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### **An enhanced fall detection system for elderly person monitoring using consumer home networks**

Wang J, Zhang Z, Li B, Lee S, Sherratt RS.

*IEEE Trans. Consumer Electronics* 2014; 60(1): 23-29.

(Copyright © 2014, IEEE (Institute of Electrical and Electronics Engineers))

**DOI** 10.1109/TCE.2014.6780921 **PMID** unavailable

#### **Abstract**

Various fall-detection solutions have been previously proposed to create a reliable surveillance system for elderly people with high requirements on accuracy, sensitivity and specificity. In this paper, an enhanced fall detection system is proposed for elderly person monitoring that is based on smart sensors worn on the body and operating through consumer home networks. With treble thresholds, accidental falls can be detected in the home healthcare environment. By utilizing information gathered from an accelerometer, cardiometer and smart sensors, the impacts of falls can be logged and distinguished from normal daily activities. The proposed system has been deployed in a prototype system as detailed in this paper. From a test group of 30 healthy participants, it was found that the proposed fall detection system can achieve a high detection accuracy of 97.5%, while the sensitivity and specificity are 96.8% and 98.1% respectively. Therefore, this system can reliably be developed and deployed into a consumer product for use as an elderly person monitoring device with high accuracy and a low false positive rate.

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### **Causes and course of falls resulting in hip fracture among elderly Thai patients**

Muangpaisan W, Suwanpatoomlerd S, Srinonprasert V, Sutipornpalangkul W, Wongprikron A, Assantchai P.

*J. Med. Assoc. Thai.* 2015; 98(3): 298.

(Copyright © 2015, Medical Association of Thailand)

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#### **Abstract**

**OBJECTIVE :** To investigate causes and course of fall-related hip fractures in elderly individuals admitted to a hospital.

**MATERIAL AND METHOD :** The authors collected data from older patients admitted with fall-related hip fractures. The cause and the clinical course of falls were evaluated by consultants in geriatric medicine. All patients were followed-up until discharge from the hospital.

**RESULTS :** Falls usually occurred indoors (78.6%) during the daytime (67.5%). Only 27.5% of the falls were attributable to purely extrinsic causes. Neurological, musculoskeletal, and visual problems along with orthostatic hypotension were the leading causes of falls in the present study. Women demonstrated more intrinsic causes (41.9% vs. 28.9%), such as musculoskeletal (33.9% vs. 11.1%), and visual impairment (21.0% vs. 11.1%), whereas falls involving men were more likely to be caused by orthostatic hypotension (21.8% vs. 8.1%). Most patients received surgical treatment (92.5%). The most common complications during the hospital stay were delirium (45%). The modified Rankin Scale of 2-5 at discharge was noted in 46.3% of patients, and mortality was 3.8%. The median length of hospital stay was 15 days (7-75 days). The direct costs of in-hospital care were 2,427.2 (761.9-8,348.6) US dollars for general wards, and 3,739.1 (1,333.6-11,871.7) US dollars for special wards.

**CONCLUSION :** Intrinsic causes (pure and combined with extrinsic) lead to falls with hip fractures more often than purely extrinsic causes. Women and men had different etiologies for falls. Hip

fracture leads to a number of in-hospital complications and significant functional impairment. Preventive strategies following the present study would likely lead to more accurate and beneficial outcomes.

#### PDF N Endnote Y

### Comparison of 2 different exercise approaches: tai chi versus Otago, in community-dwelling older women

Son NK, Ryu YU, Jeong HW, Jang YH, Kim HD.

*J. Geriatr. Phys. Ther.* 2016; 39(2): 51-57.

(Copyright © 2016, American Physical Therapy Association)

DOI 10.1519/JPT.0000000000000042 PMID unavailable

#### Abstract

**BACKGROUND AND PURPOSE:** Regular exercise can delay age-related risk factors and can maintain or improve physical health and activity in older adults leading to a decrease in fall risk. The purpose of this study was to compare 2 different interventions for fall prevention, tai chi (TC) and Otago, by examining lower extremity strength, balance, and spatiotemporal gait parameters in community-dwelling older women.

