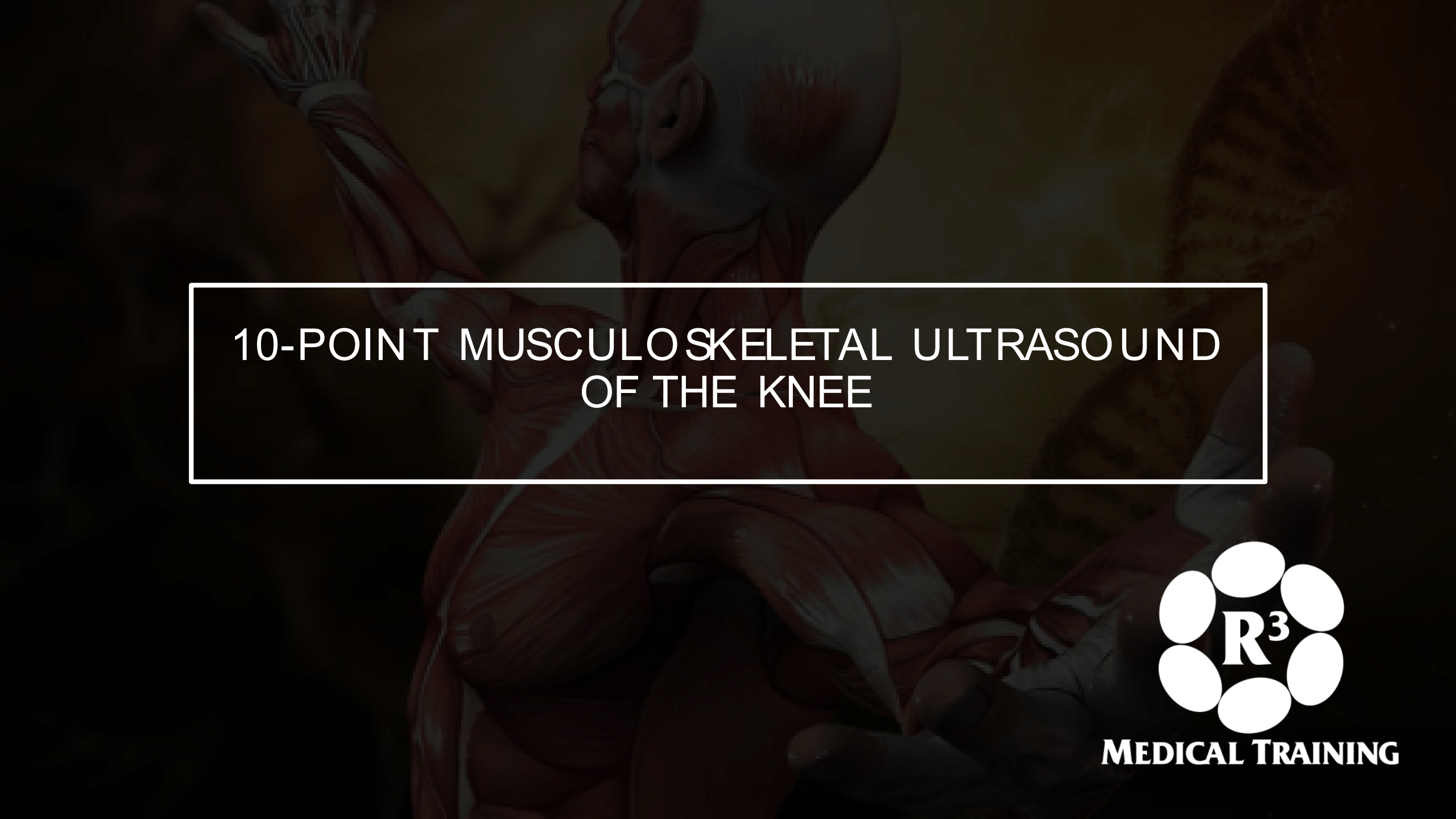




10-POINT MUSCULOSKELETAL ULTRASOUND OF THE KNEE



MEDICAL TRAINING

10 POINT KNEE EVALUATION



MEDICAL TRAINING

1. Anterior knee joint superior Sagittal

2. Anterior knee joint superior Axial

3. Anterior knee inferior Sagittal

4. Anterior knee inferior Axial

5. Medial knee anterior

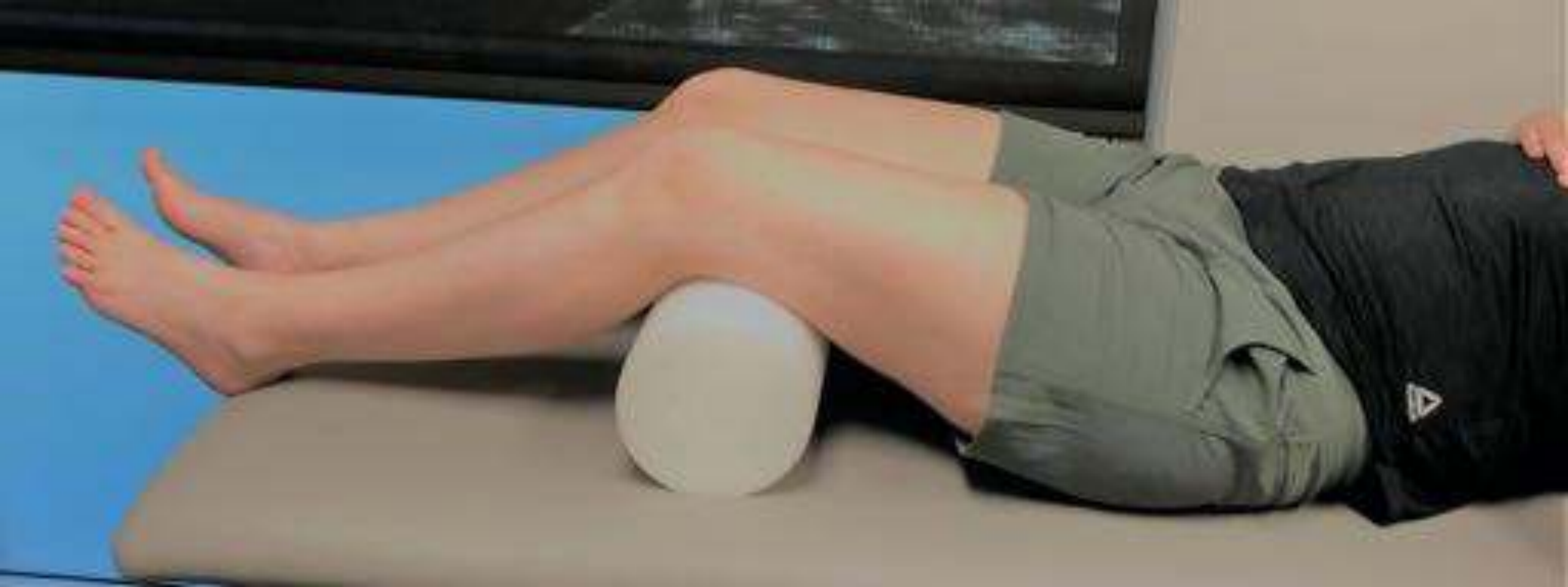
6. Medial knee posterior

7. Lateral knee anterior

8. Lateral knee posterior

9. Posterior knee Sagittal

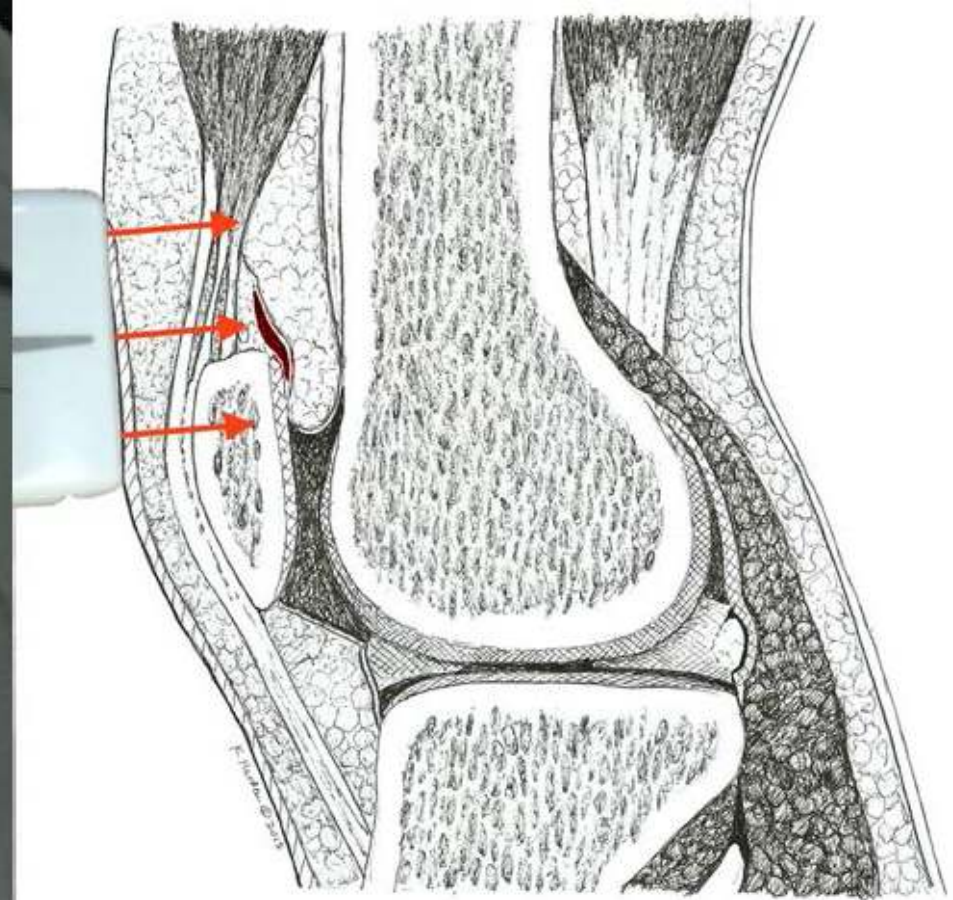
10. Posterior knee Axial



MEDICAL TRAINING

KNEE POSITION

ANTERIOR, MEDIAL AND LATERAL SCANS CAN BE PERFORMED IN SUPINE
WITH KNEE FLEXION AROUND 15-20 DEGREES OF FLEXION ON A
BOLSTER



1. ANTERIOR KNEE SUPERIOR LAX

STARTING POSITION MIDSAGITTAL ALONG THE QUAD WITH THE
PROBE ANGLED PARALLEL TO THE QUAD AND FEMUR



MEDICAL TRAINING

REGIONS OF SUPRAPATELLAR SPACE



MEDICAL TRAINING

1. Prefemoral Fat Pad

2. Simple Synovial Fluid

3. Quad Fat Pad

4. Proximal Patella

5. Trochlear Articular Cartilage

6. Distal Femur

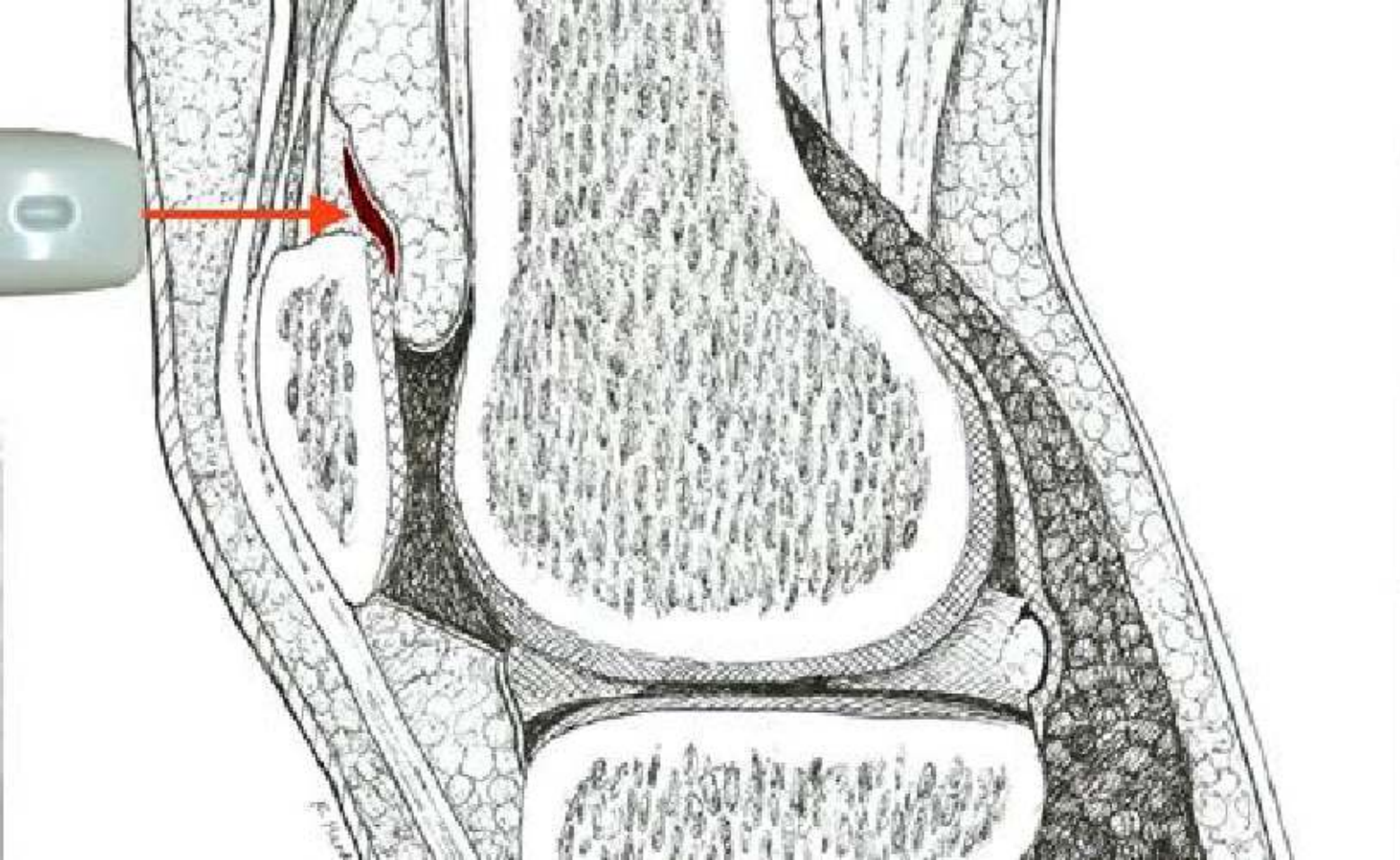
7. Quadriceps tendon



ANTERIOR SUPRAPATELLAR SPACE LAX



MEDICAL TRAINING



2. ANTERIOR KNEE SUPERIOR SAX

STARTING POSITION MIDSAGITTAL ALONG THE QUAD WITH THE
PROBE ANGLED PERPENDICULAR TO THE QUAD AND FEMUR



MEDICAL TRAINING



ANTERIOR SUPRAPATELLAR SPACE SAX



MEDICAL TRAINING



ANTERIOR SUPRAPATELLAR SPACE SAX

TROCHLEAR VIEW AT 90 DEG KNEE FLEXION

- View of trochlear groove is best visualized with knee in 90 deg of flexion
- Hypoechoic signal adjacent to femur is hyaline cartilage



