

EXERCISE PHYSIOLOGY

At its core, Exercise Physiology is the study of physiological mechanisms underlying physical activity. In this program, students learn how to deliver treatment services focused on the improvement of health and fitness, rehabilitate heart disease and other chronic diseases and provide professional guidance to athletes and other active people who are training for their sport or activity.

Programs

The Exercise Physiology Department offers these programs:

- Exercise Physiology, B.S. (<http://catalog.css.edu/programs-az/healthprofessions/exercise-physiology/exercise-physiology-bs/>)
- Exercise Physiology, M.S. (<http://catalog.css.edu/programs-az/healthprofessions/exercise-physiology/exercise-physiology-ms/>)

Contact Information

exp@css.edu (exercisephysiology@css.edu)

Accreditation

The College of St. Scholastica B.S. in Exercise Physiology program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and meets the CAAHEP Standards and Guidelines for the Accreditation of Educational Programs in Exercise Sciences. Included in this CAAHEP accreditation is a "Strength and Conditioning add-on" which requires additional curricular content in strength and conditioning.

The College of St. Scholastica M.S. in Exercise Physiology program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and meets the CAAHEP Standards and Guidelines for the Accreditation of Educational Programs in Applied Exercise Physiology.

Exercise Physiology Courses

EXP 3321 - Kinesiology - 4 cr.

Provides students the opportunity to engage in an advanced introduction to: (a) the study of the origins, insertions, and functions of 75 major muscles of the upper and lower extremities; (b) the brachial plexus and lumbar-sacral plexus and the role of each in muscle function and dysfunction; (c) the application of functional anatomy concepts in weight lifting and stretching exercises, human movement activities, and athletics; and (d) the blending of anatomical information with the physiology of the body to thoroughly grasp the meaning of "the science of movement."

Prerequisite Courses: BIO 2510

EXP 3322 - Biomechanics - 4 cr.

Fundamental principles, calculations and applications of biomechanical analysis to the human body at rest and during movement. Special attention is given to the relationship of biomechanics to kinesiology and exercise physiology in order to understand the role of physical stressors as they influence significant clinical changes in the body.

Prerequisite Courses: EXP 3321

EXP 3323 - Sports Nutrition - 4 cr.

Structure, function and dietary sources of macro and micronutrients. Determination of individual nutrient requirements and diet analysis. Effect of nutrition and hydration on health and athletic performance. Efficacy and ethical considerations regarding the use of nutritional manipulation techniques, supplements and ergogenic aids to improve performance and enhance recovery.

Prerequisite Courses: BIO 2510

EXP 3331 - Exercise Physiology - 0,4 cr.

Studies basic principles of human physiology and metabolic processes used to produce and store energy with direct application to acute and chronic exercise. Structure, function and measurement of the cardiovascular, pulmonary and neuromuscular systems with respect to human activity and athletic performance. Measurement of hemodynamic parameters and expired ventilatory gases to determine energy expenditure at rest and during exercise.

Prerequisite Courses: BIO 2510

EXP 3332 - Physiological Assessment - 0,4 cr.

Emphasis is on basic to advanced instrumentation used to evaluate aerobic capacity, flexibility, body composition, muscular strength and endurance, as well as exercise test protocols used to evaluate individuals ranging from the elite athlete to middle-aged and elderly adults.

Application of various stress test protocols and exercise programs with individualized exercise prescriptions for both healthy and diseased individuals. Emphasis is on progression, safety, and legal ramifications of exercise as a therapeutic intervention.

Prerequisite Courses: EXP 3331

EXP 3334 - Cardiopulmonary Rehabilitation - 4 cr.

Multi-disciplinary risk factors considered responsible for heart and vascular disease along with commonly associated diseases (obesity, diabetes) and behaviors (smoking, physical inactivity). Changes in cardiac structure, function and coronary circulation that occur in heart and vascular disease. Behavioral, surgical and pharmacological treatments used in primary and secondary prevention of heart disease. Use of diagnostic techniques to determine safe and effective exercise prescription for cardiac and pulmonary patients. Recognition of, and response to, common psychosocial issues as they relate to the post-myocardial infarction and pulmonary patients.

Prerequisite Courses: EXP 3331

EXP 3342 - Strength and Conditioning - 4 cr.

Scientific theory and practical application of strength training and aerobic exercise to enhance the function and capacity of the musculoskeletal and cardiovascular systems.

EXP 4431 - Advanced Exercise Physiology - 0,4 cr.

The culmination of undergraduate exercise physiology classroom and laboratory experiences are integrated to illustrate how the understanding of the physiology of exercise, sport, and physical activity is applied in real world settings within the scope of practice of an exercise physiologist. Laboratory sessions focus on physical/physiological measurement and evaluation techniques while the lecture portion is centered on applied exercise physiology topics and professional development.

Prerequisite Courses: EXP 3331

EXP 4436 - EXP Research I - 4 cr.

Foundations of research including the fundamental tenets of scientific investigation and the scientific method; the importance of objectivity and ethical behavior in research; and the ability to critically read, interpret, and discuss the content of scientific articles. The skills involved in writing a research paper according to specified guidelines will also be taught and will culminate in the writing of a research proposal paper.

Prerequisite Courses: EXP 3331

EXP 4438 - Exercise Electrocardiography and Graded Exercise Testing - 4 cr.

