Knee Evaluation

Chapter 16 Pages 366-370

H: History

- Ask questions to determine the type of injury and the mechanism of how it happened.
- Questions may include:
  - What were you doing when you hurt your knee?
  - How did the injury happen?
  - What happened?
  - What position was the knee in at the time of injury?
  - What type of pain is there? Sharp or dull.
  - Did you hear a snap or a pop?
  - Did your knee buckle or collapse?
  - Can you point to the exact site of pain?
  - Is this a new injury? Or has it happened before?
  - What makes it feel better or what makes it feel worse?

More on History

- Do you have any weakness? Numbness?
- How disabling is this injury? On a scale of 1 to 10, 10 means call 911, what would this injury be?
- Can you bear weight on your leg/knee and walk normally or do you walk with a limp?
- Was there immediate swelling, or did the swelling occur later (or at all)? Where did the swelling occur?
- What past knee injuries have you had?

More on History

- For recurrent or chronic injuries
  - What is your major complaint?
  - Is there recurrent swelling?
  - Does the knee ever lock, catch, or buckle?
  - Does the knee hurt more to go up and down stairs?
  - Do you feel any grinding or grating sensations?
  - What past treatments have you received for this condition?

O: Observation

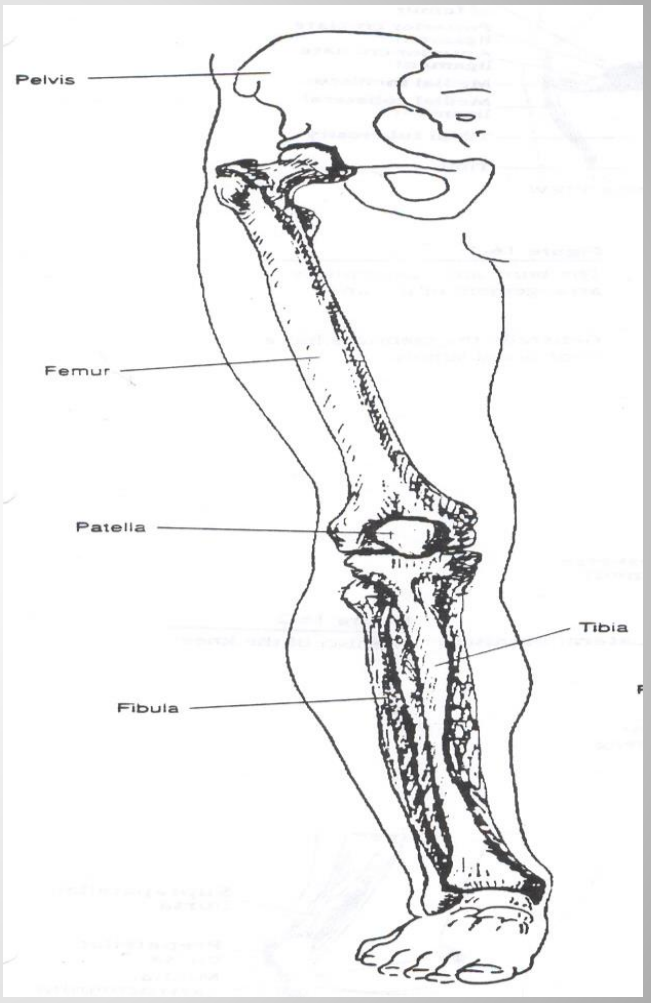
- Look for signs and symptoms of injury at the KNEE. Try to determine the severity based on them.
- Some signs and symptoms may include:
  - Walking with a limp or unable to bear weight
  - Swelling
  - Deformity
  - Eccymosis or discoloration
  - Is the Knee/Leg Symmetric- knock kneed or bow legged
  - Heat or warmth
  - Crepitus or abnormal sounds in the Knee
  - Redness
  - Feeling or Sensation
  - Range of Motion (ROM)
  - Areas of Pain and Point Tenderness
  - Muscle Atrophy