MEDICAL TRAINING

TROCHLEAR GROOVE DYNAMIC EVALUATION

- Sweeping the probe lateral to medial with knee in various degrees of flexion looking for loose body formation



MEDICAL TRAINING



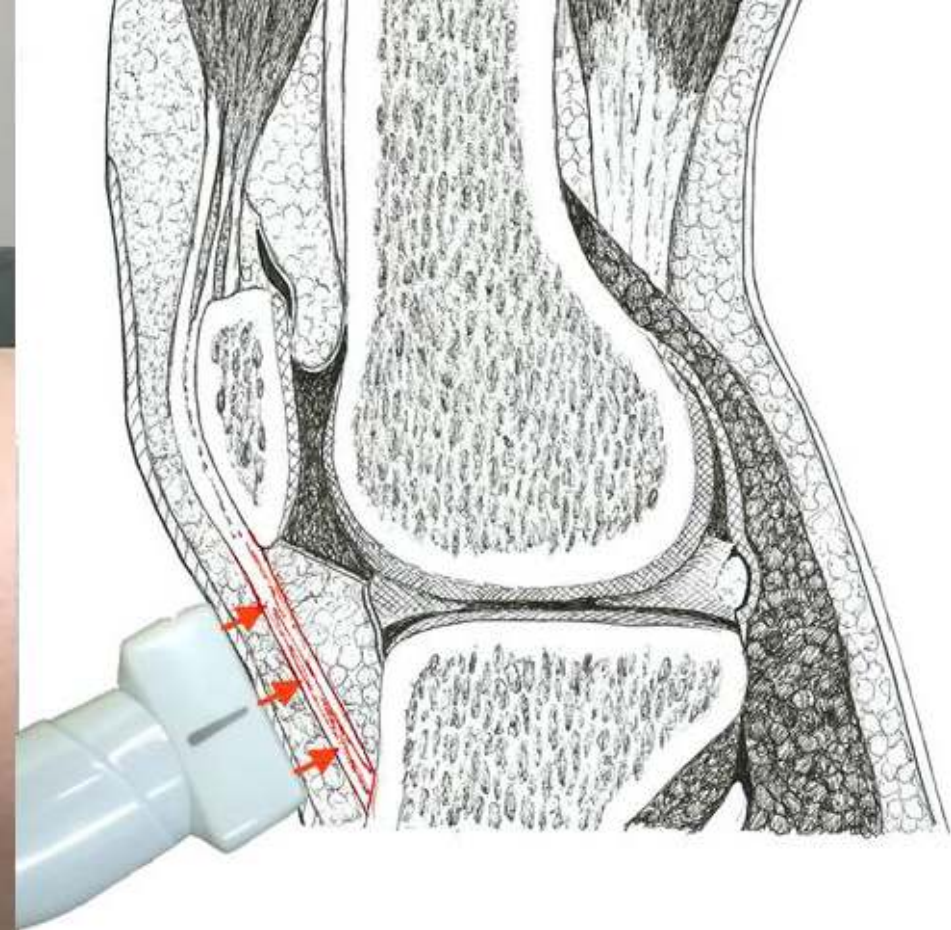


QUAD MUSCLE GROUP SAX

KEEPING THE PROBE IN SAX OF
THE QUAD, AND FEMUR,
TRANSLATE THE PROBE
PROXIMAL, AND MAINTAIN
RECTUS AND VASTUS
INTERMEDIUS, AND SWEEP
MEDIAL TO LATERAL AS NEEDED.
*DEPENDING ON BODY
HABITUS, POSSIBLY USE
CURVILINEAR OR TRAPEZOID
VIEW FOR DEEPER STRUCTURES



MEDICAL TRAINING



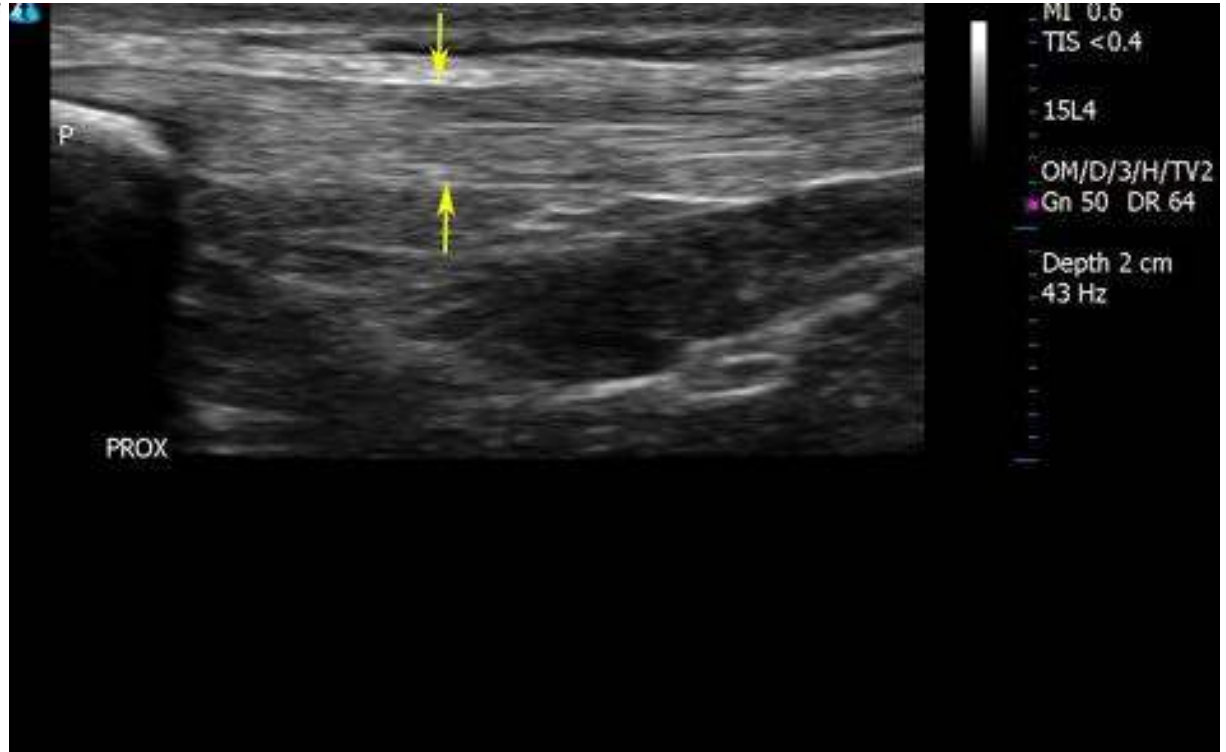
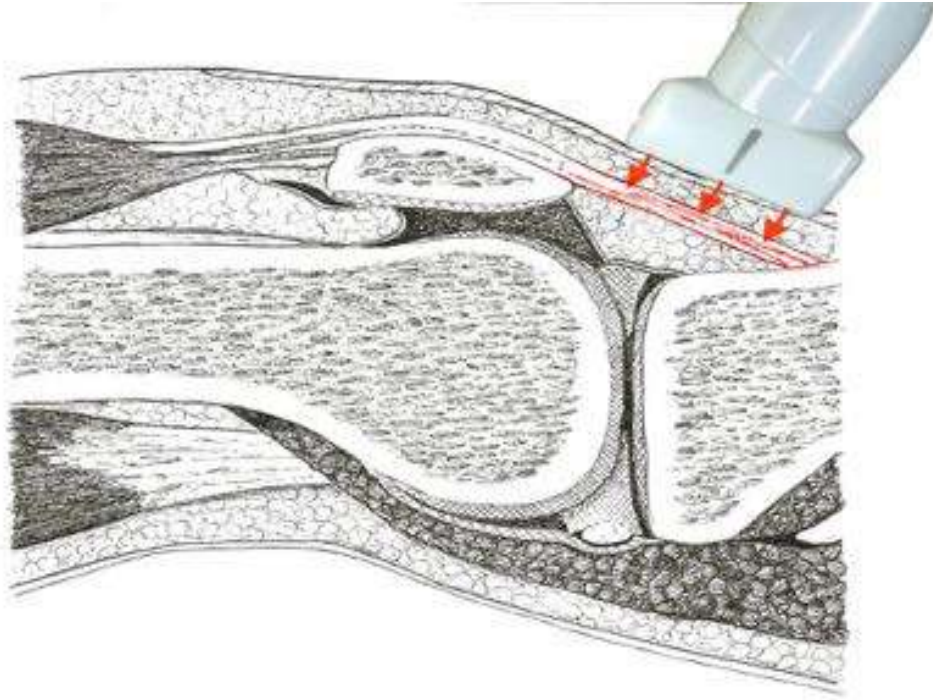
3. ANTERIOR KNEE INFERIOR LAX

