DEPARTMENT OF EXERCISE SCIENCE

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Faculty

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Description

The Department of Exercise Science is dedicated to educational excellence through high-quality, innovative graduate programs in exercise physiology and cutting-edge research.

Our graduate program aspires to more than just education of competent skilled professionals. Exercise Science is a dynamic department that encourages students to pursue innovative clinical experiences and research using cutting-edge equipment. This research-driven environment involves high quality, hands-on investigations of important and current questions in the field, giving graduates a competitive advantage in the job market. **We are educating the next generation of leaders in our field.**

Research & Facilities

Department of Exercise Science research effort centers on the investigation of health related aspects of exercise. Department faculty research is integrative and allows for study at the cellular, tissue, and whole organism level. General research interests of faculty in the Exercise Science Department include:

- Anti-inflammatory effects of exercise
- Effect of gene and environmental interactions on human athletic ability, health and disease
- Skeletal muscle adaptations to disuse and aging
- Obesity and Diabetes
- Neuromuscular physiology, muscle strength and aging
- Biomechanics, gait, balance and fall risk

We also collaborate with the SUNY Upstate Medical University on projects and share some research and laboratory space. Collaborative research, clinical and educational opportunities are available for our students through SUNY UMU as well. The Institute for Human Performance (https://www.upstate.edu/pmr/healthcare/ihp.php), part of the SUNY UMU campus, is a 40,000 square foot facility of dedicated laboratory space for research in Human Performance.

Additional Exercise Science research projects and facilities include:

- **Clinical Research Laboratory** - The Clinical Research Laboratory, directed by Dr. Joon Young Kim, is located at the Women's Building Room #303, for the major purpose of human research in obesity, metabolism, and type 2 diabetes. This lab is divided into two separate rooms as: (1) Exam room for physical and metabolic testing, and (2) Specimen processing & data collection room for the analysis of metabolic (blood) samples. The Clinical Research Laboratory allows faculty and students to study: (1) pathophysiology of and/or risk factors for chronic disease (i.e., metabolic syndrome, type 2 diabetes), and (2) effects of lifestyle intervention (i.e., physical activity, exercise, diet, etc.) on biomarkers of cardio-metabolic disease risk in youth and adults.
- **Human Performance Laboratory** - The Human Performance Laboratory allows faculty and students to study the physiologic response to acute exercise and exercise training in health and disease. The primary focus of the laboratory is on the cardiovascular alterations that occur with exercise training (both aerobic and resistance) particularly those in diseased populations.
- **Kinesmetrics Laboratory** - The goal of the Kinesmetrics Lab is to advance the knowledge of physical behavior's (i.e., sleep, sedentary behavior, and physical activity) consequences on health. Dr. Tiago Barreira is an expert in the objective measurement of human physical behavior, more specifically in the use of pedometers and accelerometers.
- **Altitude Simulation Laboratory** - The Altitude Simulation Laboratory, directed by Dr. Tom Brutsaert, conducts work on how genes and environment interact to produce variation in human athletic ability and health and disease. Dr. Brutsaert conducts field research in high-altitude environments, such as the Andes in Peru and Mount Everest in Nepal. His on-campus Altitude Simulation Laboratory houses a human-scale hypoxia chamber that is large enough to accommodate several test subjects during metabolic testing under simulated altitude conditions up to 20,000 feet.
- **Neuromuscular Physiology Laboratory** - directed by Dr. Kylie Harmon, uses noninvasive brain stimulation and assessment of motor unit behavior to investigate changes that occur in the brain and spinal cord that impact skeletal muscle function throughout the lifespan.
- **System Motor Control and Biomechanics Laboratory** - directed by Dr. Yaejin Moon, uses biomechanics equipment and neuro-stimulation techniques to examine how the musculoskeletal and nervous systems produce functional movements, as well as how these systems' functions change due to aging or diseases.

Graduate Students in Research

Graduate students in Exercise Science are encouraged to become involved in the research process by participating as part of a team on various projects during their first semester on campus. Both M.S. and Ph.D. students also direct their own projects after their first year. Graduate student research in the department is of exceptional quality and the students publish their papers in professional journals. Many students have also received grant support for their research.

Programs

- Exercise Science, MS (https://coursecatalog.syracuse.edu/graduate/sport/exercise-science/exercise-science-ms/)
- Exercise Science, PhD (https://coursecatalog.syracuse.edu/graduate/sport/exercise-science/exercise-science-phd/)