Abstract

BACKGROUND: Falls are the leading cause of injury-related deaths in the elderly worldwide. Both gait impairment and cognitive decline have been shown to constitute major fall risk factors. However, further investigations are required to establish a more precise link between the influence of age on brain systems mediating executive cognitive functions and their relationship with gait disturbances, and thus help define novel markers and better guide remediation strategies to prevent falls.

METHODS: Event-related functional magnetic resonance imaging (fMRI) was used to evaluate age-related effects on the recruitment of executive control brain network in selective attention task, as measured with a flanker paradigm. Brain activation patterns were compared between twenty young (21 years \pm 2.5) and thirty-four old participants (72 years \pm 5.3) with high fall risks. We then determined to what extent age-related differences in activation patterns were associated with alterations in several gait parameters, measured with electronic devices providing a precise quantitative evaluation of gait, as well as with alterations in several aspects of cognitive and physical abilities.

RESULTS: We found that both young and old participants recruited a distributed fronto-parietal-occipital network during interference by incongruent distractors in the flanker task. However, additional activations were observed in posterior parieto-occipital areas in the older relative to the younger participants. Furthermore, a differential recruitment of both the left dorsal parieto-occipital sulcus and precuneus was significantly correlated with higher gait variability. Besides, decreased activation in the right cerebellum was found in the older with poorer cognitive processing speed scores.

CONCLUSIONS: Overall results converge to indicate greater sensitivity to attention interference and heightened recruitment of cortical executive control systems in the elderly with fall risks. Critically, this change was associated with selective increases in gait variability indices, linking attentional control with gait performance in elderly with high risks of falls.

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PDF Y Endnote Y

Associations between social isolation, loneliness, and objective physical activity in older men and women

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DOI 10.1186/s12889-019-6424-y **PMID** 30651092

Abstract

BACKGROUND: The impact of social isolation and loneliness on health risk may be mediated by a combination of direct biological processes and lifestyle factors. This study tested the hypothesis that social isolation and loneliness are associated with less objective physical activity and more sedentary behavior in older adults.

METHODS: Wrist-mounted accelerometers were worn over 7 days by 267 community-based men (n = 136) and women (n = 131) aged 50-81 years (mean 66.01), taking part in the English Longitudinal Study of Ageing (ELSA; wave 6, 2012-13). Associations between social isolation or loneliness and objective activity were analyzed using linear regressions, with total activity counts and time spent in sedentary behavior and light and moderate/vigorous activity as the outcome variables. Social isolation and loneliness were assessed with standard questionnaires, and poor health, mobility limitations and depressive symptoms were included as covariates.

RESULTS: Total 24 h activity counts were lower in isolated compared with non-isolated respondents independently of gender, age, socioeconomic status, marital status, smoking, alcohol consumption, self-rated health, limiting longstanding illness, mobility limitations, depressive symptoms, and loneliness ($\beta = -0.130$, $p = 0.028$). Time spent in sedentary behavior over the day and evening was greater in isolated participants ($\beta = 0.143$, $p = 0.013$), while light ($\beta = -0.143$, $p = 0.015$) and moderate/vigorous ($\beta = -0.112$, $p = 0.051$) physical activity were less frequent. Physical activity was greater on weekdays than weekend days, but associations with social isolation were similar. Loneliness was not associated with physical activity or sedentary behavior in multivariable analysis. **CONCLUSIONS:** These findings suggest that greater social isolation in older men and women is related to reduced everyday objective physical activity and greater sedentary time. Differences in physical activity may contribute to the increased risk of ill-health and poor wellbeing associated with isolation.

PDF Y Endnote Y

Characteristics of fall among older people in rural Puducherry

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Indian J. Community Med. 2018; 43(4): 327-328.

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Abstract [Abstract unavailable]

PDF Y Endnote Y

Characterization of falls in adults with established rheumatoid arthritis and associated factors

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Adv. Rheumatol. 2018; 58(1): e16.



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(Copyright © 2018, BioMed Central) **DOI** 10.1186/s42358-018-0021-0 **PMID** 30657096

Abstract

BACKGROUND: Rheumatoid arthritis patients may have an increased risk of falls due to changes caused by the disease such as muscle weakness, joint impairment, reduced mobility and postural instability. The aim of this study was to prospectively analyze the occurrence of falls in RA patients and its risk factors.

METHODS: A cohort of 86 RA patients were assessed over 1 year for disease activity using the Disease Activity Score (DAS-28), for functionality using the Health Assessment Questionnaire (HAQ), for the characterization of falls and for the use of medications, and they were subjected to the Berg Balance Scale (Berg), Timed Up and Go (TUG), 6-Minute Walk (6MWT) and Short Physical Performance Battery (SPPB) tests. The Kolmogorov-Smirnov, Spearman's correlation, Student's t, Mann-Whitney and chi-square tests were performed with a significance level of $P \leq 0.05$.

RESULTS: A total of 86 patients were evaluated, of which 48.8% had at least one fall and 75.6% reported having a fear of falling. No association of falls with age, disease duration, functional capacity, disease activity or physical performance was found. Patients with poorer performance in the physical tests had more functional impairment, higher disease activity and more advanced age. No differences in physical or functional performance, disease activity, gender or fear of falling were found between fallers and non-fallers; only a greater amount of medications used was found in the group of fallers.

