

SafetyLit July 3, 2016

Age-related imbalance is associated with slower walking speed: an analysis from the National Health and Nutrition Examination Survey

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J. Geriatr. Phys. Ther. 2016; ePub(ePub): ePub.

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(Copyright © 2016, American Physical Therapy Association)

DOI 10.1519/JPT.000000000000093 **PMID** 27341325

Abstract

BACKGROUND AND PURPOSE: Walking speed is an important dimension of gait function and is known to decline with age. Gait function is a process of dynamic balance and motor control that relies on multiple sensory inputs (eg, visual, proprioceptive, and vestibular) and motor outputs. These sensory and motor physiologic systems also play a role in static postural control, which has been shown to decline with age. In this study, we evaluated whether imbalance that occurs as part of healthy aging is associated with slower walking speed in a nationally representative sample of older adults.

METHODS: We performed a cross-sectional analysis of the previously collected 1999 to 2002 National Health and Nutrition Examination Survey (NHANES) data to evaluate whether age-related imbalance is associated with slower walking speed in older adults aged 50 to 85 years (n = 2116). Balance was assessed on a pass/fail basis during a challenging postural task-condition 4 of the modified Romberg Test-and walking speed was determined using a 20-ft (6.10 m) timed walk. Multivariable linear regression was used to evaluate the association between imbalance and walking speed, adjusting for demographic and health-related covariates. A structural equation model was developed to estimate the extent to which imbalance mediates the association between age and slower walking speed.

RESULTS: In the unadjusted regression model, inability to perform the NHANES balance task was significantly associated with 0.10 m/s slower walking speed (95% confidence interval: -0.13 to -0.07; $P < .01$). In the multivariable regression analysis, inability to perform the balance task was significantly associated with 0.06 m/s slower walking speed (95% confidence interval: -0.09 to -0.03; $P < .01$), an effect size equivalent to 12 years of age. The structural equation model estimated that age-related imbalance mediates 12.2% of the association between age and slower walking speed in older adults.

CONCLUSIONS: In a nationally representative sample, age-related balance limitation was associated with slower walking speed. Balance impairment may lead to walking speed declines. In addition, reduced static postural control and dynamic walking speed that occur with aging may share common etiologic origins, including the decline in visual, proprioceptive, and vestibular sensory and motor functions.

PDF N Endnote Y

**Combined exercise is more effective than aerobic exercise in the improvement of fall risk factors:
A randomized controlled trial in community-dwelling older men**

Sousa N, Mendes R, Silva A, Oliveira J.

Clin. Rehabil. 2016; ePub(ePub): ePub.

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(Copyright © 2016, Sage Publications)

DOI 10.1177/0269215516655857 **PMID** 27353246

Abstract

OBJECTIVE: To compare the long-term effects of two community-based exercise programs on fall risk factors, such as balance, postural control, mobility and leg strength, in community-dwelling older men.

DESIGN: Single-blinded randomized controlled trial, comparing three groups, with follow-ups at eight, 16, 24 and 32 weeks.

SETTING: Older men independent-living residing in Maia city, Portugal.

PARTICIPANTS: A total of 66 older men (aged 69.0 ±4.9 years) were randomly assigned to an aerobic exercise group (n = 22), a combined aerobic and resistance exercise group (n = 22) or a control group (n = 22).

INTERVENTIONS: Both community-based exercise programs consisted of three sessions each week for 32 consecutive weeks and were planned for moderate-to-vigorous intensity. The control group had no exercise intervention. **MEASUREMENTS:** Main outcomes were measured by the Timed Up and Go Test, functional reach test, 30-second chair stand test and 6-minute walk test, on five different occasions.

RESULTS: Repeated measures of analysis of covariance revealed significant main effects between time × group interaction in all outcomes over time (Timed Up and Go Test: p < 0.001; functional reach test: p = 0.002; 30-second chair stand: p = 0.001; 6-minute walk test: p < 0.001). Both exercise groups reported improvements; however, better performance was identified in the combined aerobic and resistance exercise group compared with the aerobic exercise group (-20.3% vs. -9.1% on the Timed Up and Go Test, +27.5% vs. +10.9% on the functional reach test, +20.8% vs. +7.3% on 30-second chair stand, +10.9% vs. +3.5% on 6-minute walk test).

