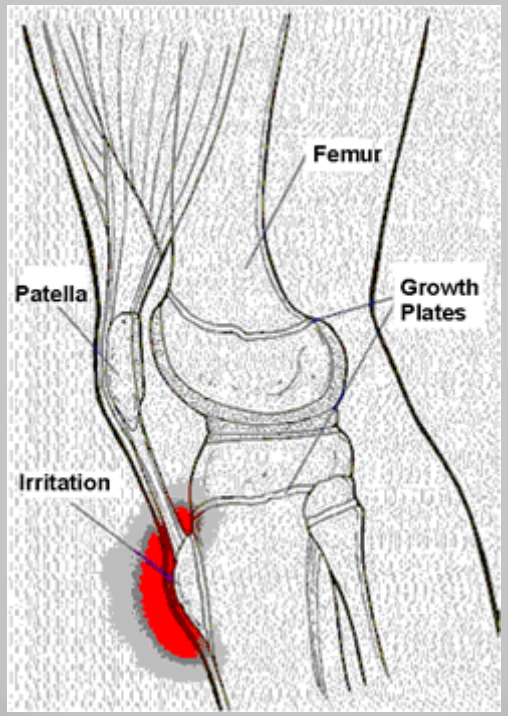
Knee Conditions

Sports Medicine II

Osgood Schlatter's Disease

- Etiology: Results from repetitive traction on the tibial tuberosity; repeated stress causes minor avulsions of the bone resulting in an inflammatory response.
- Pathology: **Increase in size of the tibial tuberosity**
- Signs and Symptoms: **Anterior knee pain (aggravated by running, jumping, kneeling**). Local swelling and tenderness.
- Treatment: Increase athlete's flexibility, taping/bracing, anti-inflammatory drugs, **athlete usually outgrows the condition as they become skeletally mature (growing pains).**

Osgood Schlatter's Disease



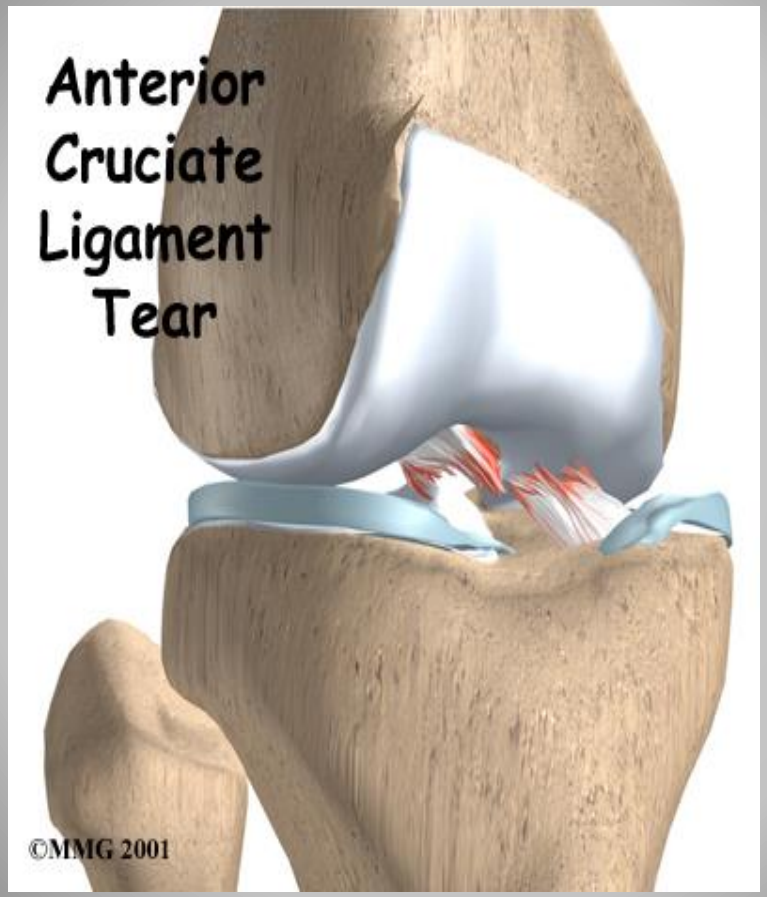
Tibial Tuberosity Avulsion

- Avulsion Fractures: **When a ligament, muscles, or tendon pulls a piece of bone off. In this case, the patella/quadriceps tendon would avulse the tibial tuberosity.**
- MOI: **Strong flexion while the quadriceps are contracting (violent extension against resistance).** Usually occurs as a complication of another injury.

Tibial Tuberosity Avulsion

ACL Rupture

- Etiology: **Twisting/rotational force** while weight bearing and decelerating; forced by **hyperextension**.
- Pathology: Rupture of anterior cruciate ligament
- Signs and Symptoms: **Athlete usually describes in the evaluation that they heard/felt a "pop." May be painful at the time of injury but pain usually decreases.**
- Special Tests**: Anterior Drawer or Lachman's test is positive**
- Treatment: **Surgical repair**, rehabilitation before and after surgery.


