

## SafetyLit 20 November 2016

### A feasibility study for an integrated approach to fall prevention in community care: Stay Up and Active in Orange County

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*Front. Public Health* 2016; 4: e174.

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**DOI** 10.3389/fpubh.2016.00174 **PMID** 27622184

#### Abstract

**INTRODUCTION:** Falls among persons over 60 present significant risks for serious injury or debility. Falls place burdens on Emergency Medical Services (EMS), hospitals, and the adults themselves. Recognizing a need to provide interventions to minimize risk, Orange County Emergency Services (OCES), the Orange County Department on Aging (OCDoA), and the University of North Carolina at Chapel Hill (UNC) partnered to create the Stay Up and Active Program (SUAA). The purpose of this study was to determine if SUAA was a feasible program to implement in the community.

**METHODS:** A streamlined workflow algorithm between the OCES and OCDoA was created and employed to provide falls risk assessment and necessary services. Qualitative techniques were used to assess the need for such a program and its potential impact. A subset of individuals was interviewed 3 months after the intervention to assess the impact of the intervention on their fall risk. Formal stakeholder interviews were not conducted, but anecdotal information from EMS providers was obtained and reported.

**RESULTS:** In the first 7 months, 478 instances of individuals who called OCES screened positive for falls risk. Of the 478 positive screenings, 55 individuals were identified as having received more than one positive fall screen due to multiple calls. The maximum number of positive screenings by one individual was 14. More women (61.3%) than men screened positive for fall risk. Individuals 88 years of age (6.9%) represented the highest number of individuals with positive screens. Nineteen (4.0%) people who called OCES and received the intervention completed a 3-month follow-up survey. Of the 19, 86% (n = 16) reported no recurrent fall.

**CONCLUSION:** The number of individuals who screened positive supports the need for early identification and intervention through SUAA. This program identified several challenges connecting older adults with services already available to keep them independent, which provided insight to all stakeholders regarding factors that inhibit the program's success. The program evaluation should continue to provide suggestions for improvement and ensure sustainability.

#### PDF Y Endnote Y

### A prospective study of back pain and risk of falls among older community-dwelling men

Marshall LM, Litwack-Harrison S, Makris UE, Kado DM, Cawthon PM, Deyo RA, Carlson NL, Nevitt MC.

*J. Gerontol. A Biol. Sci. Med. Sci.* 2016; ePub(ePub): ePub.

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(Copyright © 2016, Gerontological Society of America)

**DOI** 10.1093/gerona/glw227 **PMID** 27852636

#### Abstract

**BACKGROUND:** Musculoskeletal pain is associated with increased fall risk among older men. However, the association of back pain, the most prevalent type of pain in this population, and fall risk is unknown.

**METHODS:** We conducted a prospective investigation among 5,568 community-dwelling U.S. men at least 65 years of age from the Osteoporotic Fractures in Men Study (MrOS). Baseline questionnaires inquired about back pain and its location (such as low back), severity, and frequency in the past year. During 1 year of follow-up, falls were summed from self-reports obtained every 4 months. Outcomes were recurrent falls ( $\geq 2$  falls) and any fall ( $\geq 1$  fall). Associations of back pain and fall risk were estimated with risk ratios (RRs) and 95% confidence intervals (CIs) from multivariable log-binomial regression models adjusted for age, dizziness, arthritis, knee pain, urinary symptoms, self-rated health, central nervous system medication use, and instrumental activities of daily living.

**RESULTS:** Most (67%) reported any back pain in the past year. During follow-up, 11% had recurrent falls and 25% fell at least once. Compared with no back pain, any back pain was associated with elevated recurrent fall risk (multivariable RR = 1.3, 95% CI: 1.1, 1.5). Multivariable RRs for 1, 2, and 3+ back pain locations were, respectively, 1.2 (95% CI: 1.0, 1.5), 1.4 (1.1, 1.8), and 1.7 (95% CI: 1.3, 2.2). RRs were also elevated for back pain severity and frequency. Back pain was also associated with risk of any fall.

**CONCLUSIONS:** Among older men, back pain is independently associated with increased fall risk.

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**Associations between geriatric syndromes and mortality in community-dwelling elderly: results of a national longitudinal study in Taiwan**

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*J. Am. Med. Dir. Assoc.* 2016; ePub(ePub): ePub.