CONCLUSIONS: Adding resistance exercise to aerobic exercise improves factors associated with an increased risk of falls. However, both exercise regimes, combined or aerobic alone, are more effective than no exercise in the reduction of fall risk factors. ClinicalTrials.org #NCT01874132.

PDF Y Endnote Y

Developing methods of repurposing electronic health record data for identification of older adults at risk of unintentional falls

Baus A, Zullig K, Long D, Mullett C, Pollard C, Taylor H, Coben JH.

Perspect. Health Inf. Manag. 2016; 13(Spring): e1b.

(Copyright © 2016, American Health Information Management Association)

DOI unavailable **PMID** unavailable

Abstract

Nationally, nearly 40 percent of community-dwelling adults age 65 and older fall at least once a year, making unintentional falls the leading cause of both fatal and nonfatal injuries among this age group. Addressing this public health problem in primary care offers promise. However, challenges in

incorporating fall risk screening into primary care result in a problem of missed opportunities for screening, counseling, intervention, and ultimately prevention. Given these barriers, this study examines the potential for the innovative use of routinely collected electronic health record data to provide enhanced clinical decision support in busy, often resource-thin primary care environments. Using de-identified data from a sample of West Virginia primary care centers, we find that it is both feasible and worthwhile to repurpose routinely collected data for the purpose of identification of older adults at risk of falls. Searching of both free-text and semistructured data was particularly valuable.

PDF Y Endnote Y

Effect of group activities on health promotion for the community-dwelling elderly

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J. Rural Med. 2016; 11(1): 17-24.

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(Copyright © 2016, Japanese Association of Rural Medicine)

DOI 10.2185/jrm.2903 **PMID** 27313798

Abstract

OBJECTIVE: In Japan, the Integrated Community Care System aims to support residents to live as independently as possible at home. Koreisya-Kyoshitsu and Fureaiikiiki salons are two types of group activities for community-dwelling elderly. We investigated effective ways of conducting such activities.

METHODS: We analyzed 96 subjects from 8 salons and 354 subjects from 10 Koreisya-Kyoshitsu. Self-completed questionnaires included the following: attributes, the Motor Fitness Scale (MFS), revised Philadelphia Geriatric Center Morale Scale (PGCMS), Measurement of Psychological Independence (MPI), instrumental activities of daily living (IADL), and self-rated health status (SRH). Follow-up assessment was conducted 6 months later. Representatives from 8 salons and staff members from 10 Koreisya-Kyoshitsu answered an additional questionnaire on management.

RESULTS: In Koreisya-Kyoshitsu, physical performance (MFS) ($p = 0.007$) and subjective well-being (PGCMS) ($p = 0.001$) improved significantly, whereas psychological independence (MPI) deteriorated significantly ($p = 0.015$). The MFS scores significantly improved in the sub-group with a high number of sessions (7 or more) ($p = 0.043$), as well as in the non-volunteer sub-group ($p = 0.004$). The PGCMS scores significantly improved in the sub-group with a high number of sessions ($p < 0.001$). The MPI scores significantly deteriorated in the sub-group with a low frequency of sessions (6 or less) and in the non-volunteer sub-group ($p = 0.013$ and $p = 0.010$, respectively). In salons, the frequency of going out decreased significantly ($p = 0.049$). Functional status (IADL) significantly improved in the "twice or more a month" sub-group ($p = 0.046$), whereas it significantly deteriorated in the "once a month" sub-group ($p = 0.004$). The proportion of volunteers/organizers in Koreisya-Kyoshitsu (23.4%) was significantly lower than that in salons (39.6%).

CONCLUSION: The frequency (number) of sessions, but not the volunteer/non-volunteer attribute, was a key factor in obtaining the health promotion effects of group activities in both Koreisya-Kyoshitsu and salons.

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Etiology of syncope and unexplained falls in elderly adults with dementia: Syncope and Dementia (SYD) Study

Ungar A, Mussi C, Ceccofiglio A, Bellelli G, Nicosia F, Bo M, Riccio D, Martone AM, Guadagno L, Noro G, Ghidoni G, Rafanelli M, Marchionni N, Abete P.

J. Am. Geriatr. Soc. 2016; ePub(ePub): ePub.

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(Copyright © 2016, John Wiley and Sons)

DOI 10.1111/jgs.14225 **PMID** 27351866

Abstract

OBJECTIVES: To investigate the etiology of transient loss of consciousness (T-LOC) suspected to be syncope and unexplained falls in elderly adults with dementia.