Anterior
Cruciate
Ligament
Tear
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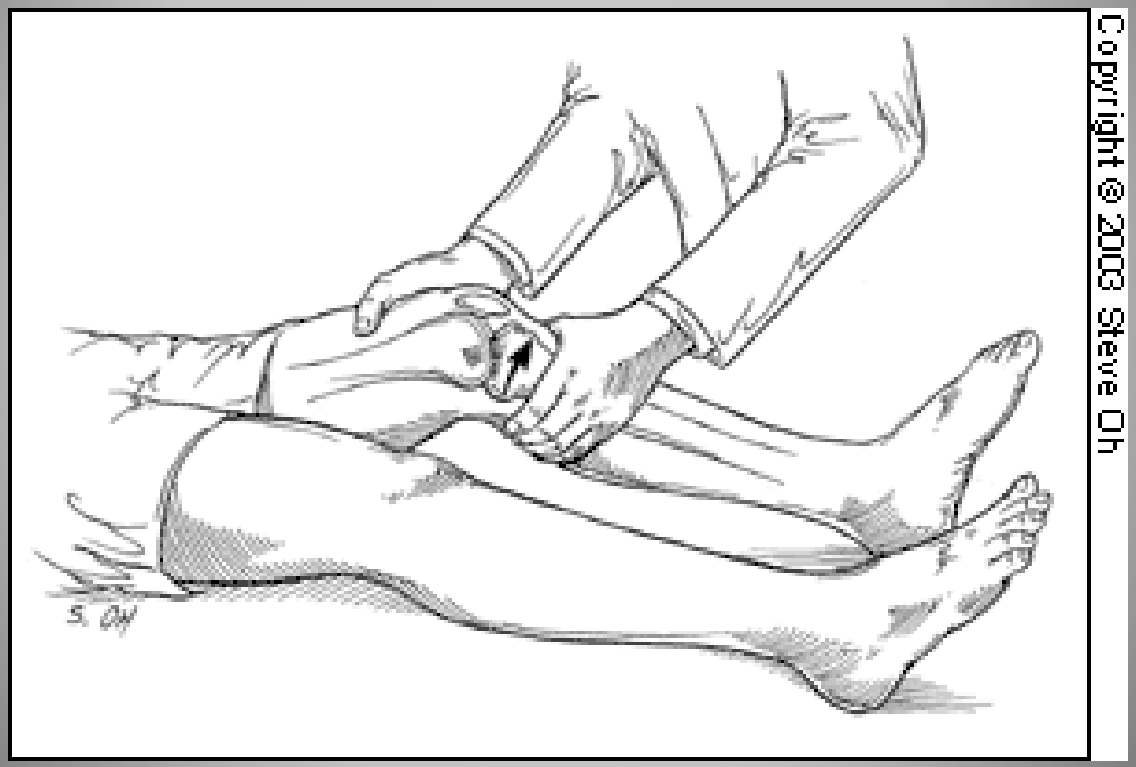
Lachman's Test-tests the ACL Ligament

- The Lachman's test is administered by positioning the knee approximately 30 degrees of flexion. One hand of the examiner stabilizes the leg by grasping the distal end of the thigh, and the other hand grasps the proximal aspect of the tibia, attempting to move it anteriorly.
- A positive Lachman's test indicates damage to the ACL.