**METHODS:** We performed a randomized trial in which subjects were assigned to 1 of 2 groups: the TC group (n = 21; age, 72.8 ± 4.7 years, range: 65-83 years), which participated in a modified Sun-style TC exercise program; and the Otago group (n = 24; age, 71.5 ± 3.6 years, range: 65-79 years), which participated in the Otago exercise program. The Timed Up and Go (TUG) test, functional reach (FR) test, one-leg standing (OLS) test, 5 times sit-to-stand test (5×STS), 30-second sit-to-stand (30s STS) test, and gait parameters (gait velocity, step length, step width, stride time, and cadence) were measured before and after the intervention.

**RESULTS:** Both groups showed statistically significant improvements in balance (TUG and OLS tests), lower extremity strength (5×STS and 30s STS tests), and spatiotemporal gait parameters, except for step width and step length (P <.05). The Otago group showed a significantly improved FR, whereas the TC group showed a significantly improved step length after the intervention (P <.05).

Furthermore, the Otago group exhibited greater improvements in the TUG (P <.001), FR (P <.001), 5×CST (P <.01), and 30-second CST (P <.01) tests: a faster cadence (P <.001) and shorter stride time (P <.001) when compared with the TC group. The TC group showed greater improvements in the OLS test, step length, and step width (P <.01) and faster gait velocity (P <.05) than the Otago group.

**DISCUSSION AND CONCLUSIONS:** The findings from this study support the efficacy of the TC and Otago exercise programs in improving mobility in this sample of subjects. Furthermore, the Otago group showed greater improvement in lower extremity strength, whereas the TC group showed greater improvement in balance (OLS test). Also, the TC group showed a greater improvement in gait velocity after TC training program compared with the Otago exercise program. However, this study does not elucidate which exercise program is a more effective intervention method with older women for fall prevention.

#### PDF Not yet available Endnote Y

### Distribution, determinants, and prevention of falls among the elderly in the 2011-2012 California Health Interview Survey

Qin Z, Baccaglini L.

*Public Health Rep.* (1974) 2016; 131(2): 331-339.



Affiliation: University of Nebraska Medical Center, Department of Epidemiology, Omaha, NE.

(Copyright © 2016, Association of Schools of Public Health)

**DOI** unavailable **PMID** 26957668 **PMCID** PMC4765982

#### **Abstract**

**OBJECTIVES:** Falls in the geriatric population are a major public health issue. With the anticipated aging of the population, falls are expected to increase nationally and globally. We estimated the prevalence and determinants of falls in adults aged  $\geq 65$  years and calculated the proportion of elderly who fell and made lifestyle changes as a result of professional recommendations.

**METHODS:** We included adults aged  $\geq 65$  years from the 2011-2012 California Health Interview Survey (CHIS) and categorized them into two groups based on whether or not they had had at least two falls in the previous 12 months. We performed logistic regression analysis adjusted for the complex survey design to determine risk factors for falls and compare the odds of receiving professional recommendations among elderly with vs. without falls.

**RESULTS:** Of an estimated 4.3 million eligible elderly participants in the CHIS (2011-2012), an estimated 527,340 (12.2%) fell multiple times in the previous 12 months. Of those, 204,890 (38.9%) were told how to avoid falls by a physician and 211,355 (40.1%) received medical treatment, although fewer than 41.0% had made related preventive changes to avoid future falls. Falls were associated with older age, less walking, and poorer physical or mental health. Non-Asians had higher odds of falling compared with Asians (adjusted odds ratio = 1.69, 95% confidence interval 1.16, 2.45). Most participants reported changing medications, home, or daily routines on their own initiative rather than after professional recommendations.