CONCLUSIONS: The occurrence of falls was high and associated with a previous history of falls and polypharmacy, with no association with disease activity or duration, functional capacity, physical performance, age or gender.

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Cross-cultural adaptation and psychometric properties of the Falls Efficacy Scale - International in Filipino community-dwelling older adults

Lipardo DS, Leung AYM, Gabuyo CMA, Escuadra CJT, Leung PA, Aseron AMC, Hernandez KAV, Diaz JB, Tsang WWN.

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(Copyright © 2019, Informa - Taylor and Francis Group)

DOI 10.1080/09638288.2018.1519045 **PMID** 30668161

Abstract

PURPOSE: The Falls Efficacy Scale - International is universally used in assessing the level of concern about falling in older adults. The objectives of this study were to conduct a cross-cultural adaptation and to establish psychometric properties of Falls Efficacy Scale - International in Filipino (FES-I F).

METHODS: The standardized 10-step translation protocol of the Prevention of Falls Network Europe was followed. Community-dwelling older adults aged 60 or above (N = 211) from Manila, Philippines were recruited. The internal consistency and test-retest reliability of the translated tool was assessed. Convergent validity was compared with fall-related factors. The receiver operating



characteristics were used to determine the cutoff score.

RESULTS: The FES-I F has high internal consistency ($\alpha = 0.91$) and good test-retest reliability (intraclass correlation coefficient = 0.86). Overall scores were significantly higher among those with subjective report of fear of falling ($p < 0.001$), lower timed up and go test scores ($p = 0.014$), slower gait speed ($p = 0.003$), and lower perceived well-being scores ($p = 0.003$) indicating acceptable convergent validity. The cutoff score of FES-I F was 22 points.

CONCLUSIONS: The FES-I F has high internal reliability and acceptable validity, and can be a practical tool to measure the concern about falling in Filipino older adults. Future research is necessary to establish its utilization as an outcome measure in intervention studies. Implications for rehabilitation The psychometric properties of the Filipino version of the Falls Efficacy Scale - International were good when assessed in older adults living in the community. The cutoff score to demarcate those with fear of falling from those without is 22 points. Falls Efficacy Scale - International in Filipino is recommended for the assessment of fear of falling for research and clinical purposes.

PDF Y Endnote Y

Detraining effects of regular Tai Chi exercise on postural control ability in older women: a randomized controlled trial

Sun W, Wang L, Zhang C, Song Q, Gu H, Mao D.

J. Exerc. Sci. Fit. 2018; 16(2): 55-61.

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Abstract

BACKGROUND/OBJECTIVE: This study aimed to investigate the training and detraining effects of Tai Chi (TC) on postural control ability in single leg stance (SLS) by conducting a single-blind randomized controlled trial.

METHOD: Forty-eight older women were randomly divided into the TC, brisk walking (BW), and control(C) groups by using computer-generated program. The participants completed a 16-week intervention training and 8-week detraining program. Postural control ability in SLS was tested at the baseline, 16 t h, 20 t h, and 24 t h weeks. The primary outcomes included single-leg stance time (Time) and secondary outcomes included maximal displacement of the center of pressure (COP) in the anterior-posterior (AP) direction (D-ap), maximal displacement of the COP in the medial-lateral (ML) direction (D-ml), total length of the COP trajectories (Lng), and 95% confidence ellipse area of the COP movements (area), mean AP total excursion velocities (V-ap), and mean ML total excursion velocities (V-ml).

RESULTS: Significant within-group difference compared with the baseline and between-groups difference compared with control group were found at 16 t h, 20 t h, and 24 t h weeks in the TC group and at the 16 t h and 20 t h weeks in the BW group in all the primary and secondary outcomes. Most of secondary outcomes including Lng, D-ml, V-ml, Area increased significantly at the 24 t h week compared with that at the 16 t h week in BW group.

CONCLUSIONS: TC was effective in improving postural control ability and maintaining intervention gains, and was recommended as an appropriate exercise to prevent falls in the older adults.

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Does a perturbation based gait intervention enhance gait stability in fall prone stroke survivors? A pilot study

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Abstract

A recent review indicated that perturbation based training (PBT) interventions are effective in reducing falls in older adults and patients with Parkinson's disease. It is unknown whether this type of intervention is effective in stroke survivors. We determined whether PBT can enhance gait stability in stroke survivors. Ten chronic stroke survivors who experienced falls in the past six months participated in the PBT. Participants performed 10 training sessions over a six-week period. The gait training protocol was progressive and each training contained, unexpected gait perturbations and expected gait perturbations. Evaluation of gait stability was performed by determining steady-state gait characteristics and daily-life gait characteristics. We previously developed fall prediction models for both gait assessment methods. We evaluated whether predicted fall risk was reduced after PBT according to both models. Steady-state gait characteristics significantly improved and consequently predicted fall risk was reduced after the PBT. Daily-life gait characteristics, however, did not change and thus predicted fall risk based on daily-life gait remained unchanged after the PBT. A PBT resulted in more stable gait on a treadmill and thus lower predicted fall risk. However, the more stable gait on the treadmill did not transfer to a more stable gait in daily life.

PDF Y Endnote Y

Epidemiology of sarcopenia and factors associated with it among community-dwelling older adults in Taiwan

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Am. J. Med. Sci. 2019; 357(2): 124-133.