P:Palpation

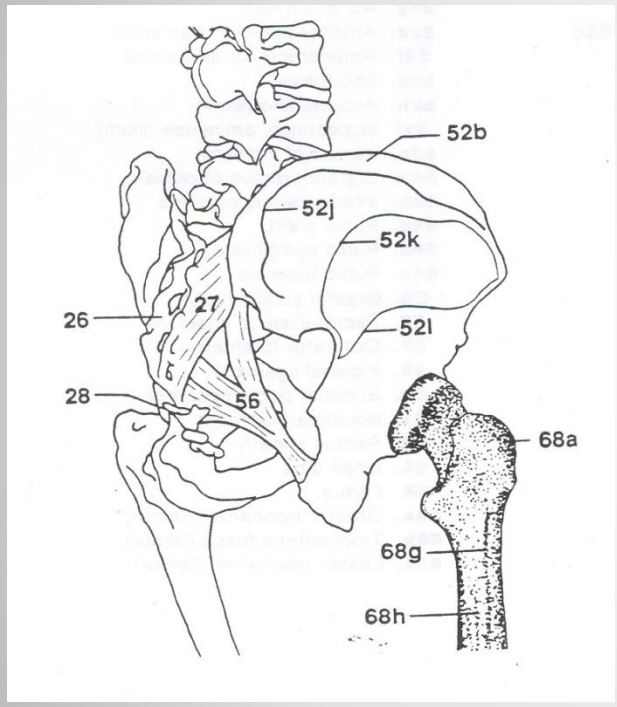
- To determine what anatomy is involved in the injury.
- Palpate bony structures first, then ligaments and muscles/tendons.
- Make a note of any swelling, deformities, lumps, muscle spasms, or muscle guarding.
- Also check for feeling and circulation.
- Next palpate things you KNOW you can FIND…..

Bony Palpation

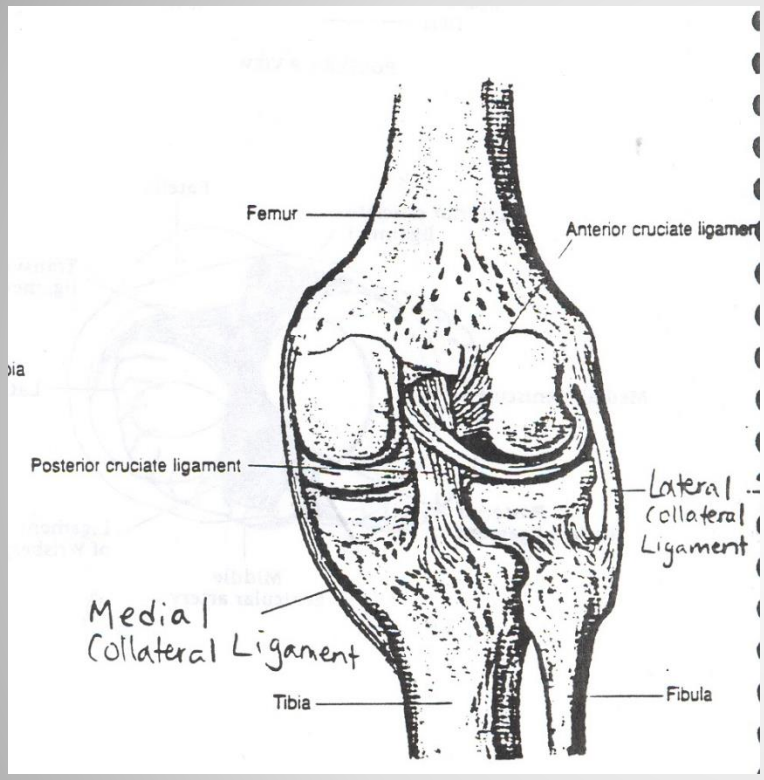
- At the knee, palpate
  - Tibial Tuberosity
  - Head of Fibula
  - Tibial Plateau
  - Patella
  - Femoral Condyles
  - Pes Ansurine
- At the lower leg, palpate
  - The Entire Length of the Fibula and Tibia
  - Medial and Lateral Malleoli



Bony Palpation

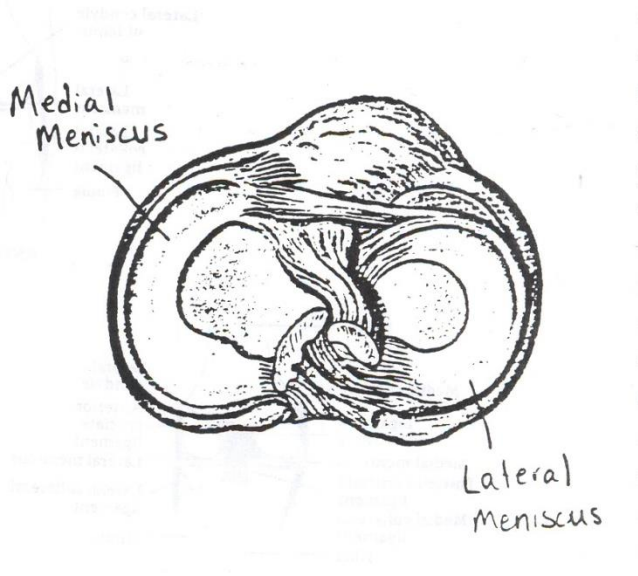


- At the hip, palpate
  - Ischial Tuberosity- origin of the hamstrings
  - AIIS- origin of the rectus femoris; below the ASIS
  - Greater Trochanter of the Femur