**CONCLUSION:** Patients with a history of falls did not consistently receive professional recommendations on fall prevention-related lifestyle or living condition changes. Given the high likelihood of a serious fall, future interventions should focus on involving primary care physicians in active preventive efforts before a fall occurs.

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#### **Effect of motor versus cognitive secondary tasks on performance of stair descent in community-dwelling older adults**

Yadav M, Zia NU, Walia S.

*Activ. Adapt. Aging* 2015; 39(1): 43-55.

(Copyright © 2015, Informa - Taylor and Francis Group)

**DOI** 10.1080/01924788.2015.994467 **PMID** unavailable

#### **Abstract**

Falls on stairs are one of the leading causes of accidental death among the elderly. The purpose of this study was to investigate the effect of dual tasking on stair descent in older adults and also to investigate whether a secondary motor task or secondary cognitive task caused more difficulty in performance. Eighty older adults (mean age = 68 years) were randomly selected from various residential colonies across Gurgaon, India. The performance of stair descent with a secondary task became more difficult than descent without the secondary task. Furthermore, participants demonstrated great difficulty in the performance of stair descent with the cognitive task.

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### **Fall detection system for elderly person monitoring using GSM network**

Manigandan S, Norman SR.

*International journal of advances in engineering* 2015; 1(2): 78-83.

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#### **Abstract**

The World Health organization (WHO) indicated that falls are the second leading cause of unintentional injury, deaths for those over 65 years old worldwide. Non-fatal injurious falls can not only cause disability or functional impairment, but also have psychological effects that reduce the range of Activities of Daily Living (ADLs). A combination of sensors such as accelerometer and ultrasonic sound sensor is a cost efficient method for fall detection. Arduino boards are used to detect the fall events based on threshold values. A pair of RF transmitter and receiver is used for wireless communication. Moreover in case of emergency sending an alert to the caregiver would help in timely medical aid. When the microcontroller in the Arduino board senses drastic changes from the threshold values of the sensors outputs, an emergency alert is sent as SMS to the caregiver through a GSM.

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### **Prevalence of the geriatric syndromes and frailty in older men living in the community: the Concord Health and Ageing in Men Project**

Noguchi N, Blyth FM, Waite LM, Naganathan V, Cumming RG, Handelsman DJ, Seibel MJ, Le Couteur DG.

*Australas. J. Ageing* 2016; ePub(ePub): ePub.

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(Copyright © 2016, Australian Council on the Ageing, Publisher John Wiley and Sons)

**DOI** 10.1111/ajag.12310 **PMID** 26970062

#### **Abstract**

**AIM:** To describe the age at which the geriatric syndromes and frailty become common in community-dwelling men.

**METHODS:** The Concord Health and Ageing in Men Project involves a population-based sample of 1705 community-dwelling men aged 70 and over from a defined geographic region in Sydney. Data were obtained by physical performance tests, clinical examinations, and questionnaire to determine the prevalence of the following conditions by five-year age group.

**RESULTS:** Poor mobility, recurrent falls, urinary incontinence, dementia and frailty phenotype were all uncommon (less than 10%) in men in their 70s, but the prevalence of each of these conditions exceeded 10% in men aged 85-89. The prevalence of Frailty Index-defined frailty, multimorbidity, polypharmacy and instrumental activities of daily living dependence was constantly high in all age groups.

**CONCLUSIONS:** The different health-care needs of the 'old old' aged 85 years and older should be accounted for in health service planning.

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### **Prognostic markers for poor recovery after mild traumatic brain injury in older adults: a pilot cohort study**

Kristman VL, Brison RJ, Bedard M, Reguly P, Chisholm S.

*J. Head Trauma Rehabil.* 2016; ePub(ePub): ePub.

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(Copyright © 2016, Lippincott Williams and Wilkins)

**DOI** 10.1097/HTR.0000000000000226 **PMID** 27022959

#### **Abstract**

**OBJECTIVE:** To identify prognostic markers associated with poor recovery from mild traumatic brain injury (MTBI) in older adults.

