Instrumented Assisted Soft Tissue Mobilization using the Fascial Abrasion Techniques
Athletic Trainers are charged with the prevention, care, and rehabilitation of athletic injuries. Many times, the source of many injuries is abnormal tissue tension. The goal(s) of this learning lab are to educate athletic trainers about abnormal tissue tension based on current research, educate them on the impact of abnormal tissue tension on biomechanics and teach them to develop a strategy for releasing/normalizing soft tissue tension. Although the principles that will be discussed in this learning lab can be applied to any modality, we will be utilizing the Fascial Abrasion Technique Tool for practice.

At the conclusion of the session, attendees will be able to:
1. Analyze areas of the body for abnormal tissue tension.
2. Create a treatment plan for managing areas of abnormal tissue tension.
3. List advantages of the fascial abrasion technique

Integrating Lower Extremity Injury Prevention Techniques into Strength and Conditioning Programs
Acute lower extremity joint injuries are often preventable through neuromuscular training interventions. Unfortunately, a lack of time, resources, and expertise frequently inhibits the implementation of injury prevention programs for young athletes. However, integration of valuable injury prevention strategies into athletes’ strength and conditioning programs is feasible, while minimally increasing demands on time and equipment. Additionally, incorporation of preventative techniques likely has a dual benefit for injury risk reduction and sport performance improvement. Thus, athletic trainers should collaborate with coaches and with strength and conditioning professionals to add efficient injury prevention strategies to strength and conditioning protocols.

At the conclusion of the session, attendees will be able to:
1. Describe neuromechanical risk factors for common lower extremity injuries
2. Select preventative neuromuscular training exercises for inclusion in strength and conditioning programs.
3. Demonstrate augmented feedback techniques designed to correct neuromechanical deficiencies.

During the lab session, attendees will:
1. Recognize neuromechanical risk factors for common lower extremity injuries.
2. Select and demonstrate neuromuscular training exercises designed to prevent lower extremity injuries.
3. Practice providing external augmented feedback cues to correct neuromechanical deficiencies.

More than a Feeling: Using Exercise to Manage Emotional Responses in Sports Performance
While the autonomic nervous system protects the body from perceived danger or daily stressors via the flight, fight, or freeze mechanism, a neurological resetting may not occur. To successfully recover from patterns of the startle response, attention must not only be placed on the mind but on the body as a whole. Clinicians can utilize specific exercises that are designed to assist the patient in releasing deep muscular patterns of stress, anxiety, fear, and apprehension. Trauma Releasing Exercises activate a natural response in the body that calms the nervous system and allows return to a more normal state of balance.
At the conclusion of the program, participants will be able to:
1. Identify mechanisms and/or events that induce stress, anxiety, fear, and apprehension.
2. Explain the mechanisms of the autonomic nervous system as it applies to the flight, fight and freeze response
3. Distinguish patients who could benefit from TREs techniques.

**Vestibular Assessment and Therapy for Concussion Management**

The latest advancements in concussion management include assessments and therapy involving the vestibular system. Vestibular dysfunction is often present in concussed athletes and is often overlooked in the assessment and rehabilitation of these athletes. The accurate diagnosis and assessment of a patient is critical for a successful individualized rehabilitation program. Our lecture and laboratories will provide professionals with information and techniques to assess the concussed athlete. It will also describe the appropriate vestibular rehabilitation therapy based on this assessment.

At the conclusion of the program, participants will be able to:
1. Describe concussion and the current state of the art in concussion management
2. Describe the structure and function of the vestibular apparatus
3. Describe vestibular-ocular assessment techniques.
4. Describe vestibular-ocular rehabilitation therapy techniques.

During the lab session, attendees will:
1. Show, and apply vestibular-ocular assessment techniques.
2. Show, and apply vestibular-ocular rehabilitation therapy techniques.

**Utilization of Cupping Therapy in the Treatment of Low Back Pain**

This program will provide the clinician with the foundational knowledge of cupping therapy’s proposed modes of action and concepts behind prescribing cupping therapy. This course will also explore the body of evidence behind cupping therapy and learners will be able to make evidence based decisions on the selection, implementation, and prescription of cupping therapy. Based on the current literature, this course will have a focus on lumbar and cervical spine patients. Participants in this course will be able to practice proper preparation, application and removal of a cupping therapy in both the pathologic and healthy population.

