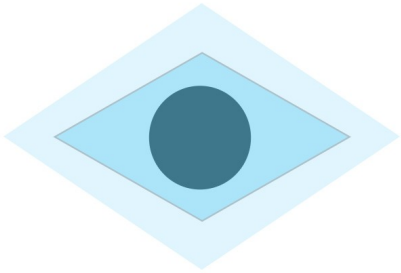

MSKS

Dry Needling & Mobilization

Information Packet

1. Complete liability waiver -Hand in on first day of course.

2. Answer questions(all answers are in booklet)

3. Review bony prominences in booklet.

MSKS

Dry Needling & Mobilization

RELEASE OF LIABILITY, WAIVER OF RIGHTS, AND ASSUMPTION OF RISKS.

I, _____ ("Participant"), hereby acknowledge that I have voluntarily elected to participate in MSKS Dry Needling and Mobilization Level I: Extremities, to be held in and in and around _____ during the following date ____/____/20___. In consideration for being permitted by MSKS Dry Needling and Mobilization LLC to participate in the Course, I hereby acknowledge and agree to the following:

ELECTIVE PARTICIPATION: I acknowledge that my participation is elective and voluntary and is not required by MSKS Dry Needling and Mobilization LLC. As a condition of my participation, I hereby grant MSKS Dry Needling and Mobilization LLC., the right to use, for promotional purposes only, any photographs of me taken by MSKS Dry Needling and Mobilization LLC. During my participation in the course. I further understand and agree that MSKS Dry Needling and Mobilization LLC., may use (for marketing purposes) any statements or quotes attributed to me in my evaluation of the course.

RULES AND REQUIREMENTS: I agree to abide by all the rules and requirements of the Course. I acknowledge that MSKS Dry Needling and Mobilization LLC., has the right to terminate my participation in the Course if it is determined that my conduct is detrimental to the best interests of the other participants or to myself. I understand that in the event my participation in the Course is terminated for violating any rule of the Course, I will be solely responsible and must forfeit my course fees. I further understand and agree that MSKS Dry Needling and Mobilization LLC., is not responsible for any injuries that I sustain when not following the guidelines of the instructors. I acknowledge that I am solely responsible for any injuries that stem from any actions or behaviors not advised by the MSKS Dry Needling and Mobilization LLC., instructors.

INFORMED CONSENT: I understand that serious injuries such as pneumothorax, hematuria, and stroke are conceivable when dry needling guidelines are not followed.

The needles used by MSKS Dry Needling and Mobilization are brands that are made of surgical grade stainless steel. However, there is a small chance that my skin will develop a contact reaction.

I also understand that I will likely develop erythema, soreness, and a hematoma from participation.

ASSUMPTION OF RISK: I understand that there are potential risks(Named above) to my participation in the Course, some of which may cause personal injury. I understand that these potential risks include, but are not limited to: pneumothorax, hematuria, stroke, erythema, soreness, hematoma, syncope, dizziness, light headedness, nausea, and fainting. **I KNOWINGLY AND VOLUNTARILY ASSUME ALL SUCH RISKS, BOTH KNOWN AND UNKNOWN, EVEN IF ARISING FROM THE ACTS OF THE RELEASEES, UNLESS THEY ARISE FROM THE RELEASEE'S INTENTIONAL MISCONDUCT OR GROSSLY NEGLIGENT ACTS,** and I assume full responsibility for my participation in the Course.

PERSONAL MEDICAL INSURANCE: I acknowledge and agree the I may be responsible for the cost of certain medical and health services I may incur as a result of participating in the Course.

MEDICAL CONSENT: I understand and agree that Releasees assume no responsibility for any injury or damage which might arise out of or in connection with such authorized emergency medical treatment . In case of emergency, I give permission to the instructors to contact emergency services.

Date: _____ _____

(Signature of Participant)

_____

(Printed Name of Participant).

MSKS
Dry Needling & Mobilization

MSKS Dry Needling and Mobilization
Test Questions and Activity Check-off

1. Studies examining dry needling are considered _____ studies.

2. What are two characteristics of dry needling that differentiates it from acupuncture?

3. What is the definition of dry needling based on HumRRO?

4. Using 2-3 words, list the sixteen knowledge requirements to be competent for dry needling according to HumRRO.

5. List the absolute contraindications for dry needling.

6. APTA considers dry needling a _____.

7. Inflammation is a defense mechanism to fight against _____.

8. Prolonged inflammation may cause _____.

9. What are the five characteristics of inflammation?

10. T/F: Some injuries can avoid the chronic phase of inflammation completely.

11. Some authors describe chronic inflammation as _____.

12. Malaise and leukocytosis are considered a consequence of _____ inflammation.

13. _____ may cause tissue destruction and excessive swelling.

14. Entry of antibodies and Fibrin formation are considered _____ of inflammation.

15. Describe the vascular events that occur in the acute inflammatory process.

16. _____ is dependent on a binding receptor site and uses a positive feedback loop to cause initial _____, _____ and regulate _____.

17. _____ are stimulated by cytokines and produced by leukocytes and platelets.

18. _____ help to resolve the acute inflammatory response.

19. What is the overall purpose of acute inflammation?

20. Complication of acute phase occurs when _____ and _____ appears in the injured tissue.

21. Secondary hypoxic injury is a complication due to (decreased circulation O_2) _____ and (diminished O_2) _____.

22. What is the cause of pain due to acute inflammatory phase?

23. What marks the end of the acute phase of inflammation?

24. Chronic inflammation occurs when damaged tissues are infected by _____ that can't be _____ in earlier phases.

25. Nitrous Oxide causes _____ and is released from _____.

26. Redness around the needled site is normal and is due to _____.

27. How might a syncopal response be prevented?

28. Give a reason why a clinician might decrease the angle of insertion?

29. Matching: Dry Needling Techniques

1. Technique used to converge needles to the greater trochanter.	a. Setting
2. Technique used to maximize the blood flow to treat a quad strain.	b. Superficial needling

3. Technique that might be used on the palmar surface of the hand.	c. Tracing
4. Depth that might be used for the rhomboid muscles.	d. Tenting
5. Depth that might be used for dry needling the piriformis.	e. Targeting
6. Technique that might be used for the sciatic nerve.	f. Threading
7. Technique that could be used for the infra patellar tendon attachment.	g. Fat pad manipulation
8. A technique that might be used to follow along the length of the levator muscle.	h. Nerve tracing
9. Technique used to manipulate adhesions of fat pad.	i. Tracing
10. A technique used to needle the AC joint.	j. Periosteal Pecking
11. Twisting needle to increase pliability of a total knee incision.	k. Deep Needling
12. Also called “pistoning” and used to separate the IT band from the dermis and increase blood flow for chronic inflammation.	l. Braiding
13. Type of dry needling for the piriformis.	m. Aiming

CLAVICLE

Anterolateral clavicular concavity

Start with medial clavicle and move fingers laterally until concavity is felt. Pectoralis major attaches

Posterolateral convexity

Provides attachment of trapezius muscles.

