Effect of multimodal exercise program on physical function, falls, and injuries in older women

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J. Am. Geriatr. Soc. 2016; 64(2): 458.

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DOI 10.1111/jgs.13958 **PMID** 26889865

Abstract [Abstract unavailable]

PDF Y Endnote Y

Effect of whole-body vibration on reduction of bone loss and fall prevention in postmenopausal women: a meta-analysis and systematic review

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J. Orthop. Surg. Res. 2016; 11(1): e24.

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DOI 10.1186/s13018-016-0357-2 **PMID** 26888467

Abstract

BACKGROUND: To examine whole-body vibration (WBV) effect on bone mineral density (BMD) and fall prevention in postmenopausal women, we performed a meta-analysis and systematic review of prospective randomized controlled trials (RCTs) comparing change in BMD of the femoral neck and lumbar spine and related factors of falls between WBV group and control group.

METHODS: EMBASE, PubMed, Cochrane Central Register of Controlled Trials, ISI Web of Science, and China National Knowledge Infrastructure (CNKI) were searched up to April 2015; search strategy was used as follows: (vibration) AND (osteoporo* OR muscle* OR bone mineral density OR BMD). All prospective randomized controlled trials comparing related factors of falls and BMD change in the femoral neck and lumbar spine between WBV group and control group were retrieved.

RESULTS: Eight of 3599 studies with 1014 patients were included, 477 in the WBV group, and 537 in the control group. We found that there was no significant difference in all magnitude groups of the femoral neck (N = 936, WMD: 0.00 (-0.00, 0.01); p = 0.18). A statistical significance showed in the all magnitude groups (N = 1014, WMD: 0.01 (0.00, 0.01); p = 0.01) and low-magnitude group (N = 838, WMD: 0.01 (0.00, 0.01); p = 0.007) of the lumbar spine. No significant difference was found in high-magnitude group of the lumbar spine (N = 176, WMD: 0.00 (-0.01, 0.02); p = 0.47), low-magnitude group (N = 838, WMD: 0.00 (-0.00, 0.00); p = 0.92) and high-magnitude group (N = 98, WMD: 0.02 (-0.00, 0.05); p = 0.06) of the femoral neck. All the studies provided data of related factors of falls such as strength of the lower limb, balance, and fall rate reported effectiveness of WBV therapy. In addition, no complication was reported.

CONCLUSIONS: Low-magnitude whole-body vibration therapy can provide a significant improvement in reducing bone loss in the lumbar spine in postmenopausal women. Moreover, whole-body vibration can be used as an intervention for fall prevention.

PDF Y Endnote Y

Effects of virtual reality training Eexergaming) compared to alternative exercise training and passive control on standing balance and functional mobility in healthy community-dwelling seniors: a meta-analytical review

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Sports Med. 2016; ePub(ePub): ePub.

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DOI 10.1007/s40279-016-0485-1 **PMID** 26886474

Abstract

BACKGROUND: Balance training is considered an important means to decrease fall rates in seniors. Whether virtual reality training (VRT) might serve as an appropriate treatment strategy to improve neuromuscular fall risk parameters in comparison to alternative balance training programs (AT) is as yet unclear.

OBJECTIVE: To examine and classify the effects of VRT on fall-risk relevant balance performance and functional mobility compared to AT and an inactive control condition (CON) in healthy seniors. DATA SOURCES: The literature search was conducted in five databases (CINAHL, EMBASE, ISI Web of Knowledge, PubMed, SPORTDiscus). The following search terms were used with Boolean conjunction: (exergam* OR exer-gam* OR videogam* OR video-gam* OR video-based OR computer-based OR Wii OR Nintendo OR X-box OR Kinect OR play-station OR playstation OR virtua* realit* OR dance dance revolution) AND (sport* OR train* OR exercis* OR intervent* OR balanc* OR strength OR coordina* OR motor control OR postur* OR power OR physical* OR activit* OR health* OR fall* risk OR prevent*) AND (old* OR elder* OR senior*). STUDY SELECTION: Randomized and non-randomized controlled trials applying VRT as interventions focusing on improving standing balance performance (single and double leg stance with closed and open eyes, functional reach test) and functional mobility (Berg balance scale, Timed-up and go test, Tinetti test) in healthy community-dwelling seniors of at least 60 years of age were screened for eligibility. DATA EXTRACTION: Eligibility and study quality (PEDro scale) were independently assessed by two researchers. Standardized mean differences (SMDs) served as main outcomes for the comparisons of VRT versus CON and VRT versus AT on balance performance and functional mobility indices. Statistical analyses were conducted using a random effects inverse-variance model.