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**DOI** 10.1016/j.jamda.2016.09.017 **PMID** 27838338

**Abstract**

**OBJECTIVE:** Although geriatric syndromes have been studied extensively, their interactions with one another and their accumulated effects on life expectancy are less frequently discussed. This study examined whether geriatric syndromes and their cumulative effects are associated with risks of mortality in community-dwelling older adults.

**METHODS:** Data were collected from the Taiwan Longitudinal Study in Aging in 2003, and the participant survival status was followed until December 31, 2007. A total of 2744 participants aged  $\geq 65$  years were included in this retrospective cohort study; 634 died during follow-up. Demographic factors, comorbidities, health behaviors, and geriatric syndromes, including underweight, falls, functional impairment, depressive condition, and cognitive impairment, were assessed. Cox proportional hazard regression analysis was used to estimate the hazard ratios (HRs) and 95% confidence intervals (CIs) for the probability of survival according to the cumulative number of geriatric syndromes.

**RESULTS:** The prevalence of geriatric syndromes increased with age. Mortality was significantly associated with age  $\geq 75$  years; male sex;  $\leq 6$  years of education; history of stroke, malignancy; smoking; not drinking alcohol; and not exercising regularly. Geriatric syndromes, such as underweight, functional disability, and depressive condition, contributed to the risk of mortality. The accumulative model of geriatric syndromes also predicted higher risks of mortality (N = 1, HR 1.50, 95% CI 1.19-1.89; N = 2, HR 1.69, 95% CI 1.25-2.29; N  $\geq 3$ , HR 2.43, 95% CI 1.62-3.66).

**CONCLUSIONS:** Community-dwelling older adults who were male, illiterate, receiving institutional care, underweight, experiencing a depressive condition, functionally impaired, and engaging in poor health behavior were more likely to have a higher risk of mortality. The identification of geriatric syndromes might help to improve comprehensive care for community-dwelling older adults.

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**Comprehensive gait analysis of healthy older adults who have undergone long-distance walking**

Elhadi MM, Ma CZ, Wong DW, Wan AH, Lee WC.

*J. Aging Phys. Act.* 2016; ePub(ePub): ePub.

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(Copyright © 2016, Human Kinetics Publishers)

**DOI** 10.1123/japa.2016-0136 **PMID** 27834558

**Abstract**

Many older adults do not adhere to the recommended physical activity levels. This study examines the gait changes upon long-distance walking among healthy older adults. Gait tests of 24 adults aged 65 or more were conducted at the baseline, at the end of 30 and 60 minutes of treadmill walk. Spatial temporal, kinematic and kinetic gait data were computed. Perceived level of exertion was evaluated for each subject. Ten subjects (Group B) perceived higher exertion level than the remaining fourteen subjects (Group A). After walking, group B had significant reductions in dominant-side ankle joint range of motion and power, suggesting lower-leg muscle fatigue, which appeared to be compensated by significantly increased non-dominant side knee and hip motions. These changes were not observed in Group A. Differences in gait parameters between Group A and B implied that some biomechanical factors might contribute to the lack of walking of some older adults.

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### Exploring beliefs around physical activity among older adults in rural Canada

Schmidt L, Rempel G, Murray TC, McHugh TL, Vallance JK.

*Int. J. Qual. Stud. Health Well-Being* 2016; 11: e32914.

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(Copyright © 2016, Co-Action Pub.)

**DOI** unavailable **PMID** 27834180

#### Abstract

**OBJECTIVE:** As physical activity can improve health and reduce the risk of chronic disease, it is important to understand the contributing factors to physical activity engagement among older adults, particularly those living in rural communities to assist in remaining active and healthy as long as possible. The purpose of this study was to gain a deeper understanding of the socio-ecological factors that influence or contribute to physical activity among rural-dwelling older adults in rural Saskatchewan, Canada.

**METHODS:** This qualitative description explored the perceptions of physical activity among older adults living in two rural communities in the Canadian province of Saskatchewan. Semi-structured interviews were conducted with 10 adults aged 69-94. Using content analysis techniques, transcribed interview data were coded and categorized.

**RESULTS:** Participants identified socio-ecological elements facilitating physical activity such as improved health, independence, and mobility as well as social cohesion and having opportunities for physical activity. The most common perceived environmental barrier to engaging in physical activity was the fear of falling, particularly on the ice during the winter months. Participants also cited adverse weather conditions, aging (e.g., arthritis), and family members (e.g., encouraged to "take it easy") as barriers to physical activity.