STARTING POSITION MID SAGIT TAL WITH THE PROBE
PARALLEL TO THE PATELLAR TENDON



MEDICAL TRAINING

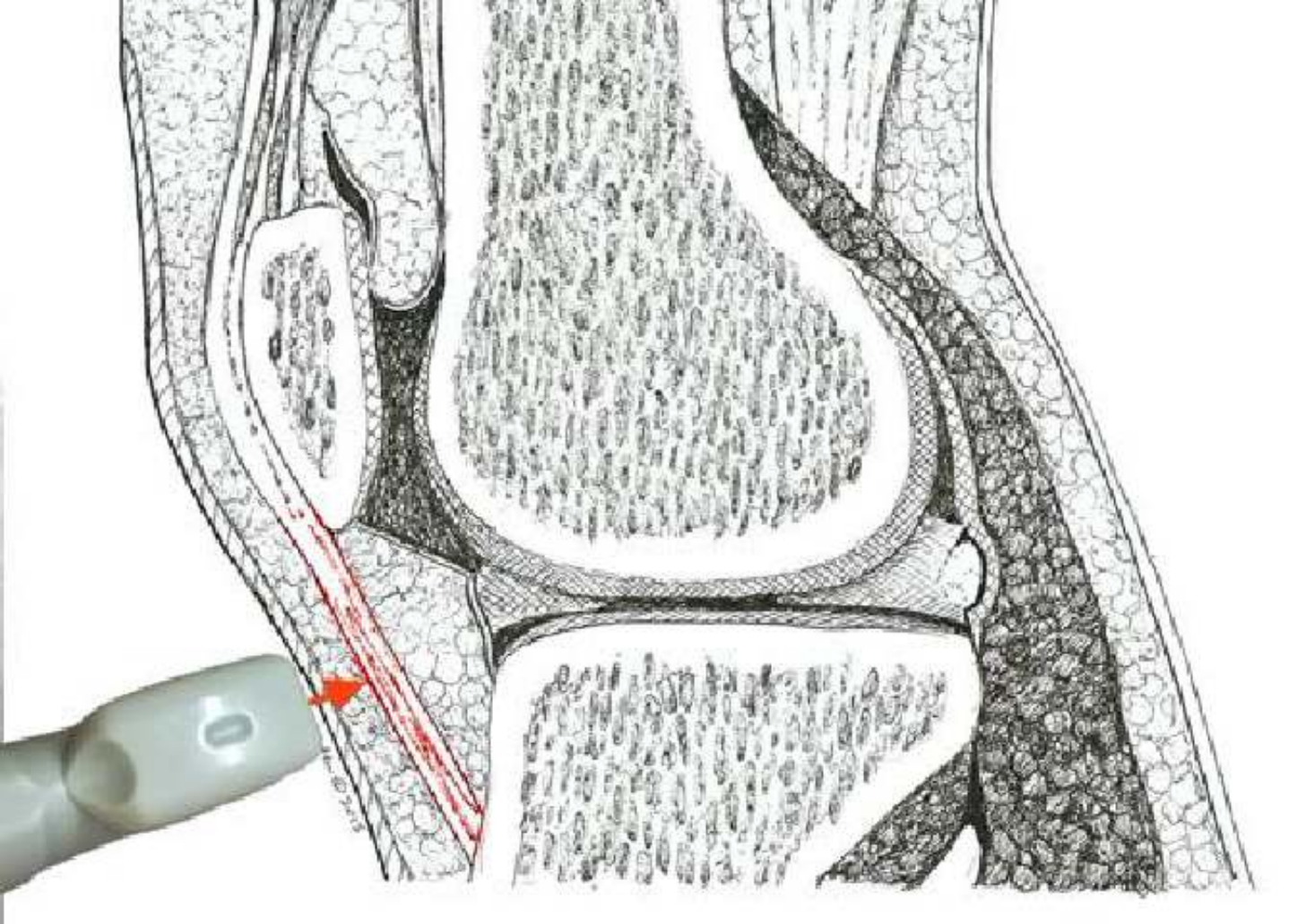
Patellar Tendon Long Axis



PATELLA TENDON

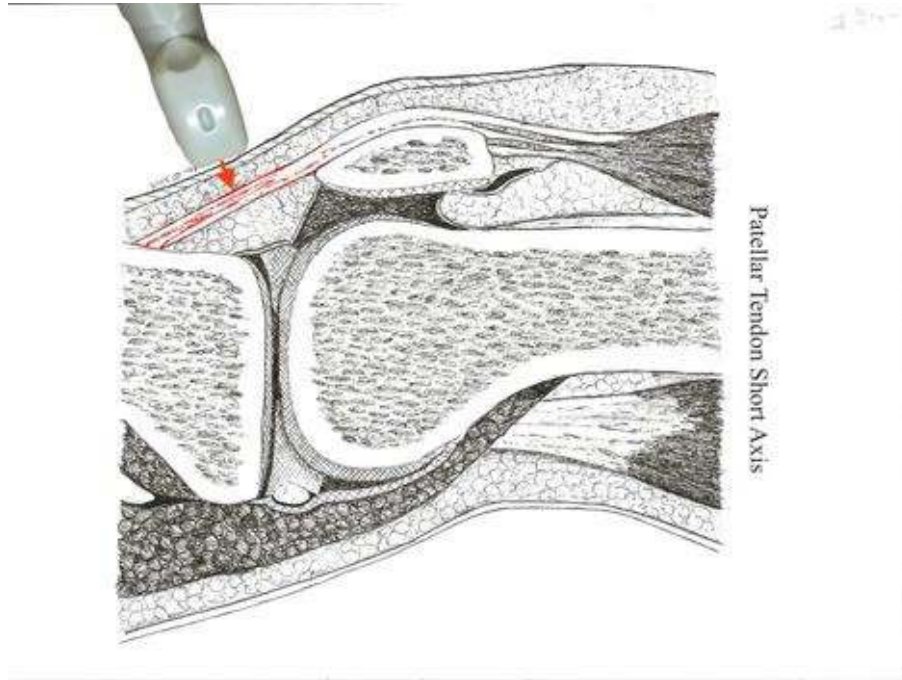


MEDICAL TRAINING



4. ANTERIOR KNEE INFERIOR SAX

STARTING POSITION PERPENDICULAR TO THE PATELLAR
TENDON AND SWEEP FROM PROXIMAL TO DISTAL

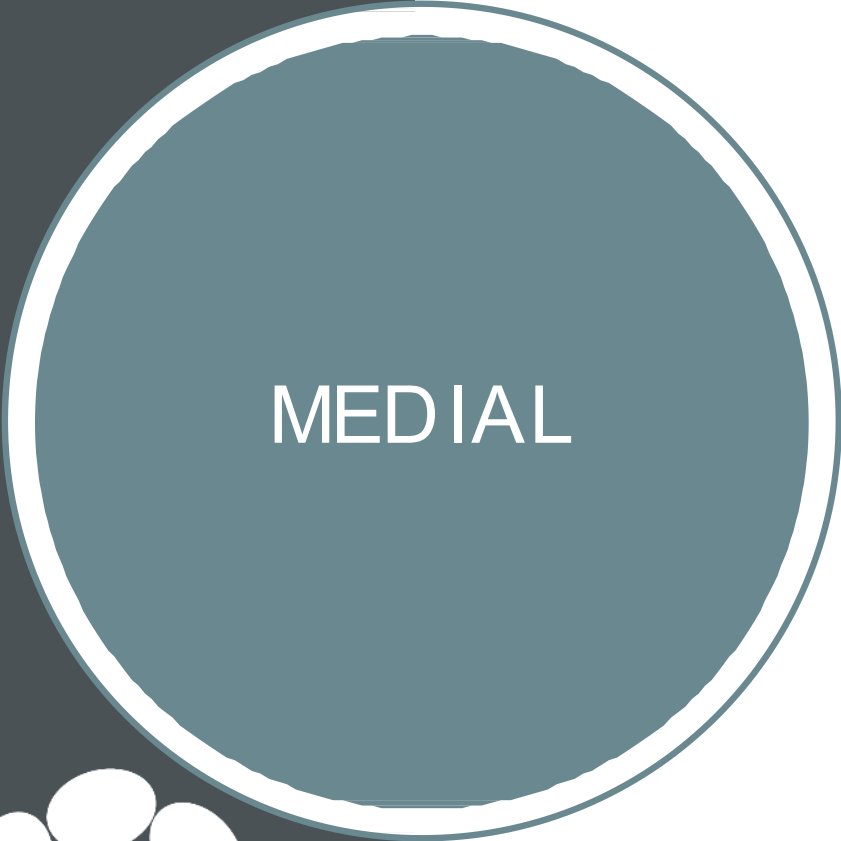


Patellar tendon in SAX will have oval shape.
Be sure to sweep from inferior patellar pole to tibial tuberosity