RESULTS: Eighteen trials (mean PEDro score: 6 ± 2) with 619 healthy community dwellers were included. The mean age of participants was 76 ± 5 years. Meaningful effects in favor of VRT compared to CON were found for balance performance [$p < 0.001$, SMD: 0.77 (95 % CI 0.45-1.09)] and functional mobility [$p = 0.004$, SMD: 0.56 (95 % CI 0.25-0.78)]. Small overall effects in favor of AT compared to VRT were found for standing balance performance [$p = 0.31$, SMD: -0.35 (95 % CI -1.03 to 0.32)] and functional mobility [$p = 0.05$, SMD: -0.44 (95 % CI: -0.87 to 0.00)]. Sensitivity analyses between "weaker" (n = 9, PEDro ≤5) and "stronger" (n = 9, PEDro ≥6) studies indicated that weaker studies showed larger effects in favor of VRT compared to CON regarding balance performance ($p < 0.001$).

CONCLUSIONS: Although slightly less effective than AT, VRT-based balance training is an acceptable method for improving balance performance as well as functional mobility outcomes in healthy community dwellers.

VRT might serve as an attractive complementary training approach for the elderly. However, more high-quality research is needed in order to derive valid VRT recommendations compared to both AT and CON.

PDF Endnote Y

Falls prevention education: interprofessional training to enhance collaborative practice

McKenzie G, Lasater K, DeLander GE, Neal MB, Morgove M, Eckstrom E.

Gerontol. Geriatr. Educ. 2016; ePub(ePub): ePub.

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DOI 10.1080/02701960.2015.1127809 **PMID** 26886245

Abstract

The gap between the complex health care needs of older adults and the availability of geriatrics-trained health care professionals is widening. Interprofessional education offers an opportunity to engage multiple professions in interactive learning and clinically relevant problem-solving to achieve high quality patient-centered care. This article describes a project that engaged an interprofessional teaching team to support interprofessional practice teams to reduce falls in older adults via implementation of evidence-based practice guidelines. Ninety-five participants from 25 teams were trained on multiple strategies to decrease the risk of falls in older adults. The intervention facilitated increases in knowledge, confidence in skill performance, and team commitment to change practice patterns to support the health and safety of older adults. Our findings suggest that community based practices can successfully support the training of interprofessional teams and that training may lead to improved care processes and outcomes for older adults.

PDF Y Endnote Y

Gait cost of using a mobility aid in older adults with Alzheimer's disease

Muir-Hunter SW, Montero-Odasso M.

J. Am. Geriatr. Soc. 2016; 64(2): 437-438.

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DOI 10.1111/jgs.13973 **PMID** 26889848

Abstract [Abstract unavailable]

PDF Y Endnote Y

ICT-based system to predict and prevent falls (iStoppFalls): results from an international multicenter randomized controlled trial

Gschwind YJ, Eichberg S, Ejupi A, de Rosario H, Kroll M, Marston HR, Drobics M, Annegarn J, *Wieching R, Lord SR, Aal K, Vaziri D, Woodbury A, Fink D, Delbaere K.*

Eur. Rev. Aging Phys. Activ. 2015; 12: e10.

