Колено

Владимир Огненоски

Завод за физикална и медицинска рехибилитација-Скопје

ЦЕЛИ

- Анатомија
- Преглед
- Специјални тестови
- Повреди

Колено

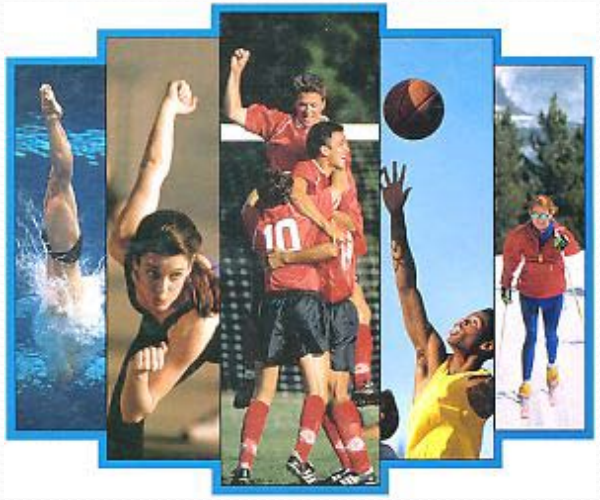
- Не се возбудувај
- Направи систематски преглед
- Не прескокнувај региони од коленото
- Не ги заборавај зглобовите над и под

Битно

- Акутна и хронична повреда?
- Излив?
- Механизам на повредата?
- Предизвикувачки/предиспонирачки фактори?

Колено

- Болка во колено~ 33% кај луѓе кои не се занимаваат со спорт
- Над55% спортитистите се жалат на повреда на коленото



Историјата на болеста некогаш е најважна

- Болка
  - Некогаш остра некогаш тапа
  - Каде е лоцирана
  - Колку долго е присутна
  - Колку го отежнува животот
  - Предиспонирачки & предизвикувачки фактори
  - Дали има нагло покачување на тежината

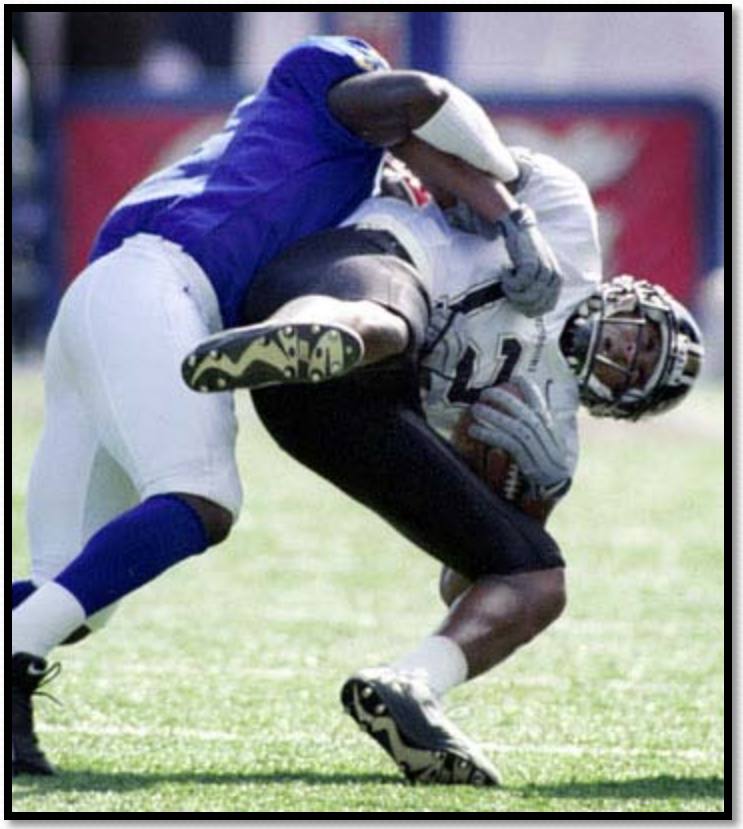
Историја на болеста

- Механички симптоми
  - Locking or catching(откључи/закључи)
  - Popping (at injury and/or now)
  - Giving way

Историја на болеста

- Ефузии
  - Дали има
  - Брза (< 1 час)
  - Одложена(24-36 часа)

Историја на болеста

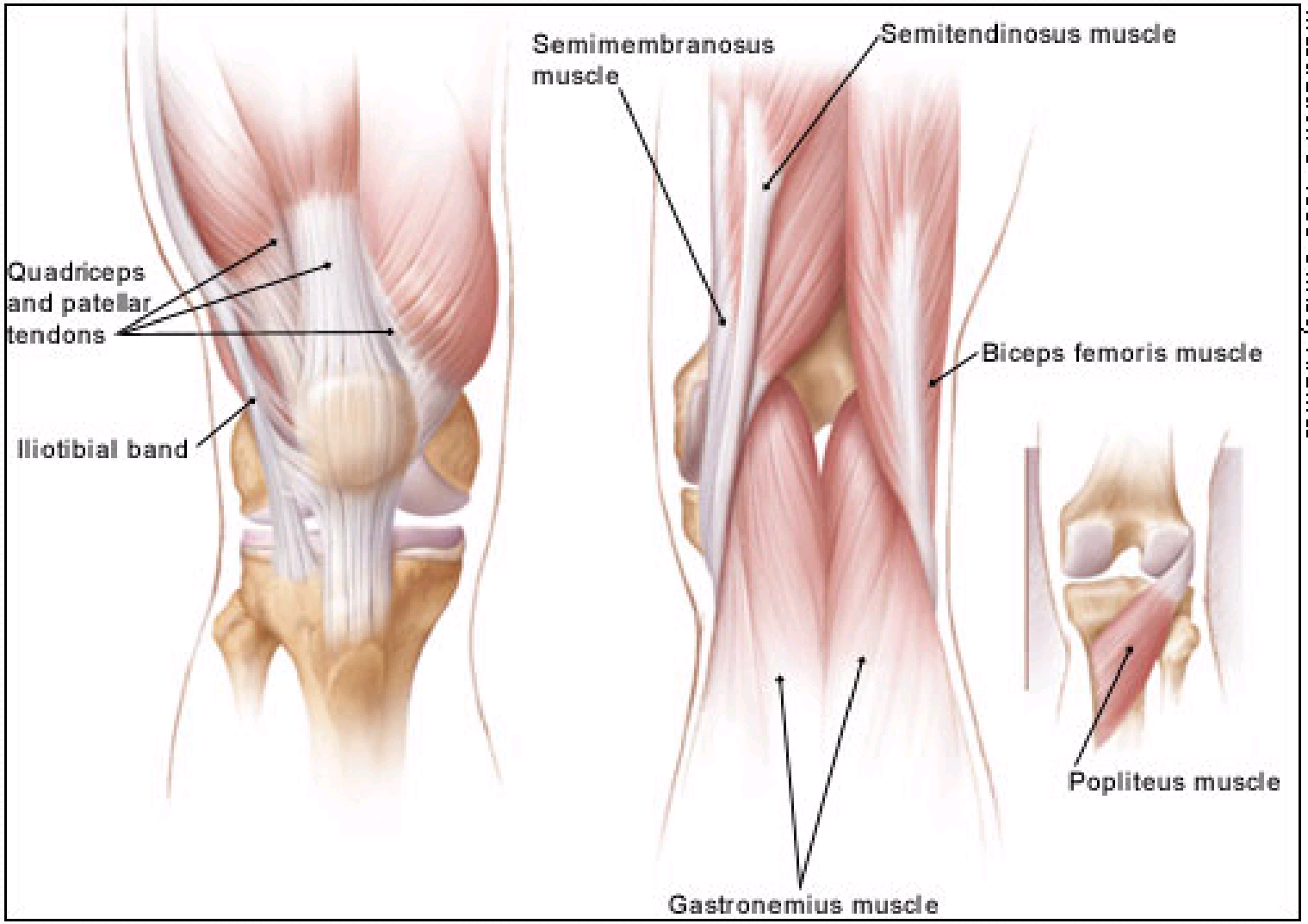


- Механизам на повредата
  - Direct blow & location
  - Twisting, landing, cutting, decelerating
  - Planted foot
  - Непознато

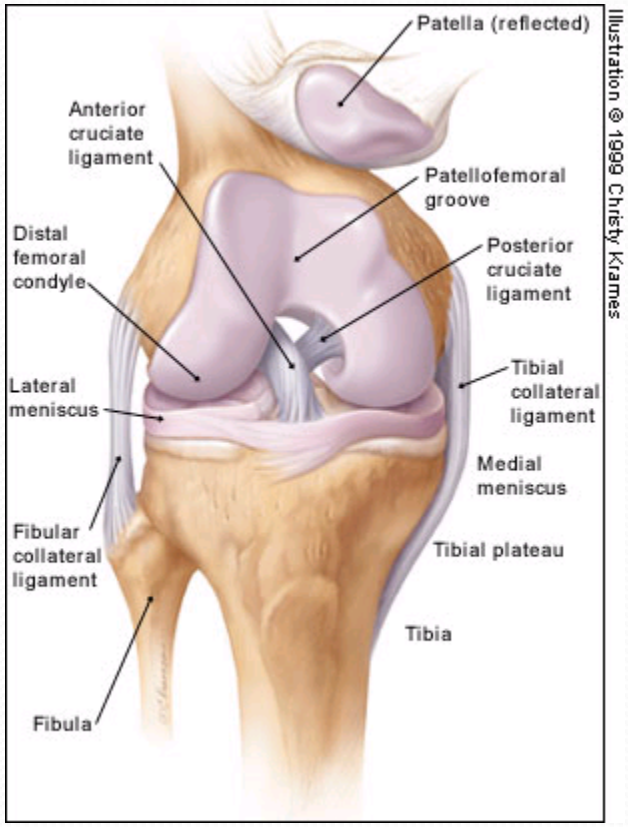
Историја на болеста

- Медицинска историја
  - Претходна повреда
  - Користење на лекарства
  - Физикална терапија
  - гихт
  - Ревматиден артрит