- https://www.youtube.com/watch?v=oFWjwxJJmmQ

Lachman's Test- tests the ACL Ligament

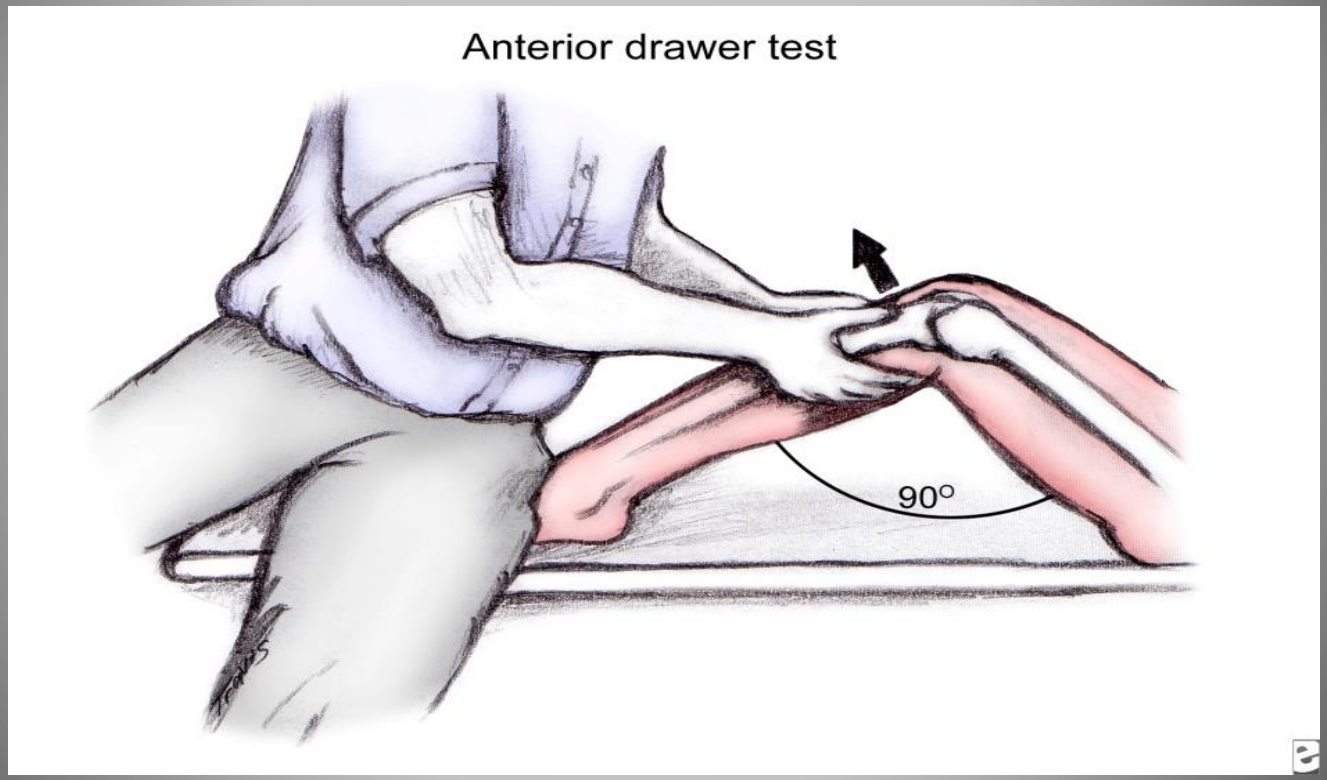


Anterior Drawer Test

- The athlete lies on the training table with the injured leg flexed. The examiner stands facing the anterior aspect of the athlete's leg, with both hands encircling the upper portion of the leg, immediately below the knee joint. The fingers of the examiner are positioned in the popliteal space of the affected leg, with the thumbs on the medial and lateral joint lines. The examiner tries to pull the tibia/fibula anteriorly from the femur.

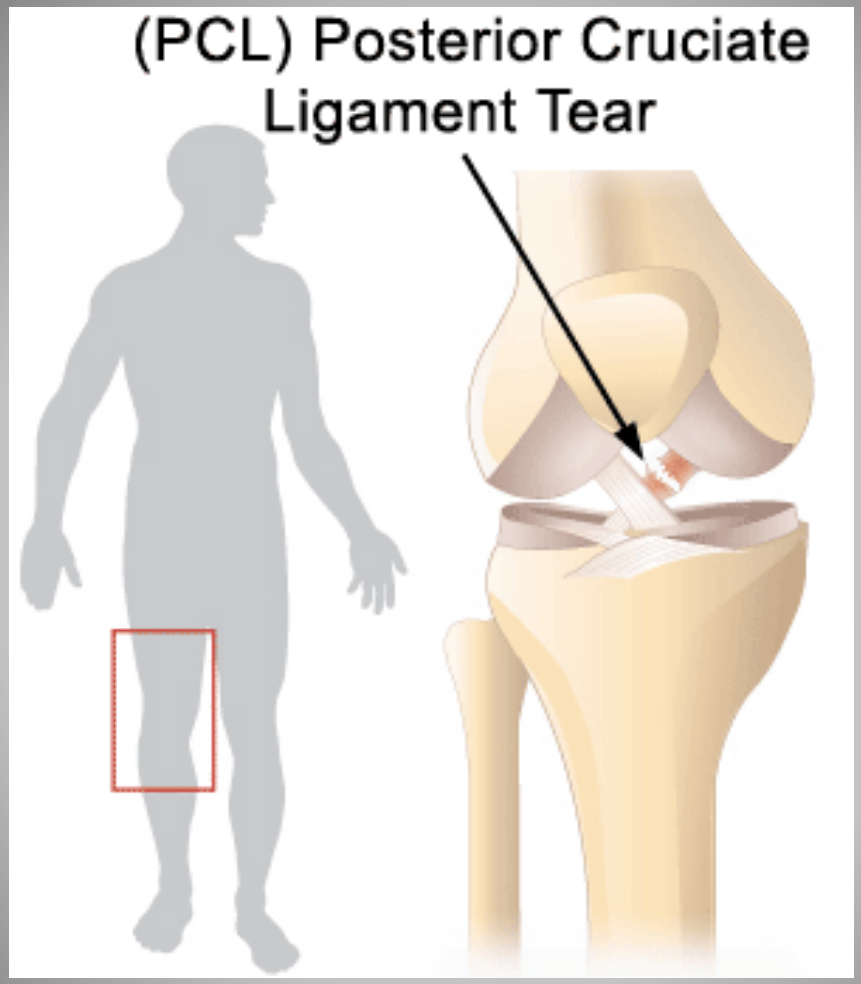
- https://www.youtube.com/watch?v=yQdBrr3Mmj0