- The only ligaments you can palpate are the collateral ligaments.
  - MCL-connects the femur to the tibia
  - LCL-connects the femur to the fibula

Palpate the Ligaments

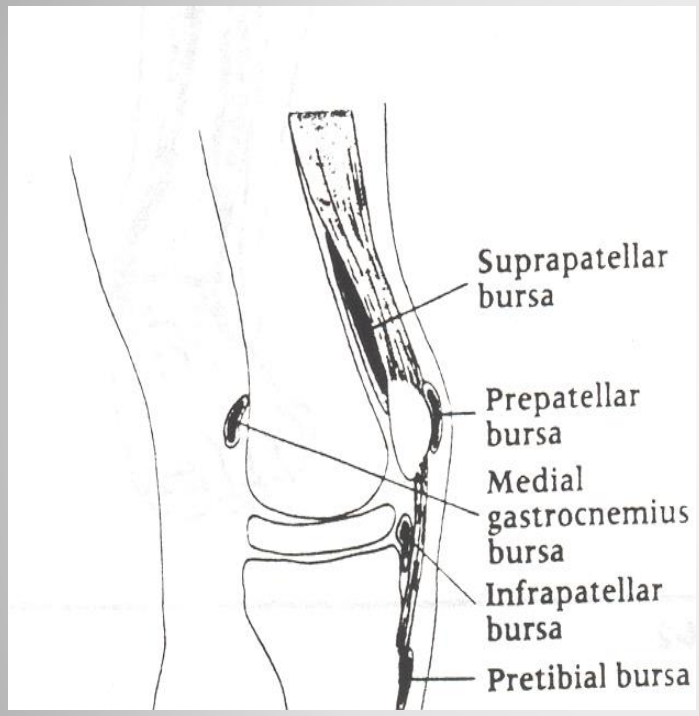


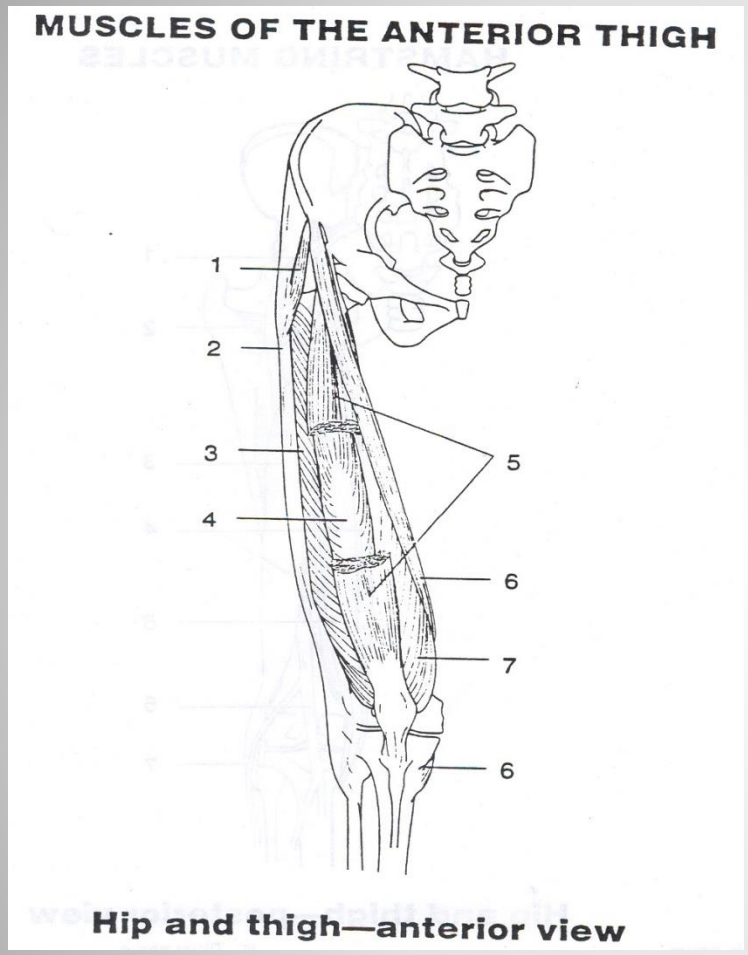
- Menisci
  - Sit on top of the tibial plateau to the left and right of the patella
  - Medial Menisci- C shaped
  - Lateral Menisci- O shaped