**SETTING:** Three Ontario emergency departments.

**PARTICIPANTS:** Forty-nine participants aged 65 years and older that visited an emergency department for MTBI.

**DESIGN:** Pilot prospective cohort study. **MAIN MEASURES:** Recovery from MTBI determined using the Rivermead Postconcussion symptom Questionnaire, the Glasgow Outcomes Scale-Extended, physical and mental health functioning (SF-12), and a single question on self-rated recovery assessed by telephone shortly after emergency department visit (baseline) and again 6 months later.

Predictors were measured at baseline.

**RESULTS:** Markers potentially associated with poor recovery included reporting worse health 1 year before the injury, poor expectations for recovery, depression, and fatigue.

**CONCLUSION:** Recovery after MTBI in older adults may be associated more with psychosocial than with biomedical or injury-related factors.

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### **Quality-of-life indicators and falls due to vitamin D deficiency**

Cheema MR, Chaudhry AY.

*Int. J. Gen. Med.* 2016; 9: 21-25.

**Affiliation:** Department of Geriatrics, University Hospitals Coventry and Warwickshire, NHS Hospitals, Coventry, UK.

(Copyright © 2016, Dove Medical Press)

**DOI** 10.2147/IJGM.S76360 **PMID** 26955288 **PMCID** PMC4769006

#### **Abstract**

**OBJECTIVE:** To determine whether the number of falls and quality-of-life indicators relate to serum levels of vitamin D, parathyroid hormone (PTH), and calcium levels.

**DESIGN:** A prospective study.

**PARTICIPANTS:** Patients being admitted with a fall with or without sustaining a fragility fracture post fall.

**MEASUREMENTS:** Measured frequency of falling, SF-12 questionnaire, serum concentrations of 25-hydroxyvitamin D, calcium, and PTH levels before and after treatment with vitamin D supplementation.

**RESULTS:** The mean age (N=38) of the cohort was 80.2±12. In all, 76.3% of the cohort had sustained a fragility fracture after the fall. The cohort was vitamin D deficient with the pretreatment mean value of 24.2±17 nmol/L and posttreatment mean value of 99±40 nmol/L with a statistically significant mean difference of 74.7 nmol/L (confidence interval [CI] 61.27-88.3), P=0.001. The levels of calcium and PTH were statistically significant after treatment with a mean difference of 0.16 (CI

0.1-0.2),  $P=0.001$ , and 3.7 (CI -4.8 to -2.5),  $P=0.001$ , respectively. After treatment, the mean difference of physical component score (PCS) and mental component score for the whole cohort was 2.9 (CI -0.69 to 6.6),  $P=0.10$ , and 1.05 (CI -2.6 to 4.7),  $P=0.56$ , respectively. However, a subgroup analysis for cohort aged  $\leq 70$  years provided a statistically significant effect on PCS with a mean difference of 8.9 (CI 1.3-16.4),  $P=0.03$ , but a statistically insignificant improvement in mental component score with a mean difference of 6.0 (CI -17 to -5.0),  $P=0.20$ . However, a statistically significant improvement in PCS SF-12 was observed in patients  $\leq 70$  years of age 2.9 (1.3-16.4),  $P=0.03$ . The mean number of falls for the whole cohort pre- and posttreatment was  $1.11 \pm 0.92$  vs  $0.97 \pm 0.99$  ( $P=0.68$ ), respectively.

**CONCLUSION:** Patients who had fallen and sustained fragility fracture had lower serum 25-dihydroxyvitamin D and higher serum PTH levels. Our study demonstrates that there is no statistically significant improvement in the number of falls after treatment with vitamin D. Overall, vitamin D levels improved significantly, this is despite quality-of-life indicators showing a mean increase in PCS but not a statistically significant improvement. However, statistically significant improvement in PCS was observed in group aged  $\leq 70$  years after vitamin D supplementation.