Anteromedial convexity of clavicle

Medial 2/3 of the anterior border. Pectoralis major attaches

Posteromedial concavity of the clavicle

Medial 2/3 of the posterior border of the clavicle

Sternal end of clavicle

Sliding finger medially from the anteromedial convexity the bone widens. Feel divot(SC Joint) then bone(sternum).

Acromial end of clavicle

Lateral end of clavicle flattens into a divot(AC joint) then another bone(acromion)

SCAPULA

Anterior (spinal) surface of scapula

Fingers enter anterior scapula by distracting the medial scapula.

(I) Needling in this area should be at an angle parallel with the thorax.

(II) If scapula is distracted, then insert needles and remove before allowing the scapula to return to normal position.

(III)Common conditions

- (a) Scapular dyskinesia
- (b) Rhomboid strain

Anterior (costal) surface of scapula

Follow inferior angle superiorly along the lateral border.

(I) Needling in this area should not be in direction of the ribs

(II) Common conditions

(a) Latissimus dorsi strain

(b) Subscapularis strain

Lateral end of scapular spine and acromion

Find acromion and slide fingers along the posterior side medially. The scapular spine is continuous until the medial border.

Lateral border of the acromion

Lateral and anterior to the lateral end of the clavicle.

Acromial angle

Feeling the lateral point of the acromion move inferiorly until divot (subacromial space) is felt.

Posteroinferior border of the acromion inside the acromial angle

Find posterior side of acromion, then move fingers inferior to the divot.

Medial border of acromion

Move from lateral probation of the acromion to the spine of the scapula and then pinch.

Medial boarder of the spine of scapula

Follow the spine of the scapula until it meets with the medial border.

Tubercle for the trapezius

Follow spine to the mid point, and there will be an enlargement or bulge between pinched fingers.

SECTION II: BODY REGIONS

Supraspinous fossa

Area superior to the spine of the scapula

Infraspinous fossa

Area inferior to the scapular spine

Lateral border of scapula

Find inferior angle and slide finger laterally and superior. The lateral border widens into the infraglenoid tubercle.

Neck of Scapula

Move fingers above the infraglenoid tubercle.

Coracoid process

Inferior 1 finger width and 1 finger with medial from the AC joint

Superior border of scapula

Short border that terminates laterally into the suprascapular notch

Superior angle of scapula(Posterior)

Push subject's shoulder posteriorly causing the medial scapular border to wing. Follow the medial border of the scapula superiorly until the medial angle is felt.

Superior angle of the scapula(Anterior)

Have patient extend and adduct shoulder to expose the superior border of the scapula. Follow medial border superiorly and then pinch the medial angle.

CLAVICULAR HEAD OF PECTORALIS MAJOR

(I) Abduct the subjects arm by 90 degrees with the elbow flexed to 90 degrees and forearm directed superiorly. Ask patient to adduct against counter pressure on medial side.

(II) Muscle arises on the medial 2/3rds of the anterior border of the clavicle

(III)Dry needling in this area should be at an angle upward toward the clavicle or downward and parallel.

STERNOCOSTAL HEAD OF THE PECTORALS MAJOR

(I) Abduct subjects arm to 90 degrees and provide resistance to horizontal adduction. Sternal head will make its appearance under the groove that separates it from the clavicular head.

(II) Attaches from the Sternum to the 6th rib on the anterior side

(III)Needling in this are should be towards the sternum, and manubrium or parallel with the ribs.

ABDOMINAL PART OF PECTORALS MAJOR

(I) Abduct patients arm to 90 degrees. Resist adduction at the medial portion of the arm. Will form the inferolateral border.

(II) May be traced up to the crest of the lesser tubercle of the humerus.

(III)Needling should be at an angle away from thorax.

PECTORALIS MINOR

(I) Patient is seated supine or sitting. Cradle forearm in one hand with their elbow flexed to 90 degrees. Pectoralis major should be on slack. Then place the pads of the fingers of the opposite hand on the 3rd-4rth rib area posterior to pectoralis major. Slide fingers in the direction of coracoid process.

(II) May find pectorals minor by locating the coracoid process and applying pressure in an inferolateral position.

(III) Needle in a superior or lateral direction or at an angle inferior

SERRATUS ANTERIOR

(I) Patient is supine or seated. Ask the patient to make short, repeated breaths in order to make the the digitation appear on the ribs anterior to latissimus dorsi, and posteriorly and inferiorly to pectorals major.

(II) Serratus anterior attaches on the lateral surface of first 6 ribs by means of muscular digitations, and on the superior and inferior angles of the scapula and the medial order of the scapula between the two angles.

(III)Needle as close to parallel as possible

SUBSCAPULARIS

(I) Distract the scapula. Slide fingers over the anterior surface fo the scapula between the latissimus dorsi laterally and the pectoralis major medially and anteriorly.

(II) Attachments include: anterior surface of the scapula, then cross the anterior surface of the scapulohumeral joint, adhering to the capsule. Finally attaching to the lesser tubercle of the humerus.

SUPRASPINATUS

(I) Above the spine of the scapula, palpated through the middle trapezius in the supraspinous fossa.

(II) Attaches from medial 2/3rds or the supraspinous fossa and travels through the subacromial space over the humeral head/capsule and attaches to the superior facet of the greater tubercle.

(III) May insert needle at any angle in the supraspinous fossa and the subacromial space medial to lateral or lateral to medial.

HUMERAL INSERTION OF THE SUPRASPINATUS

(I) Position patients shoulder in internal rotation, extension, and adduction(forearm behind back). Crest of greater tubercle becomes pronounced on the anterior tip of the acromion.

(II) Needle may be inserted in a medial direction anywear in the the subacromial space.

INFRASPINATUS MUSCLE

(I) Patient is seated. Shoulder is externally rotated with the elbow flexed to 90 degrees, while being supported by clinician. Patient actively externally rotating making the muscle pronounced under the spine of the scapula in the infraspinous fossa.

