



## **Clinician Performed Ultrasound in Sport and Exercise Medicine ACSEP Syllabus 2021**

### **Section One - Introduction**

#### **Purpose**

This unit is designed to cover the theoretical and practical curriculum for the use of Ultrasound in Sport and Exercise Medicine (SEM) clinical practice.

#### **Prerequisites**

SEM Physicians engaged in managing soft tissue injury and pathology should have completed the ASUM CCPU online Physics tutorial or accredited equivalent course.

#### **Training**

Recognised through completion of a Sport and Exercise Medicine diagnostic and interventional ultrasound course and logbook of cases from clinical practice.

#### **Assessments**

Learners are required to perform supervised ultrasound scans and guided injections with logbook documentation as well as two formative assessments and one summative assessment.

#### **Objectives**

On completion, learners should be able to:

- demonstrate a detailed understanding of relevant surface anatomy and musculoskeletal anatomy.
- effectively perform basic soft tissue imaging
- demonstrate muscle contraction and relaxation.
- identify and assess soft tissue pathology, including haematomas, ganglia, muscle, tendon and ligament injuries.
- identify ultrasound evidence of stress fracture and fracture in bones.
- effectively perform and interpret SEM ultrasound, including:
  - Image optimisation
  - Needle tracking
  - Accurate measurements where necessary
  - Accurate diagnosis of conditions listed in the syllabus.
- write a structured report following soft tissue scanning +/- intervention.
- demonstrate clinical knowledge and ultrasound skill to be able to make appropriate clinical decisions in patient care.
- identify situations where expert imaging or intervention input is required.



## **Section Two - Content**

### **1. General anatomy, physiology and pathology**

- Identify relevant surface anatomy landmarks and musculoskeletal anatomy related to muscles, tendons, joints and neurovascular structures.
- Identify tendinopathy changes and tears within major tendons (e.g. supraspinatus, Achilles, tibialis posterior)
- Identify soft tissue structures including bursitis, ganglia, dystrophic calcification and collections including haematomas.
- Identify a joint effusion.

### **2. Appropriate use of ultrasound** in the context of the other imaging modalities available, including an understanding of the limits of ultrasound as a diagnostic modality.

### **3. Indications for the use of ultrasound in SEM practice** for diagnostic purposes and guided injections

### **4. Techniques, physical principles and safety of ultrasound**

- a. Physics of musculoskeletal ultrasound
- b. Transducers
- c. Artefacts (especially anisotropy)
- d. Windows
- e. Image optimisation

### **5. Imaging skills**

- a. Patient and probe positioning
- b. Standard images
- c. Image optimisation
- d. Dynamic assessment
- e. Colour Doppler
- f. Needle visualisation
- g. Accurate localisation of injection
- h. Recording of images



**6. Perform appropriate static and dynamic ultrasound assessments to demonstrate pathology in the following regions:**

**Shoulder**

- a. Acromioclavicular joint effusion
- b. Osteolysis distal clavicle
- c. Subacromial bursitis
- d. Rotator cuff tendinopathy
- e. Partial thickness rotator cuff tear
- f. Full thickness rotator cuff tear
- g. Dynamic subacromial impingement
- h. Long head of Biceps tenosynovitis
- i. Calcific tendinitis in supraspinatus tendon
- j. Guided injections
  - i. AC joint
  - ii. subacromial space
  - iii. rotator cuff
  - iv. long head of biceps
  - v. glenohumeral joint

**Elbow**

- a. Joint effusion
- b. Common extensor origin tendinopathy
- c. Common flexor origin tendinopathy
- d. Distal biceps tendinopathy
- e. Olecranon bursitis
- f. Guided injections
  - i. Lateral epicondyle
  - ii. Medial epicondyle
  - iii. Distal biceps
  - iv. Radiocapitellar joint

**Hand and wrist**

- a. Ganglion wrist joint
- b. Joint effusion wrist joint
- c. DeQuervain's Tenosynovitis
- d. Arthritis CMC joint of thumb
- e. Flexor tendon tenosynovitis / triggering
- f. Guided injections
  - i. Wrist joint
  - ii. Scapholunate ligament



- iii. TFCC
- iv. Ganglion
- v. 1<sup>st</sup> extensor compartment
- vi. median nerve

