Sport Science

Sport Science Director: Steve Ball
218 Gentry Hall; Phone: (573) 882-2334
ballsd@missouri.edu

Faculty

Professor S. Ball**
Assistant Professor R. Carpenter, J. Linn, K. Miller, K. Weitzel

* Graduate Faculty Member - membership is required to teach graduate-level courses, chair master's thesis committees, and serve on doctoral examination and dissertation committees.
** Doctoral Faculty Member - membership is required to chair doctoral examination or dissertation committees. Graduate faculty membership is a prerequisite for Doctoral faculty membership.

Undergraduate

- BS in Sport Science (https://catalog.missouri.edu/collegeofhealthsciences/sportscience/bs-sport-science/)
  - with emphasis in Strength and Conditioning (https://catalog.missouri.edu/collegeofhealthsciences/sportscience/bs-sport-science-emphasis-strength-conditioning/)
- Certificate in Sport Science (https://catalog.missouri.edu/collegeofhealthsciences/sportscience/cert-sport-science/)

The Bachelor of Science in Sports Science is designed for students interested in Strength and Conditioning, Sports and Tactical Performance, Personal Training, Corporate Wellness, and other related career fields. The program serves both traditional and nontraditional students and can be completed on-campus or 100% online.

Housed in the College of Health Sciences, Department of Physical Therapy at the University of Missouri. The school's mission is to improve the health and well-being of individuals and communities through excellence in teaching and learning, scholarship and discovery, health care, and service.

The Sports Science curriculum blends exercise science, biomechanics, physiology, coaching methodology, and leadership with hands-on application. Preparing students to work with individuals to improve athletic performance and optimize health across the lifespan. Students gain practical experience in exercise technique analysis, strength and conditioning program design, performance assessment and evaluation, and applications of sports science technologies. This applied approach prepares students for careers in high#performance athletic settings, as well as related roles in personal training, corporate and worksite wellness, tactical performance, and sport organization support.

Graduating students develop expertise in exercise training for high school, collegiate and professional athletics; tactical personnel, and special populations. Students are prepared to design and implement effective training programs to enhance performance while considering individual and sports specific aspects. Sports Science students will become connected with a network of strength and conditioning coaches and other fitness professions and be prepared to take national certifications from the National Strength and Conditioning Association.

Graduate

While MU does not offer graduate degrees specifically in Sport Science, the University does offer post-baccalaureate opportunities in a number of related areas. The catalog provides a complete list of these degree options.

SP_SCI 2130: Exercise Techniques
This course provides an overview of basic exercise techniques for successful exercise programing. Students will gain a deeper understanding of how to train the body to move more efficiently and how to teach movement and exercises to variety of clients. This course will help prepare students to take a national certification from the American College of Sports Medicine as a Certified Personal Trainer (ACSM-CPT) or Group Exercise Instructor (ACSM-GEI). Graded on A-F basis only.

Credit Hours: 3

SP_SCI 2131: Exercise Techniques I Lab
Designed to provide skills and techniques for successful implementation of exercise programming, specifically targeting athletic performance. The course emphasizes techniques and communication skills to guide/coach clients through safe and effective resistance training, recognize improper techniques, and understand the primary musculature involved in each movement. This lab complements the material presented in SP_SCI 2130 and helps prepare students for future courses and for obtaining professional certifications like the NSCA CSCS. Graded on A-F basis only.

Credit Hour: 1
Prerequisites or Corequisites: SP_SCI 2130

SP_SCI 2140: Exercise Practicum I
(same as NEP 2140). This course provides an overview of the necessary skills and techniques for successful implementation of exercise programing. This course will help prepare the student for completion of the PANHP degree and prepare for completion of the ACSM EP-C certification.

Credit Hours: 3
Prerequisites: NEP 1340 and NEP 1485

SP_SCI 2200: Sport and Exercise Psychology
(same as ESC_PS 2700). This course explores psychological principles related to both sport and exercise, focusing on mental preparation, motivation, arousal regulation, communication strategies, and skill acquisition. Special emphasis is placed on applying these principles across diverse coaching styles, athlete populations, and interdisciplinary teams, including sports medicine professionals. Students will learn how to effectively integrate psychological skills into training environments while improving their communication and leadership abilities. Graded on A-F basis only.