Palpate the Cartilage

Palpate the Bursae

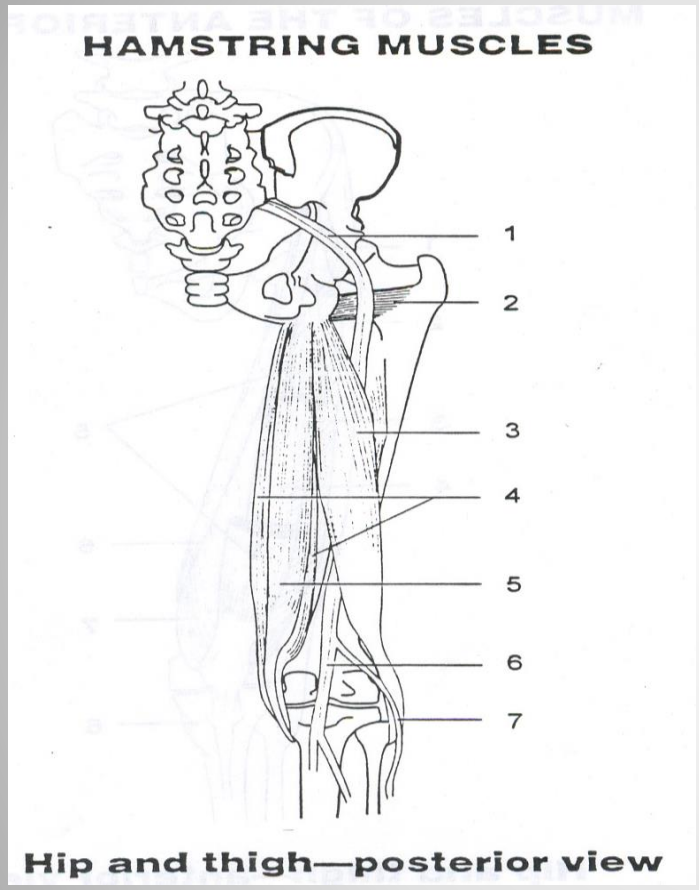
- Bursae surround the patella.





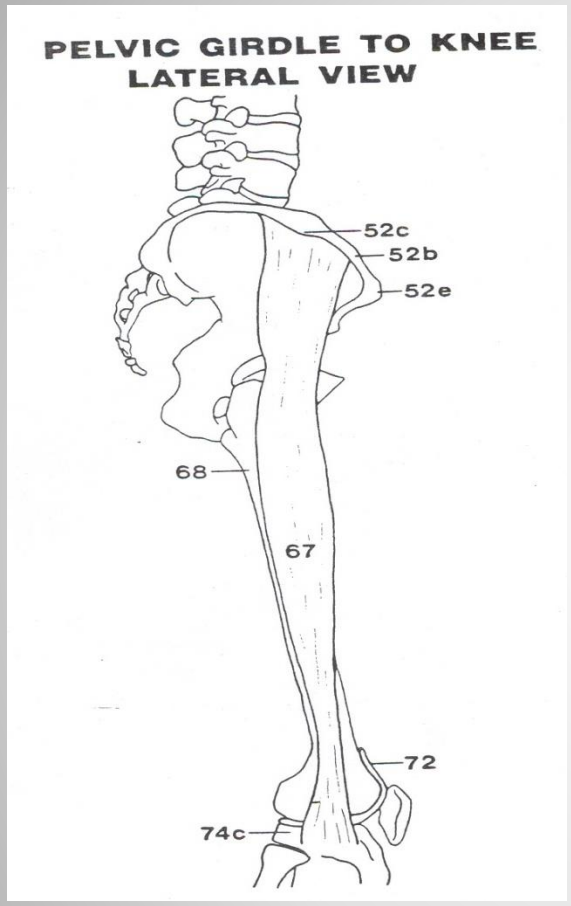
- Anterior Thigh
  - Quadriceps specifically the
    - Rectus Femoris
    - Vastus Medialis
  - Patellar/Quadriceps Tendon- over the patella and to the tibial tuberosity

Palpate the Muscles/Tendons



- Posterior Thigh
  - Hamstrings specifically the
  - Biceps Femoris
  - Semitendinosus at the Pes Ansurine

Palpate the Muscles/Tendons



- The IT Band connects the Hip to the Knee.

