Doctor of Medical Science concentrations in sports medicine

A.T. Still University's (ATSU) Doctor of Medical Science (DMSc) program, in partnership with ATSU's Doctor of Athletic Training (DAT) program, offers DMSc students three concentrations focused on content in athletic training sports medicine: Orthopaedics, Rehabilitation, and Sports Neurology and Concussion.

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DMSc students will be enrolled in the same courses as students in the DAT, Master of Science in Athletic Training (MSAT), and athletic training graduate certific te programs. ATSU's Department of Athletic Training develops clinical and academic leaders who advance the athletic training profession. Students in the athletic training post-professional programs are clinical, educational, and industry professionals seeking advanced graduate education to effectively teach their own students to succeed as leaders in the athletic training profession. Learn more about the athletic training program at **atsu.edu/dat**

Orthopaedics concentration

The Orthopaedics concentration provides advanced instruction in the diagnosis, evaluation, and patient care management of patients with orthopaedic conditions. The concentration prepares practitioners with advanced knowledge and skills in specific areas of orthopaedics enhancing the quality and effectiveness of patient care.

Rehabilitation concentration

The Rehabilitation concentration provides advanced instruction in foundations of tissue healing, assessment and correction of movement dysfunction, and considerations for moving from rehabilitation to sport performance. The concentration prepares practitioners with advanced knowledge and skills in specific areas of rehabilitation enhancing the quality and effectiveness of patient care.

Sports Neurology and Concussion concentration

The Sports Neurology and Concussion concentration provides advanced instruction in the diagnosis, assessment, treatment, and management of patients with sport-related concussion and neurological injuries. The concentration prepares practitioners with advanced knowledge and skills in the sub-specialty of sports neurology and concussion.

Orthopaedics

Outcome
Demonstrate advanced practice knowledge and skills in the specialty area of orthopaedics.

Objectives
1. Demonstrated advanced practice knowledge and skills in the diagnoses of orthopaedic conditions.
2. Demonstrated advanced practice knowledge and skills in the management of orthopaedic conditions.
3. Demonstrate advanced practice knowledge and skills in the application and interpretation of common imaging and laboratory techniques used in the examination of orthopaedic patients.
4. Demonstrate advanced practice knowledge of common orthopaedic surgical procedures with special emphasis on subsequent rehabilitation considerations.

Rehabilitation

Outcome
Demonstrate advanced practice knowledge and skills in the specialty area of rehabilitation.

Objectives
1. Integrate the basic science of connective tissue healing (anatomy, physiology, morphology, histology, and biomechanics) into the management of musculoskeletal injuries.
2. Demonstrate advanced practice knowledge and skills in the assessment and diagnosis of movement dysfunction.
3. Develop advanced practice knowledge and skills in rehabilitation of movement dysfunction through corrective exercise.
4. Demonstrate advanced practice knowledge of transitioning from rehabilitation to sport performance.

Sports Neurology and Concussion

Outcome
Demonstrate advanced practice knowledge and skills in the sub-specialty area of sports neurology and concussion.

Objectives
1. Integrate the basic science of neurologic injury and tissue healing into the management of neurologic injuries.
2. Demonstrate advanced knowledge in the recognition, assessment, management, and referral of patients with sport-related neurologic conditions.
3. Debate current issues related to the recognition, assessment, and management of activity-related traumatic brain injuries.
4. Analyze current concepts regarding the assessment, management, and referral of patients with comorbid disorders who suffer activity-related traumatic brain injury.

Important information

Format: Each course typically requires eight to 10 hours per week of coursework. Courses are asynchronous with established assignment due dates during the 10-week period.

Schedule: DAT courses follow the same academic calendar as the DMSc program with the same start dates and 10-week class length. The only exception is the end date for Fall Block 2: DAT classes do not take off he week of Thanksgiving and thus end one week earlier than DMSc Fall Block 2 classes.

CME: DMSc students earn five Category 1 CME credits for each DAT course.

Disclaimer: DMSc students will be enrolled in the same courses as students in DAT, MSAT, and graduate certificate programs. The DAT program uses a letter grade system (A, B, C, D, F). DMSc students will be given a letter grade only for DAT courses; all other DMSc courses are pass/fail (P/F).

Orthopaedics courses

ATRN 7410: Orthopaedic Diagnostic Evaluation
This course is designed to provide the practitioner with advanced knowledge and clinical skills in the pathology, examination, and diagnosis of orthopaedic and sport-related injuries to the upper and lower extremities, back, and spine. Content is presented with an emphasis on integrating evidence-based practice principles to enhance the student's clinical decision-making skills in injury evaluation and diagnosis. Focus will be placed on developing clinical reasoning skills to enhance the student's ability to accurately and efficiently utilize the physical examination and diagnostic tests to evaluate complex orthopaedic conditions, recognize atypical presentations, identify non-orthopaedic conditions presenting as orthopaedic conditions, and recommend and interpret appropriate imaging and laboratory tests.

ATRN 7430: Orthopaedic Imaging and Labs
This course is designed to enhance the practitioner's knowledge regarding common imaging and laboratory techniques used in the management of orthopaedic patients. Students will be exposed to various imaging modalities, including radiographs, magnetic resonance imaging, CT scans, and musculoskeletal ultrasound. The use of laboratory tests for injury and illness will also be examined. Students will engage in weekly collaborative learning activities and independent assignments to evaluate the sensitivity and utility of imaging and laboratory tests used in athletic healthcare.

