

IRGF Final Report

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Project Title: The cardiorespiratory response to exercise in wildfire smoke

1.1 Project Summary

This research proposal seeks to explore the effects of engaging in aerobic exercise amid moderate-risk air quality conditions caused by wildfire smoke on the vasculature. Employing a crossover design, we predict that exercising in moderate-risk air quality will transiently increase sympathetic nervous system tone and impair vascular function. We also predict that breathing rate and heart rate will be higher during exercise in wildfire smoke than on non-smoky days. This study will assess the relationship between exercise, wildfire smoke, and vascular function, which could provide valuable insights to inform public health guidelines and policies, offering evidence-based recommendations for individuals residing in wildfire-prone areas.

1.2 Project Outcomes and Impacts

Following the initial successful data collection campaign conducted in the summer of 2024, we determined that aerobic exercise under moderate-risk air quality conditions from wildfire smoke elevated sympathetic nervous system tone and could impair vascular function. These results provided critical preliminary data, directly supporting my successful application for an NSERC Discovery Grant, which will enable sustained, long-term research into this important area. Importantly, our findings contribute valuable insights to inform public health guidelines and policy decisions, facilitating evidence-based recommendations aimed at safeguarding the health of individuals living in wildfire-prone regions.