Anterior Drawer Test



PCL Rupture

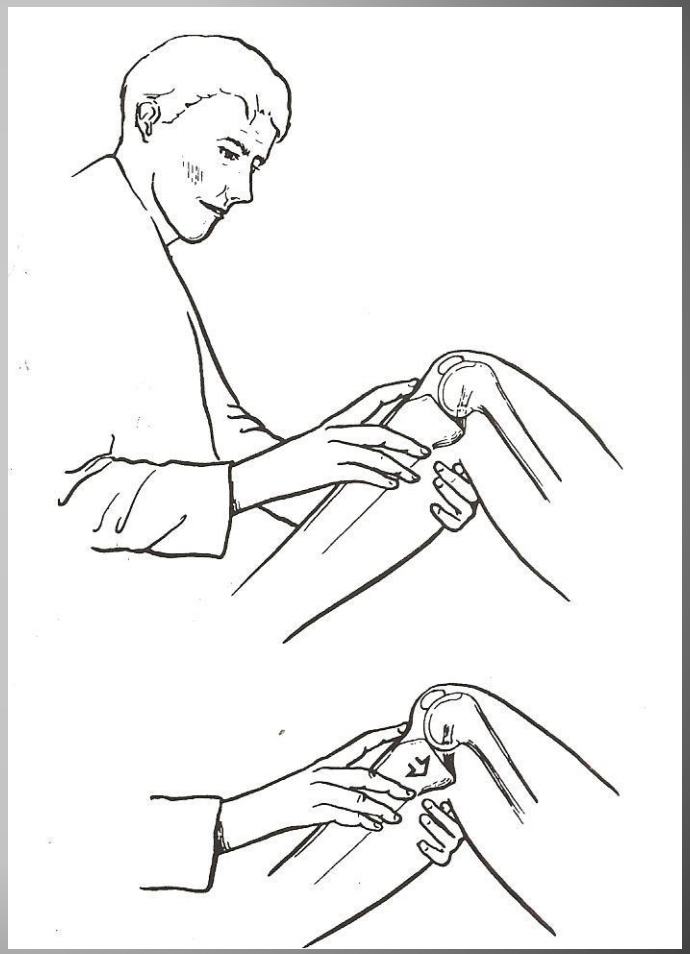
- Etiology: **A direct force that drives the tibia backward. Individuals are most at risk when knee is flexed to 90 degrees, a direct blow with the knee flexed, or by a rotational force. A PCL rupture is also called the "dashboard" injury!**
- Pathology: Rupture of the posterior cruciate ligament
- Signs and Symptoms: Athlete usually describes in the evaluation that they felt a pop at the back of their knee, pain and tenderness is located at the back of the knee, swelling at the knee
- Special Tests: **Posterior Drawer and/or Gravity Drop/Godfrey's/Sag Test**
- Treatment: Can be surgically repaired but not always repaired.


(PCL) Posterior Cruciate
Ligament Tear

Posterior Drawer Test- tests the PCL ligament

- The posterior drawer test is performed with the knee flexed at 90 degrees. Force is exerted in a posterior direction at the proximal tibial plateau. A positive posterior drawer indicated damage to the PCL.

- https://www.youtube.com/watch?v=KAUDTMu8fS0



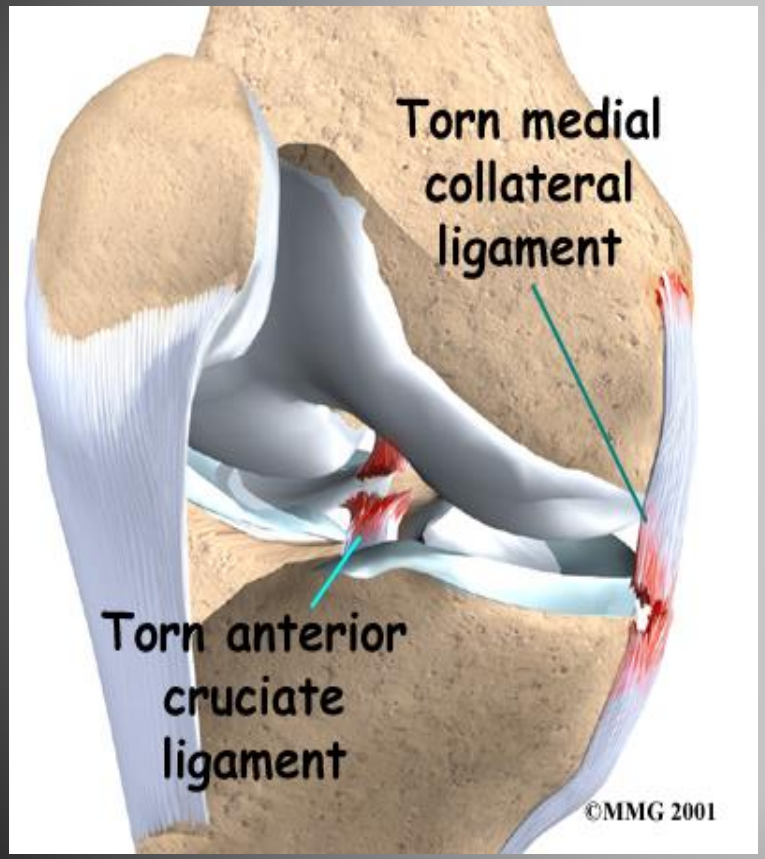
Gravity Drop (Sag or Godfrey's) Test- tests the PCL Ligament