At the conclusion of the program, participants shall be able to:
1. Explain the proposed modes of action for cupping therapy.
2. Describe indications and contra-indications for cupping therapy.
3. Identify the proper method of cupping therapy to utilize in a given situation.

At the conclusion of the program, participants will be able to:
1. Demonstrate the ability to properly prepare, apply and remove a cupping therapy array.
2. Explain the rationale behind the size of cup chosen based on the area being treated.
3. Describe the sensation of cupping therapy being applied to the lower back.
Abdominal Injuries: Differentiating Systemic from Muscular Injuries through the Clinical Exam
Twenty-nine muscles originate or insert and the lumbo-pelvic hip complex which coincides with many of the vital organs. Dealing with chief complaints regarding this area requires a multi system approach and one that can efficiently rule in or out the systemic aspect. The purpose of this program is to provide the clinicians with the knowledge base of commonalities of the subjective and objective findings within this region and to use deductive reasoning and clinical psychomotor skills to differentiate musculo-skeletal injuries from systemic conditions/illnesses.

At the conclusion of the program, participants shall be able to:
1. Assess chief complaint of abdominal region and how differential diagnoses are populated based on that
2. Recognize the differences in presentation with subjective findings and objective findings
3. Differentiate what cues in history of patient would lead us more systemic or musculoskeletal in our physical exam.
4. Point out the referral process from the timing and specificity of the referral

Core Slings
The core plays a crucial role in injury prevention along with rehabilitation from an injury. Recent peer reviewed journal articles have shown that inefficient core recruitment or an asymmetrical core can lead to hip, groin, and thigh injuries of the lower extremity. Additional literature sheds light on the importance of training the core for symmetrical recruitment and understanding how to recruit and train the entire core cylinder.

At the conclusion of the program, participants shall be able to:
1. Describe how core strength can affect hip/groin/thigh injuries.
2. Point out how the core is a cylinder and review all of the anatomy of the major muscles that influence activation.
3. Identify and test the six core muscle slings.

During the lab session, attendees will:
1. Test the six core muscle slings
2. Apply corrective exercises for each core sling.

A Best-Practice Pre-Season Evaluation to Assess Risk of Injury in Overhead Athletes
Due to the high demands placed on the shoulder and elbow during throwing, proper biomechanics are necessary to maintain stability and prevent injuries. Recent evidence suggests shoulder range of motion, scapular dyskinesis, scapular mal-positioning, and postural alignment contributes to shoulder and elbow injuries. 1-5 Preseason assessments aimed at these malalignments are necessary to identify individuals who may be at greater risk for developing arm pain during the course of the season.6-9 This presentation will outline an evidence-based approach a clinician can take to identify overhead athletes potentially at-risk of shoulder and elbow injuries.

At the conclusion of the program, participants shall be able to:
1. Explain the available evidence of measures in overhead athletes which contribute the most to developing shoulder and elbow injuries
2. Select the most useful and reliable measures to assess an overhead athlete’s risk of injury prior to and during a competitive season.
3. Create an evidence-based pre-season program to assist in reducing shoulder and elbow injuries in overhead athletes.

During the lab session, attendees will:
1. Perform the most useful and reliable measures to assess an overhead athlete’s risk of injury prior to and during a competitive season.
2. Gather and measure variables associated with a higher risk for elbow and shoulder injuries.
3. Create an evidence-based pre-season program to assist in reducing shoulder and elbow injuries in overhead athletes.

Adolescent Sport Training: Injury Prevention, Strength Training and Rehabilitation Guidelines
The participant will review epidemiology and risk of injury in adolescent populations, indications and contra-indications for strength training and rehabilitation. These techniques can be implemented adolescents with varying levels of disability. The lab will enable the participant to practice strength training and rehabilitation techniques appropriate for adolescents with varying levels of disability and a variety conditions and fitness levels.

At the conclusion of the program, participants shall be able to:
1. Describe common injuries, indications and contra-indications for strength training and rehabilitation of adolescent athletes.
2. Rehearse strength-training techniques using equipment (video – demonstration)
3. Apply strength-training techniques using one’s own body weight.
4. Recognize rehabilitation techniques using equipment and manual therapy (video – demonstration)
5. Describe when to implement strength training and rehabilitation in adolescents

Posterior Chain Activation and Rehabilitation
The participant will review the anatomy of the entire posterior chain while learning activation and rehabilitation techniques using both equipment and body weight. These techniques can be implemented with all age groups and varying levels of disability. The lab will enable the participant to practice the verbal and physical cues necessary to activate the posterior chain with a partner and one’s self.