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### **Regional differences in fall-related physical fitness of the elderly between Seoul, Korea and Gifu, Japan**

Shin S, Kim HS, Sung SC, Yabumoto T, Kasuga K, Kim K, Matsuoka T.

*Tohoku J. Exp. Med.* 2016; 238(3): 247-253.

**Affiliation:** School of Exercise and Sport Science, University of Ulsan.

(Copyright © 2016, Tohoku University Medical Press)

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#### **Abstract**

Falling is a leading cause of severe injuries among the elderly, such as hip fracture. This study examined the regional and sex differences in fall-related physical fitness of the elderly between Seoul, Korea and Gifu, Japan. The study included 87 elderly residents of Seoul (mean age 75.4 years; 21 males and 66 females) and 91 elderly residents of Gifu (mean age 71.9 years; 17 males and 74 females). The participants underwent various physical tests, and two-way ANCOVA (region  $\times$  sex) with age as a covariate was used for statistical analysis. Significant interaction was shown by the one-legged stance (OLS) with eyes open test, which was higher in elderly females from Gifu than in those from Seoul. Significant main effects for the region were shown by the 30-s chair stand (CS-30) and reaction time tests, wherein the Gifu group performed better than the Seoul group. Significant main effects for sex were shown by the sit and reach, handgrip strength, and knee extension strength tests, which were higher for females in the sit and reach test and lower for females in the handgrip and knee extension strength tests compared to the corresponding males in both the cases. Lastly, elderly from Gifu performed better than those from Seoul in the reaction time, CS-30, and OLS tests. Since the ability to move quickly and maintain balance to avoid falling are factors necessary for reducing fall risk, fall prevention classes and exercise programs are required to improve these abilities in the elderly.

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### **Risk of falling in older women**

Armas L, Lappe J, Slavik VJ, Slattery K, Cheng SC, Malik DS, Mordeson JN.

*New mathematics and natural computation* 2015; 11(1): 1-12.

(Copyright © 2015)

**DOI** 10.1142/S1793005715500015 **PMID** unavailable

#### **Abstract**

We propose a weighted average approach to measure the risk of falling in older women. We consider four causal variables of falling, namely serum 25-OHD levels, medication use, fracture, and age. We use five methods to derive linear equations with these four factors as independent variables in the linear equations with risk of falling as the dependent variable.

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### **Sedentary behavior and physical activity patterns in older adults after hip fracture: a call to action**

Fleig L, McAllister MM, Brasher P, Cook WL, Guy P, Puyat JH, Khan KM, McKay HA, Ashe MC.

*J. Aging Phys. Act.* 2016; 24(1): 79-84.

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(Copyright © 2016, Human Kinetics Publishers)

**DOI** 10.1123/japa.2015-0013 **PMID** 26759986

#### **Abstract**

**OBJECTIVES:** To characterize patterns of sedentary behavior and physical activity in older adults recovering from hip fracture and to determine characteristics associated with activity.

**METHODS:** Community-dwelling, Canadian adults (65 years+) who sustained hip fracture wore an accelerometer at the waist for seven days and provided information on quality of life, falls self-efficacy, cognitive functioning, and mobility.

**RESULTS:** There were 53 older adults (mean age [SD] 79.5 [7.8] years) enrolled in the study; 49 had valid data and demonstrated high levels of sedentary time (median [p10, p90] 591.3 [482.2, 707.2] minutes/day), low levels of light activity (186.6 [72.6, 293.7]), and MVPA (2 [0.1, 27.6]), as well as few daily steps (2467.7 [617.1, 6820.4]). Regression analyses showed that age, gender, gait speed, and time since fracture were associated with outcomes.

**CONCLUSIONS:** Older adults have long periods of sedentary time with minimal activity. Results are a call to action to encourage people to sit less and move more.