**CONCLUSION:** Hearing directly from older adults who reside in rural Saskatchewan was determined to have the potential to improve awareness of physical activity in rural communities to support the implementation of programs and practices that will facilitate active lifestyles for older adults.

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### Factors associated with recurrent falls in a cohort of older adults

Abreu DR, Azevedo RC, Silva AM, Reiners AA, Abreu HC.

*Cien. Saude Colet.* 2016; 21(11): 3439-3446.

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**DOI** 10.1590/1413-812320152111.21512015 **PMID** 27828577

#### Abstract

**OBJECTIVE:** To analyze the factors associated with recurrent falls in community-dwelling older adults from Cuiabá.

**METHODS:** This is an epidemiological, prospective, concurrent cohort study with a two-year follow-up. In-home surveys were conducted in 2012 and 2013. The data were treated by the software Epi Info and SPSS. Bivariate analysis investigated associations between risk factors and recurrent falls by calculating the relative risk (RR) of the cumulative incidences with a confidence interval of 95% (95%CI). Multiple analysis with Poisson regression included all variables with  $p < 0.20$  in the crude analyses. The significance level of 5% ( $p < 0.05$ ) was adopted as significant association for remaining in the final model.

**RESULTS:** Most older adults (77.6%) had recurrent falls. The variables significantly associated with recurrent falls were older adult's income of up to two minimum salaries (RR = 1.62; 95%CI 1.04-1.77), absence of arthritis or arthrosis (RR = 1.32; 95%CI 1.10-1.48), having regular to very bad self-perceived health (RR = 1.44; 95%CI 1.12-2.04), and having visual impairment (RR = 1.23; 95%CI 1.01 -1.69).

**CONCLUSIONS:** Falls in older adults are associated with low education levels, regular to very bad self-perceived health, visual impairment, and recurrent falls.

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### Falls risk, orthostatic hypotension, and optimum blood pressure management: is it all in our heads?

Finucane C, Kenny RA.

*Am. J. Hypertens.* 2016; ePub(ePub): ePub.

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(Copyright © 2016, Elsevier Publishing)

DOI 10.1093/ajh/hpw129 PMID 27831488

Abstract [Abstract unavailable]

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### 'Falls' problematization and risk factors identification through older adults' narrative

Morsch P, Myskiw M, Myskiw JC.

Cien. Saude Colet. 2016; 21(11): 3565-3574.

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DOI 10.1590/1413-812320152111.06782016 PMID 27828589

#### Abstract

Falling is an important event for older adults as they might cause physical and psychological impairment, institutionalization and increased mortality risk. Adherence in falls prevention programs depends on older adults' perceptions in relation to falling. The current study aims to investigate the fall problematization and older adults' perception about the risk factors for falls. This is an exploratory qualitative research, conducted through content analysis approach. The sample consisted of older adults aged 60 years and older who participate in community groups in Porto Alegre (Brazil), and professors from two local universities. Final sample consisted of 22 participants, mean age was  $70.2 \pm 7.1$ . Coding and interpretation of data resulted in two thematic categories, named: falls' problematization and the perception of the risk factors for falling. The first category highlights that many older adults do not realize falling as a potential problem, which suggests that current preventive measures may not be reaching the target population. The second category shows that older adults' perceptions in relation to the risk factors exist, but often they are not avoided, because older adults consider their ability to "take care" as the main method of prevention, and due to the multifactorial nature of falls, this cannot be considered an efficient solution.

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### Getting help quickly: older people and community worker perspectives of contingency planning for falls management

Charlton K, Murray CM, Kumar S.

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

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DOI 10.1080/09638288.2016.1247470 PMID 27830948

#### Abstract

**PURPOSE:** Older people living in the community need to plan for getting help quickly if they have a fall. In this paper planning for falls is referred to as contingency planning and is not a falls prevention strategy but rather a falls management strategy. This research explored the perspectives of older people and community workers (CWs) about contingency planning for a fall.

**METHOD:** Using a qualitative descriptive approach, participants were recruited through a community agency that supports older people. In-depth interviews were conducted with seven older people (67-89 years of age) and a focus group was held with seven workers of mixed disciplines from the same agency. Older people who hadn't fallen were included but were assumed to be at risk of falls because they were in receipt of services. Thematic analysis and concept mapping combined the data from the two participant groups.