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DOI 10.1016/j.amjms.2018.11.008 **PMID** 30665493

Abstract

BACKGROUND: Sarcopenia is a well-recognized geriatric syndrome. We sought to determine the prevalence of sarcopenia and factors associated with it among community-dwelling older adults in Taiwan.

METHODS: A cross-sectional study was conducted in Yuanshan Township, Yilan County, Taiwan. Data of 731 community-dwelling adults aged 65 and older were evaluated. Demographic characteristics, anthropometry, medical history, biochemistry results, and dual-energy X-ray absorptiometry results were collected for analysis.

RESULTS: Males had a higher rate of sarcopenia than did females and had lower values for body



weight, body mass index, waist circumference, percentage of body fat, and lean body mass. Poor nutritional status as determined by the Mini Nutritional Assessment correlated positively with markers for sarcopenia. Levels of vitamin D and folic acid correlated positively with some sarcopenia markers.

CONCLUSIONS: Gender differences and nutritional factors may influence the development of sarcopenia. Vitamin D is positively correlated with relative appendicular skeletal muscle mass in males with sarcopenia, and folic acid was positively correlated with gait speed in females with sarcopenia.

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Falls among older adults with sarcopenia dwelling in nursing home or community: A meta-analysis

Zhang X, Huang P, Dou Q, Wang C, Zhang W, Yang Y, Wang J, Xie X, Zhou J, Zeng Y.

Clin. Nutr. 2019; ePub(ePub): ePub.

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(Copyright © 2019, Elsevier Publishing)

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Abstract

OBJECTIVES: To assess and quantify sarcopenia as a risk for falls among community-dwelling older people and nursing home older persons.

METHODS: Prospective cohort studies that evaluated the association between sarcopenia and falls in older adults were identified via a systematic literature search of Medline (via Ovid), PubMed, EMBASE, and the Cochrane CENTRAL Library from database inception until October 15, 2018, in English and Chinese.

RESULTS: 10 studies (10,073 participants) were included in the meta-analysis. Among older adults, having sarcopenia was significantly associated with a higher risk of falls, compared to older adults without sarcopenia (pooled OR-odds ratio = 1.52, 95% CI-confidence interval: 1.32-1.77, $I^2 = 39.1\%$). In addition, the results of subgroup analysis indicated that male participants with sarcopenia had a higher risk of falls than mixed gender participants with sarcopenia (pooled OR = 1.72, 95% CI: 1.36-2.18 versus pooled OR = 1.41, 95% CI: 1.16-1.70). Other subgroup analyses were conducted using different study follow-up periods (>1 year versus ≤ 1 year) (pooled OR 1.63, 95% CI: 1.38-1.92 versus 1.20, 95% CI: 0.87-1.65). In addition, community-dwelling older people with sarcopenia was significantly increase risk of fall, compared with non-sarcopenia (pooled OR = 1.69, 95% CI: 1.43-2.00), whereas it was not found among nursing home residents (pooled OR = 1.12, 95% CI: 0.84-1.51). Furthermore, sarcopenia definition subgroup analysis found that older adults with sarcopenia increase the risk of falls when using EWGSOP (pooled OR = 1.43, 95% CI: 1.19-1.72), FNIH (pooled OR = 1.82, 95% CI: 1.39-2.37), AWGS (pooled OR = 7.68, 95% CI: 1.41-41.80), respectively.

CONCLUSION: The present study found that sarcopenia is a risk factor for falls among community-dwelling older people, but not among nursing home older persons. Future research is needed to provide evidence for specific interventions aimed at treating sarcopenia and preventing falls among older adults dwelling in the community.

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PDF Y Endnote Y**Identifying predictors of under-triage in injured older adults after implementation of statewide geriatric trauma triage criteria**

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Acad. Emerg. Med. 2019; ePub(ePub): ePub.

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DOI 10.1111/acem.13695 **PMID** 30661273

Abstract

OBJECTIVES: Identify factors associated with transport of injured older adults meeting statewide geriatric trauma triage criteria to a trauma center.

METHODS: An observational retrospective cohort study using the 2009-2011 Ohio Trauma Registry. Subjects were adults ≥ 70 years old who met Ohio's geriatric triage criteria for trauma center transport by emergency medical services. We created multivariable logistic regression models to identify predictors of initial and ultimate (e.g. inter-facility transfer) transport to a Level I or II trauma center and to a Level I, II, or III center.

RESULTS: Of 10,411 subjects, 47% were initially and 59% were ultimately transported to a Level I or II trauma center with rates of 66% and 74% respectively for transport to a Level I, II, or III center. For initial transport to a Level I or II center, age 80-89 (odds ratio [OR 0.89]), age ≥ 90 (OR 0.76) and either only a Level 3 (OR 0.3) or no trauma center (OR 0.11) in county of residence had decreased odds of transport, while male sex (OR 1.38), black race (OR 2.07), injury severity score (ISS) 10-15 (OR 1.99), ISS > 15 (OR 2.85), And Glasgow Coma Scale (GCS) < 9 (OR 2.11) Had Increased Odds. Results were similar for ultimate transport to a Level I or II center. Analyzing transport to a Level I, II, or III center demonstrated similar results except a Level 3 trauma center in county of residence was associated with increased odds (OR 2.00 for initial and 2.21 for ultimate) of transport to a Level I, II, or III center.