At the conclusion of the program, participants shall be able to:
1. Assess entire posterior chain function
2. Summarize posterior chain activation techniques using equipment (video – demonstration
3. Summarize posterior chain activation techniques using one’s own body weight
4. List verbal and physical cues necessary for activation

Upper Extremity Proprioceptive Neuromuscular Facilitation: Emphasis on Strengthening Including Eccentric Techniques
Rehabilitation of athletic injuries utilizing therapeutic exercise has been a standard of care. Emphasis on therapeutic exercise techniques that are voluntary and active; pain free; provide appropriate resistance;
and utilize functional patterns of motion is an important component of recovery. Proprioceptive Neuromuscular Facilitation (PNF), a manual therapy approach to rehabilitation, is an excellent addition to other functional upper develop functional strength. Eccentric techniques in various positions will be presented to promote deceleration of the upper extremity exercise. Emphasis will be PNF strengthening techniques utilizing isometric and isotonic (concentric and eccentric) contractions as well as combinations of contractions to

At the conclusion of the program, participants shall be able to:
1. Review upper extremity PNF patterns of motion

During the lab session, attendees will:
1. Acquire practical skills utilizing PNF strengthening techniques that include isometric, concentric and eccentric contractions;
2. Apply advanced PNF techniques incorporating combination of isotonics.

**Sports Vision**
We will introduce the audience to standardized testing and how to integrate this when you return. In addition, we will have hands-on stations covering the latest in foundational and advanced training. There will also be a station focused on contact lens insertion and removal – great for sideline triage.

At the conclusion of the program, participants shall be able to:
1. Discriminate foundational vision screening techniques.
2. Describe various vision training techniques and how that can be applied to help with on-field training and off-field rehabilitation.

During the lab session, attendees will:
1. Increase comfort with insertion and removal of contact lenses on another individual.

**The Role of the Thoracic Spine in Shoulder Rehabilitation: An Integrated Approach**
Thoracic spine posture and hypomobility have been supported as underlying causes of shoulder pain and contribute to dysfunction. Athletic trainers need to be able to identify impairments and analyze the role of the thoracic spine in optimal shoulder function. Treatment of thoracic mobility problems and poor posture contributing to shoulder pain can be successfully treated with manual therapy, therapeutic exercise and self-mobilization techniques. This course is designed to provide the knowledge and skills necessary for successful treatment of thoracic spine hypomobility and postural dysfunction to assist treatment of shoulder problems.

At the conclusion of the program, participants shall be able to:
1. Identify the link between poor posture, hypomobility and dysfunction in the thoracic spine to shoulder pain and dysfunction.
2. Analyze which clinical treatments are most appropriate for treating the shoulder impairments based on the available scientific evidence.
3. Develop a comprehensive treatment plan to manage shoulder pain with mobilization, therapeutic exercise and self-stretching techniques of the thoracic spine based on the available scientific evidence.
At the conclusion of the lab, participants will be able to:

1. Apply various manual therapy techniques (manipulation, muscle energy) that aim to mobilize the thoracic spine.
2. Demonstrate various therapeutic exercise techniques that aim to mobilize the thoracic spine.
3. Instruct patients in various self-mobilization and stretching techniques.
4. Develop their approach to managing a shoulder pain by addressing the underlying posture, hypomobility and dysfunction in the thoracic spine.

**From the Lab to the Clinic: Implementation of Clinical Outcome Measures for ACL Rehabilitation and Return to Sport**

The utilization of laboratory-based outcome measures, such as isokinetic strength testing, are not always feasible to complete in the clinic following ACL-reconstruction. However, other evidence based clinical-outcomes measures may be more practical to implement. These measures provide objective patient information throughout the rehabilitation process and are often proposed to assist with return to sport decision making. Examples of these measures, including the Single-Leg Hop Series and the Landing Error Scoring System, will be discussed, demonstrated, and performed by participants. Examples of how these outcomes can be utilized to assist with clinical decision-making, such as limb symmetry index, will be examined.

At the conclusion of the program, participants will be able to:

1. Describe clinical outcomes that are commonly utilized during the rehabilitation of post-ACL reconstruction patients.
2. Implement clinical outcome measures and comprehend their purpose in rehabilitation and return to sport decision making.
3. Discuss the commonality between clinical outcomes and laboratory outcome measures.