PATELLAR TENDON TRANSVERSE VIEW



MEDICAL TRAINING



MEDIAL

- Medial collateral ligament
- Medial meniscus
- PesAnserine



MEDICAL TRAINING

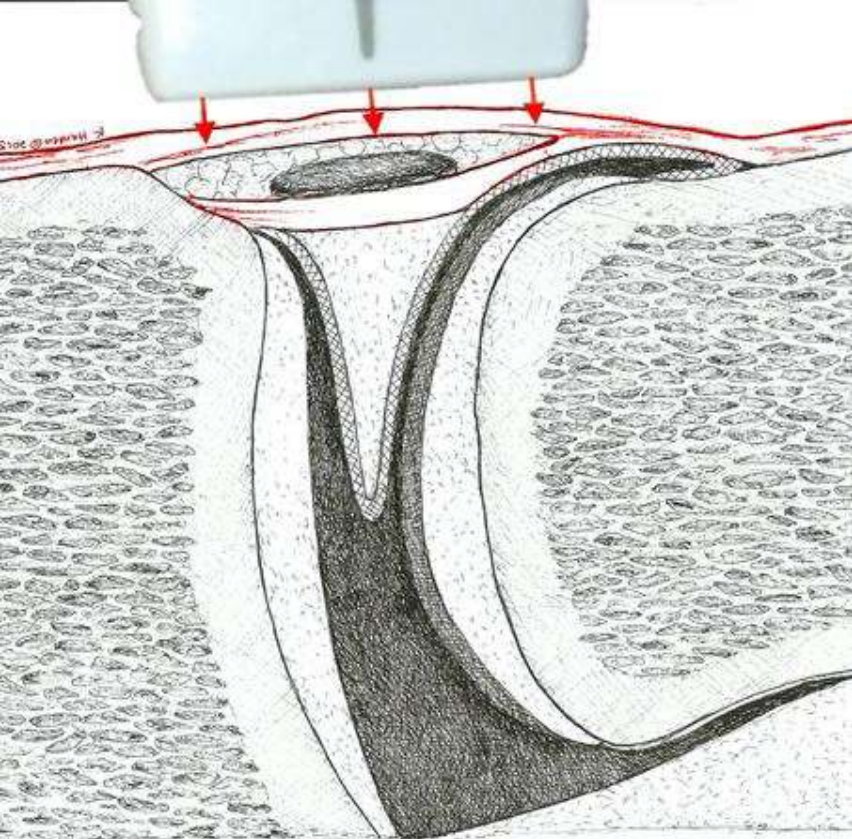


5. MEDIAL KNEE ANTERIOR

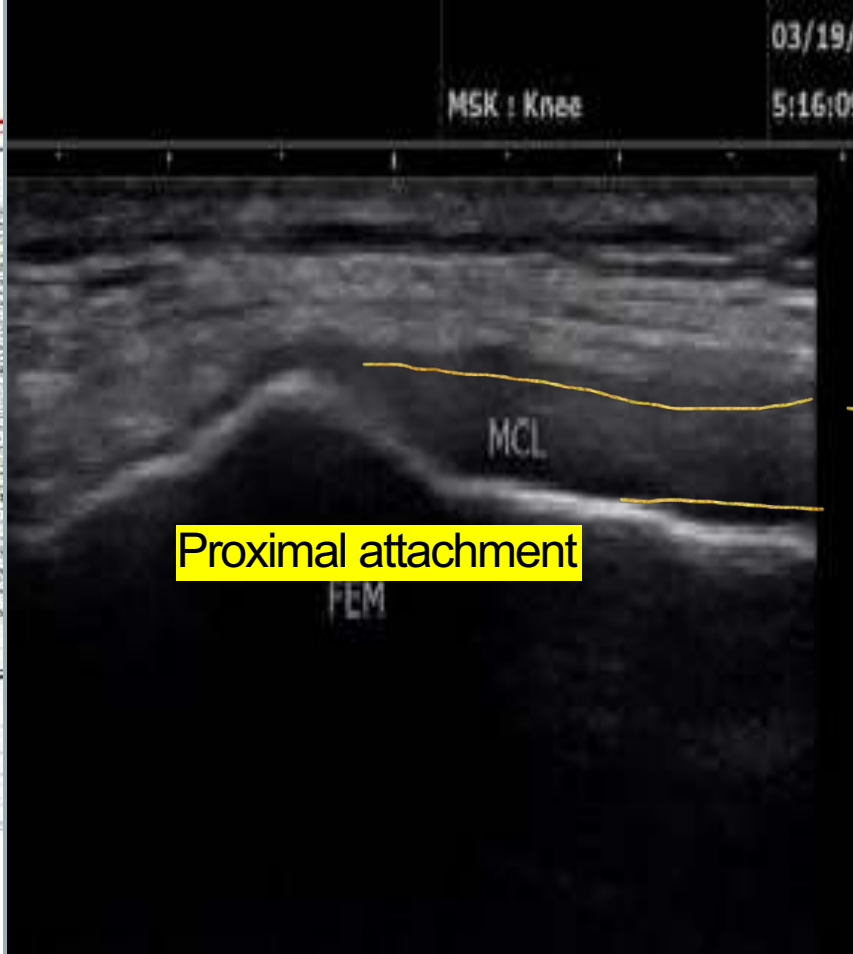
STARTING
POSITION
PARALLEL TO
THE FEMORAL
CONDYLE AND
SWEEP
PROXIMAL TO
DISTAL



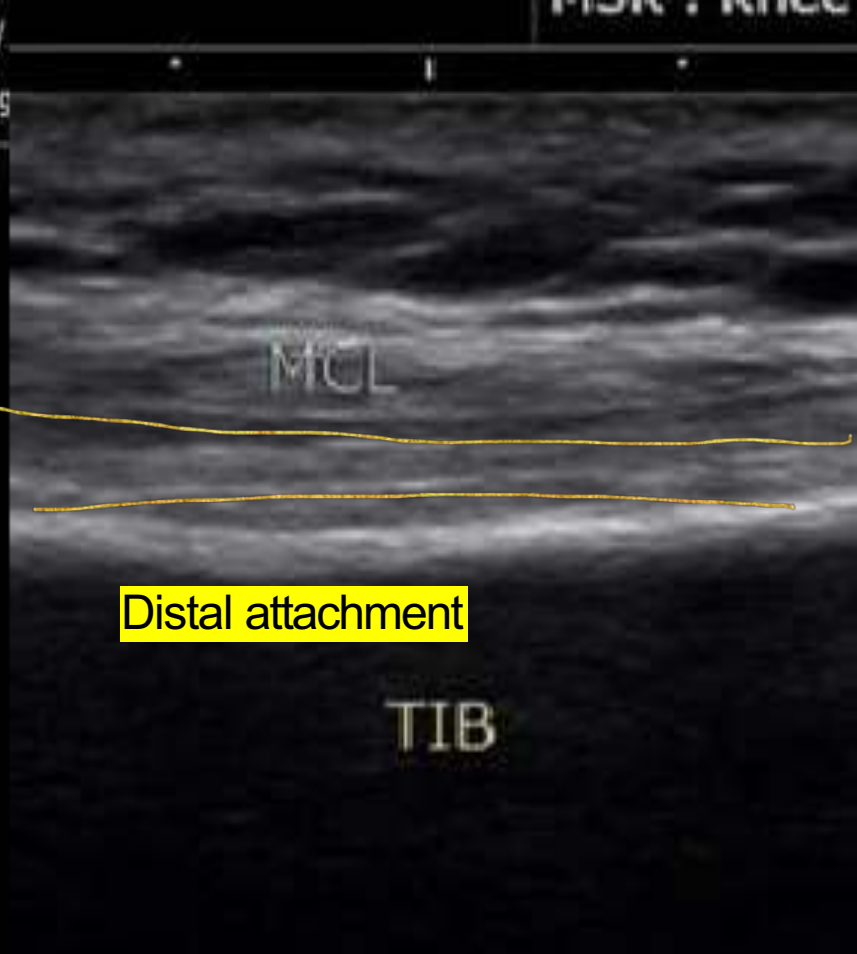
MEDICAL TRAINING



Medial Collateral Ligament Long Axis



Proximal attachment

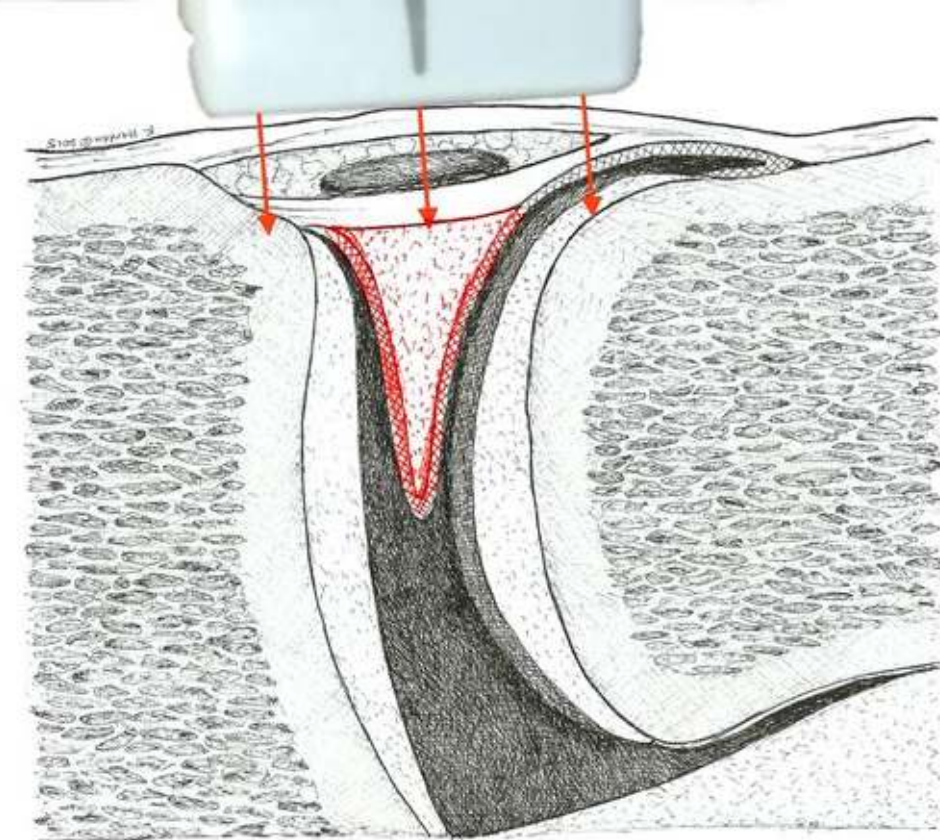
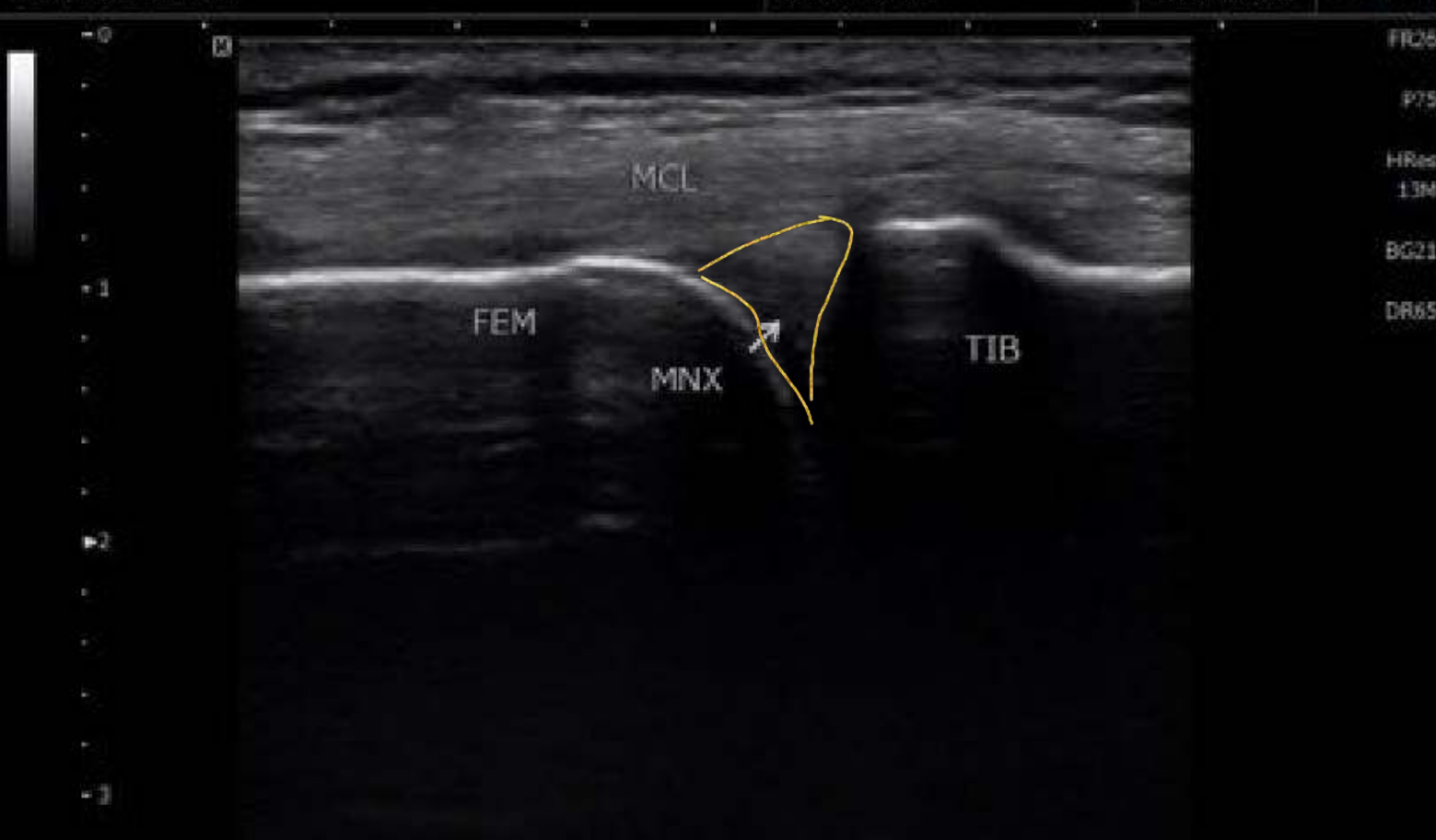