CONCLUSIONS: We identified factors independently associated with failure to transport injured older adults to trauma centers in statewide data collected after adoption of geriatric triage criteria. Lack of a trauma center in the county of residence remained a factor even in analyses which included ultimate transport. This article is protected by copyright. All rights reserved.

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PDF Y Endnote Y**Incidence, risk factors and economic burden of fall-related injuries in older Chinese people: a systematic review**

Peng K, Tian M, Andersen M, Zhang J, Liu Y, Wang Q, Lindley R, Ivers R.

Inj. Prev. 2019; 25(1): 4-12.

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(Copyright © 2019, BMJ Publishing Group)

DOI 10.1136/injuryprev-2018-042982 **PMID** 30670560



Abstract

OBJECTIVE: China's population is ageing and fall-related injury in older Chinese people is a growing public health concern. This review aims to synthesise existing evidence on the incidence, risk factors and economic burden of fall-related injury among older Chinese people to inform health service planning.

METHODS: A systematic search of literature on falls and injury among older people living in China was performed in six electronic databases including both English and Chinese databases.

Results were combined using narrative synthesis due to the heterogeneity of included studies.

RESULTS: A total of 93 studies from Mainland China, Taiwan and Hong Kong were included in this review. Most of these studies were descriptive; 82 reported the incidence of fall-related injury among older Chinese people, 7 studies examined the risk factors for fall-related injury and 22 studies described the economic burden of fall-related injury. The incidence of fall-related injury reported among older Chinese people ranged from 0.6% to 19.5%. Risk factors significantly associated with fall-related injury among older Chinese included older age, female sex, walking aid use, living environments, chronic disease, medication usage, visual impairment and a fall direction other than forward. The cost of fall-related injury among older Chinese people ranged from US\$16 to US\$3812 per person per fall.

CONCLUSION: Falls-related injuries are a significant public health issue for older Chinese people. Further studies using prospective design to identify risk factors and the economic burden of fall-related injuries are needed.

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PDF Y Endnote Y

Injury mechanism, epidemiology, and Hospital trends of scapula fractures: a 10-year retrospective study of the National Trauma Data Bank

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(Copyright © 2019, Elsevier Publishing)

DOI 10.1016/j.injury.2019.01.017 **PMID** 30661668

Abstract

BACKGROUND: This 10 year retrospective study of the NTDB is the first to describe trends in scapula fracture diagnosis frequency, epidemiology, injury mechanisms and the type of hospital where the condition is treated.

METHODS: Demographics, ISS scores, hospital data, mechanism of injury, complications, and hospital length of stay were recorded for patients with diagnosed scapula fractures (ICD-9, 811.0) recorded in the NTDB, v7.2 (2002-2012). Mean and standard deviation for continuous variables and proportions for binary variables are calculated.

RESULTS: The prevalence of scapula fractures in all patients submitted to the NTDB (2002-2012) was 1.74%. Between 2006-2007, the reported incidence doubled from 1% to 2.2%. There was a predominance of injury to white males (75% and 78% respectively). Forty-one percent were treated

at a Level 1 trauma center and had a mean ISS of 20.1 (SD-11.8). Scapula fracture rates declined in patients 0-19 years and increased in the 60-79 and 80+ age groups. The increasing incidence of the aged population is also reflected in the increase of falls as the mechanism of injury in the elderly population.

CONCLUSION: This study is the first to describe a full decade of scapula fracture epidemiology on a national scale. The number of diagnosed scapula fractures increased substantially in the NTDB between 2002-2012. Scapula fractures diagnosed in the geriatric demographic and fractures resulting from falls are both on the rise, whereas the reported incidence is decreasing in the younger demographic. Additionally, fractures as a result of motor vehicle accidents also decreased precipitously during the reported decade.

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Occupational therapist led environmental assessment and modification to prevent falls: review of current practice in an Australian rural health service

Pighills A, Tynan A, Furness L, Rawle M.

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(Copyright © 2019, John Wiley and Sons)

DOI 10.1111/1440-1630.12560 **PMID** 30671975

Abstract

INTRODUCTION: Environmental assessment and modification is an effective approach to reducing falls, particularly when provided by occupational therapists to high risk populations. Environmental assessment and modification has been incorporated into many national and international falls prevention guidelines, however, evidence suggests that it is not being implemented in practice. The aim of this study is to identify factors that support the local adoption of best practice environmental assessment for falls prevention within a rural health service.

METHODS: A concurrent mixed methods study using the Integrated Promoting Action on Research Implementation in Health Services framework was employed. The setting was a health service in Queensland, encompassing rural and regional populations. An audit, based on best practice, was conducted on eligible medical charts. An online survey of occupational therapists' knowledge, attitudes, confidence and experience of environmental assessment and modification was completed. Focus group discussions were also carried out. Quantitative data were presented using descriptive statistics and discussions were thematically analysed.