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### **The effects of Pilates exercise training on physical fitness and wellbeing in the elderly: A systematic review for future exercise prescription**

Bullo V, Bergamin M, Gobbo S, Sieverdes JC, Zaccaria M, Neunhaeuserer D, Ermolao A.

*Prev. Med.* 2015; 75: 1-11.

**Affiliation:** Sport and Exercise Medicine Division, Department of Medicine, University of Padova, Padova, Italy.

(Copyright © 2015, Elsevier Publishing)

**DOI** 10.1016/j.jpmed.2015.03.002 **PMID** 25773473

#### **Abstract**

This systematic review aims to summarize the effects of Pilates exercise training (PET) in elderly population on physical fitness, balance and fall prevention, and its effects on mood states, quality of

life and independence in the daily living activities.

**METHODS:** Keyword "Pilates" associated with "elderly", "aging" and "old subjects" were identified as terms for the literature research in MEDLINE, Embase, PubMed, Scopus, PsycINFO and SPORTDiscus. Only studies published in peer-reviewed journals written in English language were considered. A meta-analysis was performed and effect sizes (ES) calculated.

**RESULTS:** 10 studies were identified (6 RCTs and 4 uncontrolled trials); age ranged from 60 to 80years. Overall, PET showed large ES to improve muscle strength (ES=1.23), walking and gait performances (ES=1.39), activities of daily living, mood states and quality of life (ES=0.94), moderate to high effect on dynamic balance (ES=0.77), small effects on static balance (ES=0.34) and flexibility (ES=0.31), while a small effect on cardio-metabolic outcomes (ES=0.07).

**CONCLUSIONS:** PET should be taken into account as a way to improve quality of life in the elderly, due to the imparted benefits of fall prevention, physical fitness, and mood states. In this context, physicians might include PET as a tool for exercise prescriptions for the elderly.

#### PDF Endnote

#### **The Mini-Balance Evaluation Systems Test (Mini-BESTest) demonstrates higher accuracy in identifying older adult participants with history of falls than do the BESTest, Berg Balance Scale, or Timed Up and Go Test**

Yingyongyudha A, Saengsirisuwan V, Panichaporn W, Boonsinsukh R.

*J. Geriatr. Phys. Ther.* 2015; 39(2): 64-70.

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(Copyright © 2015, American Physical Therapy Association)

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#### **Abstract**

**BACKGROUND AND PURPOSE:** Balance deficit is a significant predictor of falls in older adults. The Balance Evaluation Systems Test (BESTest) and the Mini-Balance Evaluation Systems Test (Mini-BESTest) are tools that may predict the likelihood of a fall, but their capabilities and accuracies have not been adequately addressed. Therefore, this study aimed at examining the capabilities of the BESTest and Mini-BESTest for identifying older adult with history of falls and comparing the participants with history of falls identification accuracies of the BESTest and Mini-BESTest to those of the Berg Balance Scale (BBS) and the Timed Up and Go Test (TUG).

**METHODS:** Two hundred healthy older adults with a mean age of 70 years were classified into participants with and without history of fall groups on the basis of their 12-month fall history. Their balance abilities were assessed using the BESTest, Mini-BESTest, BBS, and TUG. An analysis of the resulting receiver operating characteristic curves was performed to calculate the area under the curve (AUC), sensitivity, specificity, cutoff score, and posttest accuracy of each.

**RESULTS:** The Mini-BESTest showed the highest AUC (0.84) compared with the BESTest (0.74), BBS (0.69), and TUG (0.35), suggesting that the Mini-BESTest had the highest accuracy in identifying older adult with history of falls. At the cutoff score of 16 (out of 28), the Mini-BESTest demonstrated a posttest accuracy of 85% with a sensitivity of 85% and specificity of 75%. The Mini-BESTest had the highest posttest accuracy, with the others having results of 76% (BESTest), 60% (BBS), and 65% (TUG).