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DOI 10.1186/s11556-015-0155-6 **PMID** 26865874 **PMCID** PMC4748323

Abstract

BACKGROUND: Falls and fall-related injuries are a serious public health issue. Exercise programs can effectively reduce fall risk in older people. The iStoppFalls project developed an Information and Communication Technology-based system to deliver an unsupervised exercise program in older people's homes. The primary aims of the iStoppFalls randomized controlled trial were to assess the feasibility (exercise adherence, acceptability and safety) of the intervention program and its effectiveness on common fall risk factors.
METHODS: A total of 153 community-dwelling people aged 65+ years took part in this international, multicentre, randomized controlled trial. Intervention group participants conducted the exercise program for 16 weeks, with a recommended duration of 120 min/week for balance exergames and 60 min/week for strength exercises. All intervention and control participants received educational material including advice on a healthy lifestyle and fall prevention. Assessments included physical and cognitive tests, and questionnaires for health, fear of falling, number of falls, quality of life and psychosocial outcomes.
RESULTS: The median total exercise duration was 11.7 h (IQR = 22.0) over the 16-week intervention period. There were no adverse events. Physiological fall risk (Physiological Profile Assessment, PPA) reduced significantly more in the intervention group compared to the control group ($F_{1,127} = 4.54$, $p = 0.035$). There was a significant three-way interaction for fall risk assessed by the PPA between the high-adherence (>90 min/week; n = 18, 25.4 %), low-adherence (<90 min/week; n = 53, 74.6 %) and control group ($F_{2,125} = 3.12$, n = 75, $p = 0.044$). Post hoc analysis revealed a significantly larger effect in favour of the high-adherence group compared to the control group for fall risk ($p = 0.031$), postural sway ($p = 0.046$), stepping reaction time ($p = 0.041$), executive functioning ($p = 0.044$), and quality of life (p for trend = 0.052).
CONCLUSIONS: The iStoppFalls exercise program reduced physiological fall risk in the study sample. Additional subgroup analyses revealed that intervention participants with better adherence also improved in postural sway, stepping reaction, and executive function. TRIAL REGISTRATION: Australian New Zealand Clinical Trials Registry Trial ID: ACTRN12614000096651 International Standard Randomised Controlled Trial Number: ISRCTN15932647.
PDF Y Endnote Y

Influence of barefoot, minimalist, and standard footwear conditions on gait and balance in healthy older adults
Broscheid KC, Zech A.
J. Am. Geriatr. Soc. 2016; 64(2): 435-437.
Affiliation: Department of Exercise Physiology, University of Jena, Jena, Germany.

DOI 10.1111/jgs.13980 **PMID** 26889847
Abstract [Abstract unavailable]
PDF Y Endnote Y

Intern boot camp: feasibility and impact of a one-hour session to ensure graduating medical student competency in falls risk assessment
Omlor RL, Watkins FS, Lawlor JS, Lovato JF, Fino NF, Atkinson HH.
Gerontol. Geriatr. Educ. 2016; ePub(ePub): ePub.
Affiliation : Section on Gerontology and Geriatric Medicine, Department of Internal Medicine , Wake Forest School of Medicine.

DOI 10.1080/02701960.2015.1115982 **PMID** 26885576
Abstract
INTRODUCTION: We evaluated the feasibility of a one-hour session to ensure competency in gait and falls risk assessment for medical students at our institution.
METHODS: The session included a history and exam with faculty and staff as standardized patients, gait recognition videos, and case evaluation for falls risk assessment and prevention. Student perceptions were evaluated using a retrospective pre-post survey, scored on a five-point Likert scale. Wilcoxon signed rank tests were used to assess change and Kruskal Wallis tests to analyze differences by residency choice.
RESULTS: A range of 5-11 faculty and staff certified 238 medical students during eight one-hour sessions. Overall self-perception of competence in falls risk assessment and prevention improved ($p = < 0.001$), and did not differ by residency choice, both before and after the training program ($p = 0.73$ and $p = 0.25$). Feedback was positive.
DISCUSSION: This session is a feasible way to teach and assess the competency for falls risk assessment with modest time commitment.
PDF Y Endnote Y