DESIGN: Prospective, observational, multicenter study.

SETTING: Acute care wards, syncope units or centers for the diagnosis of dementia.

PARTICIPANTS: Individuals aged 65 and older with a diagnosis of dementia and one or more episodes of T-LOC of a suspected syncopal nature or unexplained falls during the previous 3 months were enrolled.

MEASUREMENTS: The causes of T-LOC suspected to be syncope and unexplained falls were evaluated using a simplified protocol based on European Society of Cardiology guidelines.

RESULTS: Of 357 individuals enrolled, 181 (50.7%) had been referred for T-LOC suspected to be syncope, 166 (46.5%) for unexplained falls, and 10 (2.8%) for both. An initially suspected diagnosis of syncope was confirmed in 158 (87.3%), and syncope was identified as the cause of the event in 75 (45.2%) of those referred for unexplained falls. Orthostatic hypotension was the cause of the event in 117 of 242 (48.3%) participants with a final diagnosis of syncope.

CONCLUSION: The simplified syncope diagnostic protocol can be used in elderly people with dementia referred for suspected syncope or unexplained falls. Unexplained falls may mask a diagnosis of syncope or pseudosyncope in almost 50% of cases. Given the high prevalence of orthostatic syncope in participants (~50%), a systematic reappraisal of drugs potentially responsible for orthostatic hypotension is warranted.

PDF Y Endnote Y

Geriatric distal femur fracture: are we underestimating the rate of local and systemic complications?

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Injury 2016; ePub(ePub): ePub.

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(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.injury.2016.05.024 **PMID** 27311551

Abstract

BACKGROUND: Low energy distal femur fractures often occur in a fragile elderly population that is prone to local and systemic complications following operative treatment of extremity fractures. The nonunion rate and early complication rate following laterally based locked plating in this specific fracture are not well described.

METHODS: We conducted a retrospective cohort study conducted at three affiliated tertiary care hospitals to evaluate nonunion, early post operative complications, discharge disposition, length of stay, and mortality in patients over 60 years old undergoing laterally based locked plating of a low energy distal femur fracture.

RESULTS: Forty-four out of 176 patients were deceased at one year (25%). Predictors of one year mortality included older age, higher Charlson Comorbidity Index (CCI), and delay to surgery greater than 2days ($p < 0.001$). Of 99 patients alive and with follow up at one year, 24 (24%) developed a nonunion and 21 of 24 required nonunion surgery. Development of a surgical site infection was statistically significantly correlated with development of nonunion. Age and CCI did not predict development of nonunion. Average length of stay was 10days and 82% of patients were discharged to a skilled nursing facility. Thirty eight percent of patients experienced at least one postoperative systemic complication.

CONCLUSIONS: Laterally based locked plating of the low energy geriatric distal femur fracture is most often followed by a tumultuous post-operative course with a high rate of local and systemic complications including death, nonunion, and extended hospital stays. **LEVEL OF EVIDENCE:** Level III prognostic.

PDF Y Endnote Y

Implementation of a trauma service activation and admission policy for very elderly trauma patients: impact on hospital efficiency and patient outcomes

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Am. Surg. 2016; 82(6): 493-496.

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DOI unavailable **PMID** 27305879

Abstract

Very elderly trauma patients (VETs) were routinely admitted to nonsurgical services at our institution; therefore, a trauma service activation and admission policy was implemented. Our goal was to determine policy success and impact on efficiency and outcomes. VETs, defined as trauma patients aged >89 years, admitted before and after policy implementation were reviewed. Demographics included age, gender, Injury Severity Score, Glasgow Coma Score, admission diagnosis, mechanism of injury, admission service, and comorbidities. Efficiency included intensive care unit length of stay (ICU-LOS) and hospital length of stay (H-LOS). Outcomes included complications, discharge disposition, and mortality. Statistical analysis included Chi square, Fisher's exact test, and regression analyses, significance denoted by $P < 0.05$. 375 VETs were investigated. Demographic analysis revealed differences in Injury Severity Score ($9.4 + 5.4$ vs $7.2 + 4.0$, $P < 0.001$), coronary artery disease (2.1% vs 38.2%, $P < 0.001$), neurologic disease (7.4% vs 28.24%, $P < 0.001$), and intracranial hemorrhage (15.6% vs 6.1%, $P = 0.01$). The most common mechanism of injury and admission diagnosis was fall and femur fracture. VETs admitted to the trauma service increased from 28.3 per cent to 40.5 per cent, $P = 0.02$. Efficiency analysis revealed differences in ICU-LOS ($4.0 + 4.2$ days vs $0.7 + 1.3$ days, $P < 0.001$) and H-LOS ($7.3 + 4.9$ days vs $6.3 + 5.5$ days, $P = 0.005$). Outcomes analysis revealed differences in pneumonia (0.8% vs 5.3%, $P = 0.01$), acute respiratory distress syndrome (0% vs 2.3%, $P = 0.04$), discharge to skilled nursing facility (75.8% vs 57.3%, $P < 0.001$), but no difference in mortality. Regression analyses revealed that trauma service admission was