Credit Hours: 3
Recommended: PSYCH 1000 or equivalent

SP_SCI 3130: Exercise Techniques II
This course introduces students to the proper technique for advanced resistance training exercises. Areas of focus include Olympic lifting, total body explosive exercises, plyometric training, and exercises using alternative modes and nontraditional implements. In addition, basic speed and agility training is introduced. Emphasis is placed on providing students with guidelines and strategies to teach safe and effective advanced exercises, to recognize and correct improper technique, and to know the primary musculature involved in each exercise. While not required for credit completion, this course serves to help prepare students for the practical application portion of the National Strength and Conditioning Association's Certified Strength and Conditioning Specialist (CSCS) exam. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: SP_SCI 2130

SP_SCI 3131: Exercise Techniques II Lab
Designed to provide students with hands-on experience in advanced resistance training techniques. This lab complements the material presented in SP_SCI 3130 and focuses on practical application through advanced exercise techniques such as Olympic lifts, plyometric training, speed and agility drills, and exercises using nontraditional implements. The course emphasizes mastering safe and effective instruction techniques, error correction, and understanding the primary musculature involved in each movement. This lab helps prepare students for future courses and professional certifications, including the Certified Strength and Conditioning Specialist (CSCS). Graded on A-F basis only.

Credit Hour: 1
Prerequisites or Corequisites: SP_SCI 3130

SP_SCI 3250: Foundations of Movement in Exercise
This course serves as an introduction to the basic mechanics and terminology of human movement. Students will build upon concepts learned in human anatomy to analyze and identify the anatomical features involved in basic human movements. Emphasis will be placed on musculoskeletal structure and function related to exercise. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: PTH_AS 2201

SP_SCI 3630: The Female Performance Blueprint
This course examines how female physiology shapes training, recovery, and sports performance from adolescence through menopause, including pregnancy and the postpartum return-to-play. Emphasis is on optimizing sport performance and long-term athletic development. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: SP_SCI 2130

SP_SCI 4140: Exercise Practicum II
Undergraduate course, designed to provide advanced skills and advanced exercise techniques for successful implementation of exercise programing. Student will demonstrate proficiency in fitness assessment, exercise prescription, and programming to a variety of populations. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: NEP 2140

SP_SCI 4440: Fitness Programming
This course is designed to develop a fundamental understanding of annual training regimens and program design. An emphasis is placed on understanding test selection and evaluating results to form appropriate regime and applying the periodization theory to cardiovascular, strength, and agility training. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: SP_SCI 2130

SP_SCI 4440W: Fitness Programming - Writing Intensive
This course is designed to develop a fundamental understanding of annual training regimens and program design. An emphasis is placed on understanding test selection and evaluating results to form appropriate regime and applying the periodization theory to cardiovascular, strength, and agility training. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: SP_SCI 2130

SP_SCI 4480: Technology and Science in Strength and Conditioning
This upper-level course will introduce students to common technologies used to evaluate performance capabilities in a performance training environment. This course builds on previous material emphasizing how needs analysis, data-driven program development, and advanced monitoring techniques support effective program design. Students will explore the science and philosophy behind effective movement evaluation, while learning to adapt testing protocols to individual needs, and how to implement performance monitoring tools. This course prepares students for their capstone projects and internships, aligning them with NSCA and CASCE accreditation standards.

Credit Hours: 3
Prerequisites: SP_SCI 4440W

SP_SCI 4500: Sport Science Capstone: Strength and Conditioning
Undergraduate course, designed to provide a comprehensive overview of the National Strength and Conditioning Association (NSCA) Certified Strength and Conditioning Specialist (CSCS) exam. Focusing

on scientific foundations and practical application of strength and conditioning. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: MPP 3500 and SP_SCI 4440W

SP_SCI 4550: Internship in Sport Science
Focuses on opportunities to gain real-world field experience by learning new skills, developing professional contacts, and applying academic knowledge in a community fitness or athletic setting. The course will allow students to explore a particular career path and practice professional competencies needed to perform successfully in the field. Graded on A-F basis only.

Credit Hour: 1-6
Prerequisites: SP_SCI 3130 and SP_SCI 4440 or SP_SCI 4440W

SP_SCI 4560: Strength and Conditioning Internship
This course is designed to provide students with an opportunity to learn new skills, develop a professional network and apply academic knowledge in a real-world environment. Graded on A-F basis only.

Credit Hour: 3-6
Prerequisites: SP_SCI 3130 and SP_SCI 4440 or 4440W