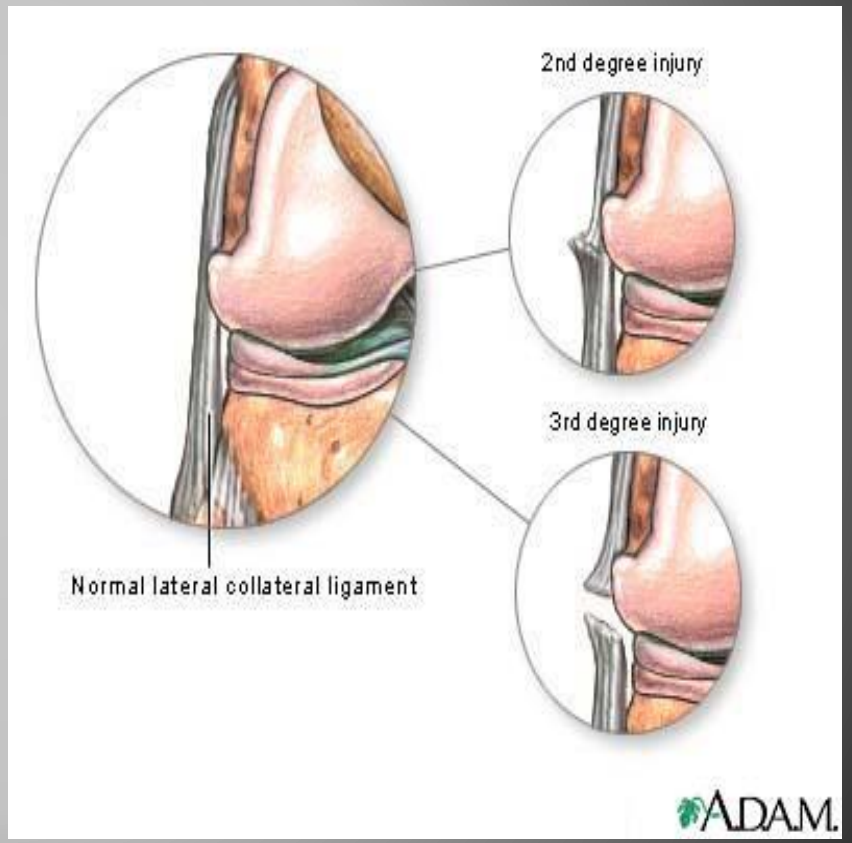
- With the athlete supine, both knees are flexed to 90 degrees. Observing laterally on the injured side, the tibia will appear to sag posteriorly when compared with the opposite extremity if the PCL is damaged.
- https://www.youtube.com/watch?v=kB__q4Y4lfA

MCL/LCL Rupture

- Etiology: A direct varus or valgus force. **MCL is normally torn by a valgus force. LCL is normally torn by a varus force.**
- Pathology: Rupture of the medial collateral ligament or lateral collateral ligament.
- Signs and Symptoms: Mild swelling at the knee, **mild point tenderness at the MCL or LCL**
- Special Tests: **Varus Stress Test or Valgus Stress Test**
- Treatment: Modalities for pain and swelling, rehabilitation, and protective knee braces.