During the lab session, attendees will:

1. Implement the Single Leg Hop Series and Landing Error Scoring System into their clinical practice.
2. Calculate and interpret limb symmetry indices for hop testing, which can be applied to other bilateral clinical outcome assessments.

**The Windmill Softball Pitcher: Injury Management Strategies**

There is currently a knowledge gap among athletic trainers who commonly work with softball athletes of proper windmill pitching mechanics and strategies to correct mechanical errors or deficits. This presentation will guide athletic trainers through the challenges they will face when working with windmill softball pitchers. Topics covered will include epidemiology, comparison between the overhand and windmill pitch, evaluation and history taking, performing biomechanical video analysis, assessing errors which contribute to injury, and implementing corrective exercises strategies for improving windmill pitching mechanics.

At the conclusion of the program, participants will be able to:

1. Identify the biomechanical differences between the windmill softball pitch and the overhand pitch.
2. Describe common subjective and objective findings during initial evaluation of softball pitchers and the types of corrective exercises to introduce initially.
3. Identify when and how to perform biomechanical video analysis of windmill softball pitching and how to interpret the analysis.
4. Develop effective evaluation, initial conservative rehabilitation, and injury prevention strategies for windmill softball pitchers recovering from injury.
5. Analyze windmill softball mechanics and common errors which contribute to musculoskeletal injuries.

During the lab session, attendees will:
1. Develop & implement appropriate home exercise program based on biomechanical video analysis of windmill softball pitcher.

Incorporating the Most up to Date Sport-Related Concussion Standard of Care Guidelines
The SRC "Standard of Care" is evolving quickly as new advances and evidence comes to light regarding the most effective prevention, assessment, and treatment guidelines. Sport-related concussion management has evolved extensively over the last 20 years. During this time span the International Consensus Conference on Concussion in Sport has been held five times (every 4 years) making recommendations for clinicians practicing world-wide. As a result of the ever-changing evidence available athletic trainers as “front-line” sports health care professionals must remain current with regard to the appropriate Standard of Care when managing. New practice guidelines and recommendations published in the British Journal of Sports Medicine in early 2017 are disseminated worldwide to sport health care professionals. Additionally, it is important for practicing athletic trainers to gain a thorough understanding of the recommendations put forth by the National Athletic Trainers’ Association in their 2014 position statement titled National Athletic Trainers’ Association Position Statement: Management of Sport Concussion. The intent of this Learning Lab is to provide participants to an opportunity to gain an understanding of these new guidelines, practice them in a "hands-on" workshop setting, and be able to incorporate these changes into their own clinical practice.

At the conclusion of the program, participants will be able to:
1. Summarize the most contemporary sport-related concussion sideline assessment tools, including the SCAT5 document.
2. Identify the most effective return-to-play protocols, including graduated steps for the most effective management of sport-related concussions.
3. Describe the contemporary evidence examining the technologies available that aid in our understanding of both the short and long-term effects of sport-related concussions on brain physiology.

During the lab session, attendees will:
1. Implement contemporary sport-related concussion assessments including the King-Devick test, VOMS, clinical reaction time testing, Trail-Making Test, computerized BESS testing, tandem gait testing, and others.

Advanced Immobilization Techniques in the Prehospital Setting
Numerous immobilization devices are available to athletic trainers in the prehospital setting. All immobilization devices have certain characteristics making one more or less advantageous over another.
The athletic training educational competencies specifically address the ability to properly stabilize an injured body area. As prehospital providers, athletic trainers must be knowledgeable in this area beyond the basics during a basic first aid class to ensure optimal outcomes. This session examine the evidence for and application of advanced immobilization techniques (e.g., sugar-tong splint, Cadillac splint, ankle stirrup, coaptation splint) and traction splints, and pelvic binders in the prehospital setting.

At the conclusion of the program, participants will be able to:
1. Summarize the current evidence for the use of advanced immobilization techniques and agents in the prehospital setting.
2. Describe the role, characteristics, indications, contraindications and precautions for using advanced immobilization techniques and agents in the prehospital setting.
3. Identity and discuss the application procedures for the use of advanced immobilization techniques and agents in the prehospital setting based on a rapid assessment.
4. Compare and contrast current best practices regarding the understanding, implementation, and risk associated with the out-of-hospital immobilization interventions in the management of acute musculoskeletal emergencies.