Анатомија

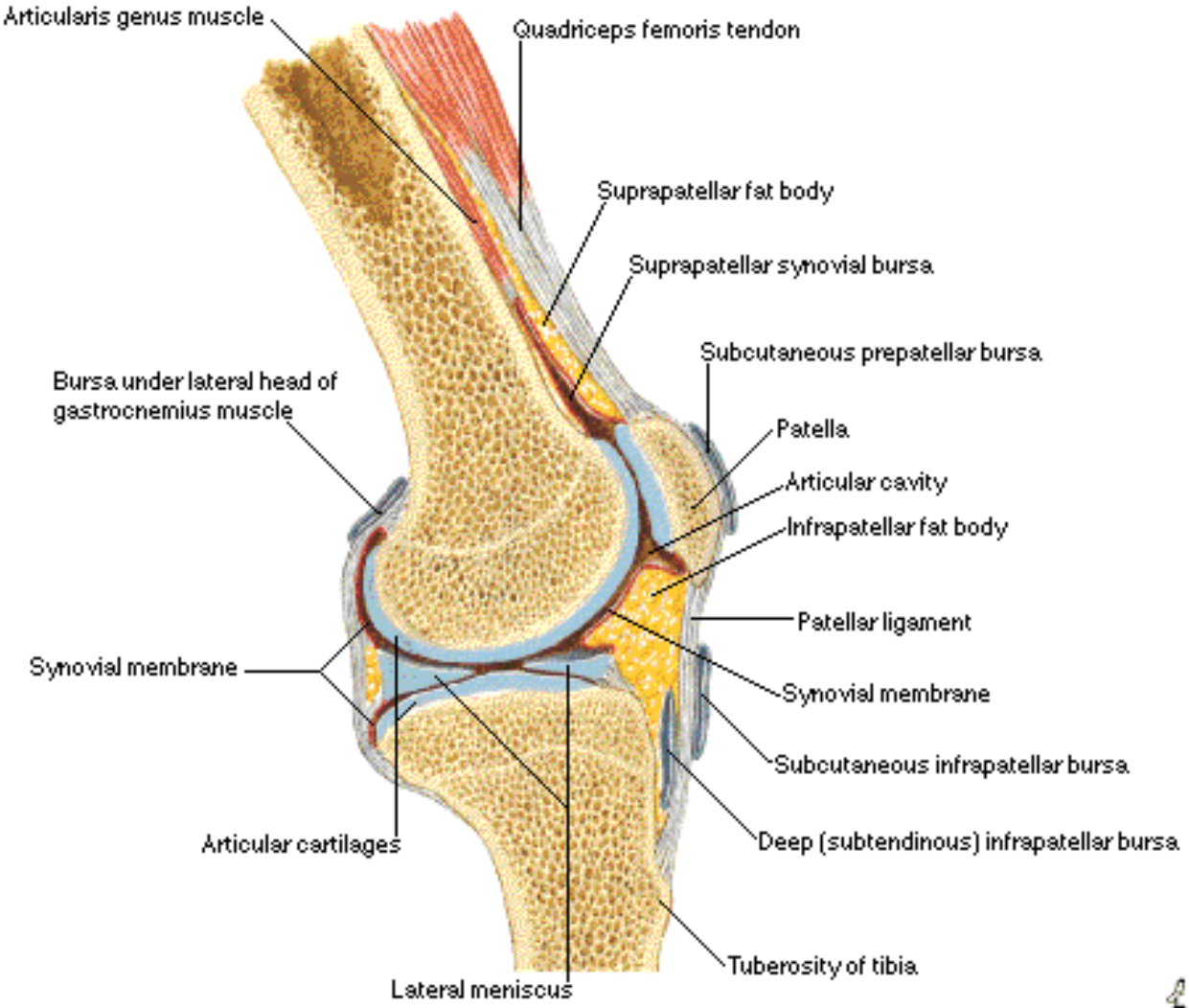

Quadriceps and patellar tendons
Iliotibial band
Semimembranosus muscle
Semitendinosus muscle
Biceps femoris muscle
Popliteus muscle
Gastronemius muscle
Illustration © 1999 Christy Krames

Анатомија


Patella (reflected)
Anterior cruciate ligament
Patellofemoral groove
Distal femoral condyle
Posterior cruciate ligament
Lateral meniscus
Tibial collateral ligament
Medial meniscus
Fibular collateral ligament
Tibial plateau
Tibia
Fibula
Illustration © 1999 Christy Krames

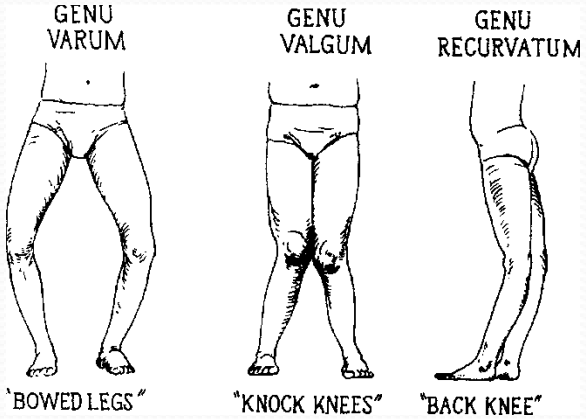
Knee

Parasagittal Section - Lateral to Midline of Knee



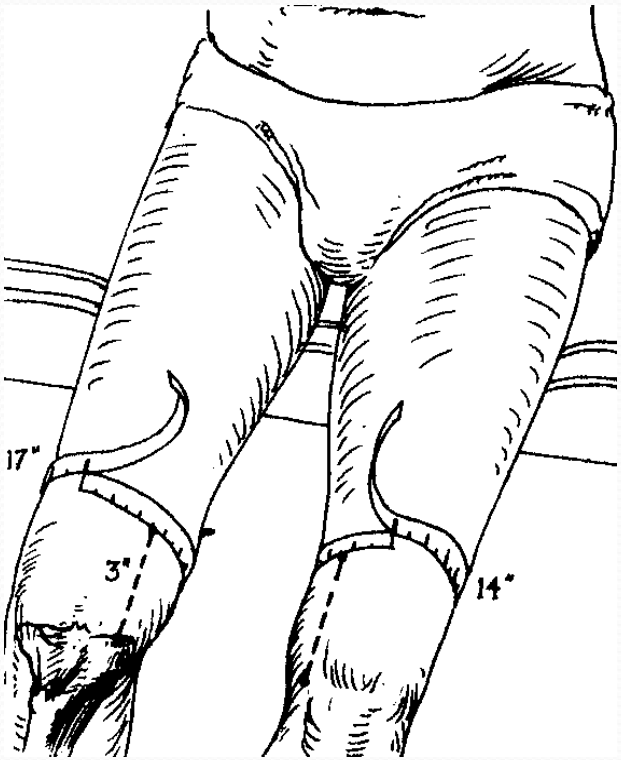
Инспекција

- Прво прегледај ги обете колена
- Инспекција
- Анатомски деформитети
- Gait abnormalities
  - Како да се решат



Инспекција

- Обете колена за еритем, оток...
- Види дали има атрофија на квадрицепс



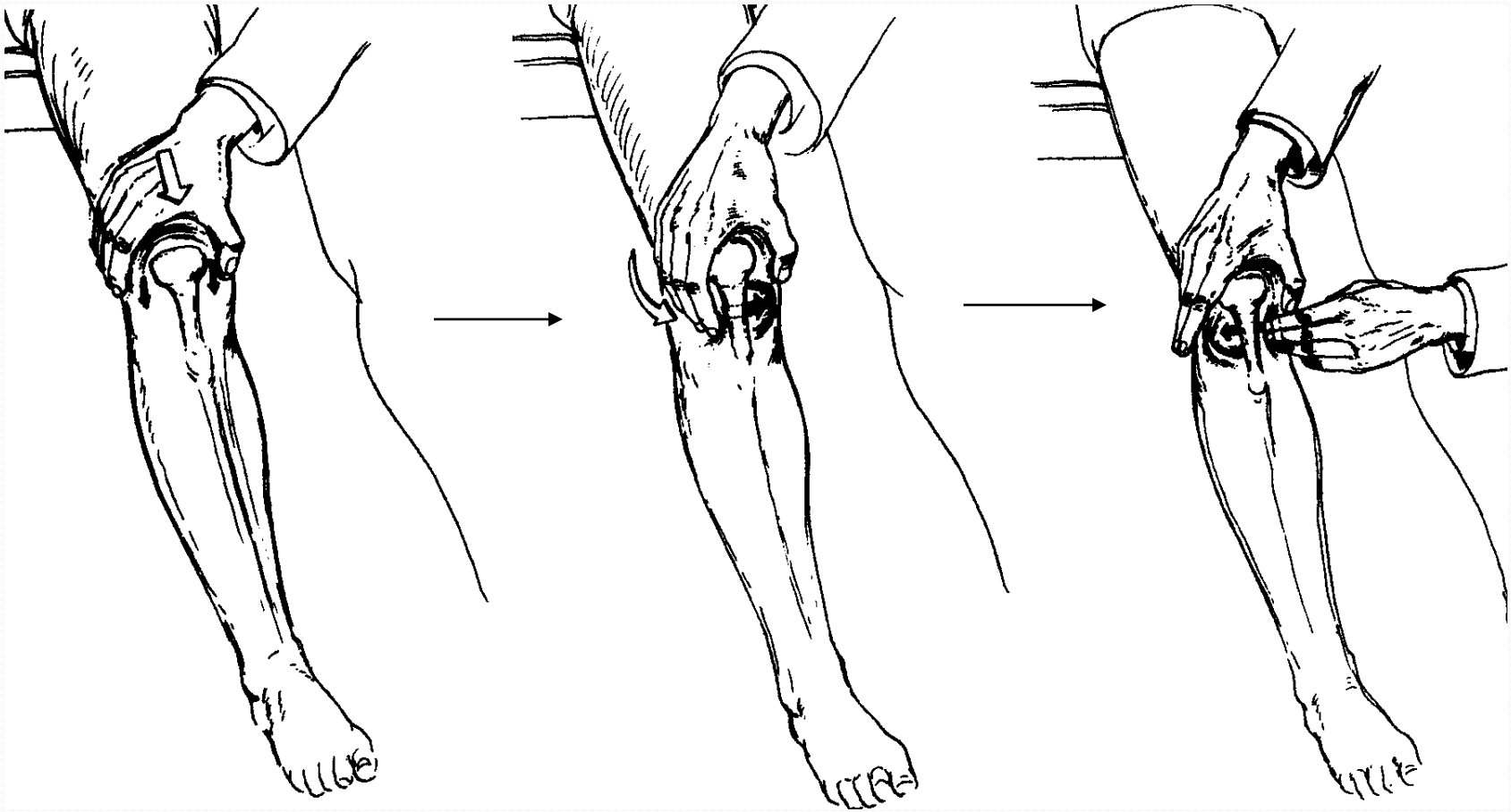
Лекарски преглед

- Examine uninjured knee first to keep patient at ease
- Save most ‘obnoxious’ maneuvers until the end