Distal attachment

MEDIAL MCL LAX



MEDICAL TRAINING



Medial Meniscus

MEDIAL MENISCUS LAX



MEDICAL TRAINING

MEDIAL KNEE; MEDIAL PATELLAR FEMORAL LIGAMENT AND
RETINACULUM

PROBE PLACEMENT PERPENDICULAR TO FEMUR STARTING AT
PROXIMAL PATELLA AND SWEEPING DISTAL



MEDICAL TRAINING

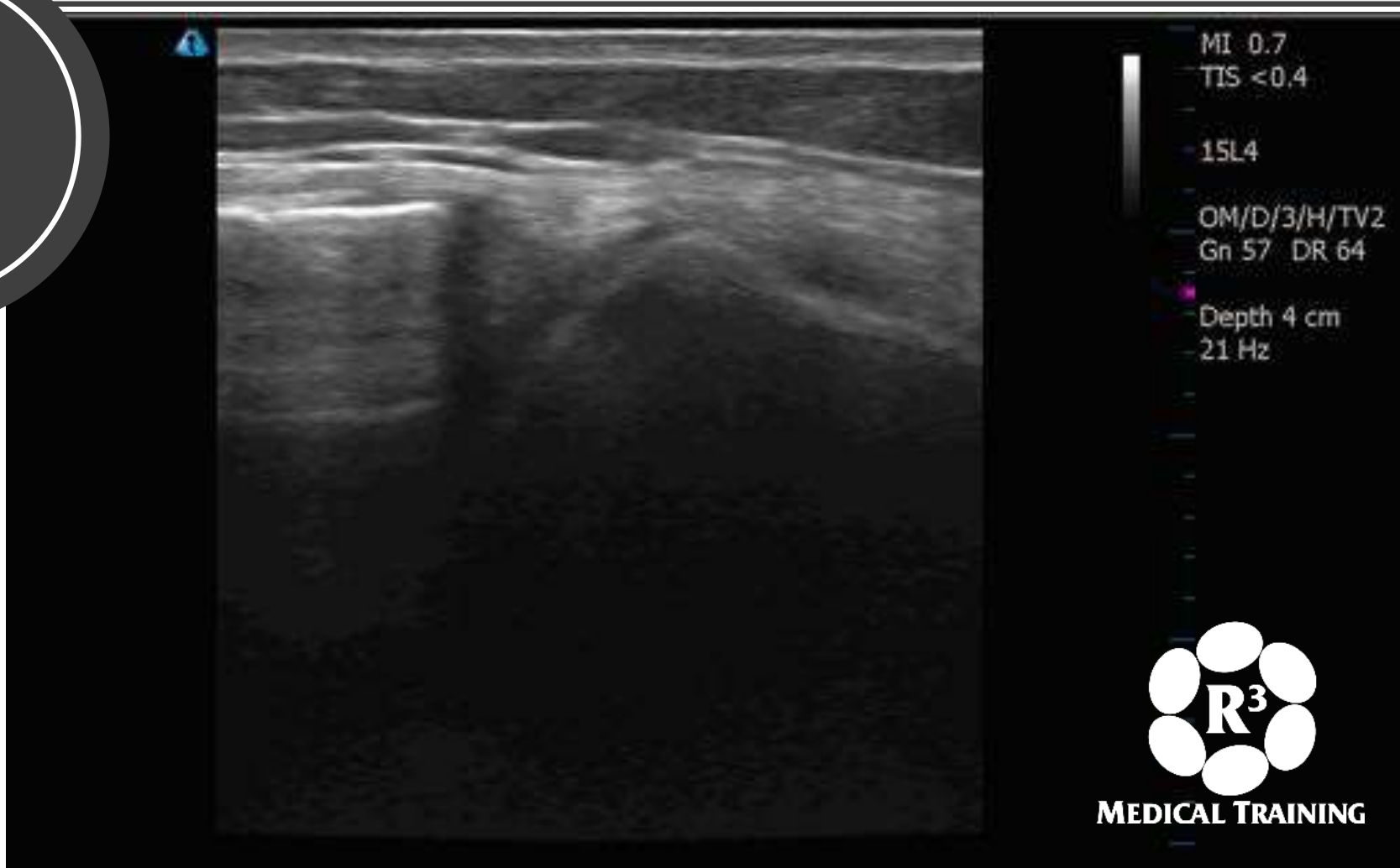


MEDIAL RETINACULUM

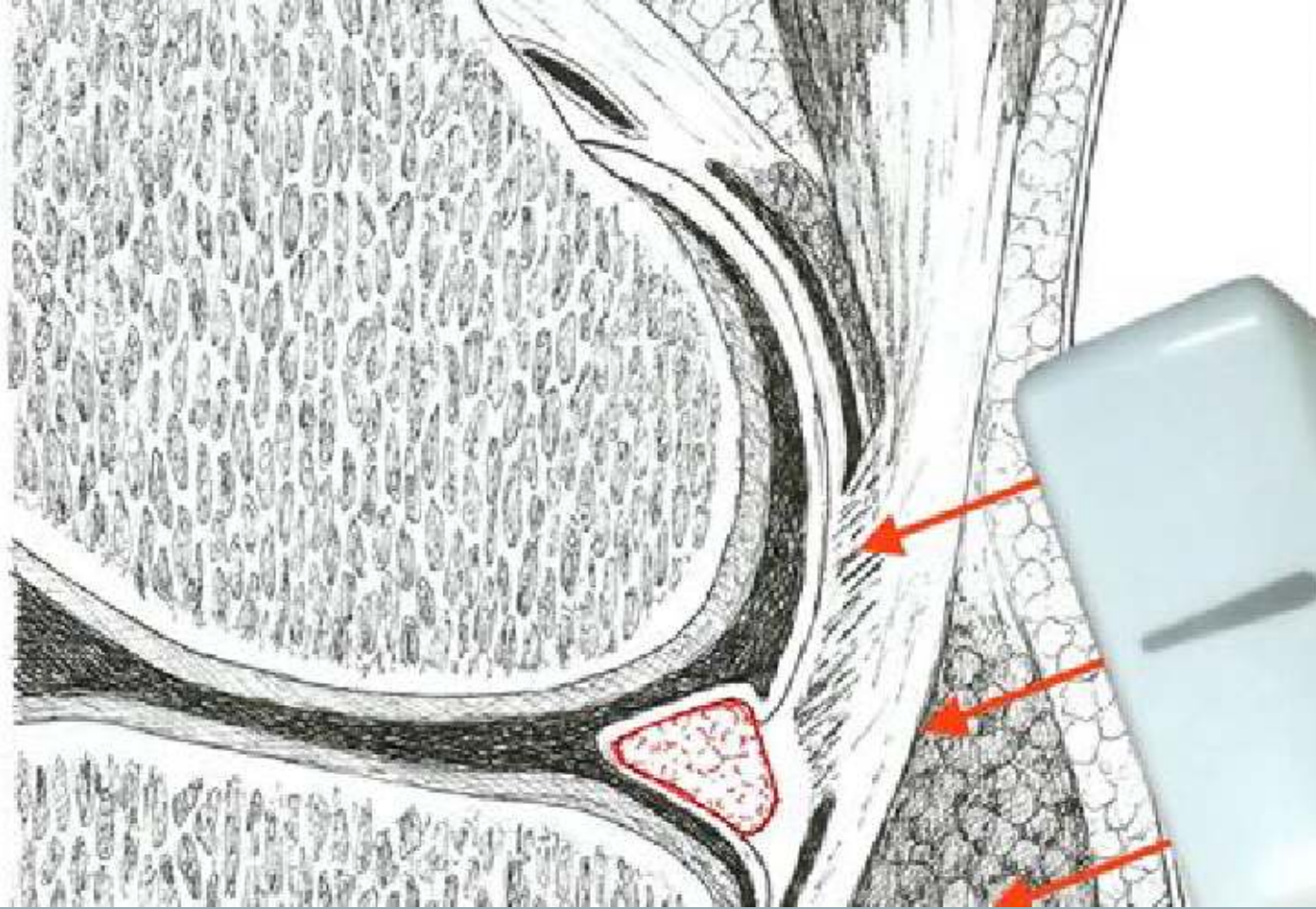


MEDICAL TRAINING

MC L
DYNAMIC



Common dynamic motions include varus, valgus and extension, flexion



6. MEDIAL KNEE POSTERIOR
STARTING POSITION PARALLEL TO
FEMUR, ALONG POSTERIOR ASPECT



Pes Anserinus
Long Axis

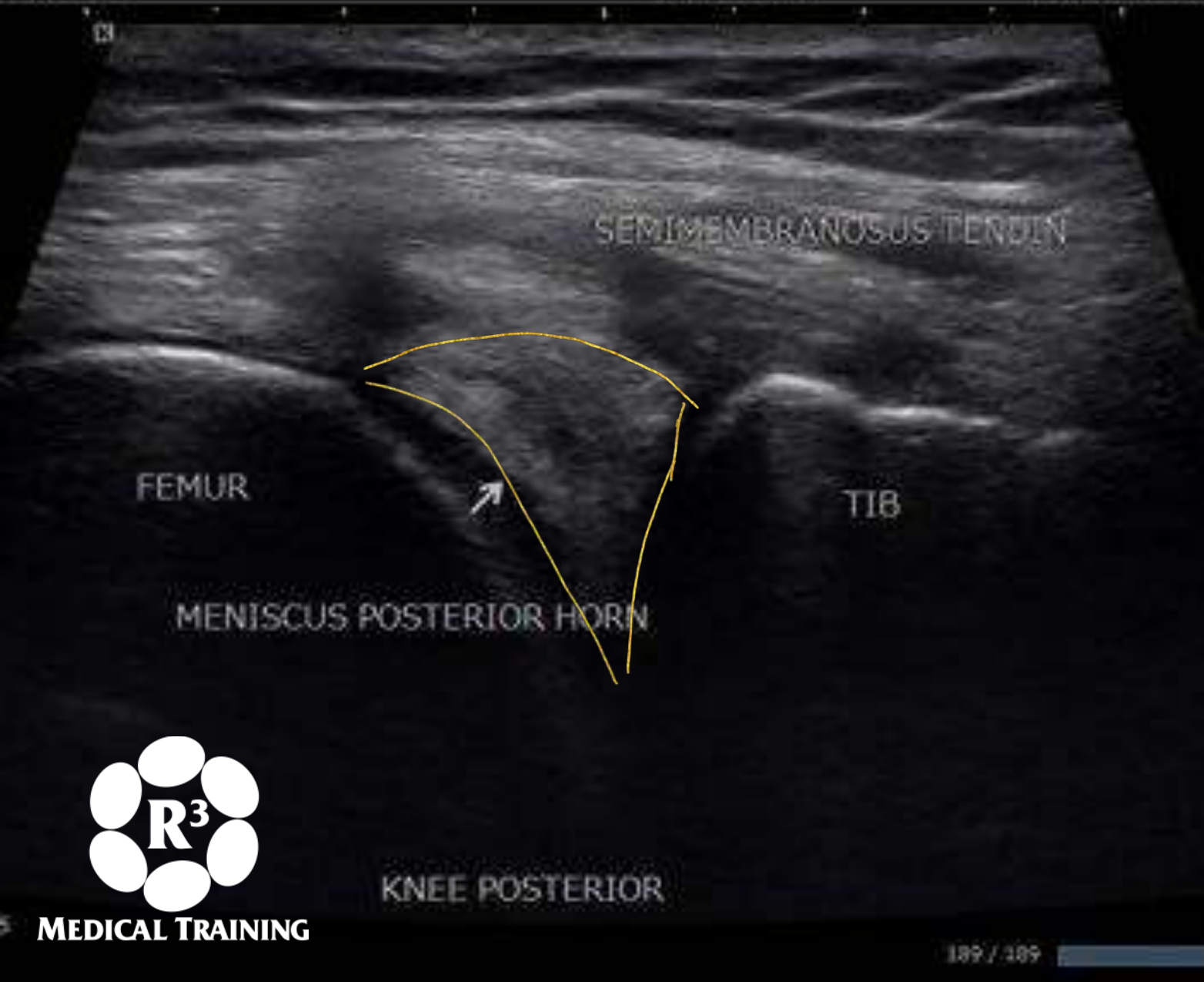


MEDIAL KNEE; PESANSERINE
SARTORIUS
GRACILIS
3. SEMITENDINOSUS

NOTE: THE MUSCULOTENDINOUS JUNCTION IS LOCATED POSTERIOR MEDIAL KNEE, AND INSERTION IS ANTERIOR ON THE TIBIA



MEDICAL TRAINING



MEDIAL MENISCUS
POSTERIOR HORN
WITH VISUALIZATION
OF
SEMIMEMBRANOSUS
INSERTION

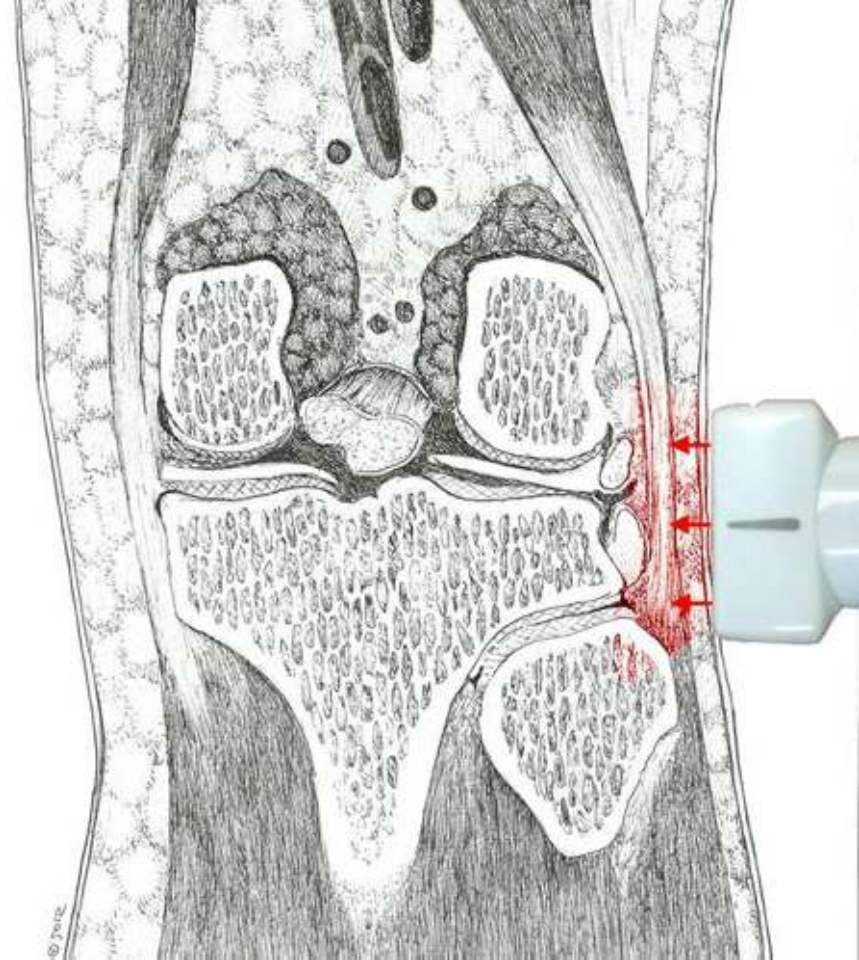
NOTE: THIS REGION
CAN BE PART OF YOUR
POSTERIOR
EVALUATION ASWELL



LATERAL

- Lateral meniscus and joint line
- Popliteus
- Iliotibial tract
- Lateral collateral ligament
- Bicep Femoris
- Common peroneal nerve



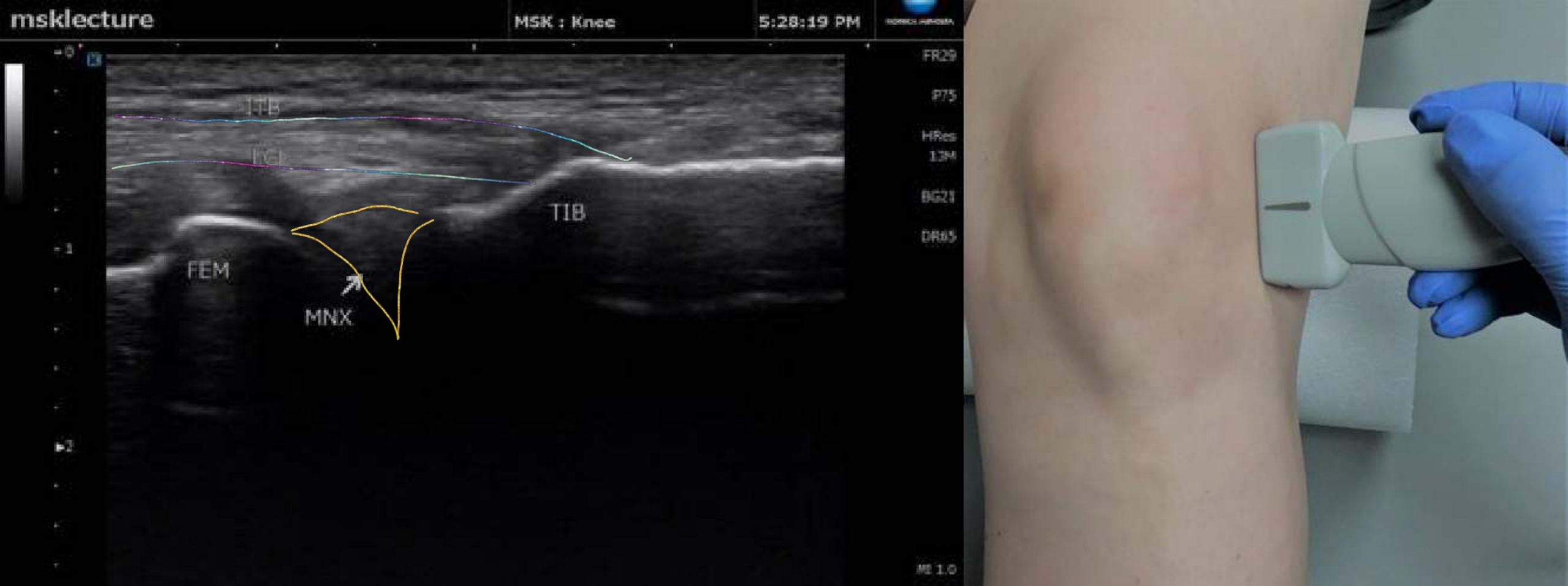


7. LATERAL KNEE ANTERIOR

STARTING POSITION PARALLEL TO LATERAL FEMORAL CONDYLE, AND SWEEP DISTAL ACROSS THE JOINT LINE



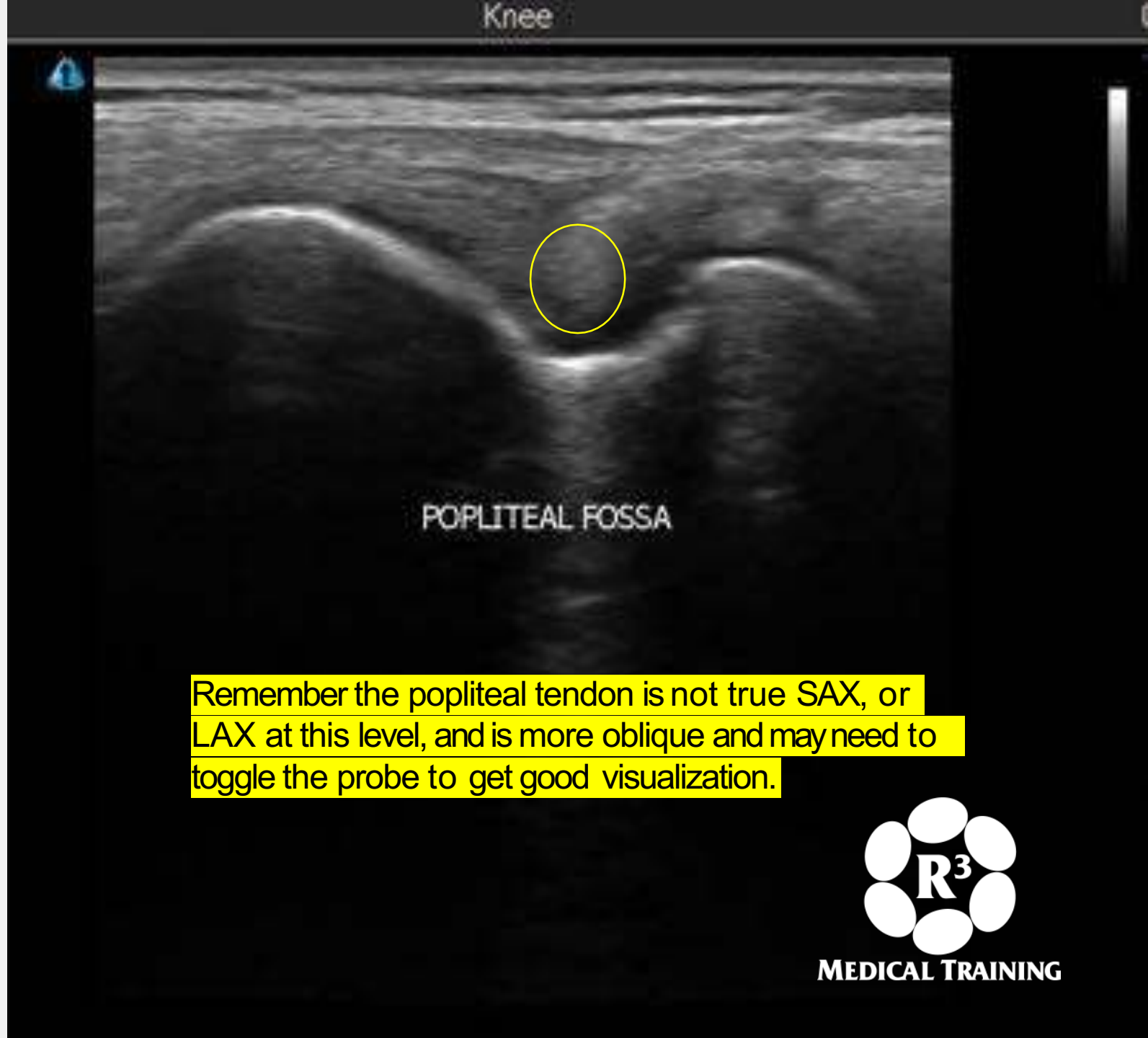
MEDICAL TRAINING



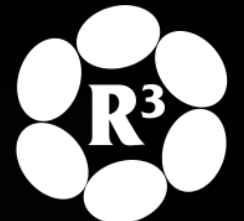
LATERAL KNEE MENISCUS AND JOINT LINE

POPLITEAL TENDON IN SHORT AXIS

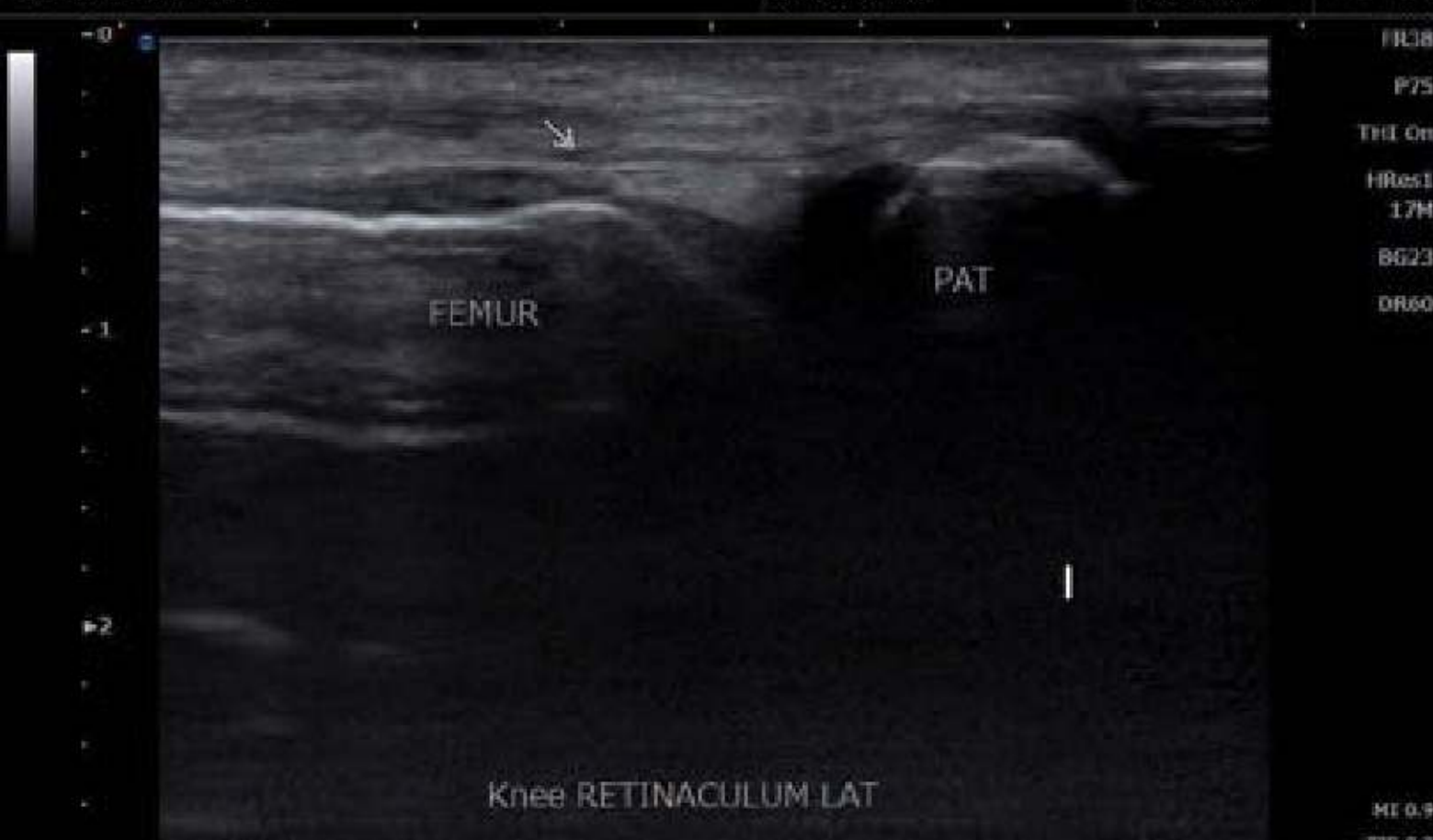
- Popliteal fossa → popliteal tendon in short axis visualized within
- Left is proximal
- Right is distal



