UNDERSTANDING NEUROMUSCULAR FATIGUE TO HELP INDIVIDUALS WITH CHRONIC LUNG DISEASE

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Investigating the causes of neuromuscular fatigue development in females and males with COPD to identify novel therapeutic targets.

Approximately 3 million Canadians are affected by chronic obstructive pulmonary disease (COPD). COPD is characterized by shortness of breath, which dramatically reduces health-related quality of life for those affected by the disease. Up to 80% of individuals with COPD report fatigue during activities of daily living that is of a much greater severity compared to age-matched controls and this enhanced fatigability may affect females more than males. The 4-year Stober Foundation Fellowship will investigate sex-based differences in fatigability in individuals with COPD and will examine how adverse cardiopulmonary function contributes to neuromuscular fatigue and exercise intolerance in these individuals.
ABOUT THE FELLOWSHIP

Project Overview
Skeletal muscle dysfunction is common in people with COPD and is a major contributing factor to the reduced exercise capacity and health-related quality of life in these individuals as well as the increased fatigue, dyspnea and mortality associated with the disease. It is also becoming evident that COPD affects females and males differently, with females experiencing more severe shortness of breath, greater physical limitations and poorer quality of life than males. The overarching aim of the research fellowship will be to investigate the causes of neuromuscular fatigue in individuals with COPD and identify novel (potentially sex-based) therapeutic approaches to overcome fatigue and improve health outcomes. The PhD student will first conduct a study to investigate whether sex-based differences in neuromuscular fatigue exist for patients with COPD and if the findings mirror those from healthy, age- and activity-matched females and males. Results of this initial study will guide further experiments to examine questions such as the specific mechanisms of neuromuscular fatigue and their role in the development of adverse symptoms during exercise or potential therapeutic approaches to effectively offset skeletal muscle dysfunction in COPD.

Background
COPD affects approximately 3 million Canadians and more than 600 million individuals worldwide. The disease is characterized by progressive airflow obstruction and airway inflammation, which accelerates the normal age-related decline in lung function. However, inflammation is not isolated to the lungs as patients also present with systemic inflammation, which negatively affects the cardiovascular and musculoskeletal systems. Impairments in muscle function lead to enhanced perceived fatigability during physical activity, which often leads to increasingly sedentary behaviour and poorer health outcomes. Despite recognition of the importance of muscle function to health-related quality of life, there has been relatively little research on the development of neuromuscular fatigue in individuals with COPD. As such, it is imperative to expand our understanding of the mechanisms of neuromuscular fatigue with COPD to guide the development of effective and appropriate interventions.

Visit hes.ok.ubc.ca/stober-fund for more information.

About the Stober Foundation PhD Fellowships
The Stober Foundation Fellowship Program has been established as a catalyst for excellence in health-related research and student training within the School of Health and Exercise Sciences at UBC’s Okanagan campus. The Stober Foundation PhD Fellowship program funds four, four-year PhD Fellowships within the School of Health and Exercise Science. The Fellowships will begin in 2021, with the generous support of $25,000/year for four years for four exceptional trainees. The successful Stober Fellow will be enrolled in the PhD in Kinesiology at UBC Okanagan, which is a research-intensive program. The Stober Foundation PhD Fellowships are based on research excellence and ongoing funding will be contingent on appropriate progression through the degree program.

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HOW TO APPLY
The Stober Fellowship funding is available for a motivated student interested in investigating sex-based differences in fatigability in individuals with a chronic respiratory condition and how adverse cardiopulmonary function contributes to neuromuscular fatigue and exercise intolerance in these individuals.

Interested applicants should email Dr. Chris McNeil (chris.mcneil@ubc.ca) directly with a CV and a statement of interest.