Ефузии

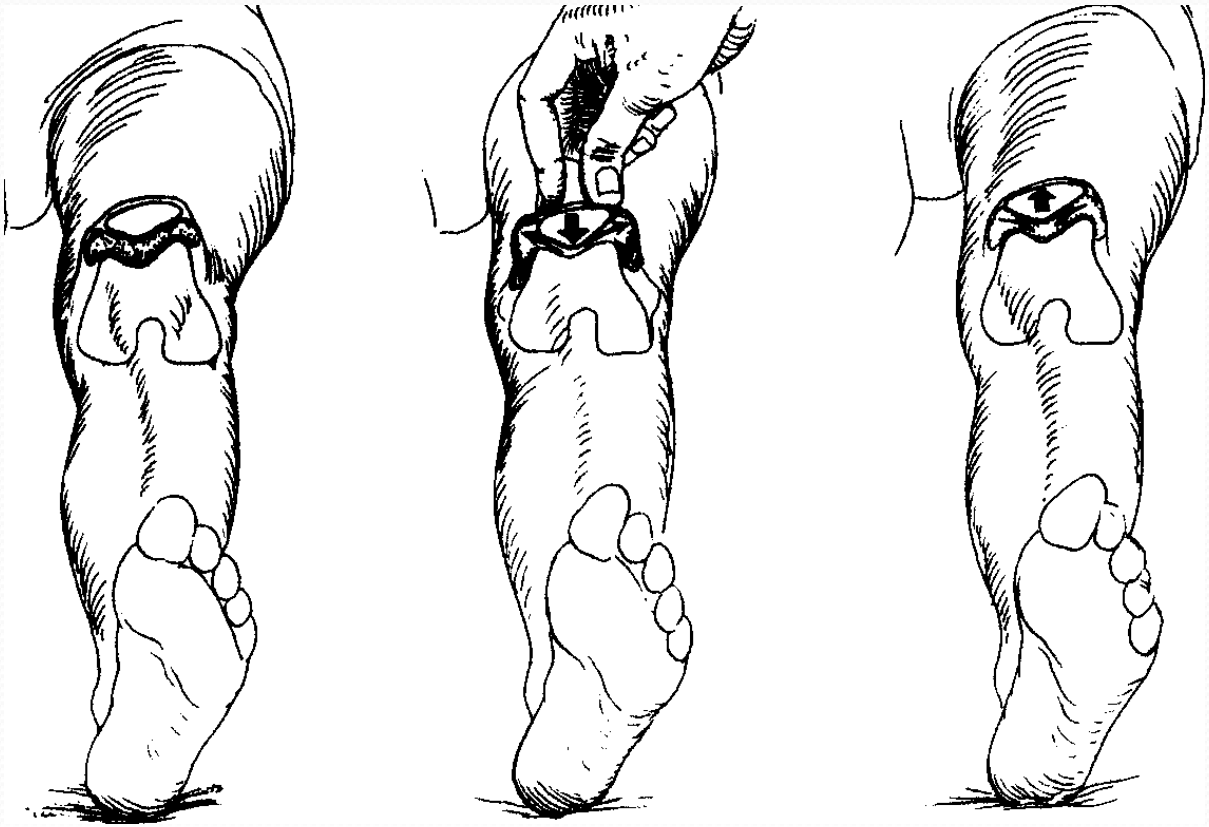
- Milk knee to assess for effusion
- Squeeze medial & lateral while milking

Цедење на ефузиите



Ефузии

- Ballotable patella



Ефузии

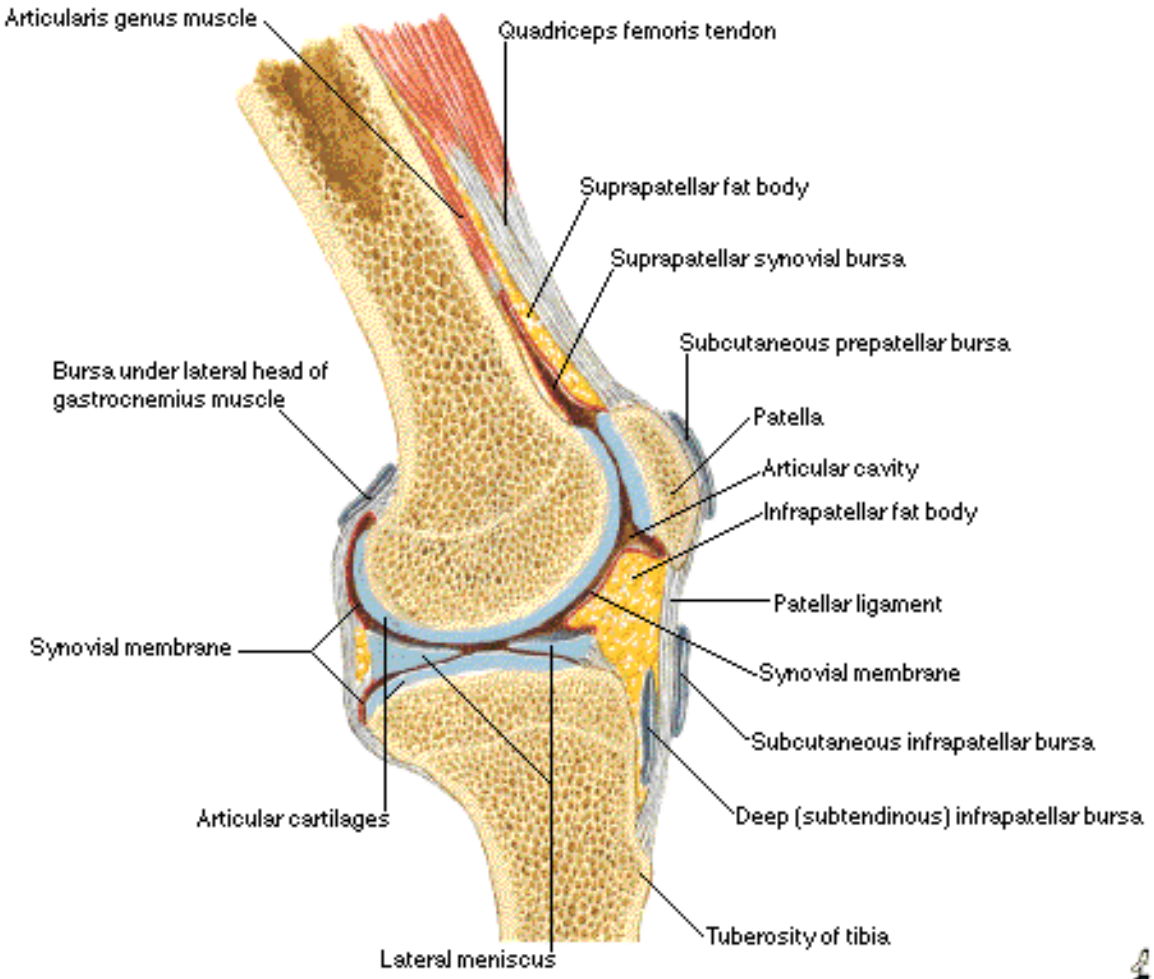
- Compare this with ‘good’ knee
- Intra-articular vs bursal

Intra-articular

Bursal

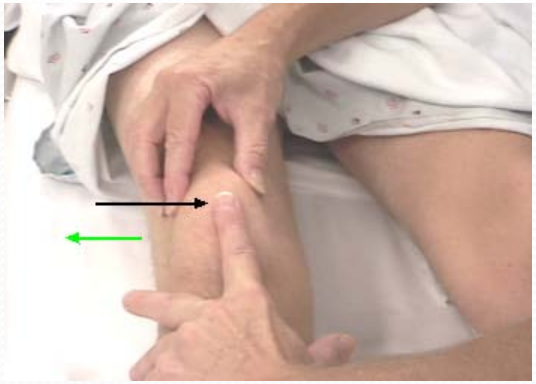
Knee

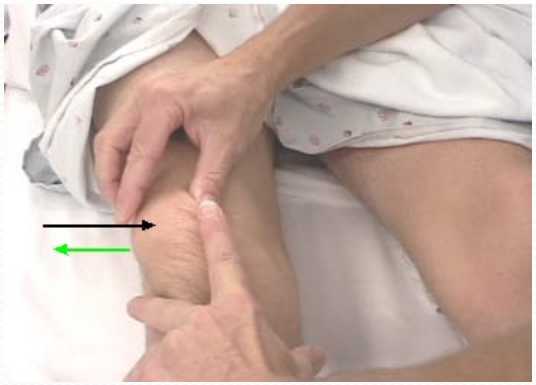
Parasagittal Section - Lateral to Midline of Knee

