

BME MSc Seminar

Department of Biomedical Engineering

Date : Friday, September 19, 2014

Time : 12:00 noon

Venue: Room 1075 Research Transition Facility

“Title: Simultaneous Measurement of Blood Flow and Oxygen Consumption Immediately Post-Exercise with Magnetic Resonance Imaging”

Kory Mathewson
MSc Candidate
Chair: Dr. Richard Thompson

Abstract:

Invasively measuring blood flow and oxygen consumption during exercise has been used to help advance performance, stratify fitness levels and most importantly to aid in clinical diagnoses and track disease or recovery progression. Currently, there exist no non-invasive method for simultaneously measuring skeletal muscle oxygen consumption, and its determinants, during dynamic exercise, which is necessary to expose mechanisms of dysfunction along the oxygen cascade in health and disease.

In my thesis work, I propose a new imaging approach which interleaves complex-difference and susceptometry magnetic resonance imaging pulse sequences for real-time imaging of venous blood flow and venous oxygen saturation, respectively, for the calculation of skeletal muscle oxygen consumption. The goal of the primary study comprising this thesis was to determine the reproducibility of this novel approach during sub-maximal single-leg knee-extensor exercise.

When combined with cardiac and vascular studies, these non-invasive methods provide a possibility to investigate the relative contributions of the mechanisms reducing exercise capacity in those at risk for or with heart failure.

All are welcome