associated with decreased ICU-LOS and H-LOS. The trauma service activation and admission policy for VETs led to improved hospital efficiency.

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Improving nursing home falls management program by enhancing standard of care with collaborative care multi-interventional protocol focused on fall prevention

Jackson KM.

J. Nurs. Educ. Pract. 2016; 6(6): 84-96.

(Copyright © 2016, Sciedu Press)

DOI 10.5430/jnep.v6n6p84 **PMID** unavailable

Abstract

PURPOSE: The objective of this quality assurance project was to implement a collaborative multi-strategy fall risk management program to reduce patient falls within a nursing home. **Intervention:** A multi-interventional program based on recommendations from Agency for Healthcare Quality was instituted. Direct care providers were required to conduct every 2-hour rounding on patients. The staff was required to participate in organizational education and training on fall prevention strategies. Patients were encouraged to participate in activities outside of their rooms throughout the day. Monthly meetings were held to review fall occurrences, collaborate on project initiatives, and discuss trends in fall rates. **Setting and Sample:** The setting for this project was a 150-bed nursing home in suburban Texas. A total of 10 participants were recruited for the fall team, and interventions were performed on each of three nursing units. The median age of the patient population was 75 years old of which 46% are males, and 53% are females. **Measurement:** The Falls Management Program-How to Reduce Fall questionnaire was completed before and after the intervention period to evaluate participants' knowledge about falls and prevention. Quality assurance data were reviewed, analysis of documentation for rounding, activities, and falls data was completed.

RESULTS: The pre-implementation mean fall rate per month was 24.5 (average monthly census was 120 patients), compared to 2-month and 4-month post-implementation mean rates which were 13.5 (average monthly census was 116 patients), and 9.5 (average monthly census was 111 patients).

DISCUSSION: Implementation of best quality fall prevention programs can improve the overall health and quality of life of patients. Care providers must be vigilant in consistently facilitating evidence-based practices that contribute to best outcomes for every patient. In so doing, enhanced standards of care will circumvent patient falls and promote best patient outcomes.

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Intra-individual changes in ambulation associated with falls in a population of vulnerable older adults in long-term care

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Arch. Phys. Med. Rehabil. 2016; ePub(ePub): ePub.

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(Copyright © 2016, Elsevier Publishing) **DOI** 10.1016/j.apmr.2016.05.013 **PMID** 27296900

Abstract

OBJECTIVES: The aim of this pilot study is to examine how intra-individual changes in ambulation characteristics may be used to predict falls.

DESIGN: Longitudinal study design. **SETTING:** Assisted Living Facility (ALF). **PARTICIPANTS:** Ambulatory older adults (N=26, mean age 79). **MAIN OUTCOME MEASURES:** Continuous measure of average weekly ambulation characteristics [time and distance walked, speed, path measures (e.g., path time and distance, number of paths (where at path is at least 60 seconds of uninterrupted walking separated by at least a 30 second stop)], accounting for weekly changes in these ambulation characteristics on an individual-level over time, along with falls (yes/no) and cognitive impairment (CI; measured by the Montreal Cognitive Assessment).

RESULTS: In Hierarchical Linear Models (HLM) accounting for intra-individual changes in ambulation characteristics over the eight month course of the study and level of CI, path distance (OR=1.02; $p \leq 0.001$) was associated with an increased risk for a fall. In the short term, intra-individual changes in path distance were associated with a fall within the 4-week interval the change was noted. Path distance had fair sensitivity (0.74) and specificity (0.66) to a fall (AUC=0.70).

CONCLUSION: Study findings suggest that falls may have specific predictors - specifically that older adults with CI are more likely to fall when walking continuously with little/no breaks. Interventions focused on reducing path-associated fatigue may effectively reduce fall incidence in this population. Copyright © 2016 American Congress of Rehabilitation Medicine. Published by Elsevier Inc. All rights reserved.