Involvement of older people in the development of fall detection systems: a scoping review
Thilo FJ, Hürlimann B, Hahn S, Bilger S, Schols JM, Halfens RJ.
BMC Geriatr. 2016; 16(1): e42.
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DOI 10.1186/s12877-016-0216-3 **PMID** 26869259 **PMCID** PMC4750302
Abstract
BACKGROUND: The involvement of users is recommended in the development of health related technologies, in order to address their needs and preferences and to improve the daily usage of these technologies. The objective of this literature review was to identify the nature and extent of research involving older people in the development of fall detection systems.
METHODS: A scoping review according to the framework of Arksey and O'Malley was carried out. A key term search was employed in eight relevant databases. Included articles were summarized using a predetermined charting form and subsequently thematically analysed.
RESULTS: A total of 53 articles was included. In 49 of the 53 articles, older people were involved in the design and/or testing stages, and in 4 of 53 articles, they were involved in the conceptual or market deployment stages. In 38 of the 53 articles, the main focus of the involvement of older people was technical aspects. In 15 of the 53 articles, the perspectives of the elderly related to the fall detection system under development were determined using focus groups, single interviews or questionnaires.
CONCLUSIONS: Until presently, involvement of older people in the development of fall detection systems has focused mainly on technical aspects. Little attention has been given to the specific needs and views of older people in the context of fall detection system development and usage.
PDF Y Endnote Y

Kinect-based choice reaching and stepping reaction time tests for clinical and in-home assessment of fall risk in older people: a prospective study

Ejupi A, Gschwind YJ, Brodie M, Zagler WL, Lord SR, Delbaere K.

Eur. Rev. Aging Phys. Activ. 2016; 13: 2.

Affiliation: Neuroscience Research Australia, University of New South Wales, Sydney, Australia.

DOI 10.1186/s11556-016-0162-2 **PMID** 26865881 **PMCID** PMC4748330

Abstract

BACKGROUND: Quick protective reactions such as reaching or stepping are important to avoid a fall or minimize injuries. We developed Kinect-based choice reaching and stepping reaction time tests (Kinect-based CRTs) and evaluated their ability to differentiate between older fallers and non-fallers and the feasibility of administering them at home.

METHODS: A total of 94 community-dwelling older people were assessed on the Kinect-based CRTs in the laboratory and were followed-up for falls for 6 months. Additionally, a subgroup (n = 20) conducted the Kinect-based CRTs at home. Signal processing algorithms were developed to extract features for reaction, movement and the total time from the Kinect skeleton data.

RESULTS: Nineteen participants (20.2 %) reported a fall in the 6 months following the assessment. The reaction time (fallers: 797 ± 136 ms, non-fallers: 714 ± 89 ms), movement time (fallers: 392 ± 50 ms, non-fallers: 358 ± 51 ms) and total time (fallers: 1189 ± 170 ms, non-fallers: 1072 ± 109 ms) of the reaching reaction time test differentiated well between the fallers and non-fallers. The stepping reaction time test did not significantly discriminate between the two groups in the prospective study. The correlations between the laboratory and in-home assessments were 0.689 for the reaching reaction time and 0.860 for stepping reaction time.

CONCLUSION: The study findings indicate that the Kinect-based CRT tests are feasible to administer in clinical and in-home settings, and thus represents an important step towards the development of sensor-based fall risk self-assessments. With further validation, the assessments may prove useful as a fall risk screen and home-based assessment measures for monitoring changes over time and effects of fall prevention interventions.

PDF Y Endnote Y

Preventing avoidable incidents leading to a presentation to the emergency department (ED) by older adults with cognitive impairment: protocol for a scoping review

Provencher V, Généreux M, Gagnon-Roy M, Veillette N, Egan M, Sirois MJ, Lacasse F, Rose K, Stocco S.

BMJ Open 2016; 6(2): e009818.

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DOI 10.1136/bmjopen-2015-009818 **PMID** 26873049