Remember the popliteal tendon is not true SAX, or LAX at this level, and is more oblique and may need to toggle the probe to get good visualization.



MEDICAL TRAINING

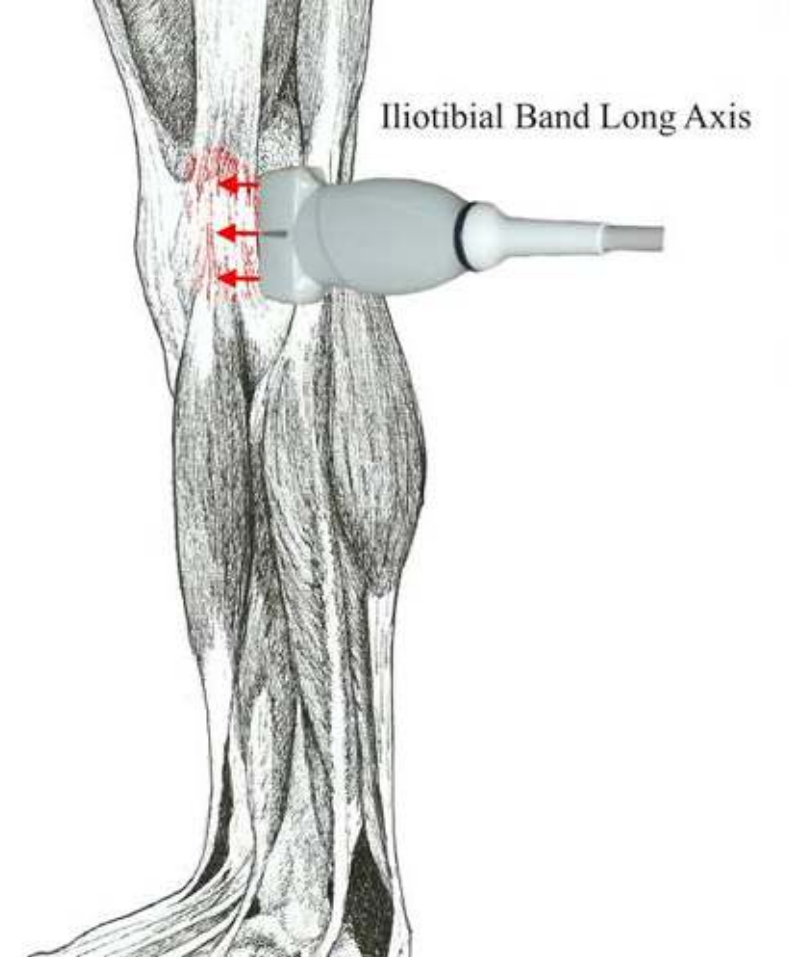


LATERAL KNEE; RETINACULUM

STARTING POSITION PERPENDICULAR TO FEMUR, WITH PROBE
TOUCHING PATELLA AND CONDYLAR RIDGE AND SWEEP
PROXIMAL TO DISTAL



MEDICAL TRAINING

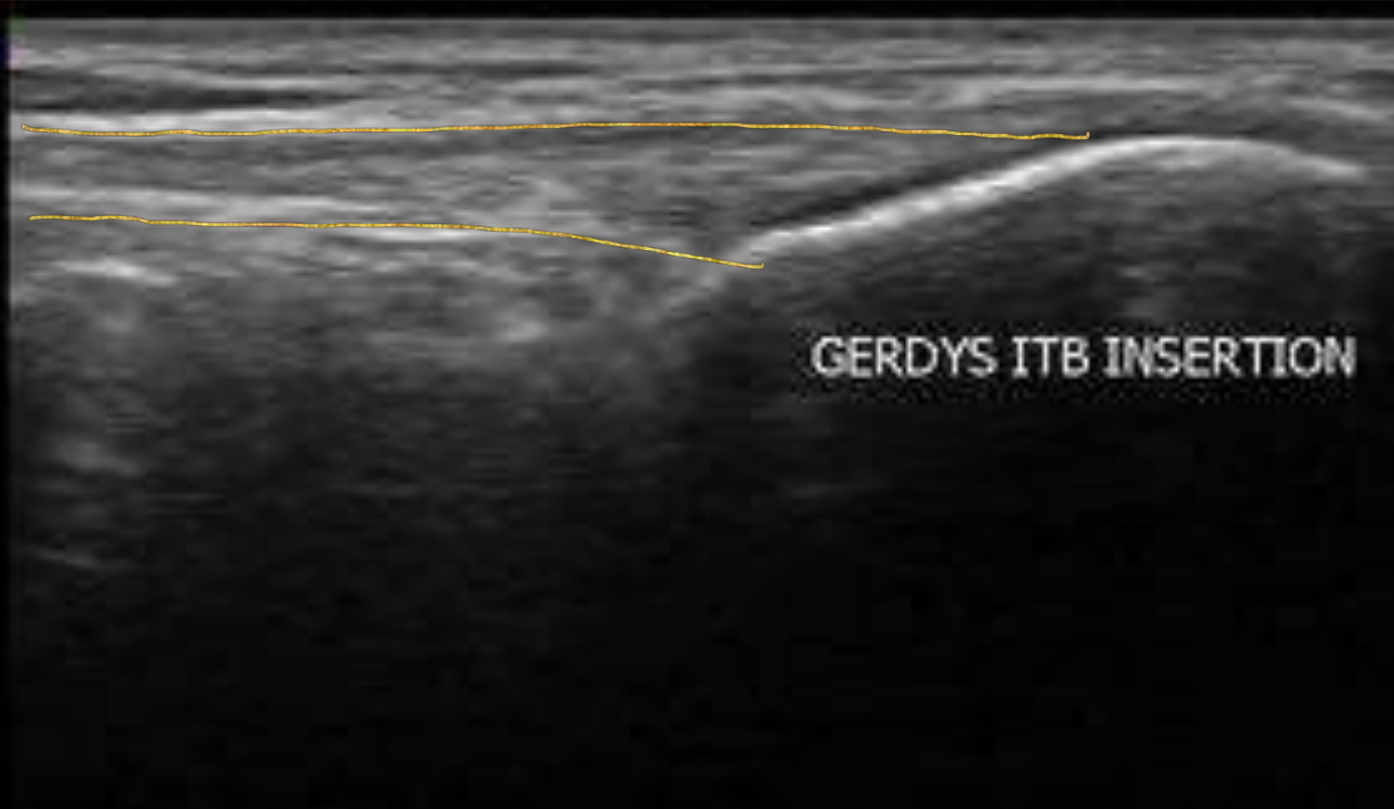


LATERAL KNEE ILIOTIBIAL BAND; GERDY'S TUBERCLE

LOCATE THE PROXIMAL TIBIA IN LAX AND SWEEP FROM ANTERIOR TO POSTERIOR



MEDICAL TRAINING



MI 0.7

TIS 0.4

15L4

OM/D/3/H/TV2

Gn 50 DR 64

Depth 4 cm

19 Hz

ILIOTIBIAL BAND INSERTION

**MEDICAL TRAINING**



8. LATERAL KNEE POSTERIOR

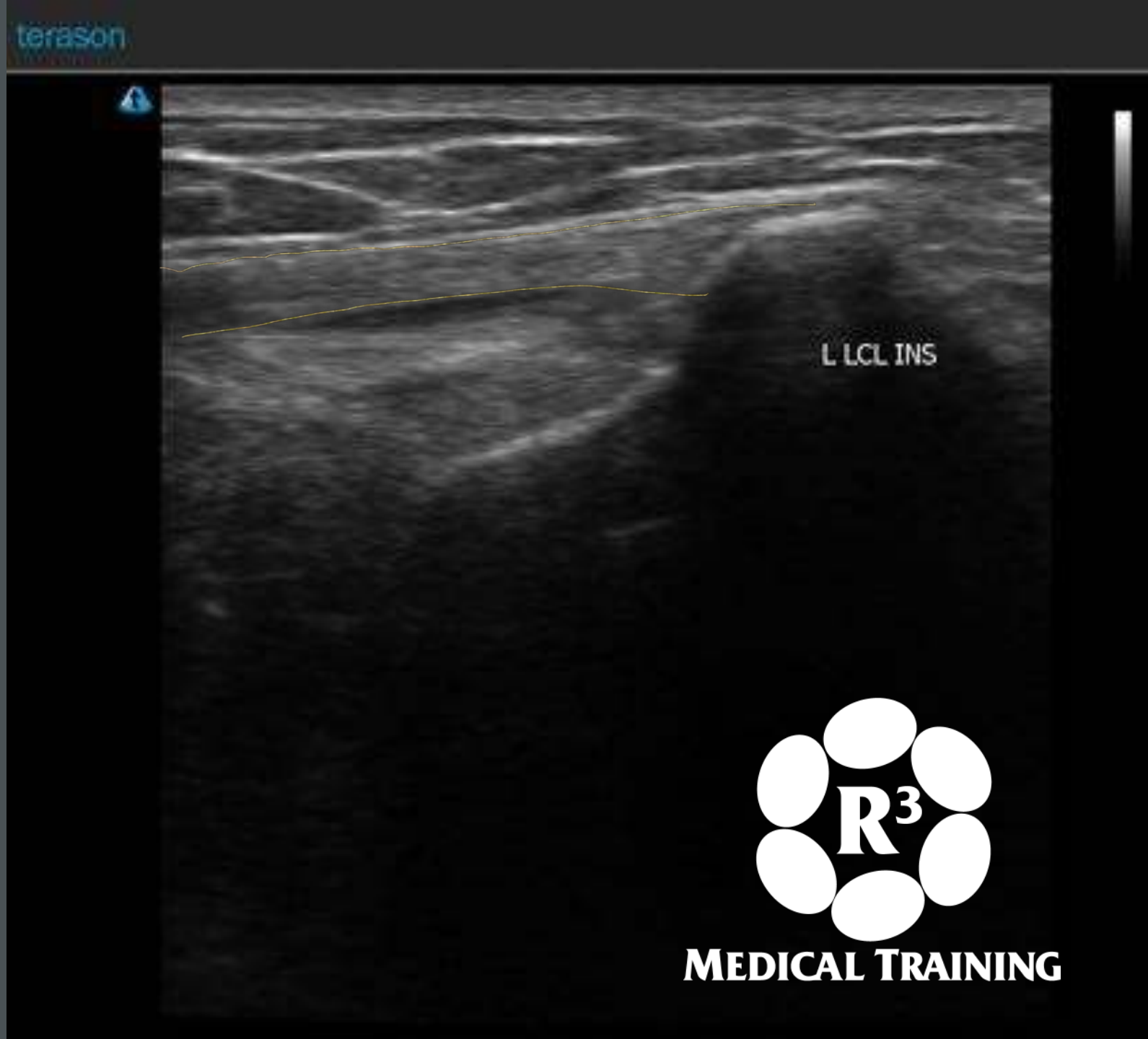
STARTING POSITION ; PALPATE FIBULAR HEAD AND PLACE DISTAL
PROBE HEAD PARALLEL TO FIBULA, AND PROXIMAL HEAD
PARALLEL TO FEMUR