PDF Y Endnote Y

Patterns of selective serotonin reuptake inhibitor use and risk of falls and fractures in community-dwelling elderly people: the Three-City cohort

Carriere I, Farré A, Norton J, Wyart M, Tzourio C, Noize P, Pérès K, Fourrier-Réglat A, Ancelin ML. *Osteoporos. Int.* 2016; ePub(ePub): ePub.

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(Copyright © 2016, Springer Science+Business Media)

DOI 10.1007/s00198-016-3667-7 **PMID** 27311722

Abstract

In this population-based elderly cohort, participants using selective serotonin reuptake inhibitor (SSRI) antidepressants have an increased risk of falls and fractures notably when the treatment was continued over 4 years. Among the various SSRI types, citalopram only was at significant risk for falls and fluoxetine for fractures.

INTRODUCTION: Increased risk of falls and fractures has been reported in elderly users of SSRIs. However, biases were insufficiently addressed notably temporality between exposure and outcome and confounding by residual depression. Our objective was to examine the associations between SSRIs and fall or fracture incidence focusing on their chronic use and different types of SSRIs.

METHODS: The population-based cohort included participants aged 65 years and above, who had not fallen before inclusion (n = 6599) or were free of recent fracture (n = 6823) and were followed up twice over 4 years. New fall and fracture events were self-reported and defined as at least two falls and one fracture, respectively, during the previous 2 years. SSRI users were compared with those taking no antidepressants. Hazard ratios (HRs) were estimated using Cox models with delayed entry and adjusted for many confounders including residual depressive symptoms.

RESULTS: Incidence of falls was 19.3 % over 4 years and that of fractures 9.5 %. After multi-adjustment, SSRI intake was significantly associated with a higher risk of falls (HR, 95 % CI = 1.58, 1.23-2.03) and fractures (HR, 95 % CI = 1.61, 1.16-2.24). The risks were significantly increased by

80 % in those continuing the treatment over 4 years. Citalopram intake only was at significant risk for falls and fluoxetine for fractures.

CONCLUSIONS: In this large community-dwelling elderly sample, SSRI users were at higher risk of falls and fractures. This association was not due to reverse causality or residual depressive symptoms. Different SSRI drugs may have specific adverse effects on falls and fractures.

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Perceived fall risk and functional decline: gender differences in patient's willingness to discuss fall risk, fall history, or to have a home safety evaluation

Greenberg MR, Moore EC, Nguyen MC, Stello B, Goldberg A, Barraco RD, Porter BG, Kurt A, Dusza SW, Kane BG.

Yale J. Biol. Med. 2016; 89(2): 261-267.

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(Copyright © 2016, Yale Journal of Biology and Medicine)

DOI unavailable PMID 27354852

Abstract

The CDC reports that among older adults, falls are the leading cause of injury-related death and rates of fall-related fractures among older women are twice those of men. We set out to 1) determine patient perceptions (analyzed by gender) about their perceived fall risk compared to their actual risk for functional decline and death and 2) to report their comfort level in discussing their fall history or a home safety plan with their provider. Elders who presented to the Emergency Department (ED†) were surveyed. The survey included demographics, the Falls Efficacy Scale (FES) and the Vulnerable Elders Survey (VES); both validated surveys measuring fall concern and functional decline. Females had higher FES scores (mean 12.3, SD 5.9) than males (mean 9.7, SD 5.9 $p = .007$) in the 146 surveys analyzed. Females were more likely to report an increased fear of falling, and almost three times more likely to have a VES score of 3 or greater than males (OR = 2.86, 95% CI: 1.17-7.00, $p = .02$). A strong correlation was observed between FES and VES scores ($r = 0.80$, $p < .001$). No difference in correlation was observed between males and females, $p = .26$. Participants (77 percent) reported they would be comfortable discussing their fall risk with a provider; there was no difference between genders ($p = .57$). In this study, irrespective of gender, there appears to be a high association between subjects' perceived fall risk and risk for functional decline and death. The majority of patients are likely willing to discuss their fall risk with their provider. These findings may suggest a meaningful opportunity for fall risk mitigation in this setting.

PDF Y Endnote Y

Strategies for obstacle crossing in older adults with high and low risk of falling

Pan HF, Hsu HC, Chang WN, Renn JH, Wu HW.