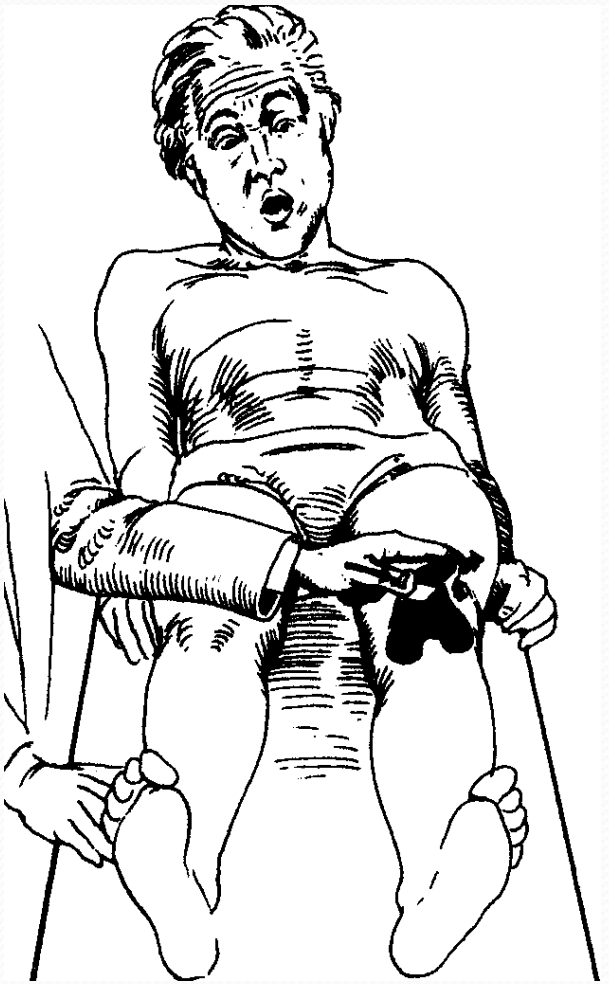


Patellofemoral assessment

- Patella apprehension test

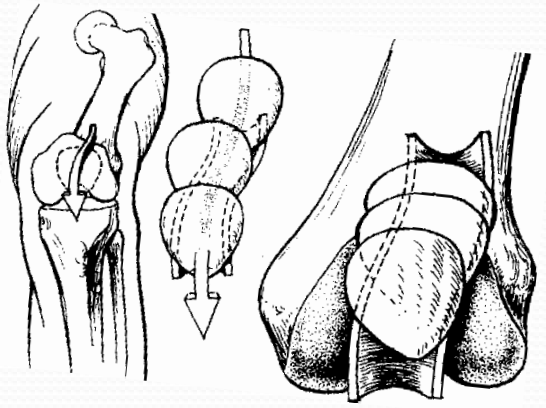




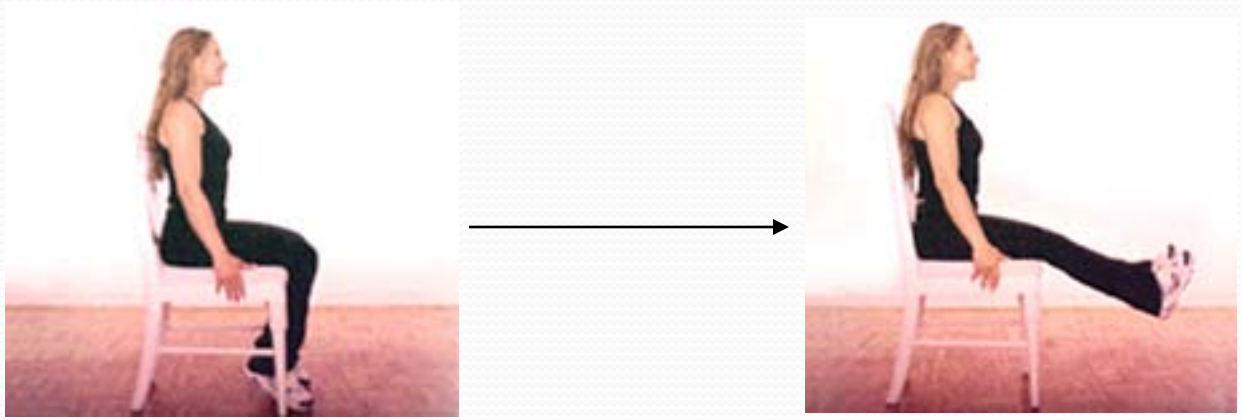


Patellofemoral assessment

- Important to assess how the patella moves when the knee is flexed & extended



Patellar tracking

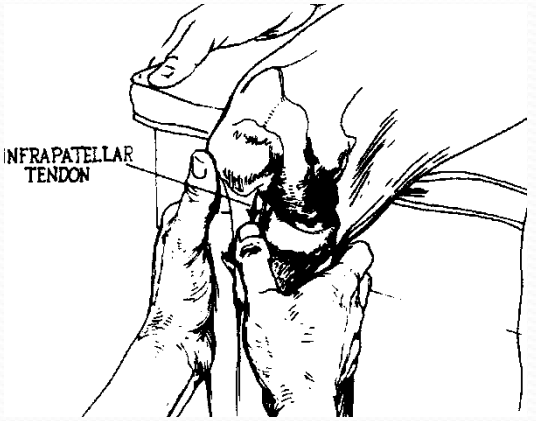


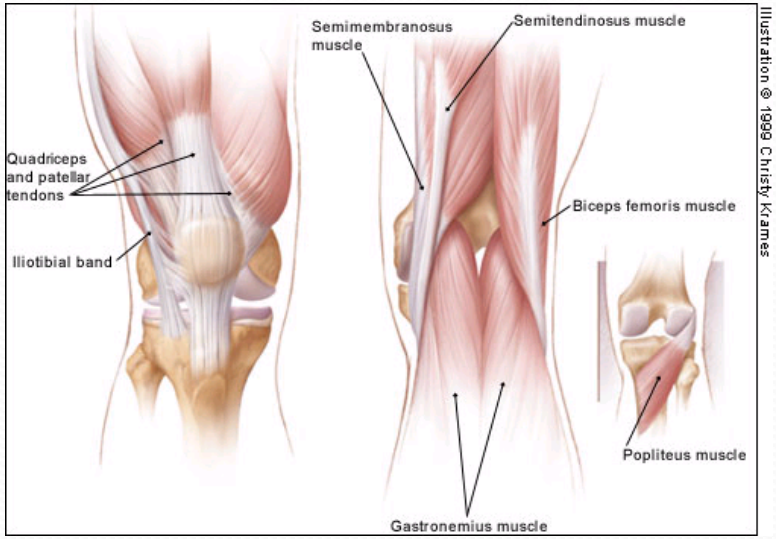
Patellofemoral assessment

- Patellar mobility
- Palpate superior, inferior, medial & lateral patella facets

Patellofemoral assessment

- Integrity of patellar & quad tendon
- Compression test
- Patellar inhibition



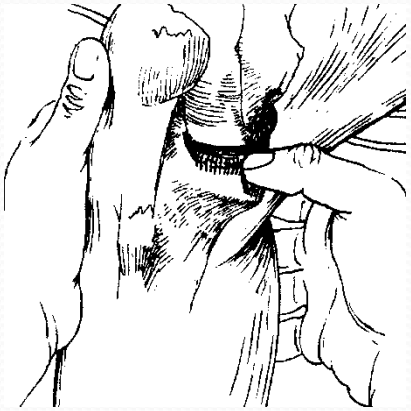


Опсег на движење

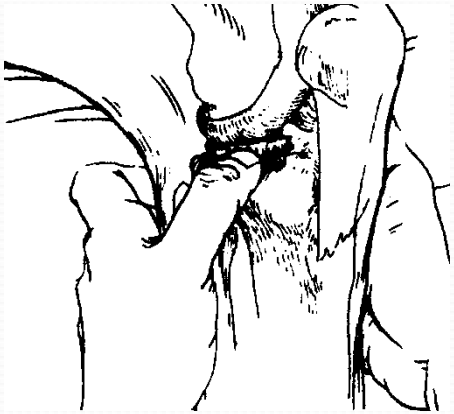
- Note angle of knee while supine
- Passive ROM
- Can you make the knee fully extend?
- Is there full flexion? Is it limited by pain or mechanical cause?

надворешната страна на колено

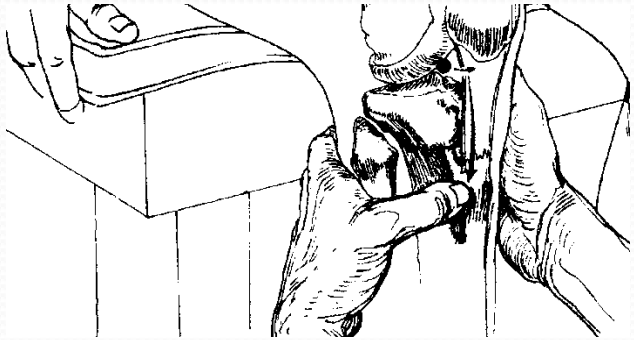
- Флексија на колено до 90°
- Palpate medial & lateral joint lines
- Palpate MCL & LCL
- Palpate tibial tubercle