(II) Attachment is on the medial 3/4 of the the infraspinous fossa. Fibers cross and adhere to the shoulder capsule in the superoposteriar portion of the humeral head and attaches to the middle facet of the greater tubercle of the humerus.

TERES MINOR MUSCLE

(I) Patient is seated. Clinician holds the subjects arm(shoulder abducted at 90 degrees, elbows flexed at 90 degrees) with a supporting hold. Anterior surface of the patients forearm should be pronated, resting on the arm of the practitioner. Using two fingers on the lateral border of the scapula between the posterior deltoid and teres major. Have patient externally rotated in a successive pattern. Muscle should be felt.

(II) Attachment is at the infraspinous fossa along the superior half of the lateral border of the scapula then travels to the inferior facet of the greater tubercle of the humerus.

HUMERAL INSERTIONS OF THE INFRASPINATUS AND TERES MINOR

(I) While the patient's shoulder is in 90 degrees of caption and the elbow is flexed to 90 degrees. Clinician places thumb below the posteroinferior border of the acromion in contact with the middle and posterior facets fo the greater tubercle fo the humerus.

TERES MAJOR MUSCLE

(I) Patient is prone or sitting. Shoulder is externally rotated, extended, and adducted with a supinated forearm. Dorsal surface of forearm will rest on sacrum. Clinician offers resistance to the medial part of patient's arm will cause the muscle to become defined.

(II) Attaches in the infraspinous fossa along the inferior half of the lateral border of the scapula. It attaches distally into the lower crest of the greater tubercle posterior to the latissimus dorsi.

LATISSIMUS DORSI MUSCLE

(I) Resist adduction of the subject's arm by positioning your resistance at the internal surface of the patent's arm. Muscle becomes prominent on the inferolateral portion of the thorax.

(I) Attaches from T7-L5 in the thoracolumbar fascia and distally into the inferior crest of the greater tubercle of the humerus anterior to the teres minor.

SPINAL PART OF DELTOID

(I) Patient's shoulder is abducted to 90 degrees, with elbow flexed and forearm parallel with the ground(Shoulder in IR). Resist in direction of horizontal abduction. Posterior side of deltoid will increase tone.

(II) Deltoid attaches on the anterior border and superior surface of the acromial end of the clavicle. On lower boarder of the spine of the scapular. Muscular attachment on the lateral border of the acromion then the distal attachment is on the deltoid tuberosity on humerus.

ACROMIAL PART OF THE DELTOID

(I) Patients shoulder is abducted to 90 degrees, with elbow flexed and forearm perpendicular to ground(90 degrees of shoulder ER). Clinician resists abduction.

(II) Limits of the acromial portion of the deltoid: between the clavicular and spinal portion.

CLAVICULAR PART OF DELTOID

(I) Clinician places the patient's shoulder in 90 degrees abduction with the elbow flexed.

RHOMBOID MAJOR AND MINOR

(I) Find the superior angle of the scapula and run fingers down the medial border.

(II) Dry needling in this area requires smaller angle of insertion to avoid penetrating the lungs.

LEVATOR SCAPULAE

(I) Find the superior angle of the scapula and place finger superior to that point.

(II) Dry needling in this area requires smaller angle of insertion to avoid penetrating the lungs.

CAPSULAR DRY NEEDLING

Main concern is to avoid the lungs

(I) Acromioclavicular joint (AC) 4 directions

- (a) Anteroinferior to Posterosuperior
- (b) Anteroinferior direction
- (c) Posterosuperior to anteroinferior
- (d) Anterior to posterior

(II) Glenohumeral joint (GH)

- (a) Anterior to posterior: Find acromion and palpate the humeral head below it. May point more laterally to avoid lungs
- (b) Lateral to medial: Find the acromion and insert needle in a slight angle inferior
- (c) Posterior to anterior: Find posterior acromion and palpate the humeral head below. May angle needle more laterally to avoid the lungs.

ARM

BODY OF LONG HEAD OF BICEPS BRACHII

(I) Clinician can palpate on the anterior surface of the arm, from the elbow region to the point were it disappears superiorly deep to deltoid in the inter tubercular groove. Have patient flex elbow (with forearm supinated) repeatedly to track it superiorly.

(II) Long portion of biceps brachii arises on the supraglenoid tubercle of the scapula, and glenoid labrum. The short portion arises on the tip of the coracoid process of the scapula. The long and short portions of the muscle unite and attach on the posterior surface of radial tuberosity deep to ante brachial fascia.

BODY OF SHORT HEAD OF THE BICEPS BRACHII

(I) Patient sits with elbow flexed and shoulder in slight external rotation. Clinician uses one hand to resist flexion with forearm supinated. Then places a couple of fingers from free hand on the proximal third of the biceps with the palm on the coracoid process. Patient then resists elbow flexion.

SHORT HEAD OF THE BICEPS BRACHII

(I) Patient's forearm is rested between the clinicians arm and thoracic cage. Both clinicians hands are free to palpate. Palpate superiorly form the body until bifurcation of the muscle is noted. Short head is on the medial side and can be traced to the coracoid process.

TENDON OF THE BICEPS BRACHII

(I) Patient has elbow flexed to 45 degrees with forearm supinated. Clinician traces the body of the biceps brachii distally until the crease of the elbow is appreciated. The distal tendon can be examined by having the patient flex the elbow.

APONEUROSIS OF THE BICEPS BRACHII

(I) Patient flexes the wrist of a supinated forearm. Clinician places index finger on the medial side of the patient's elbow against the tendon of the biceps brachii. This is where the distal biceps tendon enters deep to the radius.

BODY OF CORACOBRACHIALIS

(I) Patient's shoulder is 90 degrees of caption with the elbow flexed to 90 degrees and supported with one hand. Clinician places pad of thumb on the medial surface of the subject's upper arm behind the short head of the biceps brachii. Patient should first flex the elbow; then ask them to flex and adduct shoulder. Clinician finger is then placed the medial side of the arm.

(II) Coracobrachialis arises via a tendon, fused with that of the short portion of the biceps on the medial side of the coracoid process of the scapula.

BODY OF THE BRACHIALIS

(I) Place a global contact between the thumbs and fingers, on the lateral and medial parts of the upper arm, behind and to the either side of the biceps brachii. Ask patient to pronate forearm before flexing.

(II) Brachialis attaches on the inferior half of the medial and lateral surfaces of the humerus, and on the medial portion of the tuberosity of the ulna.

