



Joel Martin, PhD

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SMART Lab

Education

PhD, Kinesiology/Biomechanics, Pennsylvania State University

Key Interests

Tactical Athlete | Exercise | Fitness | Health | Biomechanics | Motor Control | Movement Performance | Physiology

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SELECT PUBLICATIONS

- › J. R. Martin *et al.*, Optimization and variability of motor behavior in multi-finger tasks: what variables does the brain use? *Journal of Motor Behavior* 45, 289-305 (2013).
- › J. R. Martin *et al.*, Changes in the flexor digitorum profundus tendon geometry in the carpal tunnel due to force production and posture of metacarpophalangeal joint of the index finger: an MRI study. *Clinical Biomechanics* 28, 157-163 (2013).
- › J. R. Martin *et al.*, Comparison of interfinger connection matrix computation techniques. *Journal of Applied Biomechanics* 29, 525-34 (2013).
- › J. R. Martin *et al.*, Multi-finger interaction during involuntary and voluntary single finger force changes. *Experimental Brain Research* 208, 423-435

Research Focus

My main area of research is focused on improving the fitness and health of tactical athlete populations (firefighters, police and military). These populations have physically stressful occupations and are a relatively higher risk of injury or other health related issues. The focus of my work is to address the injury and health problems. The first aim is to understand current movement abilities and fitness levels of these populations at various points in their careers. The second aim will be to use movement and exercise interventions to improve their overall health. This work is being performed out of the SMART Laboratory on the Science and Technology campus. Additionally, I have interests in the biomechanics and motor control of human movement.

Current Projects

- Investigation of health and fitness of tactical athletes in Prince William County. This research focus is being conducted with the Prince William County Public Safety Department. The goals are to reduce injuries through implementing improved fitness programs that target causes of injury and promote a higher exercise program adherence rate.
- Implications of changes to the US Army physical fitness assessment. The United States Army will be implementing significant changes to fitness testing after approximately 40 years of using the same assessment protocol. The new fitness assessment is proposed to have a higher predictive ability of soldier physical preparedness for physical demands of the job. The goal of this project is to investigate the predictive ability of the new assessment protocol versus the old protocol.