Don’t Forget the IT Band

- ROM: Active and Passive
- STRENGTH: Manual Muscle Tests
- SPECIAL TESTS: Stability
- FUNCTIONAL: Sport Specific Tests

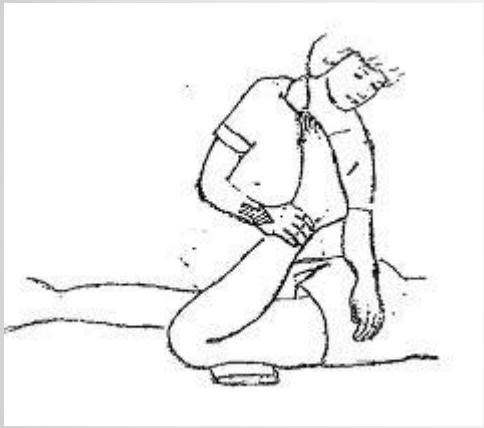
S:Special Tests

ROM: Active and Passive

- Can the athlete perform movements at the KNEE without pain or problems?
- Perform movements bilaterally (with each KNEE)?

- Passive ROM: the evaluator moves the KNEE of the injured athlete; generally, problems with PROM = ligament is injured
- Active ROM: the evaluator asks the athlete to perform each movement at the KNEE; generally, problems with AROM = muscle/tendon is injured