RESULTS: Twenty-four occupational therapists were identified as meeting the inclusion criteria. Fourteen participated in the survey and 12 of those surveyed also participated in the focus groups. Fifty-eight patients' medical charts were audited, which included entries from occupational therapists who completed the survey and focus groups and some who did not. Survey results identified that most occupational therapists were aware of, confident, and experienced in environmental assessment and modification for falls prevention. Chart audits, however, revealed that none of the patients received this intervention. Thematic analysis of focus group discussions identified three key themes which influenced uptake of environmental assessment and modification: confidence in, and awareness of evidence; key stakeholders' support and knowledge

of occupational therapy; and, perceived impact of time and resources required for implementation. RESULTS also suggested that several contextual issues unique to rural and regional service delivery influenced uptake, including: geographical and sociocultural diversities of communities being served; differing organisational structures which result in occupational therapists being line managed by other professions; and, limited access to professional development. Availability of local peer support, and engagement of multiple stakeholders from various professions were highlighted as key facilitators to support change.

CONCLUSION: Occupational therapists reported that they carried out best practice environmental assessment and modification for falls prevention but the medical chart audit provided no evidence of this happening in practice. This discrepancy requires further investigation. This study provided an understanding of factors that influence whether occupational therapists implement best practice environmental assessment and modification in a rural health service.

FINDINGS could be used to guide the translation of evidence into practice across similar settings.

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Older adults' perceptions of their fall risk and prevention strategies after transitioning from hospital to home

Shuman CJ, Montie M, Hoffman GJ, Powers KE, Doettl S, Anderson CA, Titler MG.

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Abstract

Falls are common adverse events following hospital discharge. However, prevention programs are not tailored for older patients transitioning home. To inform development of transitional fall prevention programs, nine older adults designated as being at risk of falls during hospitalization who were recently discharged home were asked about their perceptions of fall risk and prevention, as well as their knowledge and opinion of materials from the Centers for Disease Control and Prevention Stopping Elderly Accidents, Deaths & Injuries Initiative. Using the constant comparative method, five themes were identified: Sedentary Behaviors and Limited Functioning; Prioritization of Social Involvement; Low Perceived Fall Risk and Attribution of Risk to External Factors; Avoidance and Caution as Fall Prevention; and Limited Falls Prevention Information During Transition from Hospital to Home. Limited awareness of and engagement in effective fall prevention may heighten recently discharged older adults' risks for falls. Prevention programs tailored to the post-discharge period may engage patients in fall prevention, promote well-being and independence, and link hospital and community efforts. [*Journal of Gerontological Nursing*, 45(1), 23-30].

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Performance of older adults under dual task during stair descent

Zhang C, Sun W, Song Q, Gu H, Mao D.

J. Exerc. Sci. Fit. 2018; 16(3): 99-105.

Affiliation: School of Sport and Health, Shandong Sport University, China.



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Abstract

BACKGROUND: Stair walking, especially in dual-task conditions, is a challenging daily routine for older adults. The purpose of this study is to investigate gait and postural control and explore the possible reasons for the fall risk encountered by healthy older adults under dual-task conditions during stair descent.

METHODS: Thirty healthy older female adults (aged 67 ± 1 years, standing height of 1.64 ± 0.17 m, body mass of 66.01 ± 4.27 kg, and education of 8.92 ± 0.95 years) were randomly recruited from local communities and instructed to perform stair descent in a step-by-step manner on a standardized staircase under single-task (stair descent) and dual-task (stair descent with subtraction in series of three) conditions. Multivariate analysis of variance with repeated measures was performed to test the significance of multiple comparisons of kinematic variables in the single- and dual-task conditions. A paired *t*-test with Bonferroni adjustment was performed when a significant difference was detected.

RESULTS: Gait speed, foot clearance, and hip flexion angle at the cross of the support leg decreased considerably, and step width increased remarkably among the healthy older adults under the dual-task condition relative to the situation in the single-task condition during stair descent.

CONCLUSION: The gait performance and posture control of the healthy older female adults were disturbed by the second cognitive task. These adults implemented a compensation strategy to enhance their body stability under the dual-task condition during stair descent.

PDF Y Endnote Y

Predischarge home visits after hip fracture: a randomized controlled trial

Lockwood KJ, Harding KE, Boyd JN, Taylor NF.

Clin. Rehabil. 2019; ePub(ePub): ePub.

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Abstract

OBJECTIVE: The objective of this study is to investigate whether home assessment visits prior to hospital discharge for patients recovering from hip fracture reduce falls and prevent hospital readmissions, within the first 30 days and six months after discharge home.

DESIGN: A randomized controlled trial was conducted.

SETTING: The study setting included hospital wards and the community.

PARTICIPANTS: The study included adults 50 years and over recovering from hip fracture (*n* = 77).

INTERVENTION: Both groups received inpatient rehabilitation and hospital-based discharge planning. In addition, the intervention group received a home assessment visit by an occupational therapist prior to discharge from hospital.

MAIN MEASURES: Primary outcomes were falls and hospital readmissions. Secondary outcome measures included Functional Independence Measure, Functional Autonomy Measurement Scale, Nottingham Extended Activities of Daily Living Scale, EuroQol five dimension scale questionnaire and Falls Efficacy Scale-International.



RESULTS: The intervention group had fewer hospital readmissions in the first 30 days compared to the control group (intervention n = 1, control n = 10; odds ratio (OR) 12.9, 95% confidence interval (CI) 1.5 to 99.2). The intervention group was observed to have fewer falls than controls in the 30 days after discharge (intervention n = 6, control n = 14; incidence rate ratio (IRR) = 0.41, 95% CI 0.15 to 1.11). Between-group differences favoured the intervention group for functional independence at six months (11.2 units, 95% CI 4.2 to 18.2). There were no other between-group differences.