MCL sprain

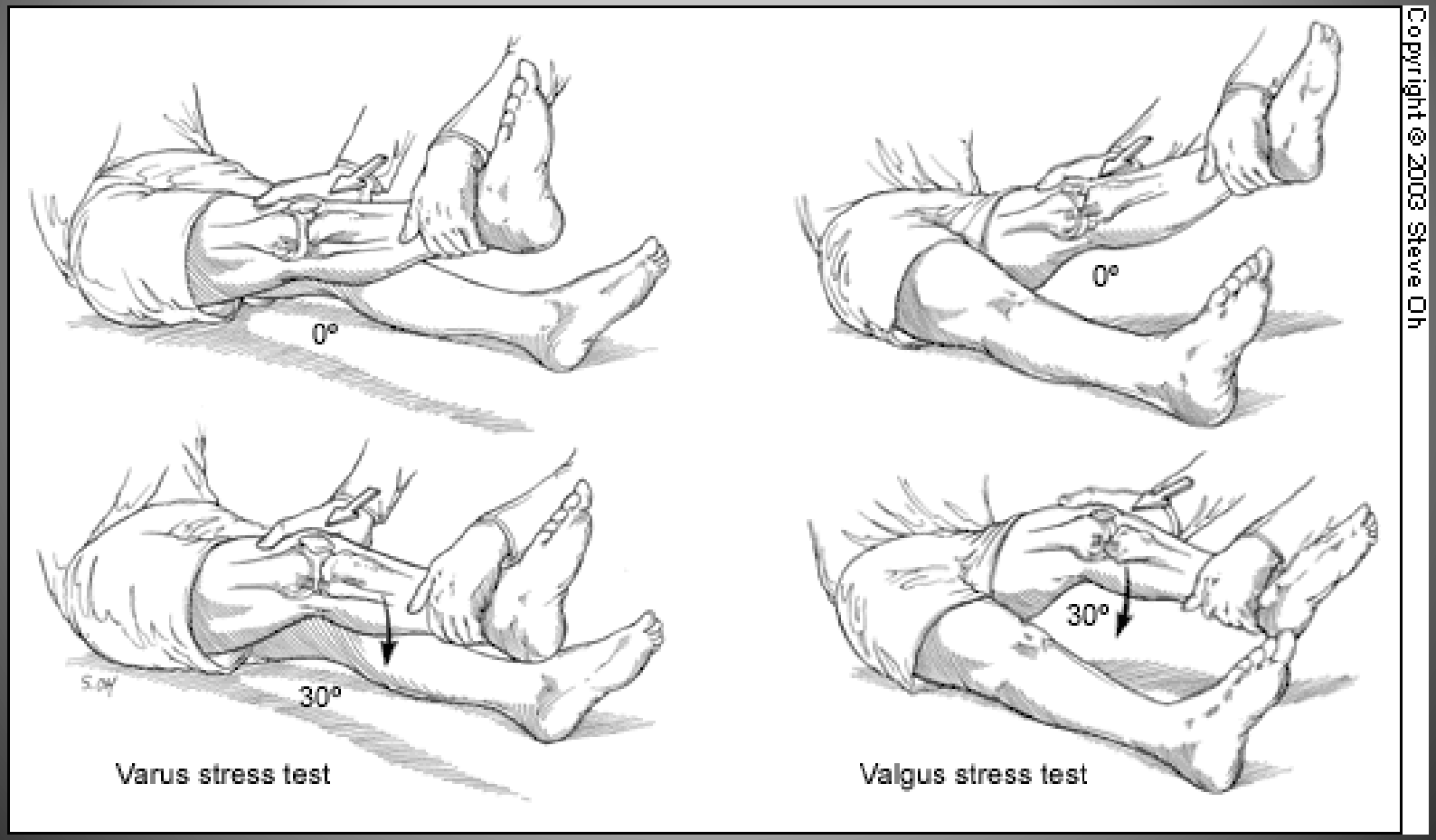

Torn medial collateral ligament
Torn anterior cruciate ligament
©MMG 2001


2nd degree injury
3rd degree injury
Normal lateral collateral ligament
A.D.A.M.

Valgus and Varus Stress Tests

- The athlete lies supine with the leg extended. To test the medial side, the examiner holds the ankle firmly with one hand while placing the other over the head of the fibula. The examiner then places a force inward in an attempt to open the side of the knee. This valgus stress is applied with the knee fully extended or at 0 degrees and at 30 degrees of flexion. The examination in full extension tests the MCL, posteromedial capsule, and the cruciates. At 30 degrees flexion the MCL is isolated. The examiner reverses hand positions and tests the lateral side with a varus force on the fully extended knee and then with 30 degrees of flexion. With the knee extended the LCL and posterocapsule are examined. At 30 degrees of flexion the LCL is isolated. The leg should be in neutral with no internal or external rotation.
- https://www.youtube.com/watch?v=M0KX1rxiyqM