J. Phys. Ther. Sci. 2016; 28(5): 1614-1620.

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(Copyright © 2016, Society of Physical Therapy Science)

DOI 10.1589/jpts.28.1614 **PMID**27313384

Abstract

PURPOSE: Tripping is a frequent cause of falls among aging adults. Appropriate limb movements while negotiating obstacles are critical to trip avoidance. The aim of our study was to investigate the mechanics of obstacle crossing in older adults at low or high risk of falling.

SUBJECTS AND METHODS: Twenty community-dwelling adults aged ≥ 55 years, were evaluated with the Tinetti Balance and Gait scale and classified as being at high or low risk of falling. Between-group comparisons of kinematics were evaluated for obstacle heights of 10%, 20%, and 30% of leg length.

RESULTS: The high-risk group demonstrated greater toe-obstacle clearance of the leading leg. Increasing obstacle height led to increased maximal toe-obstacle clearance, toe-obstacle distance, and shortened swing phase of the leading limb. Adaptation of clearance height was greater for the trailing leg. Individuals at high risk of falling demonstrated less symmetry between the leading and trailing legs and a narrower step width, features that increase the likelihood of tripping.

CONCLUSION: Kinematic parameters of obstacle clearance, including the symmetry index described in our study, could provide clinicians with a quick screening tool to identify patients at risk of falling and to evaluate outcomes of training programs.

PDF Y Endnote Y

Strength in numbers: a community education program to prevent falls in older adults

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Home Healthc. Now 2016; 34(7): 369-375.

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DOI 10.1097/NHH.0000000000000421 **PMID** 27348030

Abstract

The incidence and consequences of falls for older adults are well documented and well known to home care clinicians. In the absence of a falls-prevention program targeting older adults living in the community, home healthcare professionals at Cooley Dickinson VNA & Hospice in Northampton, MA, observed a high rate of falls and hip fractures. The clinicians designed a falls reduction program titled Strength in Numbers, an evidence-informed, multifaceted approach offered in community settings such as local senior centers and retirement communities. Physical and occupational therapists presented sessions that addressed risk factors for falls: fear of falling, strength, balance, medications, vision, and home safety. This article describes the program, its evolution and expansion, and outcomes. Between 2008 and 2015, 1,974 people received falls-prevention education through one of several variations of Strength in Numbers. Nearly 20% of those returning for a follow-up session who had fallen before did not fall again after completing it. Presenters recorded statistically significant improvement for participants in Single-Leg Standing, Timed Up and Go, and Functional Reach tests.

PDF N Endnote Y (This sounds like the Stepping on program)

Tea drinking habits and osteoporotic hip/femur fractures: a case-control study

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Pak. J. Med. Sci. Q. 2016; 32(2): 408-412.

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(Copyright © 2016, Professional Medical Publications)

DOI 10.12669/pjms.322.9092 PMID 27182250

Abstract

OBJECTIVE: To explore the relationship between tea drinking habits and osteoporotic hip/femur fractures.

METHODS: Paired case-control method was used for face-to-face interviews from January 2010 to June 2014. Patients (n=435) with newly osteoporotic hip/femur fracture and 435 controls with the same gender and age (± 3) were given questionnaire survey. The survey content included general situation, detailed tea drinking and other diet condition, health-related behavior and family history of fractures, etc.

RESULTS: Single factor logistic analysis showed that the habit of drinking tea can significantly reduce the risk of hip/femur fracture. Cumulative year of tea drinking, the cumulative amount of tea and tea concentration (low dose group) have the maximum protection for fracture, while the high dose group is weaker in protection (trend test, $P < 0.05$). After adjustment for age, energy, BMI, education degree, parents' history of fracture, second hand smoke exposure, calcium supplements, and equivalent energy consumption of physical activity, etc, the above association still showed significant linear trend, but the associated strength was slightly reduced. But stratified analysis found that the effect of tea drinking was only statistically significant in men. And there were no statistically significant differences of people with different education degree.

CONCLUSIONS: Regular tea drinking can reduce the risk of osteoporotic hip/femur fractures in middle-aged and elderly men.

PDF Y Endnote Y

The interrelationship between balance, Tai Chi and depression in Latino older adults

Siu KC, Padilla C, Rajaram SS.

Aging Clin. Exp. Res. 2016; ePub(ePub): ePub.