CONCLUSION: Home assessment visits by occupational therapists prior to hospital discharge for patients recovering from hip fracture reduced the number of readmissions to hospital, increased functional independence at six months and may have reduced the risk of falls in the first 30 days after discharge.

PDF Y Endnote Y

Relationship between nutritional status and frailty in hospitalized older patients

Hong X, Yan J, Xu L, Shen S, Zeng X, Chen L.

Clin. Interv. Aging 2019; 14: 105-111.

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DOI 10.2147/CIA.S189040 **PMID** 30666096 **PMCID** PMC6330965

Abstract

OBJECTIVE: The definition of frailty still lacks quantitative biomarkers. This study aimed to investigate the relationship between nutrition-related biomarkers and frailty in hospitalized older patients.

MATERIALS AND METHODS: This is a cross-sectional study including 380 hospitalized older patients. The patients were categorized as nonfrail (n=140), prefrail (n=81), and frail (n=159) by the criteria of frailty phenotype. The nutritional status was assessed using the mini nutritional assessment-short form (MNA-SF), levels of serum transferrin (TFN), prealbumin (PA), total protein (TP), albumin (ALB), retinol-binding protein (RBP), and hemoglobin (Hb).

RESULTS: The grip strength, levels of serum TFN, TP, ALB, Hb, and MNA-SF scores all decreased significantly in the order of nonfrail, prefrail, and frail groups ($P < 0.01$). Older ages, more fall incidents, and higher polypharmacy ratio were observed in the frail and prefrail groups than in the nonfrail group ($P < 0.05$). Univariate logistic regression analysis showed that frailty was positively related to age, polypharmacy, fall history, nutritional status, levels of TFN, PA, TP, ALB, RBP, and Hb, but was negatively related to grip strength. Ordinal logistic regression analysis showed that older patients who were well nourished, with higher levels of TFN, TP, and ALB were less likely to develop into frailty.

CONCLUSION: Hospitalized older patients with better nutritional status and higher levels of TFN, TP, and ALB were less likely to develop into frailty. These nutrition-related biomarkers may be used for the evaluation of nutritional status and frailty in older patients.

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Relationship between physical and cognitive performance in community dwelling, ethnically diverse older adults: a cross-sectional study

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DOI 10.7717/peerj.6159 **PMID** 30643695 **PMCID** PMC6327882

Abstract

BACKGROUND: Regular exercise training stimulates physiological adaptations to improve physical performance, reduce chronic disease risk, and slow age-related cognitive decline. Since the physiological mechanisms responsible for aging-associated cognitive decline are not yet fully understood, and training-induced physiological adaptations responsible for performance measure improvements are specific to the type (aerobic vs. strength) and intensity of training, studies are needed to assess the relationships between physical performance measures and cognitive performance in older adults. These results could be used to guide exercise prescriptions with the goal of improving age-related cognitive performance. The purpose of this study was to investigate the relationship between physical performance measures and cognitive performance in a population of community dwelling, ethnically diverse older adults.

METHODS: The cognitive performance of ninety independent, community dwelling participants (69 female, 21 male), aged 75 ± 9.5 years (mean \pm SD) was measured with the Modified Mini-Mental State Test (3MS), Trailmaking Tests A and B (TMT A & B), and the Animal Naming test. Sociodemographic (age, sex, ethnicity, medication use, years of education) and anthropometric data were collected, physical activity was assessed with the Physical Activity Scale for the Elderly (PASE), peak hand-grip strength, distance walked in the 6MWT, and heart rate pre-, during, and up to 5 min. post- 6MWT were measured. Forward stepwise multiple regression analyses were performed with each cognitive measure as a dependent variable.

RESULTS AND DISCUSSION: Controlling for sociodemographic covariates, peak heart rate during the 6MWT (6MWT HR_{PEAK}) was positively correlated with performance in the 3MS ($p < 0.017$), and TMT A ($p < 0.001$) and B ($p < 0.029$). Controlling for sociodemographic covariates, PASE was positively ($p = 0.001$), and β -blocker use negatively ($p = 0.035$), correlated with performance on the Animal Naming test. Also, controlling for sociodemographic covariates, PASE was positively correlated with performance on the TMT A ($p = 0.017$). Here we show that higher peak heart rate during the 6MWT is positively correlated with cognitive performance in a population of community dwelling, ethnically diverse older adults (ages 60-95 years).

CONCLUSION: Higher peak heart rate during the 6MWT was found to be independently and positively correlated with cognitive function in community-dwelling older adults. Although additional work is needed, these results are promising and suggest that physicians, exercise professionals, and/or fitness/fall prevention programs may use peak heart rate during the 6MWT to easily monitor exercise intensity to support cognitive health.

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Tai Chi Chuan can improve balance and reduce fear of falling in community dwelling older adults: a randomized control trial

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J. Exerc. Rehabil. 2018; 14(6): 1024-1031.