ATRN 7440: Orthopaedic Surgical Considerations
This course is designed to enhance the practitioner's knowledge and awareness of special considerations for rehabilitation following common orthopaedic surgeries. Surgical techniques for common orthopaedic conditions of the upper and lower extremities will be presented.Tissue response to surgery, post-surgical rehabilitation guidelines and timelines, and surgical outcomes will be discussed. Students will engage in weekly collaborative learning activities to critically appraise the current evidence for post-surgical rehabilitation approaches. The course culminates with the development of a comprehensive, evidence-based postsurgical rehabilitation protocol for an orthopaedic surgery of the student's choice.

ATRN 7420: Orthopaedic Management
This course is designed to enhance the practitioner's ability to effectively manage patients with increasingly complex orthopaedic conditions. Content focuses on management of complex orthopaedic conditions with and without comorbidities and includes the development of prioritized care plans; strategies to maximize long-term, health-related quality of life; identifying criteria and plans for safe return to participation; and to maximize sports performance, engaging in patient education. Students will engage in weekly collaborative learning activities and independent assignments to enhance their clinical skills in orthopaedic management.

Rehabilitation courses

ATRN 7210: Foundations of Tissue Healing
This course is designed to enhance the practitioner's ability to plan and implement a comprehensive sports injury rehabilitation program based on the sequential biological events of connective tissue healing. Orthopaedic basic science concepts involved in clinical assessment, establishment of therapeutic objectives, and selection of therapeutic agents will be addressed. The histology, morphology, and biomechanics of soft connective tissues, muscle, articular cartilage, and peripheral nerves will be presented. Special focus is placed on the relationships between tissue healing physiology and selection of appropriate therapeutic interventions. Current topics in soft tissue healing and rehabilitation, including viscosupplementation, graft ligamentization, and biologic treatment techniques, will be discussed. This course provides the orthopaedic basic science foundation for discussion of therapeutic techniques in future rehabilitation courses.

ATRN 7230: Assessment of Movement Dysfunction
This course introduces and explores the foundational concepts of structure and function as they relate to fundamental patterns of human movement. Neurodevelopmental progression, motor development, motor learning, and motor control concepts will be presented. Utilizing dynamic systems theory and tensegrity models, factors contributing to movement dysfunction will be identified and techniques for movement assessment will be outlined and discussed. Following the completion of this course, students will be able to demonstrate advanced knowledge and skills in the assessment and diagnosis of movement dysfunction.

ATRN 7240: Corrective Techniques for Movement Dysfunction
This course provides the practitioner with advanced knowledge in the rehabilitation of orthopaedic injuries by utilizing corrective techniques to restore movement patterns and function. Emphasis is placed on integration of tensegrity and dynamic systems models to develop a sequential and progressive rehabilitation program, centered on restoration of movement patterns in fundamental, transitional, and functional postures. Concepts of mobility, sensorimotor control, movement patterning, and neurodevelopmental progression will be studied. Assisted, active, and reactive techniques for improving mobility, stability, and movement will be taught.

ATRN 7250: Rehabilitation Considerations for Sport Performance
This course provides the practitioner with the advanced knowledge on how to bridge the gap from rehabilitation to sport performance. Neuromuscular considerations, such as psychomotor and somatosensory control, will be explored. Considerations for strength training, time under tension, power development, and athletic movement prescription will be examined. Following this course, the practitioner will be able to develop a comprehensive program for the athlete who is returning to sport post-injury.

Sports Neurology and Concussion courses

ATRN 7310: Foundations of Sport Neurology
This course is designed to enhance the practitioner's ability to manage neurological injuries resulting from participation in sports and physical activity. Basic science concepts regarding neurological mechanisms of pain, pathophysiology of neurologic injuries, neurodynamics,
and the psychological contributions of pain will be discussed. This course will serve as a foundation to the other courses in the Sports Neurology and Concussion track or graduate certificate program.

ATRN 7320: Diagnosis and Management of Neurologic Conditions in Sport
This course is designed to enhance the student's knowledge and skills regarding the recognition, assessment, management, and referral of patients who present with neurologic conditions. Specific attention will be placed on understanding red flags for various conditions, diagnostic testing, and appropriate care for various conditions. The course will use a mix of online readings, videos, and discussion forums to foster collaboration among students.

ATRN 7330: Classification and Management of Traumatic Head Injury
This course is designed to expand the student's understanding of traumatic head injury. The course will span the spectrum of head injury, from catastrophic head injury with internal hemorrhage to mild traumatic brain injury or concussion. Specifics regarding assessment, treatment, and management will be presented.
The course will use a mix of online readings, videos, and discussion forums to foster collaboration among students.

ATRN 7340: Assessment and Management of Complex Patients with Concussion
This course will provide a thorough examination of the treatment of patients with complex medical concerns who suffer a concussion. Specific attention will be focused on the patient's past medical history and comorbid factors and how these may influence
the assessment, treatment, and management of head injuries. The course will use a mix of online readings, videos, and discussion forums to foster collaboration among students.

Contact us!

Learn more about the doctor of medical science program at **atsu.edu/dmsc**

For more information, contact **onlineinquiry@atsu.edu** or 877.469.2878.

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