Knee Flexion



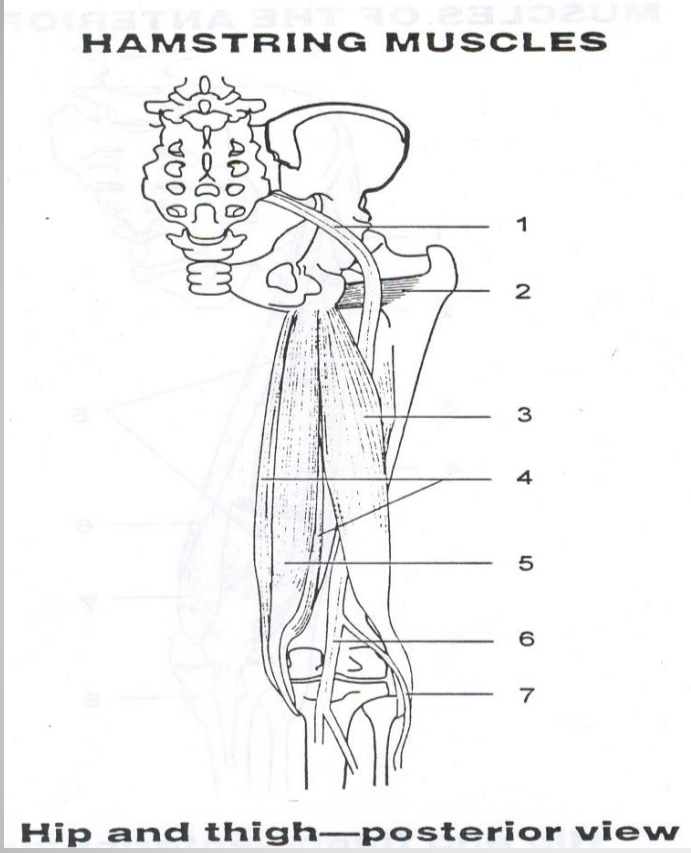
Knee Extension

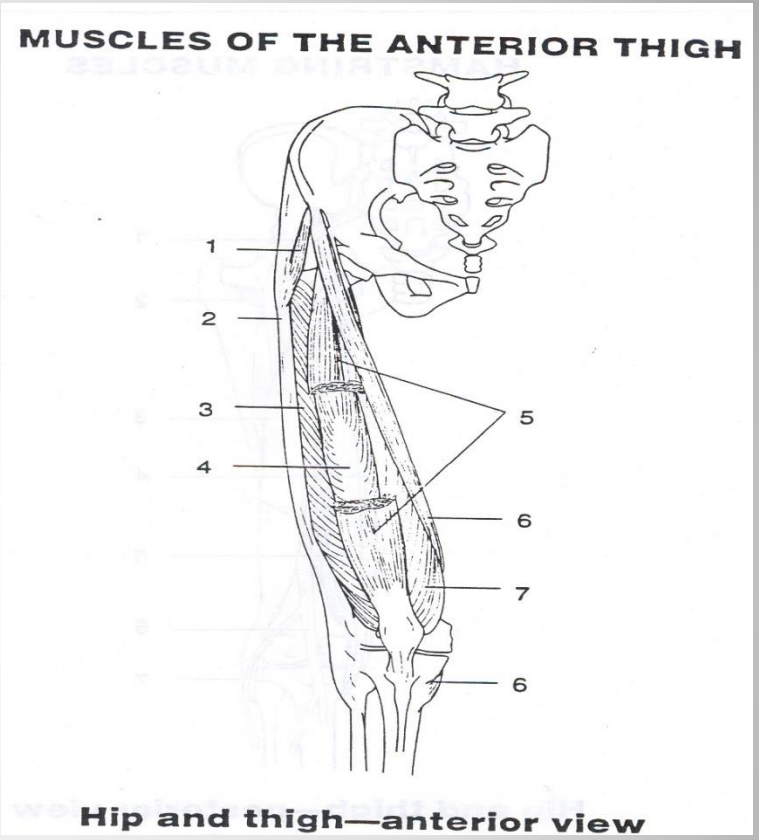
Movements of the Knee

Strength: MMT

- Perform all movements of the Knee with resistance.
- Determine if there is a weakness.
- Check the Quadriceps and Hamstrings.

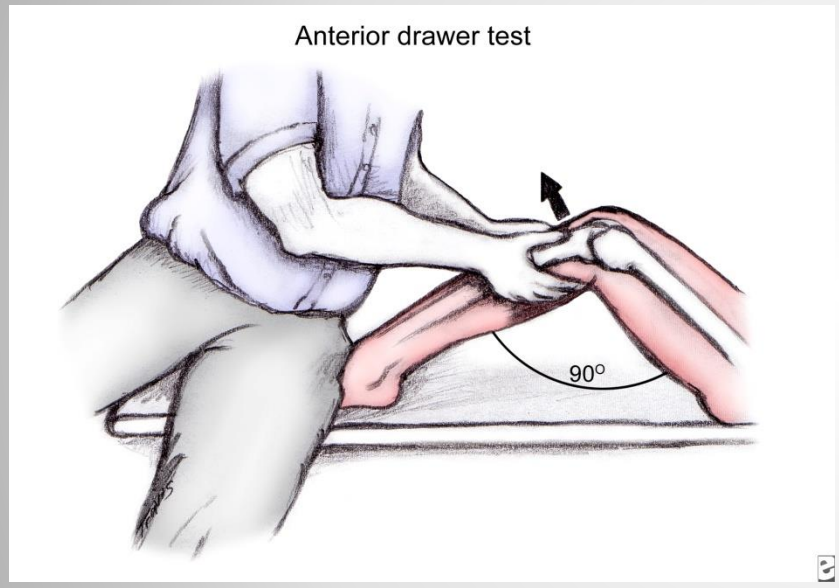
- Quadriceps: Knee Extension
  - Rectus Femoris
  - Vastus Medialis
  - Vastus Lateralis
  - Vastus Intermedius
- Hamstrings: Knee Flexion
  - Biceps Femoris
  - Semimembranosus
  - Semitendinosus