PROXIMAL TENDON LONG HEAD OF THE TRICEPS BRACHII

(I) Patient is seated. Clinician stands to the side and positions the subjects shoulder in 90 degrees of External rotation and 90 degrees of abduction and elbow flexed to 90 degrees. Clinician uses the pads of index and middle fingers and palpate near the posterior end of the deltoid. Patient then extends elbow causing the tendon to become more pronounced.

(II) Long head of the triceps arises on the infraglenoid tubercle and glenoid labrum, via a tendon. The lateral head arises vida tendons fibers on the lateral part of the posterior surface of the humerus, above the radial groove. The medial head arises via fleshy fibers on the medial intermuscular septum of the arm on the posterior surface fo the shaft of the humerus, below the radial groove. All three heads converge before attaching to the olecranon of the ulna.

PROXIMAL TENDON OF THE TRICEPS LONG HEAD

(I) Patient lies on their side, with contralateral shoulder in 90 degrees of abduction. The forearm of the patient rests on the clinicians arm pit. Palpate 1 finger width medial to shoulder crease. Have patient extend elbow with forearm fixed in clinicians armpit.

BODY OF THE LONG HEAD OF TRICEPS

(I) Patient extends elbow. The body of long head is found at the top of the "horse shoe".

LATERAL HEAD OF THE TRICEPS

(I) Have the patient extend elbow against resistance.

MEDIAL HEAD OF THE TRICEPS

(I) Ask patient to extend and flex repeatedly against resistance. Medial head will be inferior to the long head.

BRACHIAL ARTERY

(I) Locate the coracobrachialis, by having the patient horizontally adduct from 90 degrees fo flexion. Broad contact with the pads of two or more fingers behind the body of the coracobrachialis. Find the pulse of the artery.

MEDIAN NERVE

(I) Locate the body of the coracobrachialis by flexing and adducting the subject's shoulder. Place a broad contact with the pads of two or more fingers behind the body of this muscle , and draw the whole arm into a position of horizontal abduction. The subjects's forearm may be flexed and pronated. Clinician can follow the entire course of the nerve along the anteromedial surface of the arm to the fold fo the elbow by pushing aside the biceps brachii laterally to roll the nerve beneath the clinicians fingers. It is also possible to follow the nerve along with the brachial artery anteriorly 1/2 finger width.

ULNAR NERVE

(I) At the point where the superior third of the arm meets the middle third, the nerve follows a downward, backward, and inward direction. It passes through the medial intermuscular septum of the arm. From there on, until it reaches the groove between the epicondyle and the olecranon, it is in the posterior compartment of the arm where it can be rolled between the clinicians fingers at the contact with the medial head of the triceps brachii. It is easier to perceive this nerve if the patient's shoulder is abducted and elbow is flexed maximally, forearm is pronated, and the wrist is extended.

RADIAL NERVE

(I) Place one hand below the patient's deltoid tuberosity of the humerus, on the posterior surface of the arm, at the radial groove. The structure to be investigated can be rolled beneath the clinician's fingers through the muscular mass of the triceps brachii.

ELBOW

VISUALIZATION OF THE NERVES

GROOVE FOR THE ULNAR NERVE

(I) Vertical groove crossing the posterior surface of the medial epicondyle.

ULNAR NERVE

(I) Clinician places index finger in the groove for the ulnar nerve. Nerve can be appreciated as a full, cylindrical cord between the olecranon and medial epicondyle.

ULNAR NERVE IN THE PROXIMAL FOREARM

(I) Patients elbow is fully flexed, with the forearm in pronated position, and wrist extended. Nerve can be palpated tin the anti brachial extension of the ulnar groove.

MEDIAN NERVE

(I) Using the pad of the index and middle finger, the clinician, palpate medial to the biceps brachii tendon

RADIAL AND MUSCULOCUTANEOUS NERVE

(I) Musculocutaneous lies closest to the biceps tendon. It continues on as the lateral cutaneous nerve of the forearm, which in turn divides into an anterior and posterior branch. It is more superficial than the radial nerve, which lies deeper and more laterally in the lateral bicipital groove.

(II) Radial nerve lies laterally in the bicipital groove.

RADIAL NERVE AT NECK OF RADIUS AND FOREARM

(I) Locate the bodies of the extensor carpi radialis braves and the extensor digitorum. Place broad contact in between these two muscles and roll the radial nerve beneath the pads of clinicians fingers.

BRACHIAL ARTERY

(I) Clinician places two fingers in the fold of the elbow, medial and posterior to the tendon of the biceps brachii. Note the pulse of the artery.

FOREARM

PROXIMAL BRACHIORADIALIS

(I) Patient's arm in neutral position. Apply resistance on the inferior third of the radius, and ask the subject to flex the forearm on the arm.

(II) Brachioradialis arises from the inferior third of the lateral border of the humerus and on the lateral inter muscular septum of the arm. It inserts on the lateral surface of the base of the radial styloid process.

BODY OF BRACHIORADIALIS

(I) Body of muscle becomes prominent with the above steps performed.

ORIGIN OF EXTENSOR CARPI RADIALIS LONGUS

(I) Patient's elbow should be flexed. Ask them to extend the wrist and incline it radially. The muscle will contract on the lateral border of the humerus, approximately 3 finger widths below the attachment of the brachioradialis.

(II) Attaches on the lateral supraepicondylar ridge and at the lateral intermuscular septum of the arm, then inserts on the lateral tubercle of the base of the second metacarpal.

BODY OF EXTENSOR CARPI RADIALIS LONGUS

(I) In most patients, the body of appears clearly on the external surface of the elbow if you ask them to extend the wrist and radially deviate. Others may contract and the muscle can be found on the lateral surface of the elbow outside the proximal part of the brachioradialis.

(II) (a) body of extensor carpi radialis longus, (b) Extensor carp radialis brevis, (c) Extensor digitorum

TENDON OF EXTENSOR CARPI RADIALIS LONGUS

(I) Found in the middle third of the forearm, the body gives way to the tendon.

EXTENSOR CARPI RADIALIS BREVIS

(I) (a) Extensor carpi radialis longus, (b) Brachioradialis, (c) Extensor digitorum

(II) Attaches on the anterior surface of the lateral epicondyle of the humerus (via common tendon) to the dorsal and lateral base of the third metacarpal.

TOPOGRAPHICAL RELATION OF THE ECRB

(I) (a) body, (b) tendon of ECRL, (c) brachioradialis

ECRB INFERIOR THIRD OF FOREARM

(I) Tendon passes along that of the ECRL, passes in front of the APL.