Abstract

INTRODUCTION: Older adults with cognitive impairment represent a large portion (21-42%) of people (65+) who consult at an emergency department (ED). Because this sub-group is at higher risk for hospitalisation and mortality following an ED visit, awareness about 'avoidable' incidents should be increased in order to prevent presentations to the ED due to such incidents. This study aims to synthetise the actual knowledge related to 'avoidable' incidents (ie, traumatic injuries, poisoning and

other consequences of external causes) (WHO, 2016) leading to ED presentations in older people with cognitive impairment.
METHODOLOGY AND ANALYSIS: A scoping review will be performed. Scientific and grey literature (1996-2016) will be searched using a combination of key words pertaining to avoidable incidents, ED presentations, older adults and cognitive impairment. A variety of databases (MEDLINE, CINAHL, Ageline, SCOPUS, ProQuest Dissertations/theses, EBM Reviews, Healthstar), online library catalogues, governmental websites and published statistics will be examined. Included sources will pertain to community-dwelling older adults presenting to the ED as a result of an avoidable incident, with the main focus on those with cognitive impairment. Data (eg, type, frequency, severity, circumstances of incidents, preventive measures) will be extracted and analysed using a thematic chart and content analysis.
DISCUSSION AND DISSEMINATION: This scoping review will provide a picture of the actual knowledge on the subject and identify knowledge gaps in existing literature to be filled by future primary researches.
FINDINGS will help stakeholders to develop programmes in order to promote safe and healthy environments and behaviours aimed at reducing avoidable incidents in seniors, especially those with cognitive impairment.
PDF Y Endnote Y

The design of a purpose-built exergame for fall prediction and prevention for older people
Marston HR, Woodbury A, Gschwind YJ, Kroll M, Fink D, Eichberg S, Kreiner K, Ejupi A, Annegarn J, de Rosario H, Wienholtz A, Wieching R, Delbaere K.
Eur. Rev. Aging Phys. Activ. 2015; 12: e13.
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DOI 10.1186/s11556-015-0157-4 **PMID** 26865877 **PMCID** PMC4748324
Abstract
BACKGROUND: Falls in older people represent a major age-related health challenge facing our society. Novel methods for delivery of falls prevention programs are required to increase effectiveness and adherence to these programs while containing costs. The primary aim of the Information and Communications Technology-based System to Predict and Prevent Falls (iStoppFalls) project was to develop innovative home-based technologies for continuous monitoring and exercise-based prevention of falls in community-dwelling older people. The aim of this paper is to describe the components of the iStoppFalls system.
METHODS: The system comprised of 1) a TV, 2) a PC, 3) the Microsoft Kinect, 4) a wearable sensor and 5) an assessment and training software as the main components.
RESULTS: The iStoppFalls system implements existing technologies to deliver a tailored home-based exercise and education program aimed at reducing fall risk in older people. A risk assessment tool was designed to identify fall risk factors. The content and progression rules of the iStoppFalls exergames were developed from evidence-based fall prevention interventions targeting muscle strength and balance in older people.
CONCLUSIONS: The iStoppFalls fall prevention program, used in conjunction with the multifactorial fall risk assessment tool, aims to provide a comprehensive and individualised, yet novel fall risk assessment and prevention program that is feasible for widespread use to prevent falls and fall-

related injuries. This work provides a new approach to engage older people in home-based exercise programs to complement or provide a potentially motivational alternative to traditional exercise to reduce the risk of falling.
PDF Y Endnote Y

The effect of sensor-based exercise at home on functional performance associated with fall risk in older people - a comparison of two exergame interventions
Gschwind YJ, Schoene D, Lord SR, Ejupi A, Valenzuela T, Aal K, Woodbury A, Delbaere K.
Eur. Rev. Aging Phys. Activ. 2015; 12: e11.
Affiliation: NeuRA, UNSW, Randwick, Australia.