### **Chest wall**

- a. Sternoclavicular joint
- b. Sternum
- c. Costoclavicular joints
- d. Rib

### **Hip and groin.**

- a. Hip joint effusion
- b. Gluteal enthesopathy
- c. Hamstring origin tendinopathy
- d. Guided injections
  - i. Trochanteric bursa
  - ii. Gluteal tendon
  - iii. Adductor tendon
  - iv. Hamstring tendon

### **Knee**

- a. Joint effusion
- b. Patellar tendinopathy
- c. MCL sprain
- d. Guided injections
  - i. Knee joint
  - ii. Patella tendon
  - iii. Fat pad
  - iv. Medial collateral ligament

### **Calf / leg**

- a. Medial gastrocnemius musculotendinous junction tear
- b. Stress fracture tibia / fibula
- c. Achilles rupture

### **Foot and ankle**

- a. Joint effusion
- b. Achilles tendinopathy
- c. Peroneal tendon instability
- d. Tibialis posterior tendinopathy
- e. Metatarsal shaft fracture / stress fracture
- f. Plantar fasciitis
- g. Guided injections
  - i. Ankle joint



- ii. Achilles tendon and retrocalcaneal bursa
- iii. Sinus tarsi
- iv. Plantar fascia
- v. Morton's neuroma / intermetatarsal bursitis





### **Section 3 - Teaching methodologies**

Teaching will be conducted in the following manner:

1. A pre-test shall be conducted to focus learners on the main learning points.
2. A training course shall comprise at least 6 hours of teaching time directed towards diagnostic and interventional use of ultrasound, in the setting of clinical SEM practice, of which at least 4 hours shall be practical teaching.
3. Learners will receive reference material covering the course curriculum.
4. Lectures presented will cover the material in this curriculum document.
5. An appropriately qualified clinician will be involved in the development and delivery of the course.
6. Live scanning sessions at the course will involve sufficient live patient models (both normal and patients with appropriate pathology) to ensure each candidate has an opportunity to scan.
7. For interventional procedures appropriate phantoms will be used.
8. A summative assessment post-test will be conducted at the end of the course.



## **Section 4 - Assessment and Logbook**

### **Formative assessments**

2 formative assessments, directly supervised, with suggestions and advice provided during the scan.

### **Summative assessment**

Summative assessment is performed by a suitably qualified assessor, following the teaching course, using the competence assessment form included in this document.

### **Logbook requirements**

- 5 joint examinations
- 10 muscle or tendon examinations, demonstrating a tear or tendinopathy changes.
- 10 interventional procedures, including a mix of tendon, paratenon, bursa and joint injections.
- Completed logbook to be signed off by a suitably qualified assessor (DDU, Radiologist, DMU or AMS or sonographer registered with NZ MRTB in the relevant field, CCPU in the SEM unit or other qualification as approved by the CCPU board.



**Competence Assessment - Sport and Exercise Medicine Ultrasound**

Candidate: \_\_\_\_\_

Assessor: \_\_\_\_\_

Date: \_\_\_\_\_

**Formative Assessment** (feedback & teaching given during assessment for education)

**Summative Assessment** (must pass all components - prompting allowed but teaching not given during assessment)

	Competent	Prompted	Fail
<b>Prepare patient.</b>			
Positioning	.....	.....	.....
Informed consent	.....	.....	.....
Environment	.....	.....	.....
<b>Prepare US machine</b>			
Probe selection	.....	.....	.....
Preset selection	.....	.....	.....
<b>Data entry</b>			
Patient details	.....	.....	.....
<b>Image acquisition</b>			
Demonstrates relevant anatomy	.....	.....	.....
Identifies 2 planes	.....	.....	.....
Demonstrates relevant landmarks	.....	.....	.....
<b>Artefacts</b>			
Identifies and explains anisotropy	.....	.....	.....
<b>Record keeping</b>			
Labels and saves images	.....	.....	.....
Describes scan findings	.....	.....	.....
Documents pathology identified	.....	.....	.....
Completes report	.....	.....	.....
Integrates scan findings with clinical assessment	.....	.....	.....
<b>Machine maintenance</b>			
Cleans / prepares US probe	.....	.....	.....





**Feedback**

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Examiner signature ..... Candidate signature .....