SUPINATOR MUSCLE

(I) Patients elbow is slightly flexed and completely supinated. Use index and middle fingers, p lace your contact below the head of the radius, opposite the neck of the radius, where some fibers of the supinator muscle are attached. Wedge index and middle fingers against the inferior edge of the head of the radius, and ask the subject to supinate the forearm actively, using repeated, shot, rapid movements, to enable you to sense the contraction of the muscle fibers beneath your fingers.

(II) Supinator has two heads, one superficial and another deep. Proximal attachment arises on the inferior part of the lateral epicondyle of the humerus, middle portion of the radial and collateral ligament, and finally on the supinator

fossa of the ulna. The distal attachment is found on the oblique line of the anterior border of the radius(superficial portion), and on the anterior, lateral, and posterior surfaces of the neck of the radius (deep portion).

EXTENSOR DIGITORUM

(I) The muscle is situated posteriorly and medially to the extensor carp radialis longus. It can be revealed by asking the patient to make a fist and then repeatedly open it and extend the fingers.

(II) Proximal attachments are on the lateral epicondyle, via the common tendon of origin of the epicondylar muscles(forearm extensors). It has several distal attachments: (a) at the metacarpohphalangeal joint, each tendon has a fibrous expansion that is inserted at the base of the first phalanx. (b) Each tendon then subdivides into three slips at the proximal phalanx. (c)Middle slip is attached to the posterior surface of the superior extremity of the middle phalanx, and (d) two lateral slips unite on the dorsal surface of the middle phalanx, and are inserted on the superior extremity of the posterior surface of the distal phalanx.

ED ON THE FOREARM

(I) (a) situated centrally on then posterior surface of the forearm. It runs down behind the supinator and the four muscles of the deep layer of the posterior region of the forearm. It is bounded by the extensor digiti minimi. (b)medially, and by the extensor carpi ulnaris (c). Ask the patient to perform the same muscular action as that described above.

EXTENSOR DIGITI MINIMI

(I) Muscle arises on the lateral epicondyle of the humerus, inside the origin of the ED. (a) ED, (b) ECU, (c) Anconeus

(II) Extensor digiti minimi arises from the lateral epicondyle of the humerus and ante brachial fascia. The distal attachment fuses with the tendon of the extensor digitorum belonging to the fifth finger near the fifth metacarpal.

EXTENSOR CARPI ULNARIS

(I) Clinicians index finger should find ED first., then position the contact inside that muscle and ask the subject to extend the wrist repeatedly, while unfairly deviating.

(II) ECU attaches from the common tendon of the lateral epicondylar muscles, on the lateral epicondyle of the humerus and on the superior two-thirds of the lateral side of the posterior border of the ulna, and finally on the deep surface of the ante brachial fascia. Then it inserts on the posteromedial tubercle of the base of the fifth metacarpal.

BODY OF THE PRONATOR TERES

(I) Clinician places area of contact inside the tendon of the biceps brachii. Then ask the patient to pronate the forearm with fist clenched. Body of muscle will tense.

(II) Pronator teres consists of two heads(humeral and ulnar). Humeral head arises on the medial epicondyle of the humerus and on the ante brachial fascia. Ulnar head arises on the coronoid process of the ulna. Two heads join and the muscle is inserted via a short tendon on the middle third of the lateral surface of the radius.

BODY OF FLEXOR CARPI RADIALIS

(I) Ask the patient to flex the wrist, at the same time radially deviating. You will detect the body of the muscle (a) in continuity with the tendon (c) and medial to the pronator teres (c).

(II) FCR arises via a tendon on the anterior surface of the medial epicondyle of the humerus and of the ante brachial fascia. It crosses the lateral part of the carpal tunnel and is inserted on the palmar base of the second metacarpal.

PROXIMAL FLEXOR CARPI ULNARIS

(I) Have patient flex the wrist and ulnarly deviate. A detectable body of the muscle close to the ulna, medial to the palmaris longus.

(II) FCU attaches by two heads. One on the medial epicondyle of the humerus and another on the medial border of the olecranon and the superior two-thirds of the posterior border of the ulna. The tendon then inserts on the anterior surface of the pisiform bone, by means of expansions on the hook of the hamate.

FLEXOR DIGITORUM SUPERFICIALIS

(I) Push palmaris longus to the side and the tendon is found deep. This lies on the radial border of the tendon of the flexor superficialis going to the fourth finger. Ask the subject to oppose the thumb and middle finger and to flex the wrist briefly and repeatedly. Also, may ask patient to make a fist and flex wrist repeatedly.

(II) FDS consist of two heads (humero-ulnar and the radial head). The humeri-ulnar head arises from the medial epicondyle of the humerus and on the coronoid process of the ulna and the radial head arises from the superior half of the anterior border of the radius. Muscle fibers arise from the muscular arch between these two heads, and are arranged in two layers. A superficial humero-ulnar layer(or head), which runs to the third and fourth fingers. A deep radial layer, which sometimes has two bellies, runs to the second and fifth fingers.

LOWER EXTREMITY

HIP COMPLEX BONY LANDMARKS

(I)Umbilicus- Have patient locate Umbilicus "Belly Button"

(II) Pubic Symphysis and Crest- With overlapping fingers on the umbilicus, drop inferiorly until the palm of hand is on the superior portion of pubic tubercle/symphysis.

(III) Pubic Tubercle: Move laterally into a small slope

(IV) Pubic Ramus- Flex patients knee so adductor muscles will be on slack. Move overlapping hands laterally from pubic tubercle. Horizontal area of bone is the Pubic Ramus

(V)AIIS- Find ASIS drop inferomedially(four finger widths), may be more pronounced if patient anteriorly tilts pelvis

(VI) ASIS

(VII) Iliac Tubercle: superior from ASIS, grasp with index finger and thumb

(VIII) Iliac Crest

(IX) PSIS

(X) PIIS- Follow edge of sacrum superiorly were it meets the illium(PIIS is located here)

(XI) Ischial Tuberosity: At level of gluteal fold.

(XII)Ischial Spine: Sidelying, with hips flexed. Move fingers superiorly from the Ischial tuberosity.

(XIII) Lesser Notch

(XIV) Lesser sciatic Foramen: Superior and medial to Ischial tuberosity at same height as greater trochanter

(XV) Greater Notch

(XVI) Greater sciatic Foramen: Superomedial to the Ischial spine. Locate the PIIS and move two finger widths inferolaterally.

