

M.S. in Exercise Physiology

at Central Michigan University



Exercise Physiology is a *dynamic and multi-faceted* career choice for *energetic professionals* who want to *make a difference* in the *health and wellness* of others, within *clinical or non-clinical* environments.

CMU is an AA/EQ institution, providing equal opportunity to all persons, including minorities, females, veterans and individuals with disabilities. See www.cmich.edu/aaeo.

The Academic Program

The Exercise Physiology degree program at **Central Michigan University** is designed to prepare students for several professional avenues. Health and Fitness practitioners will work in environments such as fitness facilities and community organizations. Strength and conditioning specialists work with athletes for performance enhancement on professional, intercollegiate, or secondary school athletic programs. Clinical physiologists offer medically supervised exercise programs for populations with morbidities such as cardiovascular or pulmonary. Graduates have gone on to pursue terminal doctoral degrees in the exercise sciences and other students have used the master's program as a launching point for admission into post-graduate allied health professions such as *physician assistant, physical therapy, and medical school*.

The **Graduate Exercise Physiology** degree program takes about two years to complete. Each student in the program is required to complete a minimum of 30 graduate credit hours, which include:

Required Core (9 hours)

- HSC 632 - Cardiopulmonary Exercise Physiology 3 (3-0)
- HSC 633 - Neuromuscular Physiology of Exercise 3 (3-0)
- HSC 634 - Experimental Design in Exercise Science 3 (3-0)

Required Courses (9 hours)

- HSC 635 - Biomechanics of the Musculoskeletal System 3 (3-0)
- HSC 638 - Endocrine and Metabolic Response to Exercise 3 (3-0)
- HSC 637 - Advanced Exercise Physiology 3 (2-2)

Elective Courses (6 - 9 hours)

- One of two capstone research experiences, *Plan A or Plan B*

Credit hours in the electives vary depending on whether a **Plan A thesis** (6 credits) or **Plan B research study** (3 credits) is selected.

Admission Requirements

The department reviews all applications and submitted documents in making a determination on admission and makes such recommendations to the College of Graduate Studies.

1. Applicants must have a minimum undergraduate overall grade point average of 3.0. Applicants who possess an undergraduate GPA less than 3.0 may be considered for conditional admission.
2. Applicants must have completed at least one course in exercise physiology (*CMU equivalent: HSC 308*).
3. Applicants must submit general Graduate Record Exam (GRE) scores.
4. International applicants whose native language is not English must demonstrate their English language competency using one of the methods outlined by the College of Graduate Studies (*see the Graduate Bulletin for details*).
5. Applicants must submit an application, transcripts from all academic institutions attended, and two reference letters.

Application Deadline: April 1

Core Faculty

Dr. Jeffrey Edwards ... received his Ph.D. from *Indiana University* in Human Performance with an emphasis in the areas of physiology and human performance. His early research work addressed measurement of energy expenditure of physical activities using respiratory calorimetry and stable isotopic methods of measuring energy metabolism. Currently, Dr. Edwards' research has focused on neuromuscular investigations ranging from arthrogenic muscle inhibition to measurement of neuromuscular excitability changes during training. Dr. Edwards also co-developed a novel and reliable method for electrically inducing muscle cramps which allows for further laboratory investigations into the etiology and treatment of exercise associated muscle cramping.

Dr. Roop Jayaraman ... received his Ph.D. from *Michigan State University* with emphasis on functional magnetic resonance imaging and skeletal muscle physiology. Dr. Jayaraman's research spans the continuum of human bioenergetics, from the skeletal muscle physiology to physical activity and lifestyle-based research related to obesity and associated cardio-metabolic health.

Dr. Rachael Nelson ... received her Ph.D. from the *University of Michigan*. Dr. Nelson's research interests are focused on understanding, and applying, physical activity/exercise interventions aimed at reducing chronic disease risk with a particular emphasis on type 2 diabetes prevention. She is working on a number of ongoing studies in the laboratory related to examining the impact of acute exercise on smooth and skeletal muscle insulin action, influence of exercise training on gestational diabetes prevention, and health benefits related to non-traditional forms of exercise (e.g., yoga).

Dr. Paul O'Connor ... received his Ph.D. from *Dublin City University*, Ireland. Dr. O'Connor's research examines the role high-intensity interval training plays in improving components of fitness in clinical and sporting populations. His research also focuses on the use of technology and ergogenic aids to improve sporting performance and prevent injuries; GPS, accelerometers, heart rate systems, metabolic systems, notational software, nutritional interventions.

Dr. William Saltarelli ... received his Ph.D. from the *University of Toledo*. Dr. Saltarelli's research at CMU has centered in two diverse areas. The first is evaluating cardiovascular disease risk factors in children and interventions to help children minimize the impact of these factors later in life. Published research has included documenting CVD risk factors in mid-Michigan children and the relationships among factors. Present studies include novel healthy heart interventions for children. In addition, he is conducting ultrasound evaluations of brachial and carotid arteries health using the flow mediated dilation and intimatedia techniques. These techniques have been shown to detect early blood vessel changes suggestive of atherosclerosis. A second area of research is evaluating novel teaching/learning methods in human anatomy. In collaboration with *Michigan State University*, Dr. Saltarelli is evaluating the effect of cooperative learning and the use of computer software in human anatomy courses.

Dr. Naveen Sharma ... received his Ph.D. from *Case Western Reserve University*. Dr. Sharma is interested in the physiology of aging, specifically how cellular signaling pathways are affected by this process, and how interventions such as exercise and calorie restriction can improve age-related detriments.

Dr. Micah Zuhl ... received his Ph.D. from the *University of New Mexico*. Dr. Zuhl's recent research includes identifying and developing progressive exercise therapies for various clinical populations. This includes patients enrolled in cardiac rehabilitation programs; and, more recently those suffering from various behavioral disorders (e.g., substance use disorders, mood disorders). He has additional research experience in examining the physiological stress response to physical exertion (e.g. exercise) in various environmental conditions.

Retention Requirements

1. Students must achieve a 3.0 GPA to graduate, and may not have more than two C or C+ grades in required classes to graduate.
2. Students who may be admitted conditionally must demonstrate during the first semester that they have received a 3.0 GPA.
3. Grades of C- or less do not count for graduation.
4. Students who do not maintain a 3.0 GPA or who have more than two C+ or lower grades in required classes may be placed on academic probation. Continued academic probation in multiple terms may be considered in determining whether a student will be allowed to continue in the program.
5. Students will be allowed to repeat a course no more than two times in order to improve the grade.

Apply Online

<http://apply.cmich.edu>

For More Information

Inquiries regarding the M.S. in Exercise Physiology at CMU should be addressed to:

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chp.cmich.edu/hsc

*The MS in Exercise Physiology program is housed within
The Herbert H. & Grace A. Dow College of Health Professions.*