**RESULTS:** Four themes including preconceptions about planning ahead for falling, a fall changes perception, giving, and receiving advice about contingency plans and what to do about falling.

**CONCLUSION:** Both CWs and older people agree contingency planning requires understanding of individual identity and circumstances. CWs have limited knowledge about contingency planning and may be directive, informative, or conservative. Implications for Rehabilitation Falls can result in serious consequences for older people. There is an evidence-practice gap as availability of and access to contingency planning does not necessarily mean older people will use it in a falls emergency. Older people prefer community workers to be directive or informative about contingency planning options but they do want choice and control. Increased community workers knowledge of, and collaborative decision-making about, contingency planning may promote patient-centered services and assist in closing the evidence-practice gap.

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### **Intraindividual variability and falls in older adults**

Bauermeister S, Sutton G, Mon-Williams M, Wilkie R, Graveson J, Cracknell A, Wilkinson C, Holt R, Bunce D. *Neuropsychology* 2016; ePub(ePub): ePub.

(Copyright © 2016, American Psychological Association)

DOI 10.1037/neu0000328 PMID 27831695

#### **Abstract**

**OBJECTIVE:** We investigated whether a simple measure of reaction time (RT) intraindividual variability (IIV) was associated with falls in older adults. Falls and fall-related injuries represent a major cost to health care systems, it is therefore critically important to find measures that can readily identify older adults at greater risk of falling.

**METHOD:** Cognitive and motor function were investigated in 108 adults aged 53 to 93 years ( $M = 73.49$ ) recruited across the local community and hospital outpatient department. Forty-two participants had experienced either an injurious fall, or multiple falls, in the previous 2 years.

**RESULTS:** Logistic regression suggested that fallers could be distinguished from nonfallers by greater medication use, IIV, postural sway, weaker grip strength and slower gait speed. Structural equation models revealed that IIV was predictive of falls via the mediating variable of motor function (e.g., gait). IIV also predicted higher order cognition (executive function) but higher order cognitive function did not uniquely predict falls or account for the associations between IIV and falls.

**CONCLUSIONS:** These findings indicate that IIV measures capture important aspects of cognitive and motor decline and may have considerable potential in identifying older adults at risk of falling in health care and community settings. (PsycINFO Database Record (c) 2016 APA, all rights reserved).

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### **Multiscale and Shannon entropies during gait as fall risk predictors: a prospective study**

Bizovska L, Svoboda Z, Vuillerme N, Janura M.

*Gait Posture* 2016; 52: 5-10.

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(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.gaitpost.2016.11.009 PMID 27842283

#### **Abstract**

Although entropy-based measurements of gait dynamics are becoming widely used tools for fall risk assessment, their relationship to fall occurrence is still unclear. The aim of this study was hence to compare fallers and non-fallers in terms of gait dynamics assessed by the multiscale and Shannon entropy. This study included 139 participants, aged 60-80 years, divided into two groups according to fall occurrence during a 6-month prospective observation (38 fallers, 101 non-fallers). The methodology involved the use of the Tinetti balance assessment tool (TBAT) and 5min of overground walking with 3D accelerometers located near the L5 vertebra and shanks. We analyzed 150 strides for gait complexity, an index of complexity (CI), computed from multiscale entropy (MSE) and Shannon entropy (ShE) derived from the recurrence quantification analysis. We found no significant differences between groups in MSE and CI. The TBAT total score was significantly higher in non-fallers ( $P=0.033$ ), however, both groups showed low risk of falls. ShE in the anterior-posterior direction from trunk and in the medial-lateral direction from the shanks were both significantly higher in fallers ( $P=0.020$ ;  $P=0.024$ ). ShE was negatively correlated with CI, the shank ShE in the vertical direction was positively correlated with TBAT. Taken together, our findings suggest that MSE is not able to distinguish between highly functional groups, whereas Shannon entropy seems to be sufficient in fall risk prediction.

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### **Neuromuscular responses differ between slip-induced falls and recoveries in older adults**

Sawers A, Pai YC, Bhatt T, Ting LH.

*J. Neurophysiol.* 2016; ePub(ePub): ePub.