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(Copyright © 2018, Korean Society of Exercise Rehabilitation)

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Abstract

Fear of falling and balance impairment are prevalent in older adults and cause major morbidities for this population. The aim of this study was to evaluate the effect of Tai Chi Chuan on balance and fear of falling in community-dwelling older adults. This study was a single-blind randomized control trial. Sixty older adults were randomly allocated into two groups using a 4-cell random block design. The participants of intervention group were trained in Tai Chi Chuan for eight weeks, twice a week, and 55 min in each session. Balance and fear of falling were assessed by Timed Up and Go (TUG) test, Tinetti test and Falls Efficacy Scale International in baseline and after 8 weeks. After eight weeks of intervention, the mean scores of the TUG and Tinetti scales in the intervention group were improved significantly compared to the baseline and the control group ($P < 0.001$). Moreover, the intervention group showed a significant reduction in fear of falling scores ($P < 0.001$), while those in the control group remained unchanged. Tai Chi Chuan effectively improves the balance and fear of falling and could be considered as a practical and useful method for fall prevention in community-dwelling older adults.

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Virtual reality therapy for rehabilitation of balance in the elderly: a systematic review and META-analysis

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Adv. Rheumatol. 2018; 58(1): e18.

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Abstract

Virtual reality therapy (VRT) has clinical indications in rehabilitation programs for the elderly; however, there is still no consensus on the recovery of body balance. The objective of this review was to summarize the effects of physical therapy interventions with VRT in the rehabilitation of balance in the elderly. The studies were identified via a systematic search in the databases PubMed, SciELO, LILACS and PEDro from 2010 onward. Clinical trials with interventions that involved VRT in the elderly were included in the study and were subjected to methodological quality analysis using the PEDro scale. A random effects meta-analysis of the studies that analyzed balance using the Berg Balance Scale and the Timed Up and Go (TUG) test was performed. Ten articles met the inclusion criteria, which presented variability in relation to the types of interventions used (70%) and the outcomes analyzed (60%). The mean duration of the interventions was 13.90 (± 5.08) weeks, with at least two weekly sessions (± 0.73). There were positive results in relation to improvements in both

dynamic and static balance (70% of the studies), mobility (80%), flexibility (30%), gait (20%) and fall prevention (20%). A summary of the meta-analysis showed mean effects on the Berg scale (standardized mean difference [SMD]: -0.848; 95% CI: -1.161; -0.535) and the TUG test (SMD: 0.894; 95% CI: 0.341; 1.447). Individually, virtual reality is promising in rehabilitation programs for the elderly. The overall measures were sufficient to show beneficial effects of the therapy on balance in the elderly.

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Assessing the effectiveness of engaging patients and their families in the three-step fall prevention process across modalities of an evidence-based fall prevention toolkit: an implementation science study

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J. Med. Internet. Res. 2019; 21(1): e10008.

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(Copyright © 2019, Centre for Global eHealth Innovation)

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Abstract

BACKGROUND: Patient falls are a major problem in hospitals. The development of a Patient-Centered Fall Prevention Toolkit, Fall TIPS (Tailoring Interventions for Patient Safety), reduced falls by 25% in acute care hospitals by leveraging health information technology to complete the 3-step fall prevention process-(1) conduct fall risk assessments; (2) develop tailored fall prevention plans with the evidence-based interventions; and (3) consistently implement the plan. We learned that Fall TIPS was most effective when patients and family were engaged in all 3 steps of the fall prevention process. Over the past decade, our team developed 3 Fall TIPS modalities-the original electronic health record (EHR) version, a laminated paper version that uses color to provide clinical decision support linking patient-specific risk factors to the interventions, and a bedside display version that automatically populates the bedside monitor with the patients' fall prevention plan based on the clinical documentation in the EHR. However, the relative effectiveness of each Fall TIPS modality for engaging patients and family in the 3-step fall prevention process remains unknown. **OBJECTIVE:** This study aims to examine if the Fall TIPS modality impacts patient engagement in the 3-step fall prevention process and thus Fall TIPS efficacy.

METHODS: To assess patient engagement in the 3-step fall prevention process, we conducted random audits with the question, "Does the patient/family member know their fall prevention plan?" In addition, audits were conducted to measure adherence, defined by the presence of the Fall TIPS poster at the bedside. Champions from 3 hospitals reported data from April to June 2017 on 6 neurology and 7 medical units. Peer-to-peer feedback to reiterate the best practice for patient engagement was central to data collection.

RESULTS: Overall, 1209 audits were submitted for the patient engagement measure and 1401 for the presence of the Fall TIPS poster at the bedside. All units reached 80% adherence for both measures. While some units maintained high levels of patient engagement and adherence with the poster protocol, others showed improvement over time, reaching clinically significant adherence (>80%) by the final month of data collection.



CONCLUSIONS: Each Fall TIPS modality effectively facilitates patient engagement in the 3-step fall prevention process, suggesting all 3 can be used to integrate evidence-based fall prevention practices into the clinical workflow. The 3 Fall TIPS modalities may prove an effective strategy for the spread, allowing diverse institutions to choose the modality that fits with the organizational culture and health information technology infrastructure.

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Characteristics of falls with damage to hospitalized patients

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Rev. Gaucha Enferm. 2019; 40(Suppl): e20180307.

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DOI 10.1590/1983-1447.2019.20180307 **PMID** 30652810

Abstract

OBJECTIVE: Describe the characteristics of falls in patients with damage, their risk factors and injuries.

METHOD: Retrospective and longitudinal study of 260 records of falls with damage of adult patients in clinical and surgical units of a general hospital, from September 2012 to June 2017. Data were collected in May 2018 from the electronic fall and electronic record research instrument, and the statistical analysis was described.