DOI 10.1186/s11556-015-0156-5 **PMID** 26865875 **PMCID** PMC4748327
Abstract
BACKGROUND: There is good evidence that balance challenging exercises can reduce falls in older people. However, older people often find it difficult to incorporate such programs in their daily life. Videogame technology has been proposed to promote enjoyable, balance-challenging exercise. As part of a larger analysis, we compared feasibility and efficacy of two exergame interventions: step-mat-training (SMT) and Microsoft-Kinect® (KIN) exergames.
METHODS: 148 community-dwelling people, aged 65+ years participated in two exergame studies in Sydney, Australia (KIN: n = 57, SMT: n = 91). Both interventions were delivered as unsupervised exercise programs in participants' homes for 16 weeks. Assessment measures included overall physiological fall risk, muscle strength, finger-press reaction time, proprioception, vision, balance and executive functioning.
RESULTS: For participants allocated to the intervention arms, the median time played each week was 17 min (IQR 32) for KIN and 48 min (IQR 94) for SMT. Compared to the control group, SMT participants improved their fall risk score (p = 0.036), proprioception (p = 0.015), reaction time (p = 0.003), sit-to-stand performance (p = 0.011) and executive functioning (p = 0.001), while KIN participants improved their muscle strength (p = 0.032) and vision (p = 0.010), and showed a trend towards improved fall risk scores (p = 0.057).
CONCLUSIONS: The findings suggest that it is feasible for older people to conduct an unsupervised exercise program at home using exergames. Both interventions reduced fall risk and SMT additionally improved specific cognitive functions. However, further refinement of the systems is required to improve adherence and maximise the benefits of exergames to deliver fall prevention programs in older people's homes. TRIAL REGISTRATIONS: ACTRN12613000671763 (Step Mat Training RCT) ACTRN12614000096651 (MS Kinect RCT).
PDF Y Endnote Y

The relationship between older adults' risk for a future fall and difficulty performing activities of daily living
Mamikonian-Zarpas A., Laganà L.
J. Aging Gerontol. 2015; 3(1): 8-16.

DOI unavailable **PMID** unavailable
Abstract

Functional status is often defined by cumulative scores across indices of independence in performing basic and instrumental activities of daily living (ADL/IADL), but little is known about the unique relationship of each daily activity item with the fall outcome. The purpose of this retrospective study was to examine the level of relative risk for a future fall associated with difficulty with performing various tasks of normal daily functioning among older adults who had fallen at least once in the past 12 months. The sample was comprised of community-dwelling individuals 70 years and older from the 1984-1990 Longitudinal Study of Aging by Kovar, Fitti, and Chyba (1992). Risk analysis was performed on individual items quantifying 6 ADLs and 7 IADLs, as well as 10 items related to mobility limitations. Within a subsample of 1,675 older adults with a history of at least one fall within the past year, the responses of individuals who reported multiple falls were compared to the responses of participants who had a single fall and reported 1) difficulty with walking and/or balance (FRAIL group, n = 413) vs. 2) no difficulty with walking or dizziness (NDW+ND group, n = 415). The items that had the strongest relationships and highest risk ratios for the FRAIL group (which had the highest probabilities for a future fall) included difficulty with: eating (73%); managing money (70%); biting or chewing food (66%); walking a quarter of a mile (65%); using fingers to grasp (65%); and dressing without help (65%). For the NDW+ND group, the most noteworthy items included difficulty with: bathing or showering (79%); managing money (77%); shopping for personal items (75%); walking up 10 steps without rest (72%); difficulty with walking a quarter of a mile (72%); and stooping/crouching/kneeling (70%). These findings suggest that individual items quantifying specific ADLs and IADLs have substantive relationships with the fall outcome among older adults who have difficulty with walking and balance, as well as among older individuals without dizziness or difficulty with walking. Furthermore, the examination of the relationships between items that are related to more challenging activities and the fall outcome revealed that higher functioning older adults who reported difficulty with the 6 items that yielded the highest risk ratios may also be at elevated risk for a fall.

PDF Y Endnote Y

Falls and fear of falling in vertigo and balance disorders: a controlled cross-sectional study

Schlick C, Schniepp R, Loidl V, Wuehr M, Hesselbarth K, Jahn K.

J. Vestib. Res. 2016; 25(5-6): 241-251.

Affiliation: Schön Klinik Bad Aibling, Germany.

DOI 10.3233/VES-150564 **PMID** 26890425

Abstract

BACKGROUND: Vertigo and dizziness are among the most prevalent symptoms in neurologic disorders. Although many of these patients suffer from postural instability and gait disturbances, there is only limited data on their risk of falling.

METHODS: We conducted a controlled cross-sectional study at the tertiary care outpatient clinic of the German Center for Vertigo and Balance Disorders using a self-administered questionnaire to assess falls, fall-related injuries, and fear of falling. The recruitment period was 6 months.