**Affiliation:** Emory University and Georgia Institute of Technology.

(Copyright © 2016, American Physiological Society)

DOI 10.1152/jn.00699.2016 PMID 27832608

#### **Abstract**

How does the robust control of walking and balance break down during a fall? As a first step in identifying the neuromuscular determinants of falls, we tested the hypothesis that falls and recoveries are characterized by

differences in neuromuscular responses. Using muscle synergy analysis, conventional onset latencies, and peak activity, we identified differences in muscle coordination between older adults who fell and those who recovered from a laboratory-induced slip. We found that subjects who fell recruited fewer muscle synergies than those who recovered, suggesting a smaller motor repertoire. During slip trials subjects who fell had delayed knee flexor and extensor onset times in the leading/slip leg, as well as different muscle synergy structure involving those muscles. Therefore, the ability to coordinate muscle activity around the knee in a timely manner may be critical to avoiding falls from slips. Unique to subjects who fell during slip trials were greater bilateral muscle activation, and the recruitment of a muscle synergy with excessive co-activation. These differences in muscle coordination between subjects who fell and those who recovered could not be explained by differences in gait-related variables at slip onset (i.e. initial motion state) nor variations in slip difficulty. This suggests that differences in muscle coordination likely reflected differences in the neural control of movement rather than biomechanical constraints imposed by perturbation or walking mechanics. These results are the first step in determining the causation of falls from the perspective of muscle coordination. They suggest that there may be a neuromuscular basis for falls.

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#### Postural stability in women in the eighth and ninth decades of life

Puszczalowska-Lizis E, Bujas P, Omorczyk J.

*Acta Bioeng. Biomech.* 2016; 18(3): 115-121.

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**DOI** unavailable **PMID** 27840433

#### Abstract

**PURPOSE:** The purpose of this paper was an attempt to evaluate changes in the level of static equilibrium and the impact of visual information on the effectiveness of postural reactions of women in geriatric age.

**METHODS:** 36 senior female residents of L.A. Helc Nursing Home in Cracow, Poland, were examined.

Considering the age, 2 groups were distinguished: group I - women at the age 71- 80 and group II - women aged 81-87. Their balance was assessed with stabilographic platform CQ Stab 2P. Measurements of the body stability were made in free standing position, with eyes open and eyes closed. Comparison of selected indicators of stability between the groups of the women was made with the Mann-Whitney U test. To assess the significance of differences between the results obtained in the test with eyes open and without visual control the Wilcoxon test was used.

**RESULTS:** Statistically significant differences between the results obtained in the groups concerned the length of the statokineziogram path on the X-axis, as well as the average speed of the COP movement on the X-axis. In the test without the visual control both groups showed statistically significant deterioration in most indicators of stability.

**CONCLUSIONS:** Loss of postural control as a result of progressive involitional changes in the aging process is characterized by the intensity of the body instability in the frontal plane. These results indicate the need of applying in the rehabilitation programmes for elderly people adequate solutions, including the exercises directed at developing new or enhancing the decaying adjustment mechanisms.

#### PDF Y Endnote Y

#### The degree of misjudgment between perceived and actual gait ability in older adults

Kluft N, van Dieen JH, Pijnappels M. *Gait Posture* 2016; 51: 275-280.

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(Copyright © 2016, Elsevier Publishing)

**DOI** 10.1016/j.gaitpost.2016.10.019 **PMID** 27842296

#### Abstract

Successful execution of motor tasks requires an integration of the perception of one's physical abilities and the perception of the task itself. Physical and cognitive decline associated with ageing may lead to misjudgments of these perceived and actual abilities and possibly to errors that may lead to balance loss. We aimed to directly quantify the degree to which older adults misjudge their actual gait ability. Twenty-seven older adults participated and were instructed to walk on a narrow path projected on a treadmill. We tested two paradigms to estimate the participants' perceived gait ability: a path width manipulation, in which participants had to indicate the smallest path width that they could walk on without stepping outside or losing balance (at given

speed), and a treadmill speed manipulation, in which they had to indicate the maximum speed that they could use at a given path width. We determined their actual ability as the probability of stepping inside the path over a range of path widths and speeds. The path width paradigm seemed suitable for evaluating self-perception of actual gait ability and revealed that participants appeared to show a range of misjudgment towards either over- or underestimating their actual abilities. Better abilities appeared not associated with better judgment. Direct quantification of the degree of misjudgment provides insight in the interplay between cognition and physical abilities and can be of added value towards prevention of falls and promotion of healthy ageing.