**CONCLUSION:** The Mini-BESTest is the most accurate tool for identifying older adult with history of falls compared with the BESTest, BBS, and TUG.

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### **The role of self-efficacy on fear of falls and fall among elderly community dwellers in Shahroud, Iran**

Dadgari A, Hamid TA, Hakim MN, Mousavi SA, Dadvar L, Mohammadi M, Amerian N.

*Nursing Practice Today* 2016; 2(3): 112-120.

(Copyright © 2016)

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#### **Abstract**

**BACKGROUND & AIM:** Fear of fall is well-known risk factor for falls among senior citizens. However, the mechanism by which fear of falls can facilitate falls is not clear. This study hypothesized that falls self-efficacy can play a role in relationship between fear of falls and falls. There has been rapidly growing literature on falls among senior citizens, and however, the role of falls self-efficacy on falls among older adults has not been well-investigated. The aim of this study was to identify the mediation role of self-efficacy between fear of falls and falls among the elderly people living in community.

**METHODS & MATERIALS:** In this cross-sectional study, researchers used the secondary data of a clinical trial in 2013. Subjects of the study were 1312 senior citizens living in Shahroud; Semnan province, Iran, was selected by a simple random method using online software of random number generator based on their health file numbers in district health centers. Subjects of the study were assessed for fear of falls (by Falls Efficacy Scale), falls self-efficacy (by Activity-specific Balance Confidence Scale) and history of falls.

**RESULTS:** This study indicated that fall is a frequent event among senior citizens. One-third of elderly people had the experience of falls, annually. Moreover, this study showed that high levels of fear of falling were significantly related to low falls self-efficacy ( $P < 0.001$ ). In addition, findings of this study supports the mediation role of self-efficacy between relationship of fear of falls and in default model root mean square error of approximation = 0.000.

**CONCLUSION:** Results of this study provide evidence that fear is related to falls. Moreover, it can be concluded that falls self-efficacy plays a mediation role on relationship between fear of falls and falls. Hence, it is recommended that any falls prevention should consider psychological covariates of falls especially subjects' self-efficacy to reduce falls, alongside other risk factors and covariates of falls.

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### **Timed Up and Go test: a simple test gives important information in elderly**

Brucki SMD.

*Arq. Neuropsiquiatr.* 2015; 73(3): 185-186.

(Copyright © 2015, Associacao Arquivos De Neuro-Psiquitria)

**DOI** 10.1590/0004-282X20140243 **PMID** unavailable

#### **Abstract**

The Timed Up and Go test (TUG) is a largely used test to measure gait, motor speed, frailty and physical function in elderly<sup>1,2</sup>, besides as a predictor of risk of falls<sup>3</sup>. It has been considered a predictor of activities of daily living in community cohorts<sup>4,5</sup>.

In another studies TUG test has been associated with cognitive test to increment difficulty in dual-task paradigms, with an increasing rate of falls<sup>6</sup> and an impaired performance among subjects with cognitive impairment<sup>7</sup>. In the study of Mirelman et al. authors have tried to assess TUG in older individuals without dementia and with mild cognitive impairment; they observed that time of completion of TUG was not different, but the quality was, showing motor-cognitive interactions<sup>8</sup>. Studies with Parkinson's disease patients have demonstrated TUG is associated with cognitive impairment<sup>9,10</sup>.

Many authors have used TUG with dual task (TUG-DT) that has been demonstrated as a good measure of gait disorders among elders; the tasks can be motor or cognitive. In the study of Christoforetti et al. dual task had a great influence on performance in patients with Alzheimer's disease and Parkinson's disease; it is important information for care of patients and their activities of daily living, which include dual tasks<sup>11</sup>.

