

Physical and Mental Fatigability in Late Life Clinical Populations

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Research Abstract

Project Summary: The primary goal of this R21 application is to establish the concurrent and discriminant validity of physical and mental fatigability domains of the Pittsburgh Fatigability Scale (PFS) across disorders common in late life in which fatigue is most prevalent. Fatigue is a

common complaint of older adults and is associated with chronic diseases, functional limitations,¹⁻³ depressive symptoms,⁴ and mortality risk.⁵⁻¹¹ Despite its prognostic importance, measuring fatigue has proven methodologically challenging.^{5,6,12,13} The concept of fatigability addresses these challenges by anchoring perceived exertion to a specific activity for a specific intensity and duration.⁶ Recent efforts to develop a self-report measure of physical and mental fatigability in healthy older adults have resulted in PFS.¹² Higher PFS physical fatigability scores¹² are associated with greater perceived exertion and poorer physical performance. To date, however, little is known about 1) the PFS mental fatigability domain, specifically its neuropsychological and behavioral correlates and how it relates to physical fatigability, and 2) the validity of the use of the PFS in clinical populations common in later life. In this R21 we will validate the PFS by testing associations of its physical and mental domains with physical and cognitive performance, neuropsychological functioning and depression severity in participants with depression, amnesic MCI, and/or fatigue. Cognitive performance decrements on sustained cognitive tasks have been ascribed to mental fatigue,¹⁶⁻²⁰ a phenomenon associated with decrements in physical performance as well.²¹ Older adults, susceptible to physical fatigability,^{6,12-14} may also be susceptible to mental fatigability¹⁵ as a result of the increased neural activity required to maintain cognitive performance in later life.^{16,22-30} Understanding the relationship between mental and physical fatigability on the PFS and their relationships to cognitive and physical performance may help identify the pathophysiological mechanisms of these constructs. Validation of the PFS however requires an investigation of the measure's performance in clinical populations in whom fatigue is highly prevalent (Aim 2). Older adults with depressive illness³¹⁻³⁵ and mild cognitive impairment (MCI)^{36,37} represent two such populations, yet little is known about fatigability in older adults with depression or CI. We will recruit 120 adults aged > 65 years with subjective complaints of fatigue (n = 40 with subjective complaints of fatigue and no depression or CI; n = 40 with aMCI and no depression; n = 40 with depression without aMCI). Participants will undergo an assessment of physical performance (measures of gait kinematics, EMG, force plate, and metabolic data with perceived exertion during a 16-min walk) and cognitive performance (N-back and effort-discounting tasks, episodic memory, executive functioning, and processing speed). Validation of the PFS is necessary to 1) investigate the underlying pathophysiological mechanisms of physical and mental fatigability across clinical populations and 2) to develop innovative interventions targeting these mechanisms.

Further information available at:

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