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DOI 10.1007/s40520-016-0593-7 PMID 27318946

Abstract

Falls and associated injuries are the most serious medical problem affecting the functional independence among both White non-Hispanics and Latino older adults. Studies have shown the effectiveness of Tai Chi exercise in reducing falls but have primarily focused on White non-Hispanic older adults. There is limited research that examines the effectiveness of this exercise on balance among different racial/ethnic minority older adults. This study focused on the interrelationship between functional status (balance performance) and psychosocial status (depression) before and after a 12-week Tai Chi program among Latinos in a Midwestern metropolitan city.

RESULTS indicated that at baseline, prior to the start of the Tai Chi program, participants who were more depressed had poorer functional status. Participants who had higher depression at baseline, experienced greater improvement in functional status, following the 12-week Tai Chi exercise program, compared with those who had lower levels of depression.

PDF Y Endnote Y

Exploring fall training adaptations while walking

Silver TA, Mokha GM, Peacock CA.

Work 2016; ePub(ePub): ePub.

(Copyright © 2016, IOS Press)

DOI 10.3233/WOR-162321 **PMID** 27315410

Abstract

BACKGROUND: Trips are common in and out of the workplace with most people recovering to avoid a subsequent fall. However, when the recovery attempt fails, a fall can be detrimental.

OBJECTIVE: The purpose of this exploratory study was to examine adaptations to the elevating response during obstacle tripping while walking on a treadmill. Additionally, the possible transfer effects from adapted responses in the lab to the worksite are explored.

METHODS: Fourteen healthy participants that covered the general working age range (20-70 yrs.) were presented with two different types of tripping obstacles while walking.

RESULTS: Elevating the foot over the obstacle was expected due to all trips being induced during early swing phase (first 33% of the swing phase). However, in addition to the elevating strategy, a novel "push" strategy was observed in all but three participants.

CONCLUSION: The current study provided support that obstacle type influences the behavioral response after a trip. Therefore, obstacles that catch the shoe should be considered when designing functional fall programs. Furthermore, information from the current study is useful for establishing guidelines when developing a fall prevention program in the workplace.

PDF N Endnote Y

Increased fall risk in patients receiving androgen deprivation therapy for prostate cancer

Wu FJ, Sheu SY, Lin HC, Chung SD.

Urology 2016; ePub(ePub): ePub.

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(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.urology.2016.05.058 **PMID** 27318262

Abstract

OBJECTIVE: To examine the relationship between the use of ADT and the subsequent risk of falls in men with prostate cancer by employing a population-based dataset.

METHODS: We retrieved the study sample from the Taiwan Longitudinal Health Insurance Database 2005. We included 886 patients with prostate cancer who had received ADT as the study group, while 862 patients with prostate cancer who had not received ADT served as the comparison group.

We then individually tracked each study patient for a 3-year period to identify those who subsequently received a diagnosis of a fall. We performed Cox proportional hazard regressions to calculate the hazard ratio (HR) and its corresponding 95% confidence interval (CI) for a fall during the 3-year follow-up period between these two groups.

RESULTS: The incidence rates of falls per 1000 person-years were 13.37 (95% CI: 9.15~18.88) and 6.44 (95% CI: 3.61~10.63), respectively, for patients with prostate cancer who received ADT and those who did not receive ADT. Furthermore, the HR for a fall during the 3-year follow-up period for patients with prostate cancer who had received ADT was 1.95 (95% CI: 1.04~3.66, p=0.037) compared to those who had not received ADT after censoring sampled patients who died during the

3-year follow-up period and adjusting for age, geographical location, monthly income, urbanization level, hypertension, diabetes, hyperlipidemia, coronary heart disease, Parkinson's disease, epilepsy, stroke, and mental illness.

CONCLUSIONS: The present findings suggest that patients with prostate cancer who had received ADT had an increased risk of falls.

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Reliability and validity of the Visual, Musculoskeletal, and Balance Complaints Questionnaire

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Optom. Vis. Sci. 2016; ePub(ePub): ePub.

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DOI 10.1097/OPX.0000000000000902 **PMID** 27309524

Abstract

PURPOSE: To evaluate the reliability and validity of the 15-item Visual, Musculoskeletal, and Balance Complaints Questionnaire (VMB) for people with visual impairments, using confirmatory factor analysis (CFA) and with Rasch analysis for use as an outcome measure.