RESULTS: There were 260 falls with damage, mostly in the elderly (78%), female (55%), in clinical treatment (68%) and unaccompanied (59.4%). The falls occurred at the same height (63.4%) and in the patient's room (67.3%). The severity of the damage was mild in 80.8% of cases, severe in 11.9% and moderate in 7.3%.

CONCLUSION: Improving understanding of falls and their consequences can assist professionals in identifying and assessing risks and in establishing preventive measures.

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Chronic distal sensory polyneuropathy is a major contributor to balance disturbances in persons living with HIV

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J. Acquir. Immune Defic. Syndr. (LWW) 2019; ePub(ePub): ePub.

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(Copyright © 2019, Lippincott Williams and Wilkins)

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Abstract

BACKGROUND: Medical comorbidities accumulate in older persons living with HIV (PLWH), causing disability and reduced quality of life. Sensory neuropathy and polypharmacy may contribute to balance difficulties and falls. The contribution of neuropathy is understudied.

OBJECTIVE: To evaluate the contribution of chronic distal sensory polyneuropathy (cDSPN) to

balance disturbances among PLWH.

METHODS: Ambulatory PLWH and HIV- adults (N=3,379) were prospectively studied. All participants underwent a neurologic examination to document objective abnormalities diagnostic of cDSPN and reported neuropathy symptoms including pain, paresthesias and numbness. Participants provided detailed information regarding balance disturbance and falls over the previous ten years. Balance disturbances were coded as minimal or none and mild-to-moderate. Covariates included age, HIV disease and treatment characteristics and medications (sedatives, opioids, antihypertensives).

RESULTS: Eleven percent of participants reported balance disturbances at some time during the last ten years; the rate in PLWH participants exceeding that for HIV- (odds ratio [OR] 2.59, 95% CI 1.85-3.64). Fifty-two percent met criteria for cDSPN. Balance problems were more common in those with cDSPN (OR=3.3 [2.6-4.3]). Adjusting for relevant covariates, balance disturbances attributable to cDSPN were more frequent among HIV+ than HIV- (interaction p=0.001). Among individuals with cDSPN, older participants were much more likely to report balance disturbances than younger ones.

CONCLUSIONS: Chronic distal sensory polyneuropathy contributes to balance problems in PLWH. Assessments of cDSPN in older PLWH should be a clinical priority to identify those at risk and to aid in fall prevention and the ensuing consequences, including bone fractures, subdural hematoma, hospital admissions and fatal injury.

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Prolonged QT syndrome due to donepezil: a reversible cause of falls?

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Clin. Med. (Lond.) 2019; 19(1): 80-81.

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Abstract

Prolonged QT syndrome precipitates cardiac arrhythmias such as torsades de pointes (TdP) resulting in cardiogenic syncope or sudden death. We report a case of prolonged QT syndrome caused by donepezil which resulted in a fall and hip fracture. In this case female sex, advanced age and diuretic use may have increased the risk of recurrent syncope and potential underlying TdP. Cessation of donepezil resulted in normalisation of the QT interval. This case highlights a lesser known side effect of this dementia drug. It also reminds us of the importance of taking a thorough drug history while considering potential drug toxicity/interactions as part of the comprehensive geriatric assessment.

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Re: The association between lower urinary tract symptoms and falls:

Wein AJ.

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(Copyright © 2019, American Urological Association, Publisher Elsevier Publishing)

DOI 10.1097/01.JU.0000553371.14072.ce **PMID** 30664595

Abstract Editorial comment on Gibson et al 2018 article with above title [Abstract unavailable]

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Third delay in traumatic brain injury: time to management as a predictor of mortality

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J. Neurosurg. 2019; ePub(ePub): ePub.

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(Copyright © 2019, American Association of Neurological Surgeons)

DOI 10.3171/2018.8.JNS182182 **PMID** 30660121

Abstract

OBJECTIVE: Traumatic brain injury (TBI) is a global epidemic with an increasing incidence in low- and middle-income countries (LMICs). The time from arrival at the hospital to receiving appropriate treatment ("third delay") can vary widely in LMICs, although its association with mortality in TBI remains unknown.

METHODS: A retrospective cohort analysis with multivariable logistic regression was conducted using the Toward Improved Trauma Care Outcomes in India database, which contains data from 4 urban trauma centers in India from 2013-2015.

RESULTS: There were 6278 TBIs included in the cohort. The patients' median age was 39 years (interquartile range 27-52 years) and 80% of patients were male. The most frequent mechanisms of injury were road traffic accidents (52%) and falls (34%). A majority of cases were transfers from other facilities (79%). In-hospital 30-day mortality was 27%; of patients who died, 21% died within 24 hours of arrival. The median third delay was 10 minutes (interquartile range 0-60 minutes); 34% of cases had moderate third delay (10-60 minutes) and 22% had extended third delay (≥ 61 minutes). Overall 30-day mortality was associated with moderate third delay (OR 1.3, $p = 0.001$) and extended third delay (OR 1.3, $p = 0.001$) after adjustment by pertinent covariates. This effect was pronounced for 24-hour mortality: moderate and extended third delays were independently associated with ORs of 3.4 and 3.8, respectively, for 24-hour mortality (both $p < 0.001$).

CONCLUSIONS: Third delay is associated with early mortality in patients with TBI, and represents a target for process improvement in urban trauma centers.

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