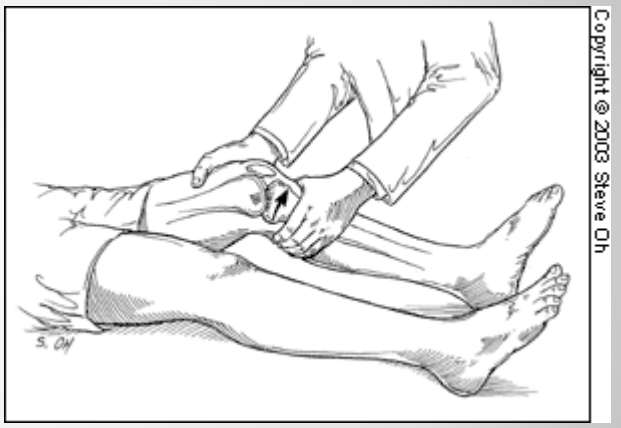


More Strength: MMT

Anterior Drawer- tests ACL ligament



Lachman's Test- tests ACL ligament



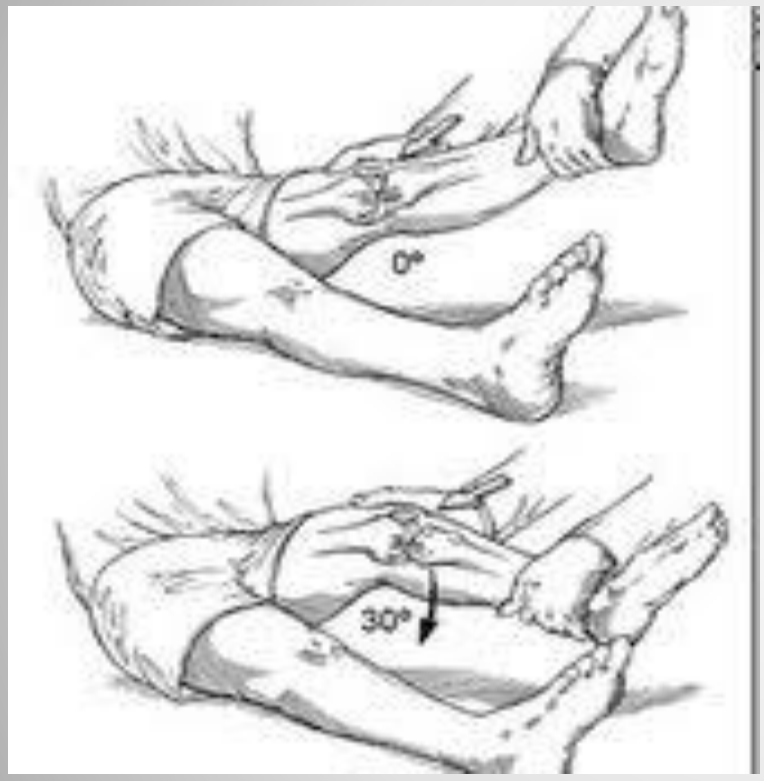
Special Tests: Stability

Posterior Drawer- tests PCL ligament

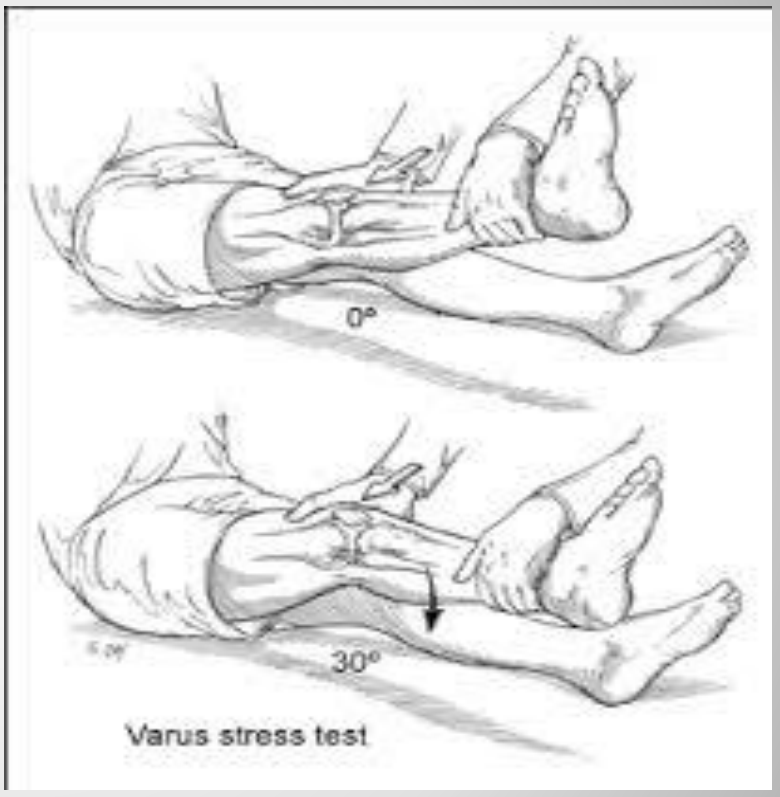
Gravity Drop (Sag) Test- tests PCL ligament