METHODS: Two studies evaluated the VMB. In Study 1, VMB data were collected from 1249 out of 3063 individuals between 18 and 104 years old who were registered at a low vision center. CFA evaluated VMB factor structure and Rasch analysis evaluated VMB scale properties. In Study 2, a subsample of 52 individuals between 27 and 67 years old with visual impairments underwent further measurements. Visual clinical assessments, neck/scapular pain, and balance assessments were collected to evaluate the convergent validity of the VMB (i.e. the domain relationship with other, theoretically predicted measures).

RESULTS: CFA supported the a priori three-factor structure of the VMB. The factor loadings of the items on their respective domains were all statistically significant. Rasch analysis indicated disordered categories and the original 10-point scale was subsequently replaced with a 5-point scale. Each VMB domain fitted the Rasch model, showing good metric properties, including unidimensionality (explained variances $\geq 66\%$ and eigenvalues < 1.9), person separation (1.86 to 2.29), reliability (0.87 to 0.94), item fit (infit MnSq's > 0.72 and outfit MnSq's < 1.47), targeting (0.30 to 0.50 logits), and insignificant differential item functioning (all DIFs but one < 0.50 logits) from gender, age, and visual status. The three VMB domains correlated significantly with relevant visual, musculoskeletal, and balance assessments, demonstrating adequate convergent validity of the VMB.

CONCLUSIONS: The VMB is a simple, inexpensive, and quick yet reliable and valid way to screen and evaluate concurrent visual, musculoskeletal, and balance complaints, with contribution to epidemiological and intervention research and potential clinical implications for the field of health services and low vision rehabilitation. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially.

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Risk of hospitalization due to unintentional fall injury in British Columbia, Canada, 1999-2008: ecological associations with socioeconomic status, geographic place, and Aboriginal ethnicity

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DOI 10.1007/s40615-016-0258-4 **PMID** 27352116

Abstract

BACKGROUND: Aboriginal people in British Columbia (BC), especially those residing on Indian reserves, have higher risk of unintentional fall injury than the general population. We test the hypothesis that the disparities are attributable to a combination of socioeconomic status, geographic place, and Aboriginal ethnicity.

METHODS: Within each of 16 Health Service Delivery Areas in BC, we identified three population groups: total population, Aboriginal off-reserve, and Aboriginal on-reserve. We calculated age and gender-standardized relative risks (SRR) of hospitalization due to unintentional fall injury (relative to the total population of BC), during time periods 1999-2003 and 2004-2008, and we obtained custom data from the 2001 and 2006 censuses (long form), describing income, education, employment, housing, proportions of urban and rural dwellers, and prevalence of Aboriginal ethnicity. We studied association of census characteristics with SRR of fall injury, by multivariable linear regression.

RESULTS: The best-fitting model was an excellent fit ($R^2 = 0.854$, $p < 0.001$) and predicted SRRs very close to observed values for the total, Aboriginal off-reserve, and Aboriginal on-reserve populations of BC. After stepwise regression, the following terms remained: population per room, urban residence, labor force participation, income per capita, and multiplicative interactions of Aboriginal ethnicity with population per room and labor force participation.

CONCLUSIONS: The disparities are predictable by the hypothesized risk markers. Aboriginal ethnicity is not an independent risk marker: it modifies the effects of socioeconomic factors. Closing the gap in fall injury risk between the general and Aboriginal populations is likely achievable by closing the gaps in socioeconomic conditions.

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Wearable inertial sensors for human movement analysis

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Expert Rev. Med. Devices 2016; ePub(ePub): ePub.

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DOI 10.1080/17434440.2016.1198694 **PMID** 27309490

Abstract

INTRODUCTION: The present review aims to provide an overview of the most common uses of wearable inertial sensors in the field of clinical human movement analysis.

AREAS COVERED: Six main areas of application are analysed: gait analysis, stabilometry, instrumented clinical tests, upper body mobility assessment, daily-life activity monitoring and tremor assessment. Each area is analyzed both from a methodological and applicative point of view. The focus on the methodological approaches is meant to provide an idea of the computational

complexity behind a variable/parameter/index of interest so that the reader is aware of the reliability of the approach. The focus on the application is meant to provide a practical guide for advising clinicians on how inertial sensors can help them in their clinical practice. Expert commentary: Less expensive and more easy to use than other systems used in human movement analysis, wearable sensors have evolved to the point that they can be considered ready for being part of routine clinical routine.

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