

Comparing Health Status and Exposure Risk in Career vs. Voluntary Firefighters

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The wearing of protective turnout gear and personal protective equipment (PPE) can pose a substantial challenge in addition to the tasks necessary for firefighting. The elevated heart rate response combined with the rise in core temperature places a considerable challenge on the body. Even firefighters who are considered experts in their field can experience a severe physiological challenge based on unpredictable environmental conditions, especially if they lack an adequate level of fitness. Further work needs to be conducted on the effects exercise or physical exertion has on the body in regards to reaction time (RT), while also looking at task complexity and physiological stressors the body can have to respond to while making a crucial decision. The purpose of this study will be to evaluate potential differences in health and physical fitness status between members of a volunteer firefighting department vs. members of a professional firefighting department. An additional purpose will be to evaluate if firefighters will exhibit an increase in markers of physiological stress during a simulated fire suppression work circuit while wearing full turnout gear compared to when performing the simulated fire suppression work circuit in standard athletic attire. The research protocol will consist of three testing days, with the first dedicated to a health and physical fitness assessment and the second and third dedicated to a physiological evaluation during a simulated fire suppression work circuit. The health and physical fitness assessment will involve testing the 5 components of health-related fitness (body composition, cardiovascular fitness, muscular strength, muscular endurance, and flexibility) using previously published and accepted protocols. The physiological evaluation during the simulated tactical occupation workload will consist of evaluating and monitoring firefighters while completing a 6-min simulated fire stair climb in measuring the following variables: reaction time, core temperature, physiological strain index, blood lactate, and salivary cortisol. This study will attempt to fill a key gap in the literature in that no study has directly evaluated many of the previously mentioned variables in firefighters simultaneously during a simulated fire suppression task. In addition, none to-date have directly compared the physical fitness or health status of firefighters from professional departments versus those firefighters who are members of a volunteer department. This will be a key research question to answer as it could have potential workplace safety and policy-altering ramifications.



University of Cincinnati 18th Annual Pilot Research Project Symposium October 5-6, 2017



Pilot Research Training Program (PRP) Overview

Welcome to the University of Cincinnati Education and Research Center's (ERC) 18th Annual Pilot Research Project (PRP) Symposium on October 5-6, 2017, held in the Medical Sciences Building Kresge Auditorium. The purpose of the PRP is to increase the research capacity of research trainees and young investigators in occupational health and safety and to encourage those in related disciplines to pursue occupational health and safety research.

Under the administrative direction of Dr. Amit Bhattacharya, research proposals are solicited and peer-reviewed annually by qualifying faculty and graduate students from the University of Cincinnati and the following PRP partnering institutions – Air Force Institute of Technology, Bowling Green State University, University of Toledo – Health Science Campus, Central State University, Purdue University, University of Kentucky, Western Kentucky University, Eastern Kentucky University, Murray State University, Ohio University and Kentucky State University.

At this symposium, the 2016-17 awardees will be presenting the results of their research and the 2017-18 awardees will make poster presentations of their proposed work. The keynote speaker on Thursday, October 5, 2017 is Dr. Carri Casteel from the University of Iowa College of Public Health, presenting on "Public Health Approach to Workplace Violence Prevention in Small Businesses."

The University of Cincinnati's Education and Research Center is one of 18 such centers funded by the National Institute for Occupational Safety and Health (NIOSH) nationally. Dr. Tiina Reponen serves as the director of the ERC, which is based in the University's Department of Environmental Health within the College of Medicine. The purpose of the ERC is to train professionals in the didactic and research skills necessary to lead the occupational safety and health disciplines. Results of research are translated into action through an outreach program and shared with professionals and practitioners in the region via continuing education.

Since 1999, the PRP program has allocated over \$1.3 million to support 230 pilot research projects. These projects have served as a catalyst in bringing over \$39 million in additional research support to the region from sources independent of the PRP program, such as, the National Institute for Occupational Safety and Health (NIOSH), National Institutes of Health (NIH), United States Department of Agriculture (USDA), National Science Foundation (NSF), and the Centers for Disease Control and Prevention (CDC). Additionally, the PRP has brought 51 new investigators from other fields of expertise to the area of occupational safety and health research.

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