RESULTS: A total of 569 patients (mean age 59.6 ± 17.1 years, 55% females) and 100 healthy participants were included (response rate > 90%). Dizzy patients with central balance disorders (Parkinsonian, cerebellar, and brainstem oculomotor syndromes) had the highest fall rates (> 50% recurrent fallers, odds ratio > 10). The rate of recurrent fallers was 30% in bilateral vestibular failure and peripheral neuropathy (odds ratio > 5). Patients with functional dizziness (somatoform or phobic

vertigo) were concerned about falling but did not fall more often than healthy controls (odds ratio 0.87).
CONCLUSION: Falls are common in patients presenting to a dizziness unit. Those with central syndromes are at risk of recurrent and injurious falling. Fall rates and fear of falling should be assessed in balance disorders and used to guide the regimen of rehabilitation therapy. The identification of risk factors would help provide protective measures to these groups of patients.
PDF Endnote Y

Falls resulting from a laboratory-induced slip occur at a higher rate among individuals who are obese

Allin LJ, Wu X, Nussbaum MA, Madigan ML.
J. Biomech. 2016; ePub(ePub): ePub.
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DOI 10.1016/j.jbiomech.2016.01.018 **PMID** 26897650
Abstract
Falls due to slipping are a serious concern, with slipping estimated to cause 40-50% of all fall-related injuries. Epidemiological data indicates that older and obese adults experience more falls than young, non-obese individuals. An increasingly heavier and older U.S. population and workforce may be exacerbating the problem of slip-induced falls. The purpose of this study was to investigate the effects of obesity and age on slip severity and rate of falling resulting from laboratory-induced slips. Four groups of participants (young obese, young non-obese, older obese, older non-obese) were slipped while walking at a self-selected, slightly hurried pace. Slip severity (slip distance, slip duration, mean slip speed and peak slip speed) and slip outcome (fall or recovery) were compared between groups. Obese individuals experienced 22% faster slips than non-obese individuals in terms of mean slip speed (p=0.022). Obesity did not affect slip distance, slip duration or peak slip speed. Obese individuals also exhibited a higher rate of falls; 32% of obese individuals fell compared to 10% of non-obese (p=0.005). Obese individuals were more than eight times more likely to experience a fall than non-obese individuals when adjusting for age, gender and gait speed. No age effects were found for slip severity or slip outcome. These results, along with epidemiological data reporting higher fall rates among the obese, indicate that obesity may be a significant risk factor for experiencing slip-induced falls. Slip severity thresholds were also reported that may have value in developing controls for fall prevention.
PDF Y Endnote Y

Indoor and outdoor falls in persons with Parkinson's disease after 1 year follow-up study: differences and consequences

Gazibara T, Kisic-Tepavcevic D, Svetel M, Tomić A, Stankovic I, Kostić VS, Pekmezović T.
Neurol. Sci. 2016; ePub(ePub): ePub.
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DOI 10.1007/s10072-016-2504-2 **PMID** 26879312

Abstract
Falls among persons with Parkinson's disease (PD) often result in activity limitations, participation restrictions, social isolation or premature mortality. The purpose of this 1-year follow-up study was to compare potential differences in features of PD attributing to falls in relation to fall location (outdoor vs. indoor). We recruited 120 consecutive persons with PD who denied having fallen in the past 6 months. Disease stage and severity was assessed using the Hoehn and Yahr scale and the newer version of the Unified Parkinson's Disease Rating Scale. Occurrence of falling and characteristics of falls was followed for 1 year.
RESULTS were assessed statistically. Outdoor falls were more commonly preceded by the extrinsic factors (tripping and slipping). Slipping was more common outdoors (p = 0.001). Indoor falls were mostly preceded by the intrinsic factors (postural instability, lower extremity weakness, vertigo). Vertigo was more common indoors (p = 0.006). Occurrence of injuries was more common after outdoor falls (p = 0.001). Indoor falls resulted in contusions only, while outdoor falls resulted in lacerations and fractures as well. In the regression model adjusted for age, disease duration, on/off phase during fall, Hoehn and Yahr stage of disease and levodopa dosage, slipping was associated with outdoor falling (odds ratio = 17.25, 95 % confidence interval 3.33-89.20, p = 0.001). These findings could be used to tailor fall prevention program with emphasis on balance recovery and negotiation of objects in environment.
PDF Y Endnote Y

Low vision rehabilitation, age-related vision loss, and risk: a critical interpretive synthesis
Laliberte Rudman D, Egan MY, McGrath CE, Kessler D, Gardner P, King J, Ceci C.
Gerontologist 2016; ePub(ePub): ePub.
Faculty of Nursing, University of Alberta, Edmonton, Canada.

