fall-related injuries in community-dwelling older adults. Future analyses will examine risk observed with cumulative CNS-active medication burden as measured by dose.

PREDICTING FALLS OF PRECLINICAL ALZHEIMER'S DISEASE

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Preclinical Alzheimer's Disease (AD), is defined as beginning with the *in vivo* presence of elevated cerebral amyloid-beta (Aβ) burden measured by positron emission tomography (PET) tracers for Aβ and/or reduced levels of $Aβ_{42}$ in the cerebrospinal fluid (CSF). These biomarkers presage conversion from cognitive normality to symptomatic AD. The purpose of this study is to explore falls among cognitive normal (CN) older adults in presumptive preclinical AD.Studies of biomarkers for Alzheimer disease (AD) have provided clear evidence for the existence of a preclinical phase of the disease. A retrospective cohort study was conducted using multiple linear regression to test if each biomarker could predict feature of falls while controlling for age and gender. Participants who age 65 or over, enrolled in biomarkers procedure, were CN at base line, and had fall information in three consecutive years were included in the analysis.There were 97 older adults with PET amlyoid imaging data, and 99 with CSF biomarker data. PET imaging could not significantly predict frequency of falls nor severity of falls. CSF biomarker $Aβ_{42}$ was a significant predictor of both frequency of falls (F=4.58, p=.01, R=.57, R^2=.33) and severity of falls (F=4.15, p=.02, R=.55, R^2=.31) at year three (n=34). The results showed that frequency of falls and severity of falls are associated with $Aβ_{42}$ among cognitively normal older adults. Falls may be a risk for preclinical AD. Future studies should examine the effectiveness of effective fall prevention strategies in this population.

DESIGN CONSIDERATIONS FOR FALLS PREVENTION INTERVENTIONS FOR OLDER ADULTS WITH VISION IMPAIRMENTS

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Introduction: Falls lead to serious injury, death, and loss of independence especially among older adults with vision impairment. As vision impairment cases increase, adapted falls prevention programs could assist in reducing falls. Methods: This randomized controlled trial tested the efficacy of Balancing Act (BA) a self administered balance program designed for in home use among older adults with vision impairments (N=66 at baseline). Specifically, independent living older adults with vision of 20/70 or worse either participated in the BA intervention (N = 23) or the control group (N = 30). The prescribed frequency of BA exercises was three times per week in 15 minute intervals. Program vision adaptations included large font, Braille, and audio versions of the BA manual, Tinetti Gait and Balance, among other validated assessments were conducted at baseline, 2, 4 and 6 months. Results: Balancing Act instruction clarity ranged from 47.4% indicating instructions were "Very Clear", 15.8% "Clear", 5.3% neutral, and 31.6% indicating instructions were "Unclear". Support for BA exercise adherence in the form of weekly telephone calls indicated that approximately 50% of participants found these helpful to varying degrees. Participants endorsed the training schedule (79%). Tinetti assessment outcomes indicated significance in a two-tailed Anova for the treatment group at 4 months (P= 0.048) but failed to continue significance at 6 months (P= 0.747). Conclusion: This study confirmed the importance of balance training for older adults with vision impairment and the value of measured dosages of social support.

THE TEMPORAL SEQUENCE OF COGNITION AND MOBILITY IN AGING

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Slower gait is strongly associated with poorer cognitive function, particularly executive function and psychomotor speed. The temporal sequence between mobility and cognition remains unanswered. Understanding the temporal sequence is critical in developing preventive strategies since cognitive and mobility-related deficits are major contributors to late life disability. 1,004 participants aged 50 and older from the Baltimore Longitudinal Study of Aging were prospectively followed up. Data on cognition and mobility were collected every four years for those aged 50 to 60, every two years for those aged 60 to 79 and annually for those aged 80 and older. Auto-regression models were used to examine the temporal sequence between cognition (Trails Making Test part B (TMT-B), Digit Symbol Substitution Test (DSST), California Verbal Learning Test (CVLT)) and mobility (usual gait speed, 400m time). After adjustment for age and sex, there was a bidirectional relationship between all three cognitive measures and usual gait speed; specifically, slower gait was associated with poorer cognition at the next time point and vice versa. There was also a bidirectional relationship of TMT-B and DSST with 400m time. Interestingly, there was a one-way relationship between 400m time and CVLT; longer 400m time was associated with lower CVLT score at the next time point, but not the other way around. These findings suggest that executive function and mobility may worsen in parallel. However, poor mobility performance in challenging tasks, such as 400 walk, may be an early indicator of memory deficit.

A SPECIFIC GAIT PROFILE UNDER DUAL-TASK CONDITION IN INJURED OLDER FALLERS

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Dual-task paradigms were often used to reveal inter-relationships between gait and cognition and predict falls in the elderly. However, methodological biases have been reported and the issue of a specific dual-task profile in

injured fallers has not yet been addressed. Thus, the objective of this study was twofold: 1/to test the relevance of applying the recently developed visuospatial WalkMOT dual-task, shown to discriminate young-old from old-old healthy adults (Pothier et al. 2014), to older adults with a fall history; this dual-task combines walking along an 8-m walkway with a Multiple-Object Tracking (MOT) task in which participants have to track moving targets among similar distractors; 2/to compare dual-task performance of fallers with and without a fracture.