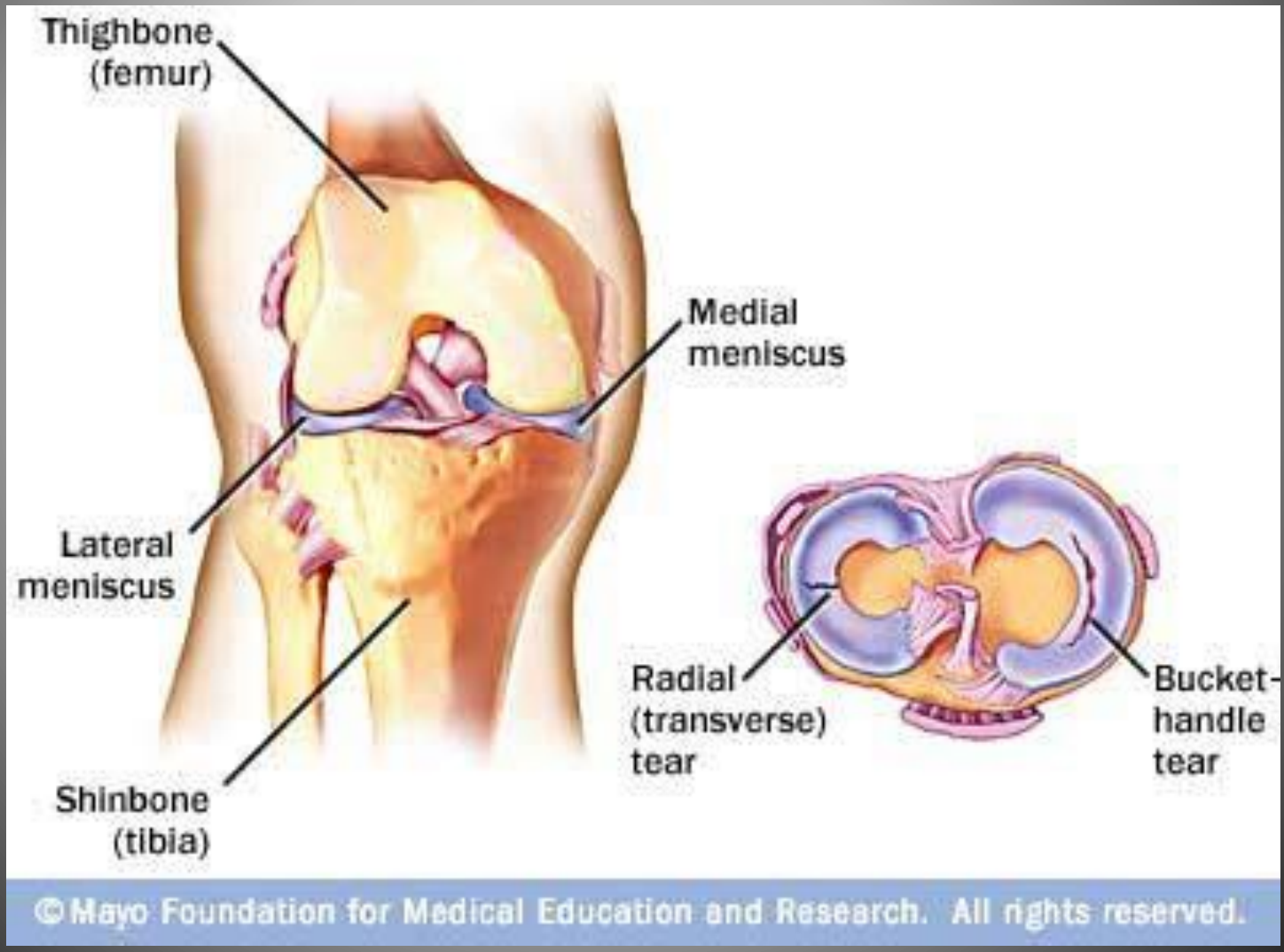
Valgus Stress Tests the MCL and Varus Stress Tests the LCL ligaments



Meniscus (Medial or Lateral)

- MOI: Lateral blow, weight bearing with rotary force while extending or flexing the knee.
- Signs and Symptoms: Pain along the joint line, mild swelling, **athlete may describe in the evaluation that they feel like their knee "locks" or "buckles" or "feels like it is giving out" when they are walking or running**
- Special Tests: **McMurray's Test or Appley's Compression or Distraction Test**
- Treatment: **Depends on the location of the tear in the meniscus, the meniscus can be surgically repaired or removed**.

