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Patterns of physical activity (PA) may be associated with physical function independently of total volume. The study aim was to explore associations of PA fragmentation (PAF) and function in ≥65-year-old European adults (SITLESS study: n=1360). The ActiGraph wGT3X+ accelerometer was worn for seven consecutive days at the dominant hip. PAF was assessed as the ratio of the number of ≥10-second PA bouts divided by an individual's total minutes in PA. Physical function was assessed using the 2-minute maximum walk test (2MWT) and short physical performance battery test (SPPB). Multiple linear regression was utilized adjusting for relevant covariates. Lower PA fragmentation was significantly ($p<0.01$) associated with longer 2MWT distances and better SPPB scores. The model explained 54% and 41% of the variance in the 2MWT distance and in SPPB score, respectively. Increased PAF seems associated with reduced physical function; independent of sedentary behavior and numerous important health and socio-demographic covariates.

### DAILY PHYSICAL ACTIVITY PATTERNS AND THEIR ASSOCIATION WITH HEALTH-RELATED PHYSICAL FITNESS AMONG AGING WORKERS

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This study aimed to identify accelerometer measured daily physical activity patterns and to examine how they associate with health-related physical fitness among 258 participants (mean age 62.4 years, SD 1.0) from the Finnish Retirement and Aging Study. Wrist-worn ActiGraph accelerometer was used and health-related physical fitness measures included body composition, cardiorespiratory fitness and muscular fitness. Based on latent class trajectory analysis, six different patterns of daily physical activity was identified on workdays and two on days off. Having low activity throughout the workday was associated with poorest health-related physical fitness, whereas a combination of low or moderate activity during working hours and increase of activity level in the evening was associated with most favorable body composition and better physical fitness compared to the other trajectories. In conclusion, a large variation in the workday physical activity patterns and health-related physical fitness was observed among aging workers.

## SESSION 7200 (SYMPOSIUM)

### PREFRONTAL CORTEX CONTROL OF WALKING: FUNCTIONAL NEAR-INFRARED SPECTROSCOPY AND BEYOND

Chair: Andrea Rosso
Discussant: Roee Holtzer

Cognitive control of walking may change with aging and is associated with poorer mobility and greater fall risk. The prefrontal cortex function is important for cognitive control of walking, and functional near-infrared spectroscopy (fNIRS) provides the primary means for assessing prefrontal activation during walking. Growing interest in fNIRS to assess cognitive control of walking has led to advancements in the methodologies for processing and analyzing the data, a greater sophistication of experimental protocols and participant samples, and implementation within intervention studies. These advancements will be highlighted in five presentations from an international group of researchers at the forefront of the field. First, Meltem Izzetoglu will provide direct comparisons of various data processing methodologies, demonstrating comparability across approaches. Three talks will demonstrate the range of applications of fNIRS to studying walking in older adults. Nemin Chen will present data on task-related patterns of prefrontal activation across walking tasks in relation to performance, cognitive function, and structural brain health. Sarah Fraser will present results from stair climbing, a critical task for daily function which also presents a fall risk. Inbal Maidan will examine how individual differences affect prefrontal activity during walking across older adults, younger adults, and patients with Parkinson's disease or multiple sclerosis. Finally, David Clark will demonstrate the use of fNIRS in assessing outcomes from an intervention that combined walking with non-invasive frontal brain stimulation. Roee Holtzer will lead a discussion of the results and the future of fNIRS in assessing cognitive control of walking in older adults.

### ASSESSMENT OF FNIRS PROCESSING METHODS ON ACTIVE WALKING DATA: FINDINGS AND IMPLICATIONS FOR FUTURE RESEARCH

Meltem Izzetoglu,[1] and Roee Holtzer,[2] *1. Villanova University, Villanova, Pennsylvania, United States, 2. Yeshiva University, Bronx, New York, United States*

Functional near infrared spectroscopy (fNIRS) studies utilized a limited and inconsistent number of processing algorithms to assess the prefrontal activity during active walking. To address this critical limitation, we have reanalyzed our large dataset of older adults (n=83) who underwent single and dual-task walking (STW and DTW) protocol by applying different hemodynamic conversion parameters and movement and physiological artifact removal methods. Linear mixed effect model results indicated significant increases in oxygenated-hemoglobin (HbO2) with expected decline in deoxygenated-hemoglobin (Hb) from STW to DTW (range of effect sizes: 0.59 to 0.64 for HbO2, 0.18