Medial knee



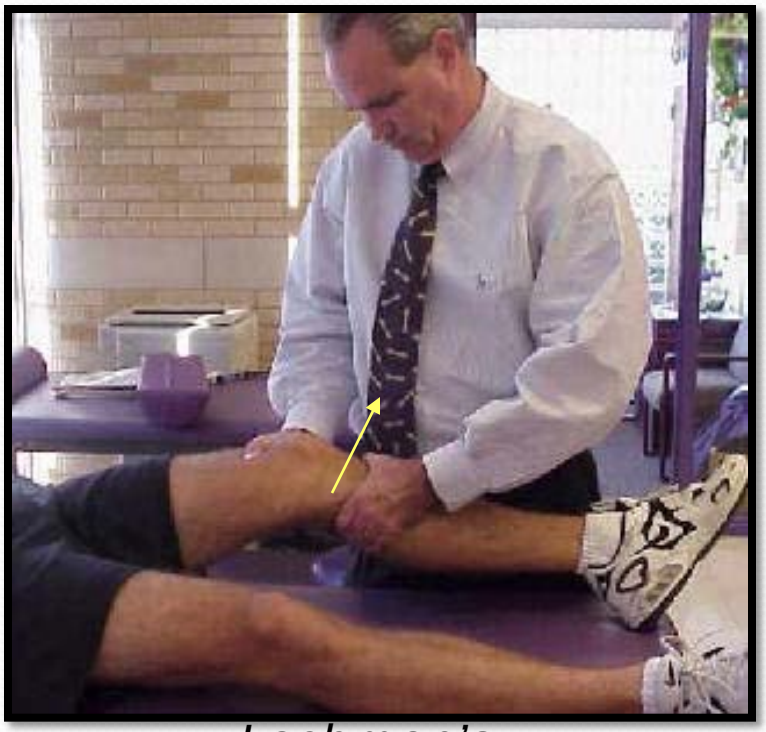
Lateral knee



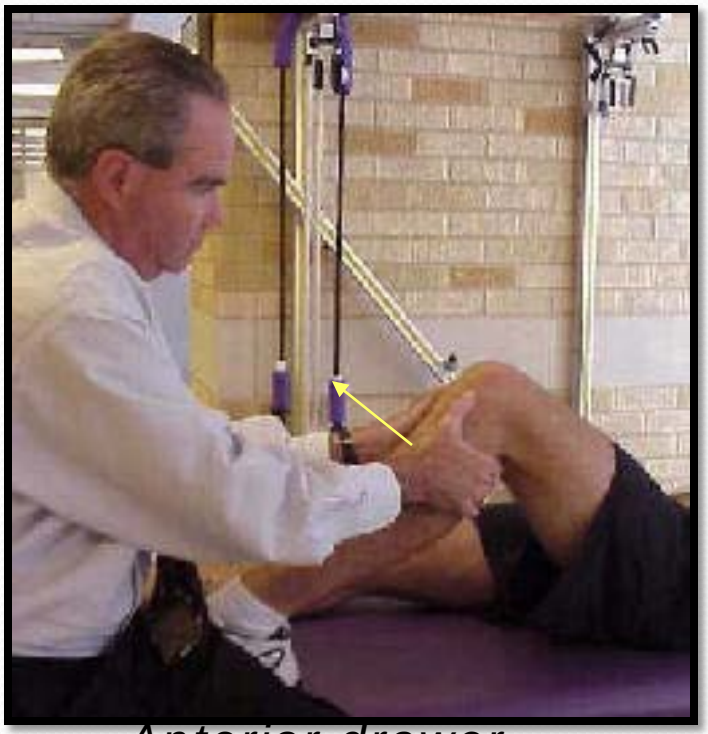
Tibial tubercle

Тестови за лигаменти

- ACL тест
  - Lachman's - 30° флексија
  - Anterior Drawer - 90° флексија



Lachman's



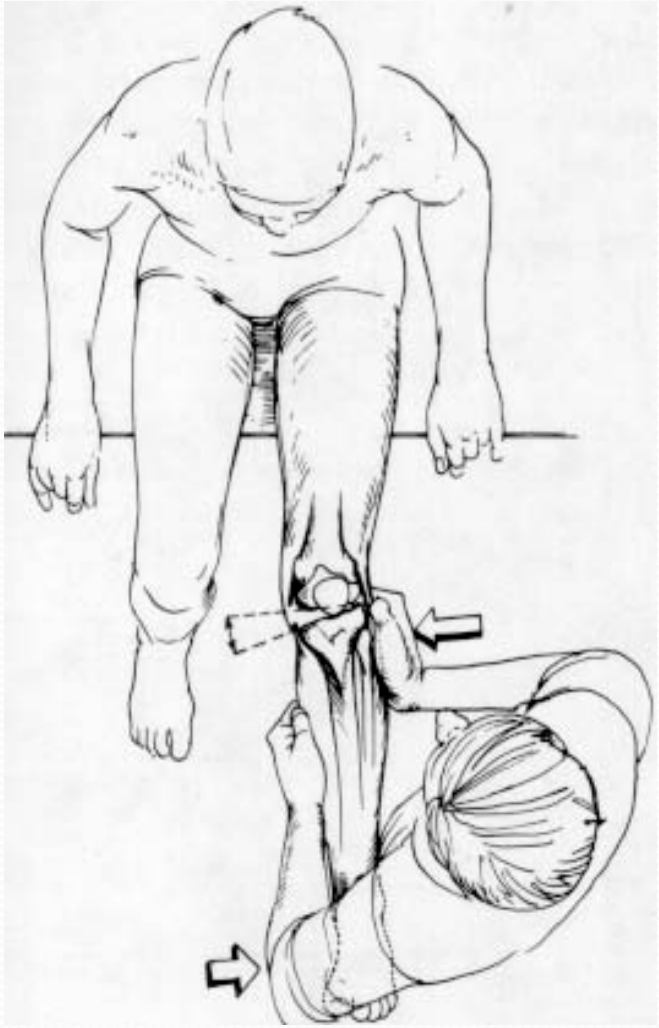
Anterior drawer

Тестови за лигаменти

- PCL тест
  - Posterior drawer тест

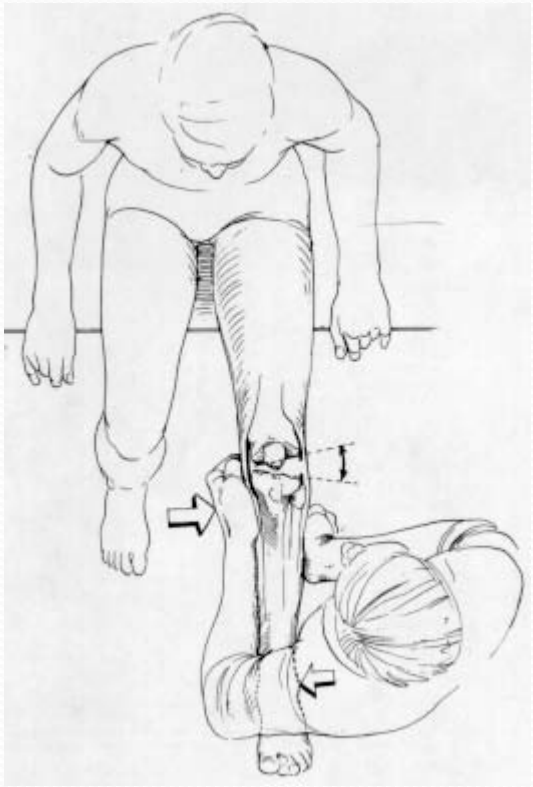
Тест за лигаменти

- MCL тест
  - Valgus stress тест
    - 0° & 30°



Тест за лигаментите

- LCL тест
  - Varus stress тест
    - 0° & 30°



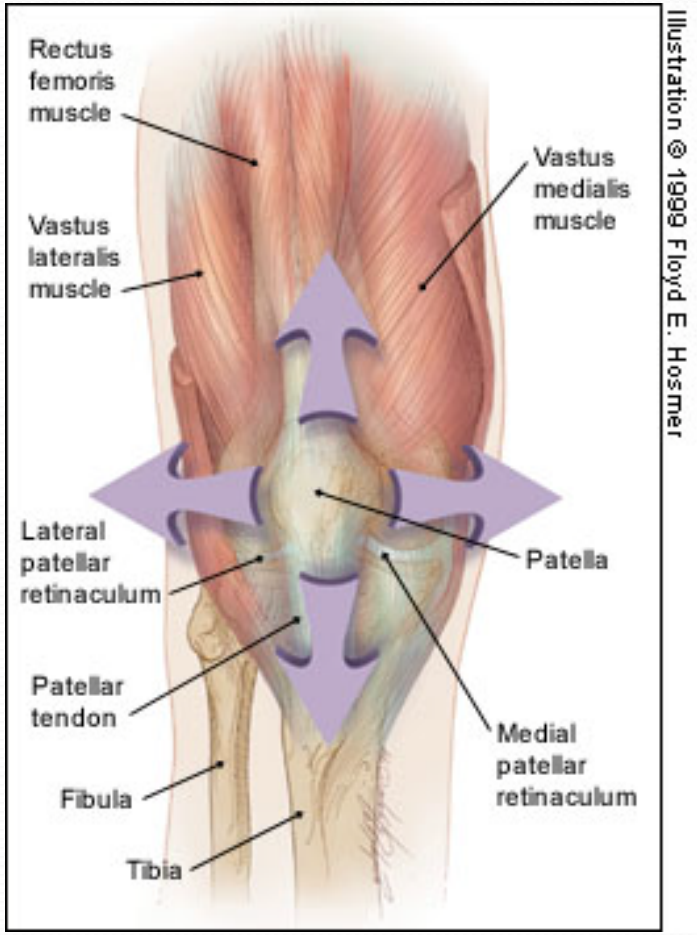
Менискус

- Meniscus тест
  - McMurray тест

Knee Injuries

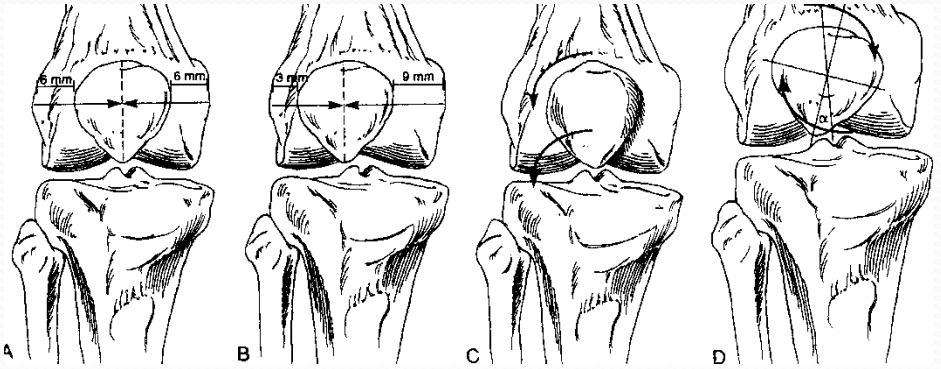
Patellofemoral pain syndrome

- Retropatellar or peripatellar pain resulting from physical or biomechanical changes in the patellofemoral joint
- Many forces interact to keep the patella aligned

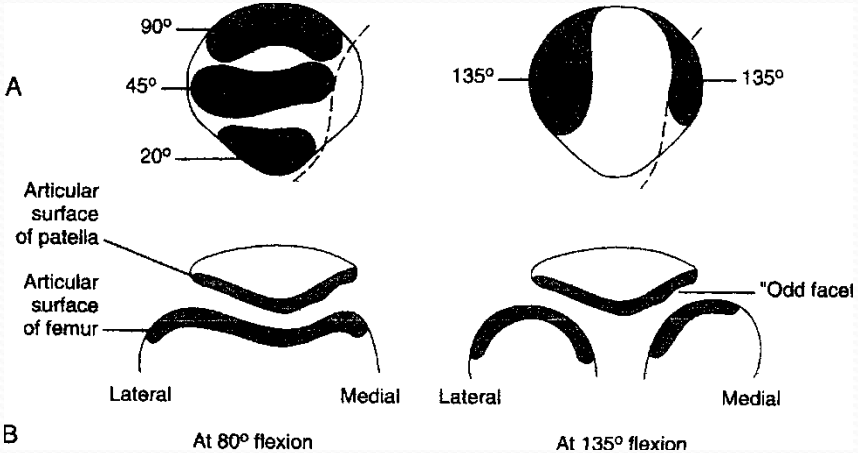


Patellofemoral pain syndrome

- Patella not only moves up and down, but rotates and tilts



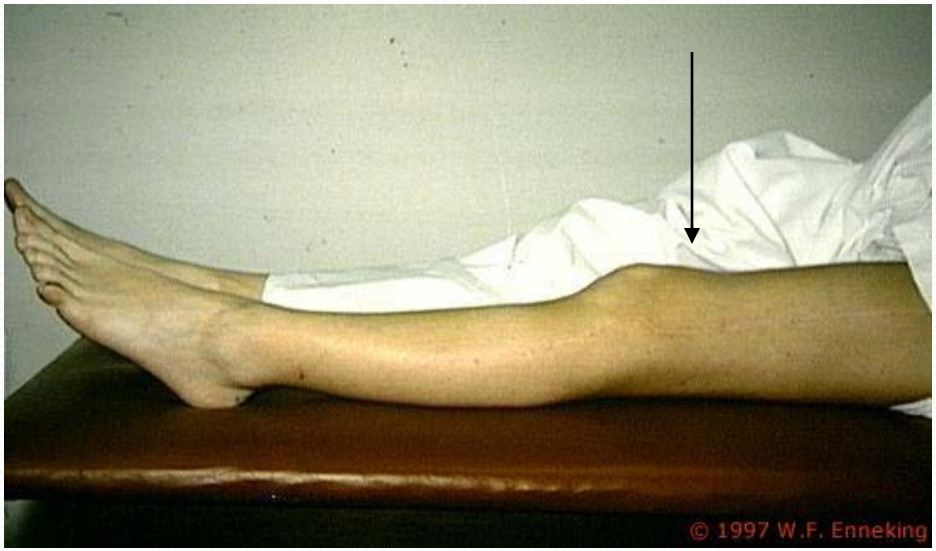
- Many points of contact between patella and femoral structures



Patellofemoral pain syndrome

- Hx:
  - Vague anterior knee pain with insidious onset
  - Common cause of anterior knee pain in women
  - Tend to point to front of knee when asked to localize pain
  - Worse with certain activities, i.e. ascending or descending hills & stairs
  - Pain with prolonged sitting → theater sign
  - No meniscal or ligamentous sxs

Patellofemoral pain syndrome



- PE:
  - Positive compression test
  - Patellar crepitus with ROM
  - Mild effusion possible
  - May see tenderness with patella facet palpation → medial, lateral, superior, inferior
  - Remainder of knee exam unremarkable