FEMUR LANDMARKS

(I) Greater Trochanter

(II) Gluteal Tuberosity: inferomedial to greater trochanter

(III) Femoral Head (Posterior Approach): Prone, felt through the body of the Gluteusaximus between the Greater Trochanter and the lateral border of the pelvis

(IV) Femoral Head (Anterior Approach): Sidelying, Stabilize pelvis and Extend hip. Proximal hand is palpating while the distal hand is holding the thigh

(V) Femoral Artery (Anterior Approach): Proximal hand palpates approximately 1/2 distance from ASIS and Pubic tubercle

(XVII)Lesser Trochanter: patient lies on back with hip and knee flexed. Resist adduction at knee.

- Two muscles will become present: Gracilis (superior one) and long adductor muscle
- Lesser trochanter may be found between the two
- Place finger in the gap and flex and add the hip.

FEMORAL HEAD

(I)Posterior Approach

- ☆ Prone
- ☆ Medially Rotate Hip
- ☆ Palpate Medially from Greater Trochanter

(II)Anterior Approach

- ☆ Find ASIS and move two finger widths medial and down
- ☆ Find Greater trochanter and cup femur with thumbs up.
- ☆ May rotate in/out to feel

FEMORAL ARTERY

(I)Supine, with patient knee slightly flexed and supported

(II)Place finger pads in a spot halfway between the ASIS and the pubic tubercle

(III)Should feel pulse

FEMORAL NERVE

(I) Same as artery, move one finger width laterally.

GLUTEUS MAXIMUS

(I)Prone

(II) Locate Coccyx and Edge of Sacrum and posterior 2" of the iliac crest

(III)Gluteal Tuberosity

(IV)Palpate from Origin to insertion

GLUTEUS MEDIUS

(I)Sidelying

(II)Place webbing of one hand at iliac crest from the PSIS to 2/3 across anteriorly

(III)Then palpate Greater Trochanter

GLUTEUS MINIMUS

(I)Deep to gluteus medius

PIRIFORMIS

(I)Prone or sidelying

(II) Locate the coccyx, PSIS, and Greater Trochanter

(III) Piriformis is located along the "T" Formation deep to glute max

SUPERIOR GEMELLUS

(I)Prone or sidelying

(II)Palpate inferior to the "T" that makes up the piriformis

OBTURATOR INTERNUS

(I)Below superior gemellus

INFERIOR GEMELLUS

(I) Below obturator internus

QUADRATUS FEMORIS

(I)Prone

(II)Locate distal and posterior aspect of the greater trochanter and ischial tuberosity

(III)Can be found deep to the glute max fibers

TFL AND IT BAND

(I)Supine

(II)Locate ASIS

(III)Place flat of hand posterior and distal to the ASIS and Illiac Crest

(IV)Ask patient to IR and relax hip(TFL will contract)

(V)Follow muscle distally in to IT Band and Gerdy's tubercle

TFL

(I) Patient's hip is slightly flexed and medially rotated

(II) Isometrically resist the hip abduction by placing a resisting hand above the lateral malleolus at the distal extremity of the patient's lower limb.

(III)Muscle can be felt in the anterolateral pelvis

(IV)Arises from the external surface of the ASIS and from the anterior extremity of the lateral hip of the iliac crest. TFL body joins the superior quarter of the anterior border of the IT tract, which acts as its tendon of the insertion into the infracondylar tubercle on the lateral tibial condyle(Gerdy's)

DISTAL IT BAND

(I) Patient's knee is extended with hip slightly flexed

(II) Clinician prevents the patient from

(III)abducting the hip medially by placing hand above the lateral malleolus on the distal extremity of the lower limb

(IV)The band can be felt lateral to the joint line before it attaches to Gerdy's tubercle

SARTORIUS

I.Supine

II.Have patient rest foot on opposite knee

III.Place hand on medial thigh

IV.Have patient FLEX and ER hip(raise knee toward ceiling

V.Palpate the muscle from the medial tibia to the ASIS

VASTUS MEDIALIS

(I) Ask patient to extend the knee or push against hand in the popliteal region

(II) Palpate the muscle on infero medial thigh

RECTUS FEMORIS

(I)Found between TFL and Sartorius just Proximal from the AIIS

(II)Have patient perform a straight leg raise

(III)For the body, Ask patient to extend the knee or push against hand in the popliteal region

(IV)Palpate the muscle in the middle

VASTUS LATERALIS

(I) Ask patient to extend the knee or push against hand in the popliteal region

(II) Palpate the muscle on infero lateral thigh

ILLIOPSOAS TENDON

(I)Found between the origin of the Sartorius and Pectineus

(II) Have patient flex and ER to verify

GRACILIS

(I)Supine, hip flexed and slightly ER

(II)Place flat hand on medial thigh and have patient adduct slightly hip and flex knee

(III)Origin: move hand cranially to pubic tubercle

(IV)Insertion: Slide hand down slender tendon to medial tibia

ADDUCTOR LONGUS

(I)Same as Gracilis, except tendon will angle towards medial thigh

(a)Flex patient's hip and knee and ER

(b)Have him/her Adduct

(c)Adductor Longus will be prominent on the superomedial part of thigh

PECTINEUS

(I)Supine, Hip slightly flexed and ER

(II)Place flat hand on medial thigh and have patient slightly adduct

(III)Locate Gracilis tendon at pubic tubercle and slide hand laterally(deep palpation would be on pubic ramus)

(IV)Have patient sequentially adduct and relax palpating the fibers

(V)If Index finger is on the adductor longus then just lateral place middle finger

ADDUCTOR MAGNUS

(I)Sidelying, with top hip and knee flexed

(II)Locate ischial tuberosity

(III)Ask patient to adduct, meanwhile slide fingers anteriorly locating the prominent adductor longus/gracilis

(IV)Then move fingers posteriorly as adductor magnus stretches from the ischial tuberosity to the adductor tubercle of the femur

(V)Difficult to distinguish from semimembranosus

SEMITENDINOSUS TENDON

(I) Apply finger pads along the medial border of the tibia, and with clinicians middle finger the semitendinosus.

(II) Flexing knee will make the gracilis more pronounced

(III)The semitendinosus lies posterior to the gracilis

(IV)The muscle arises from the posterior surface of the ischial tuberosity by a common tendon with the long head of the biceps femoris medial to the origin of the semimembranosus.

(V) Inserts to the superior part of the medial surface of the tibia behind the sartorius and below the gracilis.

