Although measures of physical function such as walking speed and time to complete chair-rises are highly heritable, the genetic architecture underlying these phenotypes remains poorly defined. To identify potentially novel genes and pathways underlying physical performance in older adults, we conducted a genome-wide association meta-analysis of the short physical performance battery (SPPB) (Score 0-12) and one of its components, chair-rise time (seconds) in 24,033 Caucasian adults aged 60+ from 13 cohorts (mean cohort age 66.2 ± 5.3 to 84.3 ± 4.1 years; 56.5% women). Cohorts had a genome wide scan imputed to either the Haplotype Reference Consortium or Trans-Omics for Precision Medicine imputation panels. Single nucleotide polymorphism (SNPs) with a minor allele frequency ≥0.1% and imputation quality score ≥0.7 were included (range 7.5-10.5 million per cohort). Analyses were adjusted for age, sex, height, and population substructure. Meta-analysis was performed using a fixed-effects model. Although no genome-wide significant loci were identified, 67 and 60 suggestive loci (p<5*10-5) were detected for SPPB score and chair-rises time, respectively. Pathway-based analyses indicated significant enrichment of genes affecting negative regulation of calcium channel activity (Bonferroni corrected p-value < 0.05). Sex-stratified gene-based analyses identified clathrin vesicle-associated sec14 protein 1 (CLVS1), significantly associated with chair-rise time in women (p = 1.5*10-7). CLVS1 is highly expressed in the cerebellum, which is involved in postural and motor function control. A larger sample size is needed to confirm and extend our findings, but our results potentially implicate a novel pathway and locus for physical performance in older women.

**PLASMA PROTEOMIC SIGNATURE OF DECLINE IN GAIT SPEED AND GRIP STRENGTH**

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Physical function predicts health-related quality of life. The mechanical mechanisms underlying declines in physical function with age remain unclear. We examined the plasma proteomic profile associated with longitudinal changes of physical functions measured by gait speed and grip strength in community-dwelling adults. We applied aptamer-based platform to assay 1,161 plasma proteins on 2,871 participants (60% women, aged 76 years) in Cardiovascular Health Study (CHS) in 1992/1993 and 1,550 participants (55% women, aged 54 years) in Framingham Offspring Study (FOS) in 1991-1995. Gait speed and grip strength were measured annually for 6 years in CHS and at cycles 7 (1998-2001) and 8 (2005-2008) in FOS. The associations of individual protein levels (log-transformed and standardized) with longitudinal changes of gait speed and grip strength in two populations were examined separately by linear mixed effect models. Meta-analyses were implemented using random effect models with a Bonferroni correction for multiple testing. We found that plasma levels of 18 and 12 proteins were associated with changes in gait speed and grip strength, respectively (Bonferroni-corrected p < 0.05). The proteins most strongly associated with gait speed decline were growth/differentiation factor 15 (GDF-15) (uncorrected Meta-analytic p = 1.60E-15), pleiotrophin (PTN) (1.29E-08), and metalloproteinase inhibitor 1 (TIMP-1) (2.02E-08). For grip strength decline, the strongest associations were for GDF-15 (1.39E-07), carbonic anhydrase III (6.60E-07), and TIMP-1 (3.21E-06). Several statistically significant proteins are involved in the alternative complement pathway, extracellular matrix remodeling or immune function. These novel proteomic biomarkers may inform our understanding of the pathophysiology of functional decline.

**SESSION 3410 (SYMPOSIUM)**

**PREPARING FOR THE FUTURE OF TECHNOLOGY TO SUPPORT OLDER ADULTS: PERSPECTIVES FROM THE CREATE CENTER**

Chair: Patricia Heyn

The rapid advancement of technology promises new opportunities to help older adults maintain health, wellbeing, community and productive engagement, and purpose in life. However, the potential of technological innovation will not be met unless technology solutions account for the needs, preferences, and abilities of older users and involve older adults in all stages of the design process. This has been the primary focus of the Center for Research and Education on Aging and Technology Enhancement (CREATE). This symposium will discuss threats to the promise of these solutions and approaches to overcome these barriers. This session will start with N. Charness presenting an overview of digital inequity and the current state of the age-related "digital divide." J. Sharit will then present an experimental study examining older adults’ willingness to adopt new technologies and attitudinal barriers to adoption. W. Boot will discuss CREATE research that has focused on the potential of virtual reality to improve the lives of older adults and potential facilitators and barriers to successful virtual reality experiences among older adults. W. Rogers will discuss the potential of voice interfaces for emerging technologies, challenges related to the success of this approach, and research gaps. Finally, S. Czaja will conclude with a broad discussion of future applications of technology to support older adults, including how developments in artificial intelligence, sensing technologies, and robotics that can be used to foster everyday activities, cognitive, physical, and emotional health.