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#### The role of high-intensity physical exercise in the prevention of disability among community-dwelling older people

Etman A, Pierik FH, Kamphuis CB, Burdorf A, van Lenthe FJ.

*BMC Geriatr.* 2016; 16(1): e183.

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**DOI** 10.1186/s12877-016-0334-y **PMID** 27829369 **PMCID** PMC5103399

#### Abstract

**BACKGROUND:** Moderate to vigorous physical activity (MVPA) is considered important to prevent disability among community-dwelling older people. To develop MVPA programs aimed at reducing or preventing disability more insight is needed in the contributions of exercise duration and intensity and the interplay between the two.

**METHODS:** Longitudinal data of 276 Dutch community-dwelling persons aged 65 years and older participating in the Elderly And their Neighbourhood (ELANE) study were used. MVPA exercise (yes/no), duration (hours per two weeks), intensity (Metabolic Equivalent of Task; METs), and energy expenditure (MET-hours per two weeks), and disability in instrumental activities of daily living (range 0-8) were measured twice within 9 months to account for fluctuations over time. Associations between the four exercise measures and disability were tested with longitudinal tobit regression analyses.

**RESULTS:** MVPA exercise was associated with fewer disabilities. While exercise duration was not associated with disability, whereas an increase of one MET in exercise intensity was associated with 0.14 fewer disabilities (95 % CI: -0.26 to -0.02). For exercise energy expenditure, an increase of one MET-hour exercise per two weeks was associated with 0.03 fewer disabilities (95 % CI: -0.05 to -0.01).

**CONCLUSIONS:** Higher-intensity exercise may help to prevent disability among community-dwelling older people. Further investigation is needed to explore the preventive effects in more detail.

#### PDF Y Endnote Y

#### Visual, musculoskeletal, and balance complaints in AMD: a follow-up study

Zetterlund C, Richter HO, Lundqvist LO.

*J. Ophthalmol.* 2016; 2016: e2707102.

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**DOI** 10.1155/2016/2707102 **PMID** 27830084 **PMCID** PMC5088334

#### Abstract

**PURPOSE.** To investigate whether patients with age-related macular degeneration (AMD) run a potentially higher risk of developing visual, musculoskeletal, and balance complaints than age-matched controls with normal vision.

**METHODS.** Visual assessments, self-rated visual function, self-rated visual, musculoskeletal, and balance complaints, and perceived general health were obtained in 37 AMD patients and 18 controls, at baseline and after an average of 3.8 years later.

**RESULTS.** At follow-up both groups reported decreased visual acuity (VA) and visual function, but only AMD patients reported significantly increased visual, musculoskeletal, and balance complaints. Decreased VA, need for larger font size when reading, need for larger magnification, and decreased self-rated visual function were identified as risk markers for increased complaints in AMD patients. These complaints were also identified as risk markers for decreased health. For controls, decreased VA and self-reported visual function were associated with increased visual and balance complaints.

**CONCLUSIONS.** Visual deterioration was a risk marker for increased visual, musculoskeletal, balance, and health complaints in AMD patients. Specifically, magnifying visual aids, such as CCTV, were a risk marker for increased complaints in AMD patients. This calls for early and coordinated actions to treat and prevent visual, musculoskeletal, balance, and health complaints in AMD patients.

**PDF Y Endnote Y**

**CoDuSe group exercise programme improves balance and reduces falls in people with multiple sclerosis: a multi-centre, randomized, controlled pilot study**

Carling A, Forsberg A, Gunnarsson M, Nilsagård Y.

*Mult. Scler.* 2016; ePub(ePub): ePub.

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**DOI** 10.1177/1352458516677591 **PMID** 27834736

**Abstract**

**BACKGROUND:** Imbalance leading to falls is common in people with multiple sclerosis (PwMS).

**OBJECTIVE:** To evaluate the effects of a balance group exercise programme (CoDuSe) on balance and walking in PwMS (Expanded Disability Status Scale, 4.0-7.5).

**METHODS:** A multi-centre, randomized, controlled single-blinded pilot study with random allocation to early or late start of exercise, with the latter group serving as control group for the physical function measures. In total, 14 supervised 60-minute exercise sessions were delivered over 7 weeks. Pretest-posttest analyses were conducted for self-reported near falls and falls in the group starting late. Primary outcome was Berg Balance Scale (BBS). A total of 51 participants were initially enrolled; three were lost to follow-up.