SEMITENDINOSUS: POSTERIOR THIGH

(I) Clinicians hand cups the subject's heel and lies flat on the medial border of the patient's foot in order to resist knee flexion and tibialmedial rotation at the shame times

(II) Body can be found distal to the above instructions

SEMIMEMBRANOSUS: DISTAL PORTION

(I) Clinician's distal hand passively rotates the patient's leg laterally to allow the distal end of the tendon to be free. Tendon can be felt under fingers as a large cylindrical cord.

(II) The muscle attaches through three tendons: a. Straight tendon in sorted into the posterior part of the medial tibial condyle, b. Reflected tendon, under cover of the collateral tibial ligament slides into the horizontal groove on the medial tibial condyle before being inserted into the anterior edge of the groove. c. Recurrent tendon, (oblique) inserts into the thickened part of the capsule of the knee.

SEMIMEMBRANOSUS: DISTAL PART

(I) Ask patient to flex and medially rotate the knee while you resist this movements.

(II) Clinician places index finger on the semimembranosus at its tibial insertion.

(III)Arises from lateral portion of the ischial tuberosity medial to the quadrates femoris and lateral to the common tendon of the long head of the biceps femoris and of the semitendinosus

BICEPS FEMORIS: DISTAL PART

(I) Clinicians hand cups the patient's heel, while resisting knee flexion. Other hand palpates with index finger on the lateral part of the knee before it inserts on the fibula.

(II) The muscle attaches proximally by the lateral portion of the ischial tuberosity and distally by the head of the fibula and lateral collateral ligament and the lateral condyle.

KNEE BONY LANDMARKS

(I) Suprapatellar fossa: Maximally flex patient's knee, palpate superiorly from the patella base.

(II) Patellar base: Triangular shaped at superior portion of knee. Maximally flex and follow rectus femoris tendon to the base. Quad tendon inserts into the anterior half and capsule inserts on posterior portion.

(III)Anterior surface of patella

(IV)Patellar apex: Inferior portion of patella

(V) Medial and lateral patella borders

(VI)Lateral articulate surface of the patella: Extend patient's knee fully and tilt medially to palpate surface

(VII)Medial articular surface of the patella: Extend patient's knee fully and tilt laterally to palpate surface

(VIII)Tibial tuberosity

(IX) Superior articular surface of the tibia: Patient knee is flexed to 90 degrees, clinician may place thumbs on either side of the patellar ligaments in the tibiofemoral joint.

(X) Articular surfaces of the femoral condyles: patient's knee is flexed to 90 degrees. Place thumbs on either side of the infra patellar tendon and find superior tibial articular surface. Move superiorly to the femur to locate the articular surface of the femur.

(XI) Oblique grooves: Flex knee greater than 90 degrees. Clinician runs fingers along the articular surface between the patella and the condylar articular surfaces themselves where the grooves may be felt.

(XII)Medial epicondyle of femur

(XIII)Adductor tubercle: Find medial epicondyle and move fingers superiorly until the prominence travels medial. Or follow the adductor Magnus distally to its distal attachement.

(XIV)Medial portion of the superior articular surface of the tibia: Flex knee to 90 degrees, MCL attaches ere.

(XV) Inferior border of the medial condyle of the tibia: Patient's knee is flexed. Locate medial tibia and ascend to this surface.

(XVI)Superior portion of the medial border of the tibia: Where 3 anserine muscles may be located.

(XVII)Lateral border of the supra patellar fossa

(XVIII)Lateral epicondyle of the femur: Less prominent than the medial portion, and occupies the medial portion of the lateral surface of the condyle.

(XIX)Lateral portion of the superior articular surface of the tibia

(XX)Infracondylar tubercle (Gerdy's tubercle): Found on the lateral tibial condyle. The patient's knee is flexed to 90 degrees, look for it below the lateral part of the superior articular surface of the tibia and lateral to the tibial tuberosity.

(XXI)Oblique line of the tibia: Bony ridge running between the infracondylar tubercle and the lateral border of the tibial tuberosity.

(XXII)Fibular head

(XXIII)Fibular neck: Between the proximal head and shaft.

KNEE LIGAMENTS

(I) Fibular collateral ligament: attaches from the lateral femoral epicondyle to the anterolateral part of the fibular head in anterior to the styloid process.

(II) Lateral patellar retinaculum (transverse fibers): Knee is fully extended. Push patella into a medial glide, approach perpendicular to fiber direction.

(III)Lateral patellar retinaculum (oblique fibers): Knee is slightly flexed. Tilt patella medially. Approach perpendicular to fibers.

(IV)Medial patellar retinaculum (transverse fibers): Fully extend knee, push the patella into a lateral glide. Approach perpendicular to fiber direction.

(V) Medial patellar retinaculum (oblique fibers): Slightly flex knee, push patella into a lateral tilt. Approach perpendicular to the fibers.

(VI) Infrapatellar fat pad. Found superior to the tibial tuberosity on either side of infra patellar tendon.

(VII) Infrapatellar tendon (ligament)

TIBIOFEMORAL JOINT

PATELLOFEMORAL JOINT

PES ANSERINE

(I) Locate the patient's distal portion of the medial border of the tibia

(II) Ask the patient to adduct and flex the knee repeatedly

(III) Semitendinosus tendon is the lowest and easily felt, gracilis lies anterior, and the sartorius overlies the former.

ADDUCTOR MAGNUS: DISTAL END

(I) Find the patient's adductor tubercle, deep to vastus medialis.

(II) Will feel solid and relatively thick cylindrical cord.

POPLITEUS TENDON

(I) Using one hand resist the patient's knee flexion, while placing the other hand behind the LCL. It is found posterior to the LCL.

FAT PADS

Found on either side of infrapatellar tendon.

LEG BONY LANDMARKS

(I) Anterior border of tibia: Place finger on tibial tuberosity and extend distally, notice that it tends to veer medially

(II) Medial border of the tibia: From medial tibial condyle to the medial malleolus.

(III) Medial surface of the tibia: consists of the anserine muscles and

(IV) Posterior surface of the tibia

(V) Lateral surface of the fibula: Run fingers from fibular head distally to the lateral malleolus

TIBIALIS ANTERIOR

(I) Origin: Ask patient to resist dorsiflexion from an everted and plantar flexed position. May be felt two fingers width lateral and inferior to the tibial tuberosity.

(II) Middle leg: Runs along anterior border of tibia, then lateral to the tibial crest, and medial to the extensor digitorum. Have patient adduct, supinate,supinate, and dorsiflex their foot, while the clinician resists on the medial border of the patient's foot.