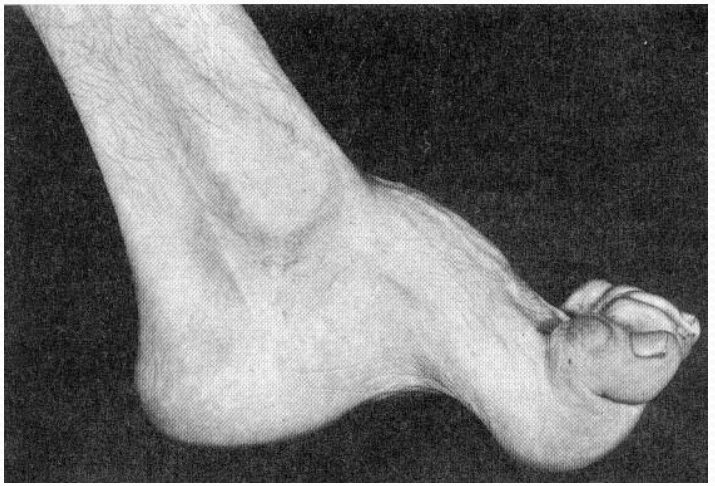
Patellofemoral pain syndrome

- PE:
  - Check hamstring flexibility

Patellofemoral pain syndrome

- PE:
  - Check for flat feet (pes planus) or high-arch feet (pes cavus)

Pes Planus



Pes Cavus

Patellofemoral pain syndrome

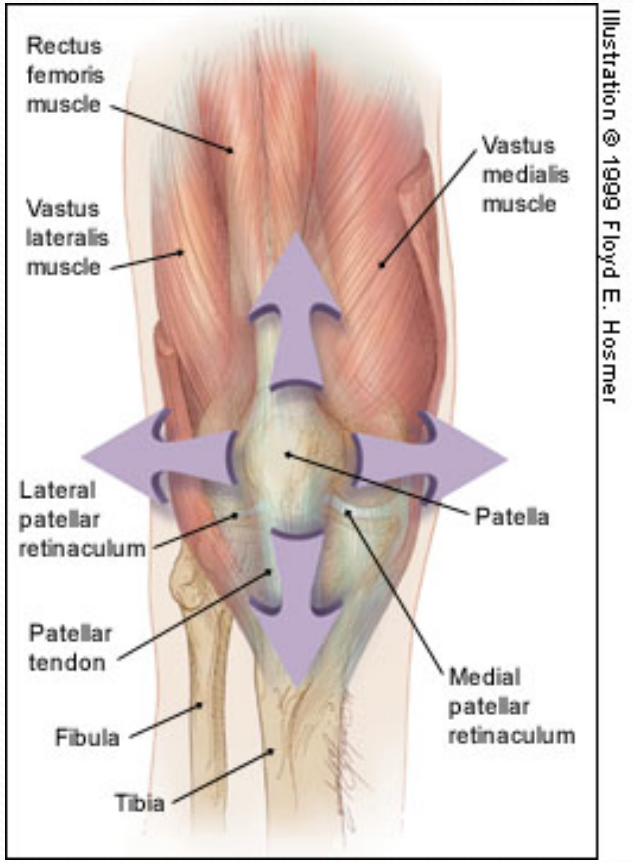
- PE:
  - Check heel cord (achilles) flexibility
  - Check for a tight iliotibial band (ober's test)

Ober's test

Achilles stretch

Patellofemoral pain syndrome

- Tx:
  - Physical therapy
    - Improve flexibility
    - Quad strengthening, especially VMO
    - Other modalities, i.e. soft tissue release, U/S
    - Patellar taping

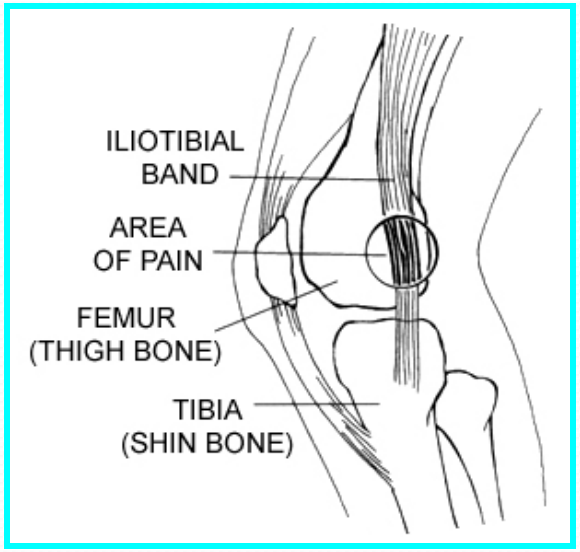


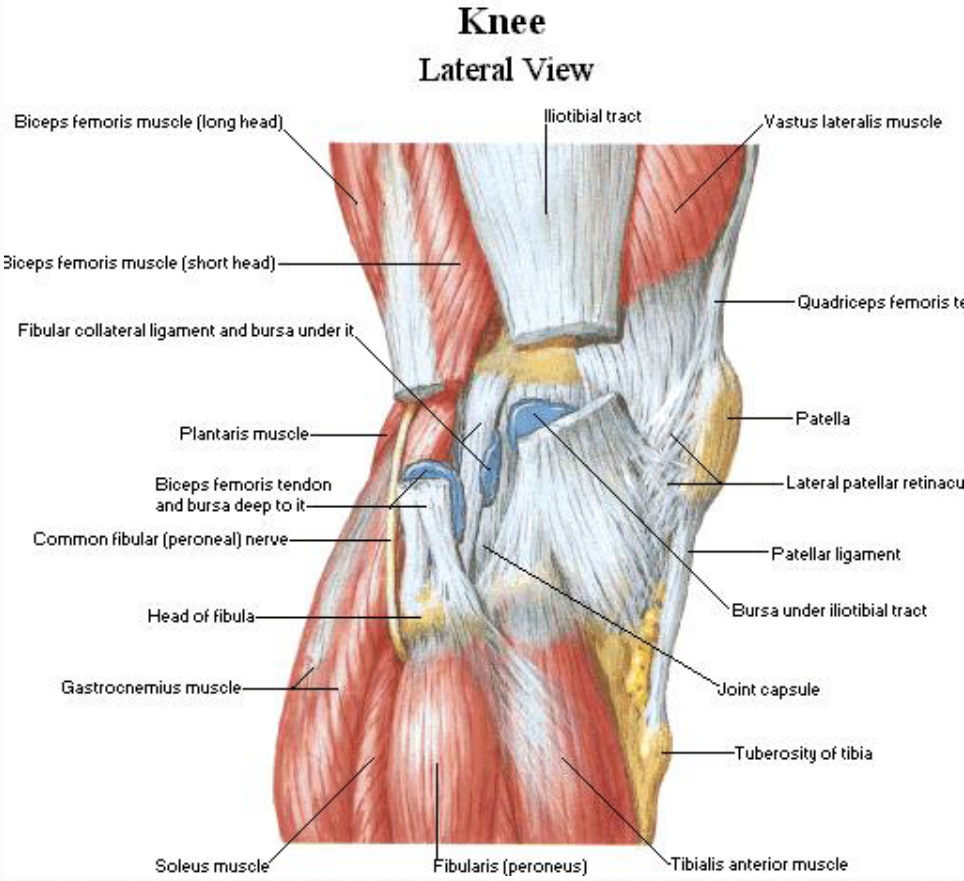
Patellofemoral pain syndrome

- Tx:
  - Relative rest/Modification of activities
  - Icing
  - NSAIDS
  - Patellar braces
  - Addressing foot problems with foot wear and orthotics
  - Surgery

Iliotibial band tendonitis

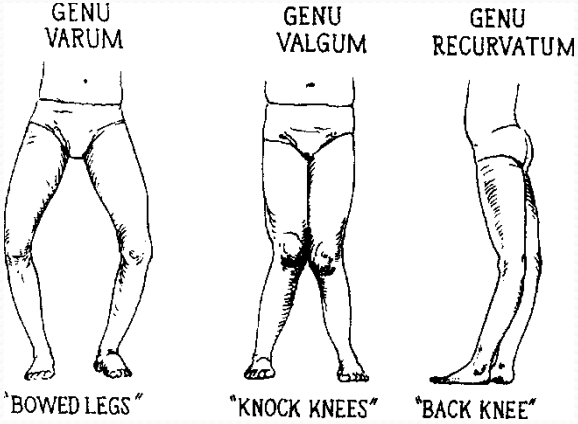
- Excessive friction between iliotibial band (ITB) & lateral femoral condyle





Iliotibial band tendonitis

- Common in runners and cyclists
- Tight ITB, foot pronation, genu varum are risk factors

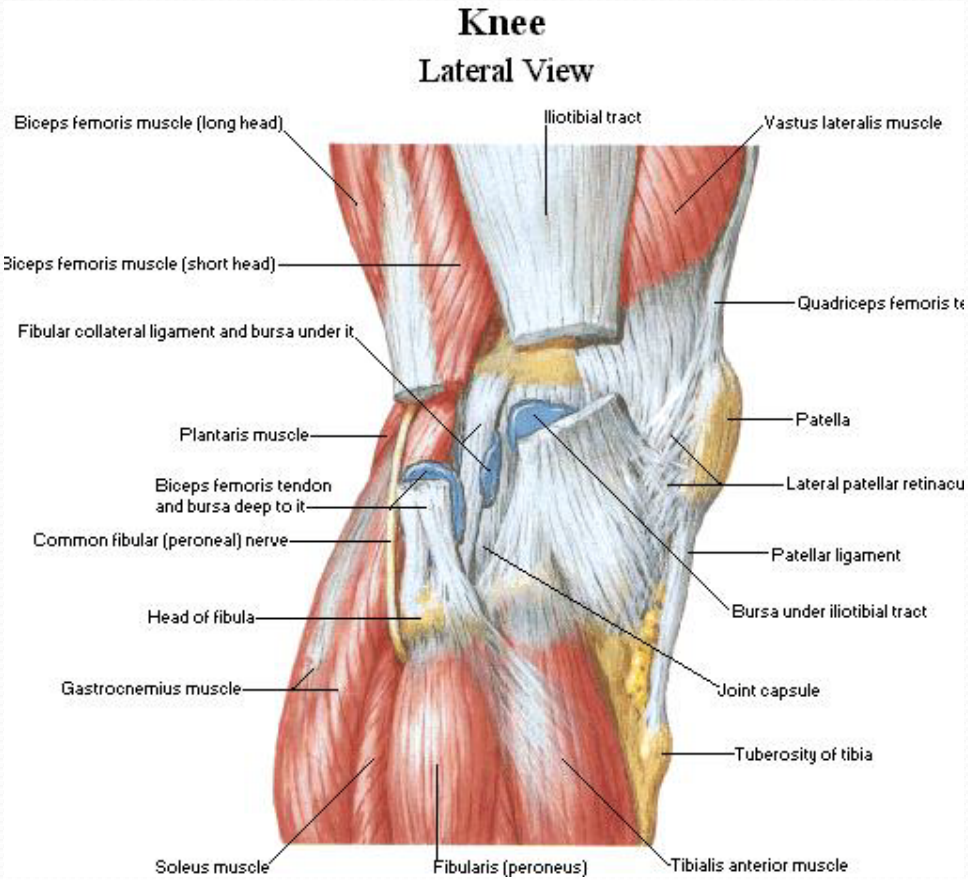


Iliotibial band tendonitis

- Hx:
  - Pain at lateral knee
  - At first, sxs only after a certain period of activity
  - Progresses to pain immediately with activity