During the lab session, attendees will:
1. Recognize and value the role of an athletic trainer within the interdisciplinary healthcare team in the delivery of proper and immediate immobilization interventions in the management of acute musculoskeletal emergencies.
2. Select and demonstrate the proper immobilization techniques and select appropriate splinting materials to stabilize injured joints or bones and maintain distal circulation, sensation, and movement using critical decision-making skills and the current evidence.

Musculoskeletal Sonography: Basic Principles and Application Techniques in Athletic Training
Musculoskeletal sonography (MSK-S) offers a unique opportunity for real-time, dynamic injury evaluation and is effective for patient/parent/coach education. The use of MSK-S by athletic trainers is rapidly growing and likely be a future necessity. Having basic knowledge and skills in MSK-S will be critical for communication with other members of the patient-care team (e.g., physicians, sonographers, etc.). The proposed learning lab will cover the basics of MSK-S: ultrasound physics, terminology, knobology, image acquisition, how to interpret an image, and normal/abnormal musculoskeletal tissues. The hands-on portion will demonstrate these principles in real-time by scanning specific anatomic structures.

At the conclusion of the lecture, participants will be able to:
1. Describe and discuss foundational knowledge of the history, technology, and physics associated with MSK-S.
2. Apply the terminology/knobology in the hands-on portion of the learning lab such that they can set up the machine’s parameters to perform the MSK-S examination.
3. Summarize the basic steps of an MSK-S examination.
4. Explain the differences in the characteristic appearance of musculoskeletal structures using MSK-S (e.g., hypoechoic muscle vs. hyperechoic tendon).
During the lab session, attendees will:
1. Implement the skills they learned in the lecture, such as transducer manipulation (e.g., slide, rock, sweep, fan, etc.) and be able to perform the steps of an MSK-S examination (e.g., set up the parameters for an MSK-S examination).
2. Identify specific musculoskeletal structures based on their knowledge of the common characteristic appearances of healthy muscle, tendon, bone, ligament, and nerve using ultrasound.
3. Differentiate between normal and abnormal musculoskeletal tissues on a basic level (e.g., pathologic tendon vs. healthy, ligament rupture, etc.).
4. Identify key anatomic structures of the knee, shoulder, and wrist joints using MSK-S in a real-time, dynamic examination.

**Manual Therapy for Lumbopelvic Disorders**

Many therapies exist for the treatment of lumbopelvic pathologies including spinal mobilization/manipulation, muscle energy and mobilization with movement. To be able to distinguish when patients would benefit the most from these interventions would help clinicians become more efficient. Lumbopelvic pain is considered by researchers and clinicians to be a heterogeneous condition and this is a possible reason why many interventions have only small effects. Manual Therapy is recommended in most international guidelines for the management of lumbopelvic pain. Competency Gap: It appears that different types of MT may work through different mechanisms. Understanding these mechanisms may help clinicians choose which therapy is most appropriate for each patient and pathology.

At the conclusion of the program, participants will be able to:
1. Describe normal and abnormal mechanics of the lumbar spine and pelvis.
2. Identify patients that will benefit from manual therapy techniques to the lumbopelvic region.
3. Summarize the guidelines for applying manual therapy techniques to the lumbopelvic region.

At the conclusion of this lab, participants will be able to:
1. Apply Muscle energy for lumbopelvic pathology
2. Apply Mulligan techniques for lumbopelvic pathology
3. Apply Mobilization techniques for lumbopelvic pathology
4. Determine the effectiveness of these treatment techniques

**Rehabilitation 2.0: Addressing Neuroplasticity in Musculoskeletal Rehabilitation**

Musculoskeletal injuries commonly occur due to errors in motor control. An athlete makes a bad step or misjudges and forces a joint into a compromising position (ankle inversion, knee valgus), increasing injury risk. Current clinical practice to prevent and rehabilitate these injuries typically focus on the mechanical adaptations, such as strength or range of motion, leaving out the immense amount of sensory-motor computation the nervous system must undergo to maintain joint stability. This learning lab will identify how the brain changes (neuroplasticity) after injury and how our rehabilitation as athletic trainers can induce positive and adaptive neuroplasticity in our patients.

At the conclusion of the program, participants will be able to:
1. Identify key neuroscience concepts related to motor control after injury
2. Describe visual-motor evaluation and screening methods for musculoskeletal injury prevention
3. Investigate novel therapies to address neuroplasticity after injury.

At the conclusion of this lab, participants will be able to:
1. Apply new techniques to target the brain in therapy.
2. Implement new assessments to identify those that may have a visual-motor over reliance as opposed to sensory-motor for sports performance.