The manuscript entitled Age and education influence the performance of elderly women on the dual-task Timed Up and Go test published in this current number investigated the influences of age, education and physical activity among 92 elderly women from community, on TUG dual task<sup>12</sup>. Although TUG has reference time values well established, there is no normative data investigating TUG-DT and education in Brazil. This manuscript gives us some data related to this important topic. Cognitive reserve could be a theoretical background since education is a surrogate for this concept and is associated with better health and physical conditions and, consequently better performance in TUG-DT. Two age groups (69 to 74 years; 75 to 79 years) and two education groups (3-4 years and 8 years) were analyzed; and both were grouped as sedentary or active. The oldest group had higher dual task cost (percentage of spent time comparing TUG and TUG-DT); higher education was associated with better performance in all measures. The number of falls over the last six months was reported more times by the younger group. An unexpected finding was sedentary and active women performed equally on tasks.

This sample has showed a greater average time than other studies described in a recent meta-analysis<sup>13</sup>, but possibly methodology was different. This manuscript was well designed and the results could be used as a parameter of normality in different age and educational groups in elderly women.

#### **PDF Y Endnote Y**

#### **Pilates exercise training vs. physical therapy for improving walking and balance in people with multiple sclerosis: a randomized controlled trial**

Kalron A, Rosenblum U, Frid L, Achiron A.

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

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#### **Abstract**

**OBJECTIVE:** Evaluate the effects of a Pilates exercise programme on walking and balance in people with multiple sclerosis and compare this exercise approach to conventional physical therapy sessions.

**DESIGN:** Randomized controlled trial.

**SETTING:** Multiple Sclerosis Center, Sheba Medical Center, Tel-Hashomer, Israel. **SUBJECTS:** Forty-five people with multiple sclerosis, 29 females, mean age (SD) was 43.2 (11.6) years; mean Expanded Disability Status Scale (S.D) was 4.3 (1.3).

**INTERVENTIONS:** Participants received 12 weekly training sessions of either Pilates (n=22) or standardized physical therapy (n=23) in an outpatient basis. **MAIN MEASURES:** Spatio-temporal parameters of walking and posturography parameters during static stance. Functional tests included the Time Up and Go Test, 2 and 6-minute walk test, Functional Reach Test, Berg Balance Scale and the Four Square Step Test. In addition, the following self-report forms included the Multiple Sclerosis Walking Scale and Modified Fatigue Impact Scale.

**RESULTS:** At the termination, both groups had significantly increased their walking speed (P=0.021) and mean step length (P=0.023). According to the 2-minute and 6-minute walking tests, both groups at the end of the intervention program had increased their walking speed. Mean (SD) increase in the Pilates and physical therapy groups were 39.1 (78.3) and 25.3 (67.2) meters, respectively. There was no effect of group X time in all instrumented and clinical balance and gait measures.

**CONCLUSIONS:** Pilates is a possible treatment option for people with multiple sclerosis in order to improve their walking and balance capabilities. However, this approach does not have any significant advantage over standardized physical therapy.

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### **Polypharmacy in elderly patients: a review**

Amanacharla M, Ponnaluri RR.

*Journal of drug delivery and therapeutics* 2015; 5(2): 17-19.

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#### **Abstract**

Patients above 65yrs of age often present with multiple diseases requiring treatment with more number of drugs which is referred to as polypharmacy. Due to age related changes in the pharmacokinetic & pharmacodynamic parameters, elderly patients may present with adverse drug events, drug interactions and hospitalization resulting in increased morbidity. The aim of our study is to assess the various causes and effects of multiple medications and find measures to reduce and manage polypharmacy. Materials for this review were gathered from medline database. The causes for polypharmacy include multiple comorbidities, multiple hospital visits, consuming over the counter medications and herbal products. Risk of falls is found to increase with polypharmacy and treatment with cardiovascular and psychoactive drugs. With increase in the number of drugs the risk of adverse drug reactions and drug interactions is more. Increase in the medical expenditure and non adherence with the drugs has been associated with polypharmacy. Hence there is a need to evaluate polypharmacy by following various criteria or tools and manage treating the elderly in an effective manner

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