Students read electrocardiograms of individuals at rest and during exercise with special attention paid to the electrocardiograms of post-myocardial infarction patients in cardiac rehabilitation programs. Includes cardiac medications and graded exercise testing.

Prerequisite Courses: EXP 3334

EXP 4555 - Internship - 4-16 cr.

The internship is designed to help you pursue your personal interests and career goals while upholding the standards of the Department of Exercise Physiology and the College of St. Scholastica. The Department allows wide latitude in terms of geographic location and type of facility at which the internship can be completed. Our primary goal is that you have a relevant, hands-on, working experience – it is not an opportunity for “observation”.

Prerequisite Courses: EXP major and consent of the Department of Exercise Physiology Academic Internship Coordinator.

EXP 4777 - Topics in Exercise Physiology - 1-4 cr.

Courses not part of the regular Exercise Physiology curriculum but taught because of a special need, interest or opportunity.

Prerequisite Courses: EXP major and/or consent of the chair.

EXP 4999 - Independent Study - 0-4 cr.

Initiation and completion of an independent research project. The department chair must approve the topic.

EXP 6521 - Functional Anatomy - 0,3 cr.

An advanced, regional, musculoskeletal anatomy course that emphasizes the study of functional relationships between musculature, nervous tissue, vascular, and skeletal components for the extremities and axial skeleton. Donor body dissection laboratory experience is used to enhance understanding of three dimensional anatomical relationships for specific body regions.

EXP 6522 - Biochemistry, Nutrition & Exer - 3 cr.

Examines the biochemistry of humans in relation to nutrition and exercise. It emphasizes the basic elements of carbohydrate, fat and protein metabolism, the role of nutrition in providing energy, building/repairing tissues and regulating metabolic processes during sports and the degree to which nutrition may enhance fitness. A section on molecular biology is included, which aids understanding of regulation at the level of DNA. Emphasis is also placed on the clarification of the most prevalent ergogenic aids (based on reputable research) and how they are thought to increase anaerobic and aerobic power (fitness) and athletic performance.

EXP 6531 - Applied Exercise Physiology - 3 cr.

Applied topics in exercise physiology related to the physical environment, psychophysiology of stress, behavior change, healthy special populations, legal issues, professional organizations and regulation, evolutionary basis of physical activity for health, physical assessment of health and fitness, and creation and presentation of scholarly work.

EXP 6532 - Physiological Assessment - 0,3 cr.

Prepares students to successfully carry out various physical assessments across the population spectrum with a focus on test selection and administration, preparticipation screening and risk stratification, risk management, emergency response procedures, and evaluation/interpretation of test scores.

EXP 6535 - Cardiovascular Physiology - 3 cr.

Normal functioning of the cardiovascular system especially the integrative aspects of cardiovascular control and regulation in humans; cardiovascular responses to physiological (e.g., orthostasis, exercise) and pathological (e.g., hypertension, cardiac failure) situations.

EXP 6536 - Clinical Exercise Physiology - 0,3 cr.

Clinical exercise physiology is introduced as it relates to diseases associated with the cardiovascular, pulmonary, musculoskeletal, metabolic, neurological, and immune systems. Issues related to pathophysiology and etiology, screening and risk stratification, and exercise testing and prescription are addressed with a focus on the most common diseases/illnesses for which exercise has been shown to be of therapeutic benefit in terms of rehabilitation, risk factor modification, and quality of life. Focus is on preparing students to work with clinical and special populations in medical and nonmedical settings.

EXP 6538 - Exercise Testing & Electrocard - 0,3 cr.

Graded exercise testing using different test modes and protocols; pre-participation screening procedures; contraindications and termination criteria for exercise testing; emergency procedures and risk management; and use of metabolic analyzing systems for the identification of disease risk in addition to the assessment of cardiorespiratory function. Emphasis is also placed on the importance of resting and exercise electrocardiogram interpretation for the identification of arrhythmias and other heart-related abnormalities.

EXP 6542 - Strength Training & Conditioning - 0,3 cr.

Lays the foundation for the safe and appropriate prescription of exercise and physical activity necessary to enhance musculoskeletal strength, power and endurance as well as cardiovascular fitness and aerobic capacity.

EXP 6555 - Internship - 1-16 cr.

A 400-hour internship in an off-campus setting, including but not limited to cardiac rehabilitation, pulmonary rehabilitation, adult fitness and training, corporate fitness or a clinical research institution. While off-campus, the student is supervised by an exercise physiologist or a practicing clinician. All internship activities are monitored by the Academic Internship Coordinator from the Department of Exercise Physiology.

EXP 6565 - Exercise Physiology Seminar - 0 cr.

The first semester of this year-long seminar focuses on professional skills needed by future exercise physiologists that are not addressed in detail in other graduate exercise physiology courses. During the second semester, professionals from fields related to exercise physiology will serve as guest speakers and share their professional experiences and advice with the class.

EXP 6777 - Independent Study - 0-4 cr.

Topics in Exercise Physiology

EXP 6888 - Thesis - 8 cr.

The student writes and submits a research proposal to an advisor and/or the chair of the department of Exercise Physiology and the College's Institutional Review Board. If accepted, the first three chapters of the thesis (introduction, review of related literature, and methods) are written. The student collects, analyzes and interprets the data, then writes the final thesis chapters (e.g., results, discussion, and conclusions).