Iliotibial band tendonitis

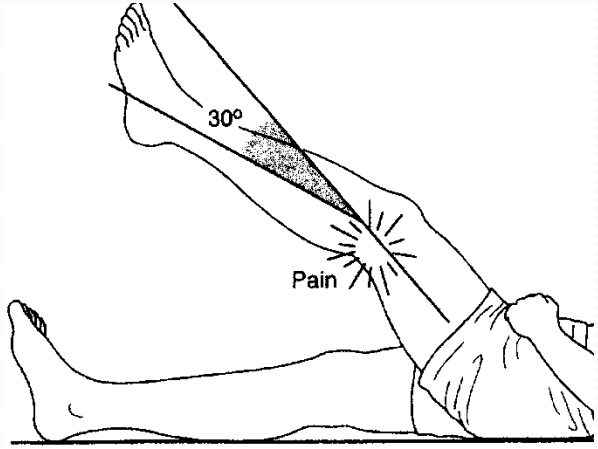
- PE:
  - Tender at lateral femoral epicondyle, ~3cm proximal to joint line
  - Soft tissue swelling & crepitus
  - No joint effusion



Iliotibial band tendonitis

- PE:
  - Ober's test

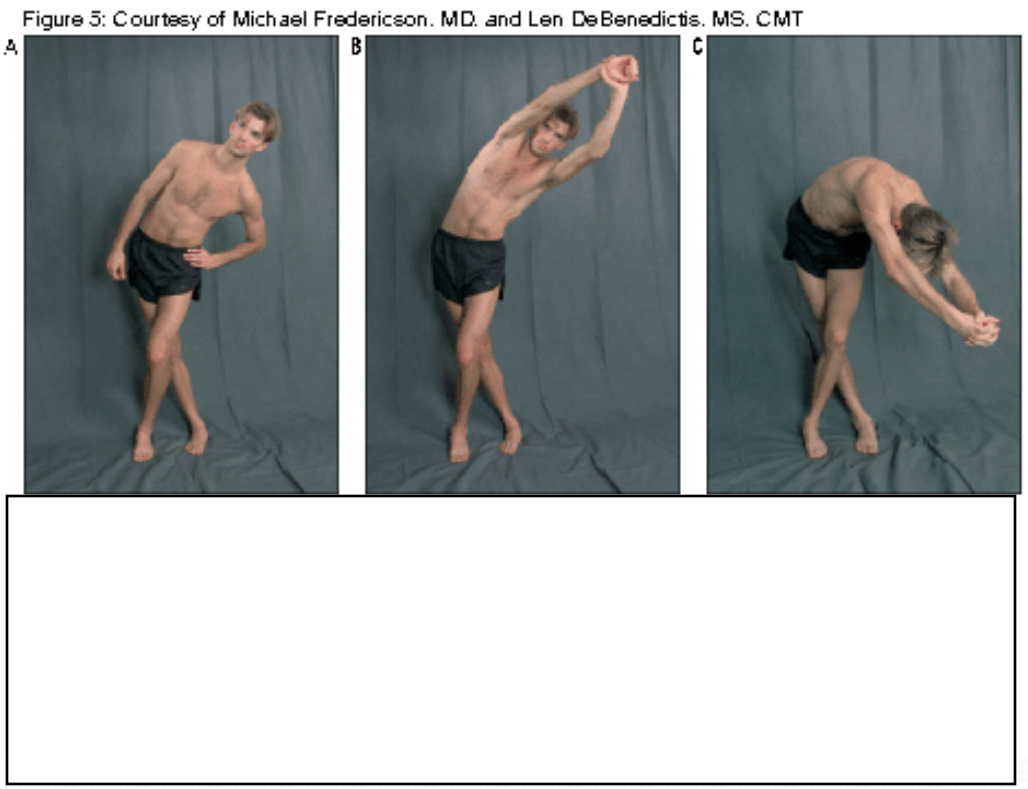
  - Noble's test



Noble's test

Iliotibial band tendonitis

- Tx:
  - Relative rest
  - Ice
  - NSAIDS
  - Stretching
  - Cortisone
  - Platelet-Rich Plasma



Iliotibial band tendonitis

- Prognosis:
  - Improves with rest
  - Expect long recovery time
- When to refer:
  - Intractable pain
  - Surgery = release

Anterior cruciate ligament (ACL) injury

- Most are non-contact injury, 2° to deceleration forces or hyperextension
- Planted foot & sharply rotating
- If 2° to contact, may have associated injury (MCL, meniscus)

Anterior cruciate ligament (ACL) injury

- Females playing soccer, gymnastics and basketball are at highest risk
- Risk of injury 2 – 8 times ↑ in women
- ~250,000 injuries/year in general population
- Gender difference not clear
  - Joint laxity, limb alignment
  - Neuromuscular activation

Anterior cruciate ligament (ACL) injury

- Hx:
  - Hearing or feeling a “pop” & knee gives way
  - Significant swelling quickly (< 1 hours)
  - Unstable
  - ↓ range of motion
  - Achy, sharp pain with movement

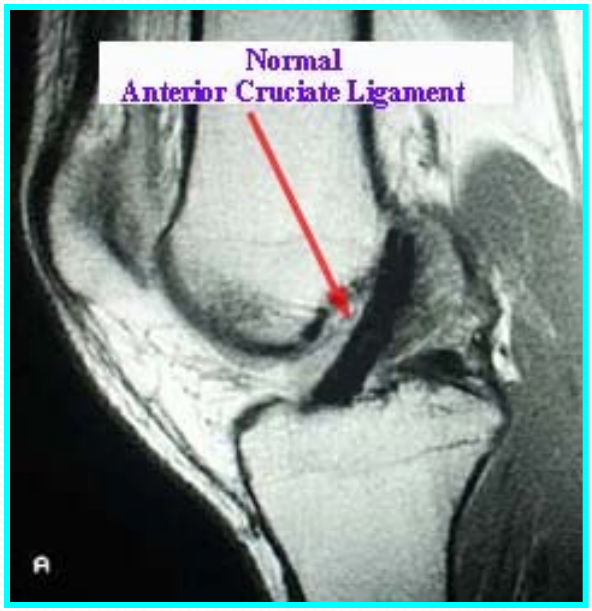
Anterior cruciate ligament (ACL) injury

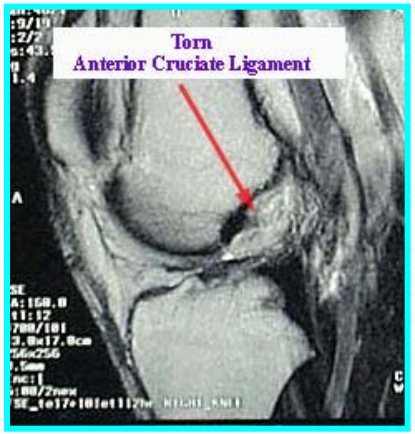
- PE:
  - Large effusion, ↓ ROM
  - Difficult to bear weight
  - Positive anterior drawer
  - Positive Lachman's

Anterior cruciate ligament (ACL) injury

- Imaging:
  - X-ray always
  - MRI

Anterior cruciate ligament (ACL) injury





MRI

Anterior cruciate ligament (ACL) injury

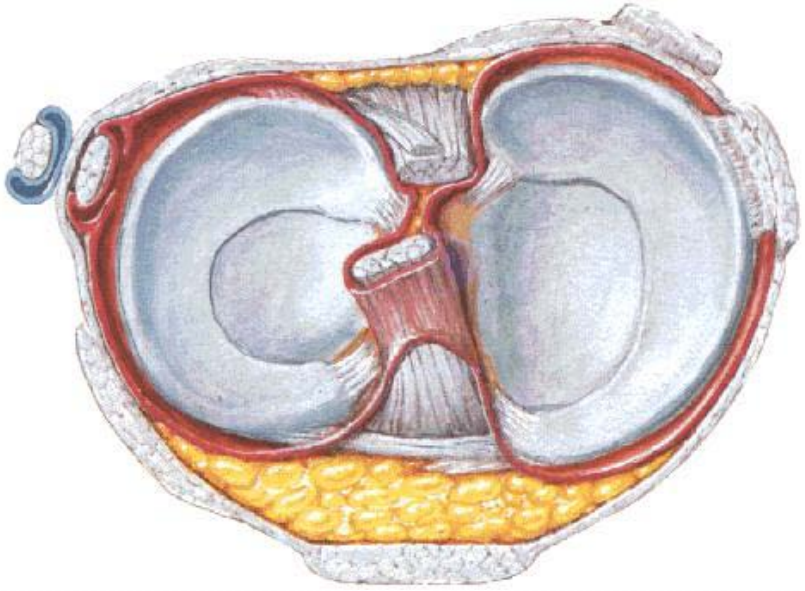
- Treatment:
  - RICE
  - Hinged knee brace
  - Crutches
  - Pain medication
  - ROM/Rehabilitation
  - Avoid most activities (stationary bike o.k.)
  - Surgery (in most cases)

Anterior cruciate ligament (ACL) injury

- Prognosis:
  - Usually an isolated injury
  - Post-op: 8-12 months until full activity
- Referral:
  - Almost all young, athletic patients will prefer surgical reconstruction
  - ?Increased risk of DJD if not treated
  - Can still get DJD if reconstructed

Meniscal Tear

- Meniscus = 'little moon' in greek
- Absorbs shock, distributes load, stabilizes joint
- Thick at periphery → thin centrally



Lateral Medial

Meniscal Tear

- Causes:

  Sudden twisting
  - Young athletes
- Simple movements
  - Older knee

Meniscal Tear

- Hx:
  - Clicking, catching or locking
  - Worse with activity
  - Tends to be sharp pain at joint line
  - Effusion

Meniscal Tear

- PE:
  - mild-moderate effusion
  - pain with full flexion
  - tender at joint line
  - + McMurray's