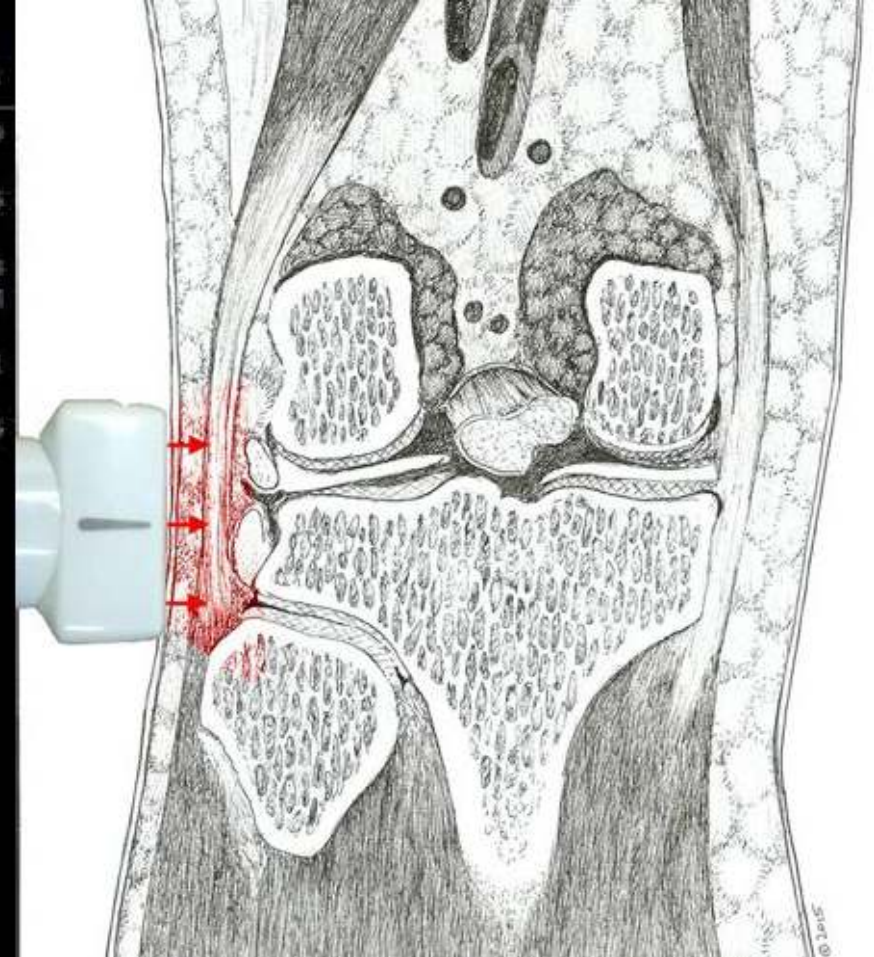


MEDICAL TRAINING

LCL INSERTION

- Fibular attachment of LCL.
- Biceps femoris is on top
- LCL is the dense, hyperechoic structure deep to biceps femoris in parallel with labeling in the image

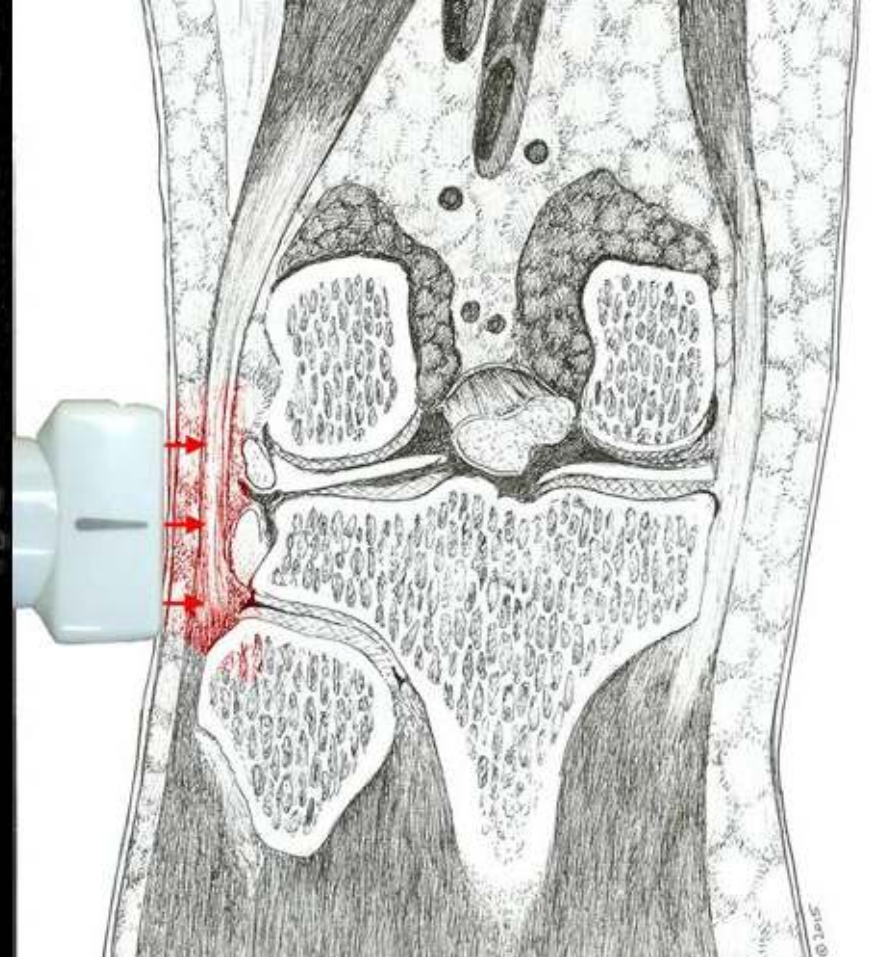
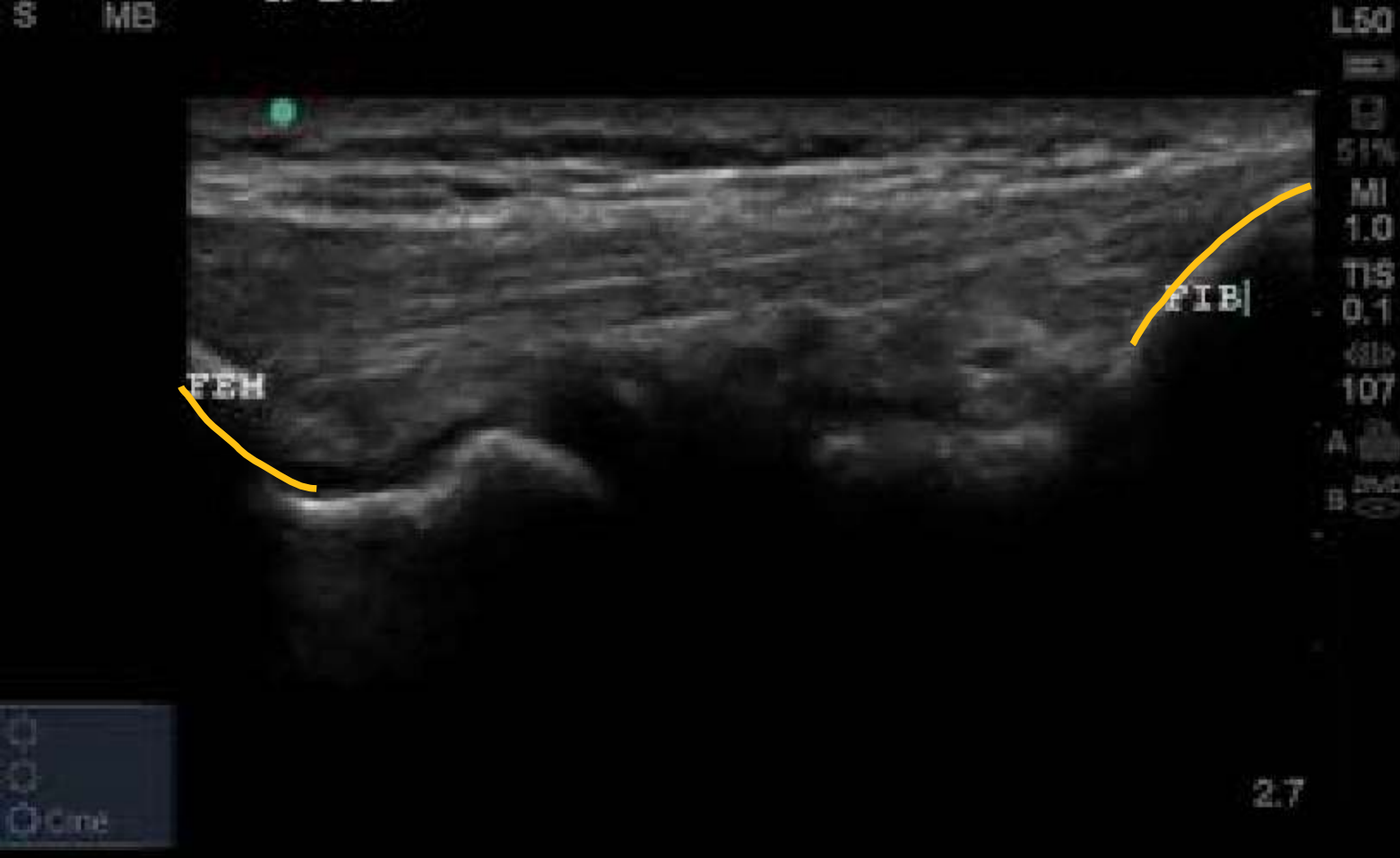




LCL FIBULA ATTACHMENT



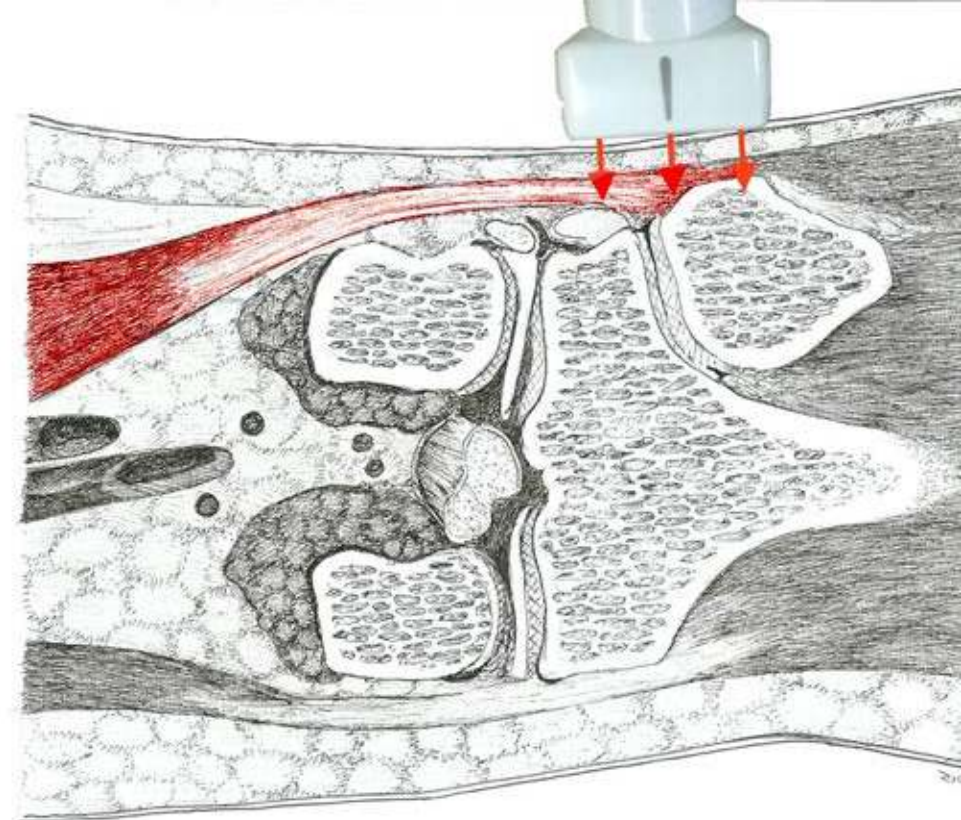
MEDICAL TRAINING



LCL FIBULA ATTACHMENT



MEDICAL TRAINING

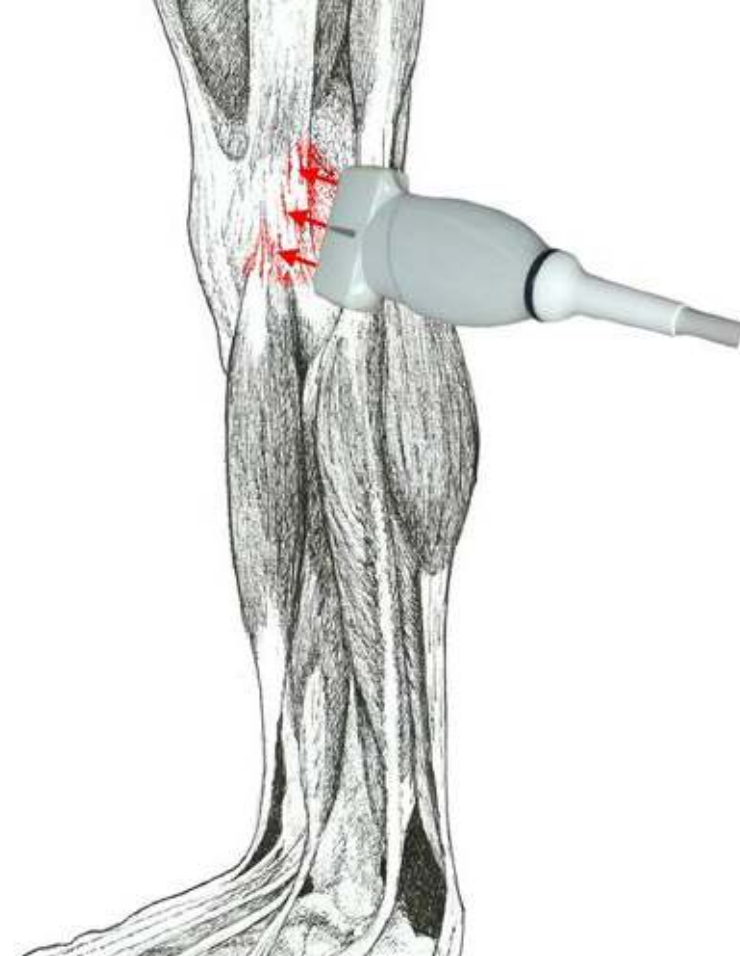


BICEP FEMORIS DISTAL ATTACHMENT

WITH THE DISTAL PROBE HEAD ON FIBULAR HEAD PARALLEL TO FIBULA, ROTATE PROXIMAL HEAD POSTERIOR UNTIL BICEPS FEMORIS IS SEEN

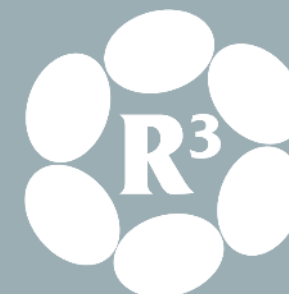


MEDICAL TRAINING



COMMON FIBULAR (PERONEAL) NERVE SAX AT PROX FIB HEAD

BEST VISUALIZATION IS POSTERIOR TO THE FIBULAR HEAD
PERPENDICULAR TO FIBULA IN SAX.