**RESULTS:** Post-intervention, the exercise group showed statistically significant improvement ( $p = 0.015$ ) in BBS and borderline significant improvement in MS Walking Scale ( $p = 0.051$ ), both with large effect sizes (3.66; -2.89). No other significant differences were found between groups. In the group starting late, numbers of falls and near falls were statistically significantly reduced after exercise compared to before ( $p < 0.001$ ;  $p < 0.004$ ).

**CONCLUSION:** This pilot study suggests that the CoDuSe exercise improved balance and reduced perceived walking limitations, compared to no exercise. The intervention reduced falls and near falls frequency.

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**PDF Y Endnote Y**

**Longitudinal evaluation of Johns Hopkins Fall Risk Assessment Tool and nurses' experience**

Hur EY, Jin Y, Jin T, Lee SM.

*J. Nurs. Care Qual.* 2016; ePub(ePub): ePub.

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**DOI** 10.1097/NCQ.0000000000000235 **PMID** 27841826

**Abstract**

The Johns Hopkins Fall Risk Assessment Tool (JHFRAT) is relatively new in Korea, and it has not been fully evaluated. This study revealed that the JHFRAT had good predictive validity throughout the hospitalization period. However, 2 items (fall history and elimination patterns) on the tool were not determinants of falls in this population. Interestingly, the nurses indicated those 2 items were the most difficult items to assess and needed further training to develop the assessment skills.

**PDF N Endnote Y**

**Predicting balance improvements following STARS treatments in chronic ankle instability participants**

Wikstrom EA, McKeon PO.

*J. Sci. Med. Sport* 2016; ePub(ePub): ePub.

**Affiliation:** University of North Carolina at Chapel Hill, USA.

(Copyright © 2016, Sports Medicine Australia, Publisher Elsevier Publishing)

**DOI** 10.1016/j.jsams.2016.09.003 **PMID** 27840034

**Abstract**

**OBJECTIVES:** Sensory Targeted Ankle Rehabilitation Strategies that stimulate sensory receptors improve postural control in chronic ankle instability participants. However, not all participants have equal responses. Therefore, identifying predictors of treatment success is needed to improve clinician efficiency when treating



chronic ankle instability. Therefore, the purpose was to identify predictors of successfully improving postural control in chronic ankle instability participants.

DESIGN: Secondary data analysis.

METHODS: Fifty-nine participants with self-reported chronic ankle instability participated. The condition was defined as a history of at least two episodes of "giving way" within the past 6 months; and limitations in self-reported function as measured by the Foot and Ankle Ability Measure. Participants were randomized into three treatment groups (plantar massage, ankle joint mobilization, calf stretching) that received 6, 5-min treatment sessions over a 2-week period. The main outcome measure was treatment success, defined as a participant exceeding the minimal detectable change score for a clinician-oriented single limb balance test. RESULTS: Participants with  $\geq 3$  balance test errors had a 73% probability of treatment success following ankle joint mobilizations. Participants with a self-reported function between limb difference  $< 16.07\%$  and who made  $> 2.5$  errors had a 99% probability of treatment success following plantar massage. Those who sustained  $\geq 11$  ankle sprains had a 94% treatment success probability following calf stretching.

CONCLUSIONS: Self-reported functional deficits, worse single limb balance, and number of previous ankle sprains are important characteristics when determining if chronic ankle instability participants will have an increased probability of treatment success.

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### **Repetitive task training for improving functional ability after stroke**

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DOI 10.1002/14651858.CD006073.pub3 PMID 27841442

#### **Abstract**

**BACKGROUND:** Repetitive task training (RTT) involves the active practice of task-specific motor activities and is a component of current therapy approaches in stroke rehabilitation.

**OBJECTIVES:** Primary objective: To determine if RTT improves upper limb function/reach and lower limb function/balance in adults after stroke. Secondary objectives: 1) To determine the effect of RTT on secondary outcome measures including activities of daily living, global motor function, quality of life/health status and adverse events. 2) To determine the factors that could influence primary and secondary outcome measures, including the effect of 'dose' of task practice; type of task (whole therapy, mixed or single task); timing of the intervention and type of intervention.