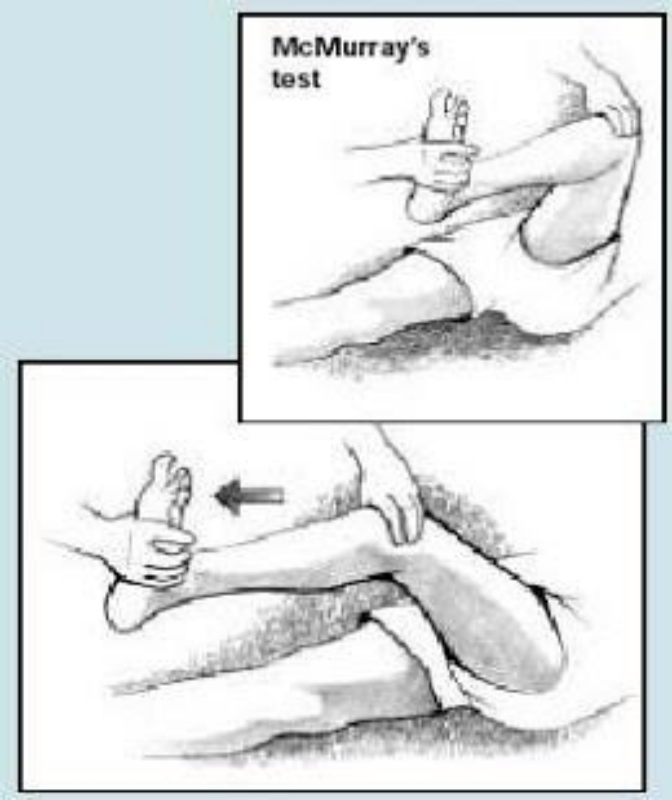
Meniscal Tears



Special Tests for Meniscal Tears

McMurray's Test

https://www.youtube.com/watch?v=fkt1TOn1UfI



Appley's Compression and DistractionTest

https://www.youtube.com/watch?v=w57I1cYXlCA&list=PLAD99E958AC0F43B1&index=19

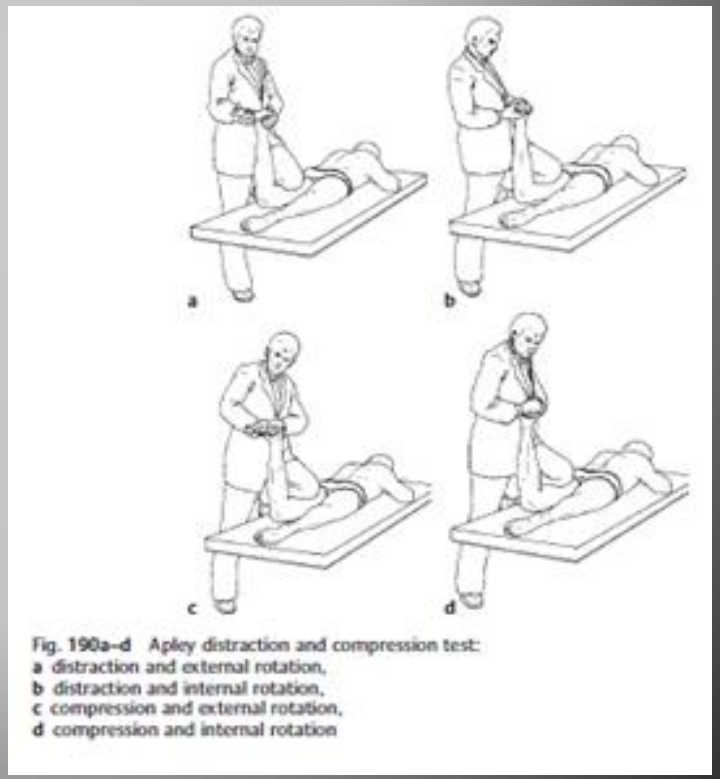
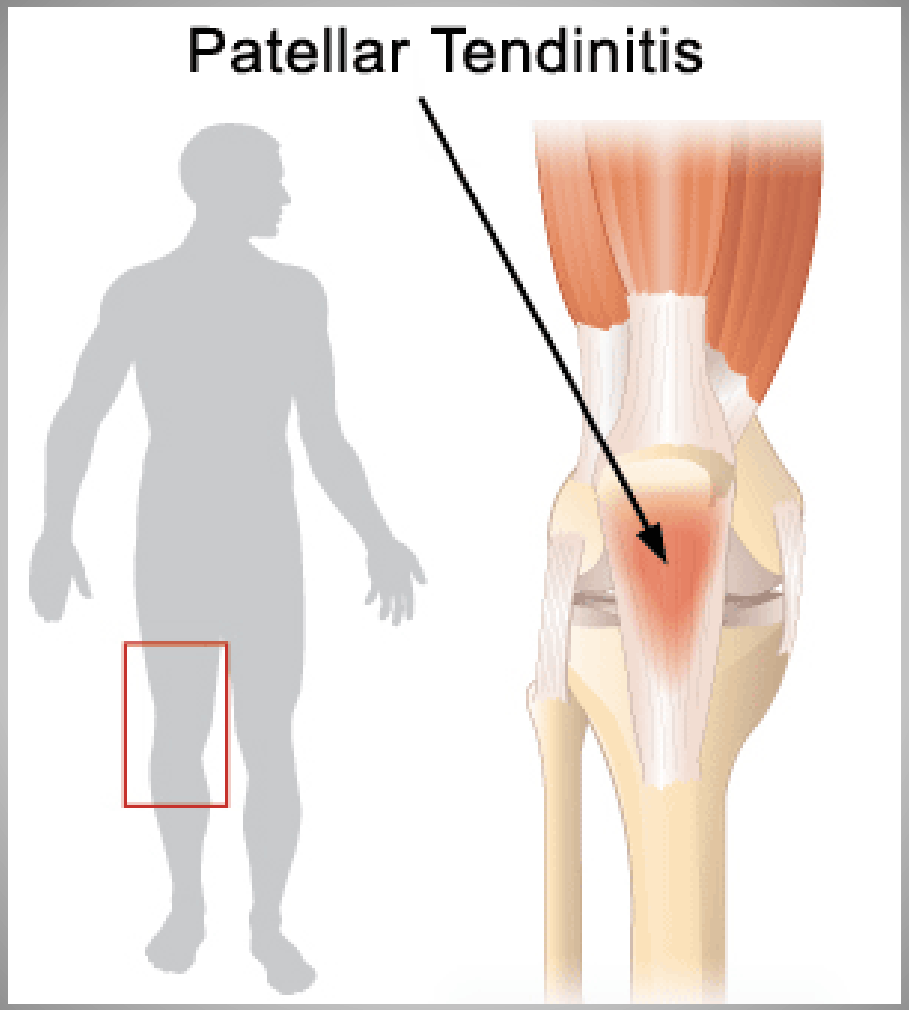


Fig. 190a–d Apley distraction and compression test:
a distraction and external rotation,
b distraction and internal rotation,
c compression and external rotation,
d compression and internal rotation

Patella Tendinitis (Jumper's Knee)

- Etiology: Sudden or repetitive forceful extension of the knee begins an inflammatory process which can lead to tendon degeneration.
- Pathology: **Irritation to the patella/quadriceps tendon**
- Signs and Symptoms: Pain and tenderness at the patella/quadriceps tendon, **mild swelling or thickening of the tendon, likely to feel crepitus with movement.**
- Treatment: Ice, modalities, anti-inflammatory medicine, rehabilitation exercises, deep friction massage, reduction in activity, patella tendon taping


Patellar Tendinitis