(III) Insertion: Ask patient to perform the same procedure for the middle leg. The TA tendon is the most medial tendon, and anterior to the medial malleolus.

EXTENSOR HALLUCINATIONS LONGUS

(I) Ask patient to extend the great toe and resist the movement. Clinician can trace the tendon proximally from the great toe to the anterior leg.

(II) The muscle attaches from the middle port of the medial surface of the fibula anteriorly to the interosseous membrane, and is inserted into the base of the proximal phalanx of the big toe and into its distal phalanx by two lateral expansions

EXTENSOR DIGITORUM LONGUS

(I) Extend the 2-5 digits. Palpate the tendons to the body of the muscle proximally.

(II) EDL arises from the lateral tibial condyle lateral to that of the tibias anterior and the upper two-thirds of the medial surface of the fibula along its anterior border. Distal attachment can be found on the proximal dorsal phalanx of the 2-5 digits.

PERONEUS TERTIUS

(I) Have patient evert foot with or without resistance

(II) The tendon attaches proximally from the inferior third fo the medial surface of the fibula, and distally on the surface of the base of the fifth metatarsal.

PERONEUS LONGUS

(I) Distal: Ask patient to abduct and plantar flex the foot. The distal tendon can be reflected posteriorly to lateral malleolus

(II) Middle: Ask patient to perform above movements. It can be found occupying half of the lateral surface of the leg and overlying the body of the peroneus brevis.

(III) Proximal: The body of the muscle lies in the upper part of the lateral surface of the leg between the EDL in front of the soles.

(IV) The proximal attachment is the lateral tibial condyle and inserts onto the tuberosity on the base of the first metatarsal.

PERONEUS BREVIS

(I) Distal: Ask patient to abduct the foot. The lateral border may be felt from the fifth metatarsal tuberosity.

(II) Middle: Ask patient to abduct the foot. The body of the muscle will present itself in front of the tendon of the peroneus longus.

(III) Proximal: Ask patient to abduct the foot. It can be felt posteriorly to the PL tendon.

MEDIAL HEAD OF THE GASTROCNEMIUS

(I) Clinician places on hand on the sole of the patient's foot, while resisting repeated plantar flexion. The medial head may be palpated on the posteromedial portion of the leg.

(II) The gastrocnemius arises from the roughened upper border of the medial femoral condyle, from the medial supracondylar tubercle, and from the part of the medial supracondylar tubercle, and from the part of the bone adjacent to the capsule and popliteal surface. Distally it inserts with the lateral head of the gastrocnemius and soleus into the posterior surface of the calcaneus via the Achilles tendon.

LATERAL HEAD OF THE GASTROCNEMIUS

(I) Clinician places on hand on the sole of the patient's foot, while resisting repeated plantar flexion. Palpate the posterolateral portion of the leg as it approaches the knee.

(II) The gastrocnemius arises from the roughened upper border of the medial femoral condyle, from the medial supracondylar tubercle, and from the part of the medial supracondylar tubercle, and from the part of the bone adjacent to the capsule and popliteal surface. Distally it inserts with the lateral head of the gastrocnemius and soleus into the posterior surface of the calcaneus via the Achilles tendon.

SOLEUS

(I) Have patient repetitively plantar flex their foot against resistance

(II) Fibular head: lies superficial to the peroneus brevis and posterior to the peroneus longus tendon and can be palpated along the fibula between the posteriorly located lateral head fo the gastrocnemius and anteriorly located peroneus longus and peroneus brevis.

(III) Middle: Lie posterior to the peroneus longus and anterior to the lateral head of the gastrocnemius.

(IV) Tibial head: Found anterior to the medial head of the gastrocnemius

(V) Fibular has is the part of the body of the muscle arising from the fibula. It extends much more over the lateral surface of the leg than the medial head does on the medial side. Two tendinous heads arising from the tibia and fibula fuse into a single expansion that gives rise to fleshy fibers on its posterior and anterior surfaces. This expansion is thus embedded inside the muscle fibers and is called intramuscular fascia. It joins the gastrocnemius before inserting into the posterior surface of the calcaneus via the Achilles tendon. Tibial head is part of the muscle arising from the lower lip of the inferomedial half of the solar line and from the middle third of the medial border of the tibia. It extends much less over the medial surface of the leg than does the fibular head over the lateral surface of the leg.

ACHILLES TENDON

(I) Follow the posterior portion of the calcaneus superiorly or the gastrocnemius inferiorly.

TIBIALIS POSTERIOR

(I) Resist the patient adduction and plantarflexion of the foot. Repetitive contractions.

(II) Proximally: between the tuberosity of the navicular bone

(III)Ankle: Tendon is found behind the medial malleolus and may be felt posteriorly to the medial malleolus.

(IV)Body: Move pads of fingers along the medial surface of the tibia. The tendon runs anteriorly to the FDL.

(V) Proximally the TP arises from the upper two-thirds of the posterior surface of the tibia lateral to the medial ridge, which separates it from the FDL. The upper two-thirds of the medial surface of the fibula behind the vertical line. Distally it inserts on all the tarsal bones except the talus and on all the metatarsal bones except the last two.

FLEXOR DIGITORUM LONGUS

(I) Resist the patient rapid flexion of 2-5 digits. One hand of the clinician resists, while the other palpates

(II) Distally: not directly felt due to FDB

(III)Ankle: posterior to the medial malleolus behind the tendon of the TP

(IV)Proximal(body): Found behind the TP to about 10cm above the medial malleolus

(V) Proximally the muscle arises from the medial portion of the inferior lip of the oblique line of the tibia and from the middle third of the posterior surface of the tibia medial to the vertical line that separates it from the TP. Distally inserts into the bases of the distal phalanges of toes II-V.

FLEXOR HALLUCIS LONGUS

(I) One of the clinicians hands oppose rapid flexion contractions fo the great toe, while the other hand palpates.

(II) Distally: palpate on the plantar surface of the foot posterior to great toe.

(III)Malleolar groove: can be felt in the malleolar groove between the medial malleolus and the achilles tendon and posterior to the FDL.

(IV)Body: Found medially to the achilles' tendon and posterior to FDL

(V) Proximally it attaches fo the inferior three-quarters of the posterior surface of the fibula and distally inserts into the base of the distal phalanx of the great toe after passing between the two sesamoid bones of the metatarsaophalangeal joint.

Practical Examination				
Category	M1	M2	M3	M4
UE Muscles				
UE ESTIM				
LE Muscles				
LE ESTIM				