**SEARCH METHODS:** We searched the Cochrane Stroke Group Trials Register (4 March 2016); the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library 2016, Issue 5: 1 October 2006 to 24 June 2016); MEDLINE (1 October 2006 to 8 March 2016); Embase (1 October 2006 to 8 March 2016); CINAHL (2006 to 23 June 2016); AMED (2006 to 21 June 2016) and SPORTSDiscus (2006 to 21 June 2016).

**SELECTION CRITERIA:** Randomised/quasi-randomised trials in adults after stroke, where the intervention was an active motor sequence performed repetitively within a single training session, aimed towards a clear functional goal.

**DATA COLLECTION AND ANALYSIS:** Two review authors independently screened abstracts, extracted data and appraised trials. We determined the quality of evidence within each study and outcome group using the Cochrane 'Risk of bias' tool and GRADE (Grades of Recommendation, Assessment, Development and Evaluation) criteria. We did not assess follow-up outcome data using GRADE. We contacted trial authors for additional information.

**MAIN RESULTS:** We included 33 trials with 36 intervention-control pairs and 1853 participants. The risk of bias present in many studies was unclear due to poor reporting; the evidence has therefore been rated 'moderate' or 'low' when using the GRADE system. There is low-quality evidence that RTT improves arm function (standardised mean difference (SMD) 0.25, 95% confidence interval (CI) 0.01 to 0.49; 11 studies, number of participants analysed = 749), hand function (SMD 0.25, 95% CI 0.00 to 0.51; eight studies, number of participants analysed = 619), and lower limb functional measures (SMD 0.29, 95% CI 0.10 to 0.48; five trials, number of participants analysed = 419). There is moderate-quality evidence that RTT improves walking distance (mean difference (MD) 34.80, 95% CI 18.19 to 51.41; nine studies, number of participants analysed = 610) and functional ambulation (SMD 0.35, 95% CI 0.04 to 0.66; eight studies, number of participants analysed = 525). We found significant differences between groups for both upper-limb (SMD 0.92, 95% CI 0.58 to 1.26;

three studies, number of participants analysed = 153) and lower-limb (SMD 0.34, 95% CI 0.16 to 0.52; eight studies, number of participants analysed = 471) outcomes up to six months post treatment but not after six months. Effects were not modified by intervention type, dosage of task practice or time since stroke for upper or lower limb. There was insufficient evidence to be certain about the risk of adverse events. AUTHORS' CONCLUSIONS: There is low- to moderate-quality evidence that RTT improves upper and lower limb function; improvements were sustained up to six months post treatment. Further research should focus on the type and amount of training, including ways of measuring the number of repetitions actually performed by participants. The definition of RTT will need revisiting prior to further updates of this review in order to ensure it remains clinically meaningful and distinguishable from other interventions.

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#### Risk of hip fracture following a wrist fracture: a meta-analysis

Johnson NA, Stirling ER, Divall P, Thompson JR, Ullah AS, Dias JJ.

*Injury* 2016; ePub(ePub): ePub.

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**DOI** 10.1016/j.injury.2016.11.002 **PMID** 27839795

#### Abstract

**AIMS:** This purpose of this meta analysis was to investigate and quantify the relative risk of hip fracture in patients who have sustained a wrist fracture.

**METHOD:** Studies were identified by searching Medline, Embase, Cochrane CENTRAL database and CINAHL from their inception to August 2015. Studies reporting confirmed hip fracture following wrist fracture were included. Data extraction was carried out using a modified Cochrane data collection form by two reviewers independently. Quality assessment was carried out using a modified Coleman score and the Newcastle Ottawa scale for cohort studies. An assessment of bias was performed for each study using a modified Cochrane Risk of Bias tool. A pooled relative risk(RR) was estimated with 95% CI from the RR/HRs and CIs reported in the studies.

**RESULTS:** 12 studies were included in the final meta-analysis (4 male, 8 female only). Relative risk of hip fracture following wrist fracture for women was 1.43 (CI 1.27 to 1.60). In men it was not significantly increased (RR 2.11, 95% CI: 0.93-4.85). Heterogeneity was low (I squared 0%) for both groups so a fixed effects model was used.

**CONCLUSION:** Risk of a subsequent hip fracture is increased for women who suffer a wrist fracture (RR 1.43). Resources and preventative measures should be targeted towards these high risk patients to prevent the catastrophic event of a hip fracture. This meta-analysis confirms and quantifies the increased relative risk of hip fracture after wrist fracture in women.

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