Preliminary results, obtained in 27 fallers (10 without and 17 with upper-limb fracture (67.1 ± 6.4 *vs* 67.3 ± 8.5 years old)) showed that: 1/overall, walking speed (p<0.001) and MOT performance (p<0.001) significantly decreased when both tasks were performed simultaneously; 2/as compared to participants with harmless fall, injured fallers performed significantly worse on the MOT task in the single condition (p<0.05, ANCOVA) but slowed down significantly less when walking in dual-task condition (p<0.05, ANCOVA).

These promising preliminary results: 1/highlight the relevance of the WalkMOT dual-task in fallers, and 2/show a specific gait and cognitive profile in injured fallers. Of particular interest is the lack of slowdown of injured fallers, likely reflecting a lack of priority given to gait, under complex dual-task conditions, which could hold responsible for the gravity of their fall.

FEAR OF FALLING IN SENSORY IMPAIRED NURSING HOME RESIDENTS: PREVALENCE AND CORRELATES

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Fear of falling (FOF) is a risk factor for falls and disability in nursing home (NH) residents. Vision impairment (VI) and/or hearing impairment (HI) are risk factors for falls and FOF, but little is known about the relationships between sensory impairments (SI), fear of falling and other factors in this vulnerable population. VI is present in up to 50% and HI has been found in anywhere from 64% to 90% of nursing home residents. This study evaluated prevalence and correlates of FOF in NH residents with SI (N=217) [NR 008777]. Residents were evaluated for FOF, falls self-efficacy, cognition, depression, and function. Mean age was 86.3 years, female (n=164, 74.5%) and Caucasian (n=198, 91.2%). SI included VI only (n=65, 41.4%), HI only (44, 28.0%), and dual impairment (n=48, 30.6%). The sample was equally divided between FOF (n=111, 51.2%) and no FOF (n=106, 48.8%). Correlates of FOF for the total sample and by SI included: those with higher cognition (MMSE) were more fearful (p<0.0005); more depressed (p<0.0001); slower on the sit-to-stand, 6 meter walk, and wheel functional tests (p<0.0074; p< 0. 0041); had lower self efficacy (p< 0.0001) and higher outcome expectancy (p<0.0001). Depression (GDS) was correlated with FOF across all three levels of SI (p<0.030 VI; p, 0.002 HI; p<0.024 DI). Cognition was only correlated with FOF for those who had VI only (p<0.147). When addressing FOF in NH residents it is important to address sensory status and FOF to promote function.

DUAL TASKING IN A VIRTUAL REALITY ENVIRONMENT: DOES AUDITORY SELECTIVE ATTENTION IMPACT GAIT?

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During dual-task walking, slower step time and more double support time may be an attempt by individuals to feel more stable. This project investigated dual task costs of an auditory selective attention task. Eleven healthy older adults (746 years) completed four conditions (walking-only trial and non-forced, forced-right, and forced left conditions of the dichotic listening test) in both virtual reality (VR) and non-virtual reality (NVR) sessions on a self-paced, split belt treadmill. Differences in step time and double support time between conditions and sessions were assessed using a two-way repeated ANOVA *(p<0.05)*. There was a significant main effect of condition, with double support time significantly increased in the NVR versus the VR condition. There was also a significant interaction for double support time, with the forced-left condition being significantly different from the walking only, non-forced, and forced-right conditions. The forced-left is significantly increased compared with the other three conditions. Increased double support time has been commonly shown in aged groups compared to healthy young and in pathological groups versus healthy groups in the literature. Thus, our results are consistent with the VR improving the double support time in older individuals. In contrast, the most difficult condition of the selective attention task, the forced left condition, made the double support time more abnormal. These preliminary results indicate that cognitive tasks requiring greater auditory selective attention impact gait in older individuals and that VR may help to decrease the effect of a cognitive dual task.

VIRTUAL REALITY IN ELDERLY GAIT: EFFECTS OF SEMANTIC FLUENCY

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Every 13 seconds an older adult visits the emergency room due to a fall. Gait variability is correlated with fall risk. Dual-task studies show that cognitive tasks interfere with gait but few studies have compared the effects of virtual reality (VR) versus non-virtual reality (NVR) environments. This study aims to explore cognitive and gait performance between VR and NVR sessions. Ten healthy adults (74 ± 6 years) walked on a self-paced treadmill in two sessions, one with VR and one without. During these sessions they completed two trials, walking only and walking while performing the semantic fluency test. Subjects walked four minutes per condition, with the final three minutes used for analysis. Using paired-samples t-tests, preliminary data showed no differences between sessions in the number of correct words across sessions for semantic fluency. However, results suggest that step length was significantly increased during VR compared with NVR during both the semantic fluency (*p*=0.017) and walking only conditions (*p*=0.002). Leg swing time was significantly increased during the VR session for the semantic task condition (*p*=0.020). Swing time standard deviations (*p*=.010) decreased in the walking only condition during VR