



## **Minnesota State University, Mankato MS in Exercise Physiology Program Description**

Our MS in exercise physiology is one of the longest standing graduate degree programs of its kind in the USA. As a state university, our focus is to prepare students for careers in exercise physiology, and to advance knowledge in exercise physiology through applied research. Our core curriculum provides fundamental skills for scouring the National Library of Medicine on the latest information related to exercise physiology, how to collect valid and reliable data, and how to interpret that data. We believe tomorrow's exercise physiologist also requires skills in modifying a person's exercise behavior, particularly patient-populations with or at risk for preventable diseases. Thus, our curriculum includes coursework on psychological components taught by professors with specific expertise in that area.

The graduate program begins with intensive lecture and laboratory coursework in exercise physiology along with a Seminar in Exercise Science course designed to arm students with information necessary for navigating graduate school and beyond. The Advanced Exercise Physiology and Laboratory Techniques in Exercise Science courses enable students to learn the latest methods for clinical and performance-based graded exercise testing and prescription, how to assess health indicators relevant to physical inactivity, and how to monitor exercise programs aimed at enhancing metabolism and preventing disease. Students learn methods for quantifying efficiency and substrate utilization along with the critical power model. Applications of biomechanical technology for exploring the determinants of muscular force, flexibility, and power also are covered.

In the second semester, students gain specific information on how to conduct and evaluate applied research along with coursework in the psychological aspects of prescribing exercise as medicine. Our Research Methods course (HP 610) provides students with the framework for conducting applied research for validity and reliability analysis of human performance testing. Our Exercise and Chronic Disease course (HP 645) explores issues that an exercise physiologist confronts when he or she prescribes exercise to a patient with or at risk for chronic disease. These clinical populations have specific issues that limit an exercise prescription, and they often need assistance on how to reduce "barriers" to developing a physically active lifestyle. We believe this is one aspect of our program that separates us others.

In the third semester, students complete the statistics component of our program (HP 610), and our Advanced Nutrition in Sport course. The remaining coursework of the second year is flexible and dependent upon the advice of the graduate student's supervisory committee. Students select elective coursework catering to their specific interests (e.g., clinical exercise physiology, strength & conditioning). Students also identify and pursue one of four different capstone experiences: Advanced Placement Paper (APP), Thesis, Internship, or Manuscript; however, the internship and manuscript are the two most popular options selected by students in the MS Exercise Physiology program (N.B., many students do both).

The manuscript option is a new capstone option in graduate education and is very unique to our university and department. We implemented the manuscript option in 2009, and have experienced a surge in graduate students publishing their research in peer-review journals. A large part of that surge is attributed to teaching students how to write in a manner specific to scientific journals, as opposed to the thesis format which was impractical (i.e., most journals limit word count). Students in our program often complete an internship in the summer between their first and second year to allow for a more extensive experience. This option is particularly desirable for students with career goals in clinical exercise physiology or strength & conditioning. Completing a summer internship allows a student the opportunity also pursue a research manuscript as a second capstone. Most students following this option register for Individual Study course credit when their research requires extensive data collection, and these credits support the total credit load counting toward their 34 credits for the MS degree in Exercise Physiology.