DOI 10.1093/geront/gnv685 **PMID** 26888757
Abstract
PURPOSE: Given the centrality of risk in geriatric rehabilitation, it is critically important to attend to how conceptualizations of risk shape research, policies, and rehabilitation practices. This paper presents a critical interpretive synthesis (CIS) of literature addressing risk and low vision rehabilitation for older adults with age-related vision loss (ARVL) to identify key guiding assumptions regarding risk and discuss implications for what gets attended to, and not attended to, within research and rehabilitation.
DESIGN AND METHODS: This CIS combined guidelines proposed by Dixon-Woods and colleagues (2006-Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. BMC Medical Research Methodology, 6, 35) and Alvesson and Sandberg (2011-Generating research questions through problematization. Academy of Management Review, 36, 247-271; 2013-Constructing research questions: Doing interesting research. London: Sage). The iterative review process involved 3 steps: literature search and selection, data extraction, and syntheses to identify boundary assumptions. The dataset included 83 research and practice description articles.
RESULTS: Older adults with ARVL were constructed as "at risk" for various adverse outcomes, particularly dependency and self-harm, and as posing risks to others. An epidemiological approach to risk based in assumptions aligned with a technico-scientific perspective was dominant, with risk

conceptualized as an embodied, individual-level phenomenon that is to be determined and managed through objective screening and expert monitoring.
IMPLICATIONS: Key concerns include a lack of: attention to the tensions created when rehabilitation research and practice attempt to promote independence while simultaneously reducing risk, incorporation of aging adults' perspectives on risk, and analysis of environmental factors that shape risks. Research that starts by valuing older adults' experiences and attends to context can inform rehabilitation practices that support health-promoting, risk-taking, and facilitate collaborative approaches to risk management.
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Muscle strength, mobility, quality of life and falls in patients on maintenance haemodialysis: A prospective study
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Abstract
AIM: To explore i) the relationship between quality of life (QOL) and physical parameters (muscle strength and mobility) among people undergoing maintenance haemodialysis, ii) changes in strength and mobility over time and predictors of changes and iii) whether strength and mobility were associated with falls.
METHODS: We recruited 51 maintenance haemodialysis patients to a prospective longitudinal study. Baseline QOL was assessed using the SF-36 physical (PCS) and mental component summary scores (MCS). Muscle strength (ankle dorsiflexion strength measured with a hand held dynamometer), mobility (Short Physical Performance Battery, SPPB) and falls history were assessed at baseline, 12 and 36 months. Associations between variables at baseline were assessed with linear regression models. Changes in physical parameters were evaluated with paired T-tests and prediction of falls assessed by negative binominal regression.
RESULTS: Fifty and 34 patients completed 12 and 36 month follow-ups respectively. Baseline mobility but not muscle strength correlated with PCS ($P = 0.01$ and $P = 0.23$ respectively). Neither correlated with MCS. At 12-months, muscle strength and mobility had significantly deteriorated (mean AS 11.0 lb (SD 1.5) from 14.0 lb (SD 2.2), $P < 0.01$; SPPB 8.5 (SD 2.8) from 9.3 (SD 2.6), $P < 0.01$). Falls at 12 and 36 months were predicted by baseline mobility ($P = 0.06$ and $P = 0.02$ respectively) but not muscle strength.
CONCLUSION: Physical parameters appear to be associated with meaningful patient outcomes and showed measurable deterioration over relatively short time frames. Interventions, with the potential to slow physical decline in people receiving maintenance dialysis, such as exercise programs, warrant further investigation. This article is protected by copyright. All rights reserved.
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