More Special Tests

Valgus Stress Test- tests MCL ligament

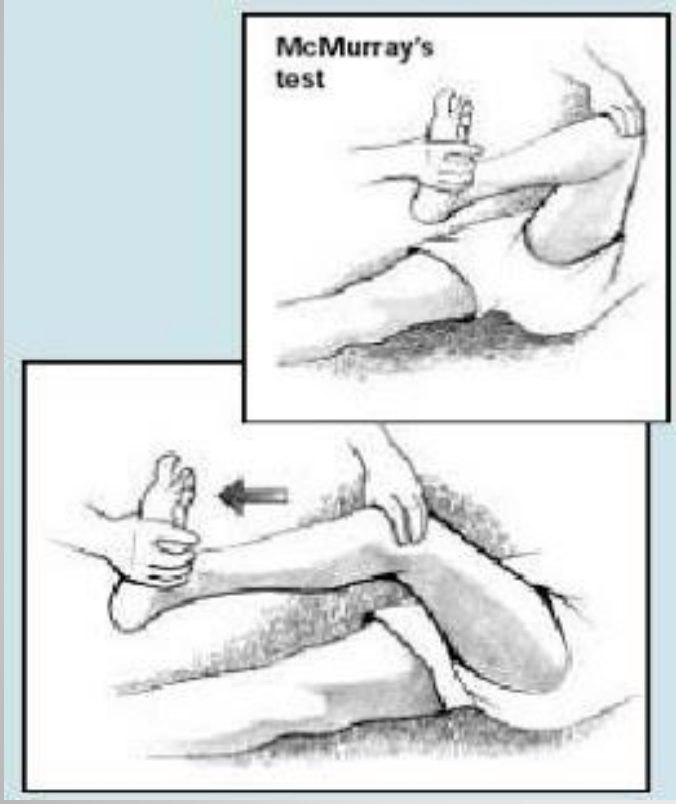


Varus Stress Test- tests LCL ligament



More Special Tests

McMurray's Test- tests the menisci (cartilage)



Appley's Compression and DistractionTest- tests the menisci (cartilage)

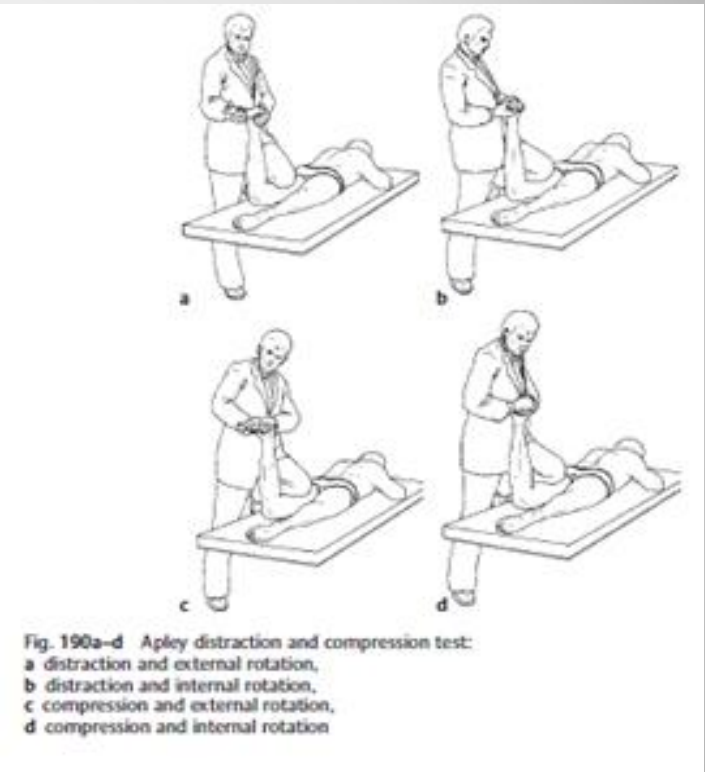


Fig. 190a–d Apley distraction and compression test:
a distraction and external rotation,
b distraction and internal rotation,
c compression and external rotation,
d compression and internal rotation

More Special Tests

Functional: Sports Specific Tests

- Can the athlete:
  - Walk
  - Hop
  - Jump
  - Run
  - Sprint
  - Back pedal
  - Cut
  - Squat
  - Lunge
  - Change Direction
- Depends on the sport:
  - Soccer-Kick/Jump up and Head the Ball
  - Volleyball-Jump Serve/Spike
  - Track-Stride Out/Hurdle/Jump/Get in the Starting Block
  - Football-Get in Stance/Cut/Change Direction/Start and Stop