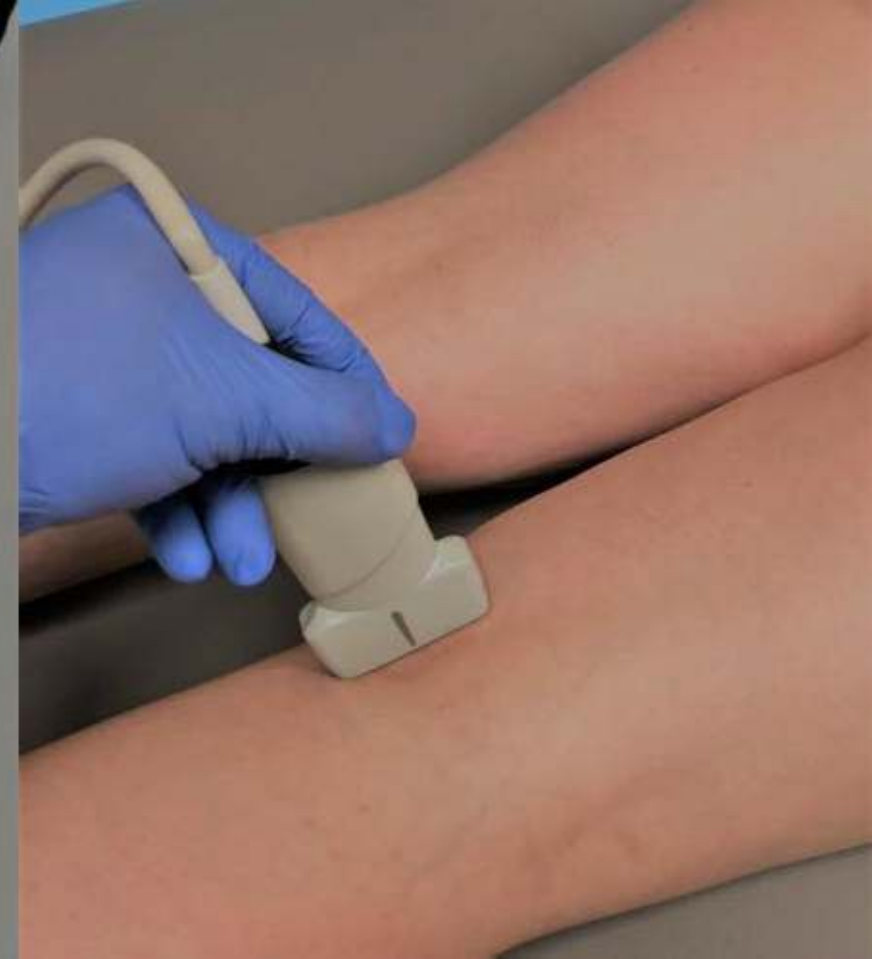
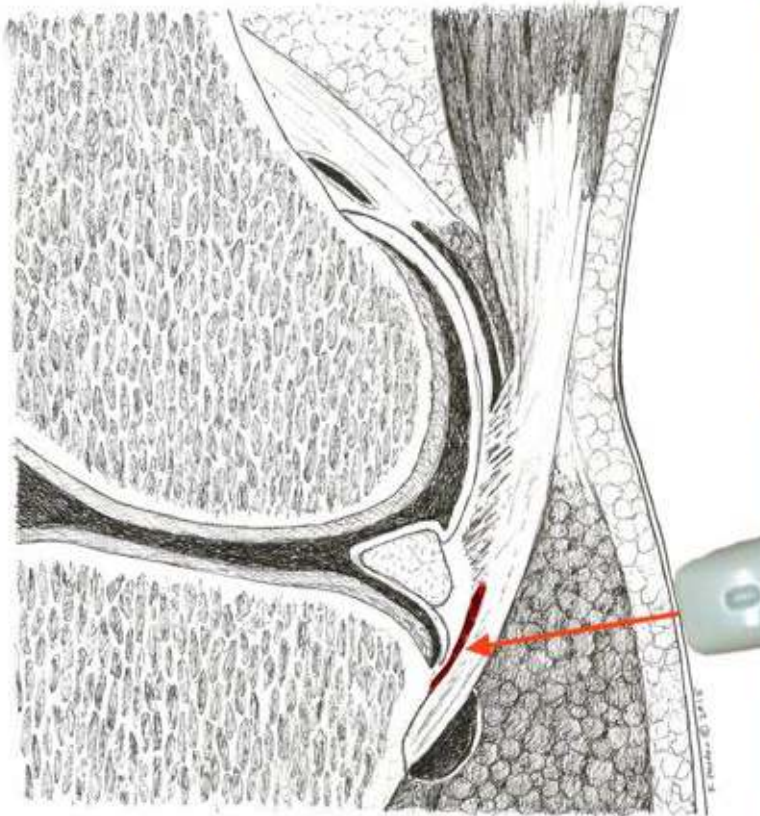


MEDICAL TRAINING

POSTERIOR

- Medial and lateral gastric/semimembranosus
- Baker's cyst
- Menisci
 - Posterior horn
- Posterior joint
- Neurovascular structures





POSTERIOR KNEE
PATIENT POSITION IN PRONE OR
ALTERNATIVELY SIDE LYING



MEDICAL TRAINING

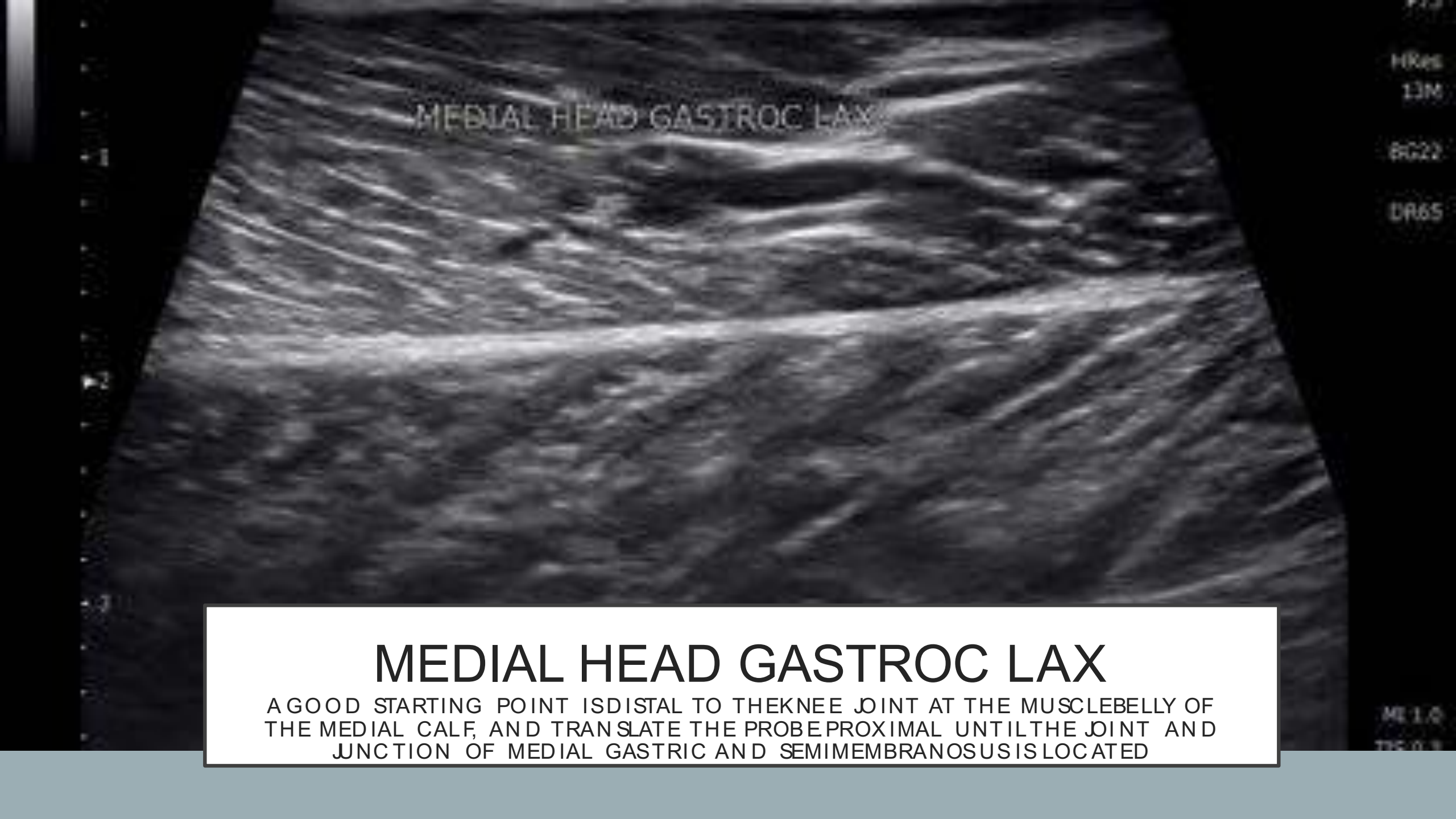


9. POSTERIOR KNEE LAX

BAKER CYST, WILL BE FOUND ALONG THE MEDIAL COMPARTMENT
OF THE POSTERIOR KNEE



MEDICAL TRAINING

A longitudinal B-mode ultrasound image of the medial head of the gastrocnemius muscle. The muscle fibers are oriented diagonally from the top-left to the bottom-right. A bright, curved line represents the tendon. The text 'MEDIAL HEAD GASTROCLAX' is overlaid in the upper center. On the right side, technical parameters are visible: 'HR65', '13M', 'B022', and 'DR65'.

MEDIAL HEAD GASTROCLAX

MEDIAL HEAD GASTROCLAX

A GOOD STARTING POINT IS DISTAL TO THE KNEE JOINT AT THE MUSCLE BELLY OF THE MEDIAL CALF, AND TRANSLATE THE PROBE PROXIMAL UNTIL THE JOINT AND JUNCTION OF MEDIAL GASTRIC AND SEMIMEMBRANOSUS IS LOCATED



MEDIAL MENISCUS
POSTERIOR HORN
WITH VISUALIZATION
OF
SEMIMEMBRANOSUS
INSERTION

NOTE: THIS REGION
CAN BE PART OF THE
POSTERIOR MEDIAL
EVALUATION



MEDICAL TRAINING



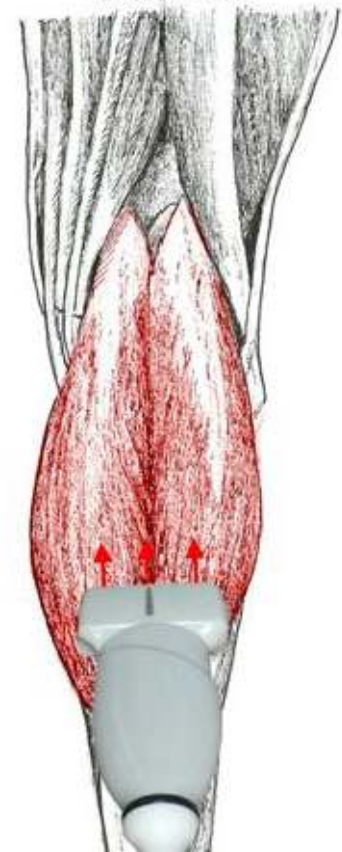
10. POSTERIOR KNEE SAX



MEDICAL TRAINING



Medial and Lateral Gastrocnemius Heads
Short Axis



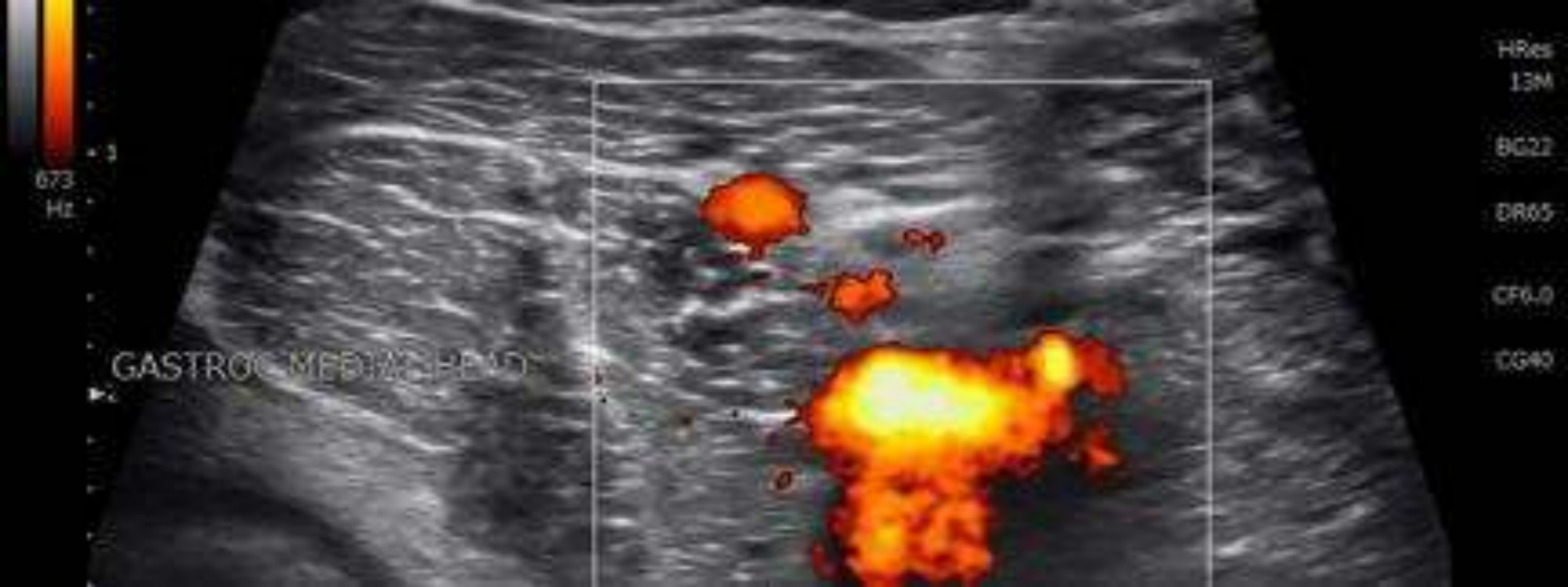
POSTERIOR KNEE SAX
MEDIAL HEAD OF GASTRCONEMIUS AND
SEMIMEMBRANOSUS SAX
LANDMARK FOR BAKER CYST



POSTERIOR KNEE JOINT SAX



MEDICAL TRAINING



POSTERIOR KNEE VASCULAR SAX



MEDICAL TRAINING

THANK YOU