McMurray's Test

Meniscal Tear

- Imaging:
  - MRI

Meniscal Tear

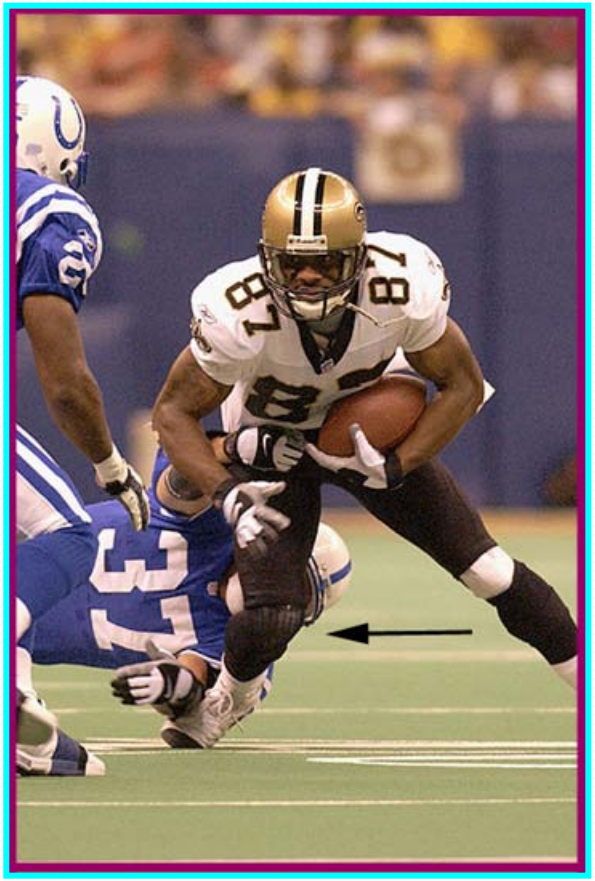
- Treatment:
  - RICE
  - Surgical repair or excision (arthroscopic)
  - Crutches
  - NSAIDs
  - Knee sleeve
  - Asymptomatic tears do not require treatment

Meniscal Tear

- Prognosis:
  - Results of surgical repair/excision are very good
  - Return to full activities 2-4 months after surgery; tends to be quicker for athletes
- When to refer:
  - Most symptomatic meniscal injuries require surgery

Medial Collateral ligament (MCL) Injury

- Important in resisting valgus movement
- Common in contact sports, i.e. football, soccer
- Hit on outside of knee while foot planted
- Associated injuries common, depending on severity

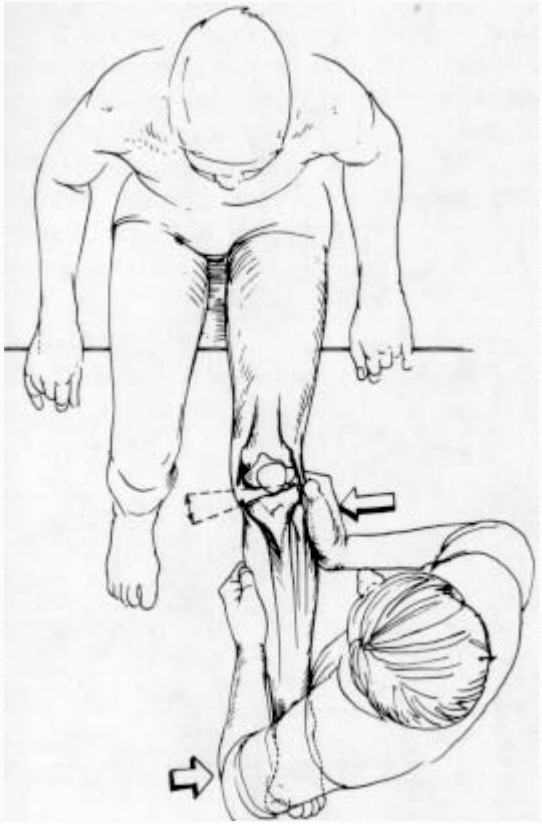


Medial Collateral ligament (MCL) Injury

- Hx:
  - Immediate pain over medial knee
  - Worse with flexion/extension of knee
  - Pain may be constant or present with movement only
  - Knee feels ‘unstable’
  - Soft tissue swelling, bruising

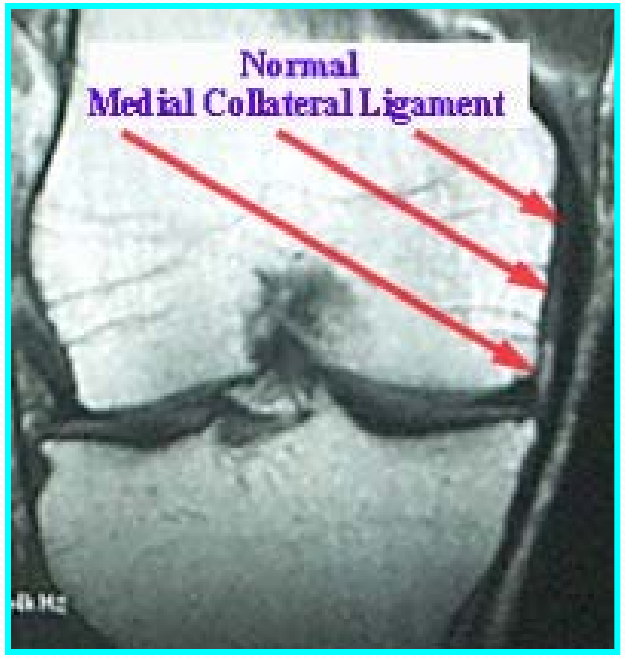
Medial Collateral ligament (MCL) Injury

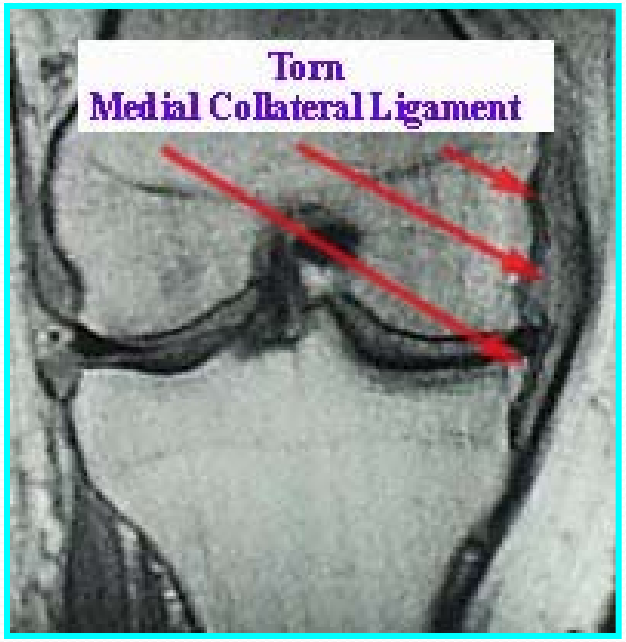
- PE:
  - no effusion
  - medial swelling
  - pain with flexion
  - tender over medial femoral condyle, proximal tibia
  - Valgus stress at 0° & 30° → PAIN, possible laxity



Medial Collateral ligament (MCL) Injury

- Imaging:
  - obtain radiographs to r/o fracture
  - MRI if other structures involved or if unsure of diagnosis





Medial Collateral ligament (MCL) Injury

- Treatment: Grade I→no laxity @ 0°or 30°
  Grade II→no laxity @ 0°,but lax @ 30°
  - RICE
  - Hinged-knee brace (Grade II)
  - Crutches
  - Aggressive rehabilitation
  - NSAIDs

- Treatment: Grade III → lax @ 0° & 30°
  - Same as above
  - Consider Orthopedic referral

Medial Collateral ligament (MCL) Injury

- Prognosis:
  - Grade I -- 10 days
  - Grade II -- 3-4 weeks
  - Grade III -- 6-8 weeks
- When to refer:
  - Other ligamentous injuries (surgical)
  - Severe MCL injury
  - Not progressing as expected

Patellar dislocation/instability

- Patella may dislocate or sublux laterally
- Young, active patients at highest risk (~ages 13-20)
- Common in football & basketball
- ♀ > ♂
- Recurrence is common, especially if first dislocation < 15 yo

Patellar dislocation/instability

- Indirect trauma most common mechanism
  - Strong quad contraction while leg is in valgus and foot planted
- Other knee ligament injuries can occur

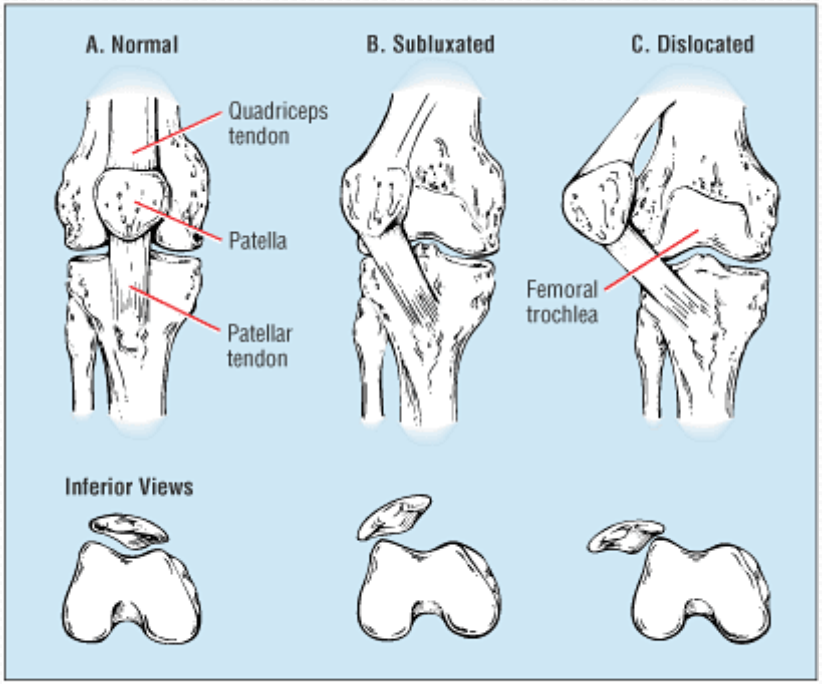
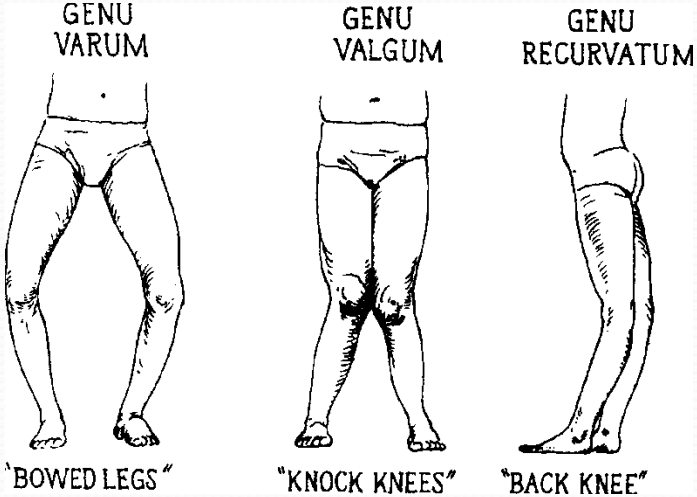


FIGURE 1. The bony and soft-tissue restraints provide stability in the normal patellofemoral joint (A). Subluxation (B) and dislocation (C) occur when the patella is torn from its normal position in the trochlear sulcus.

Patellar dislocation/instability

- Risk factors:
  - Trauma
  - Pes planus
  - Genu valgum
  - Weak VMO



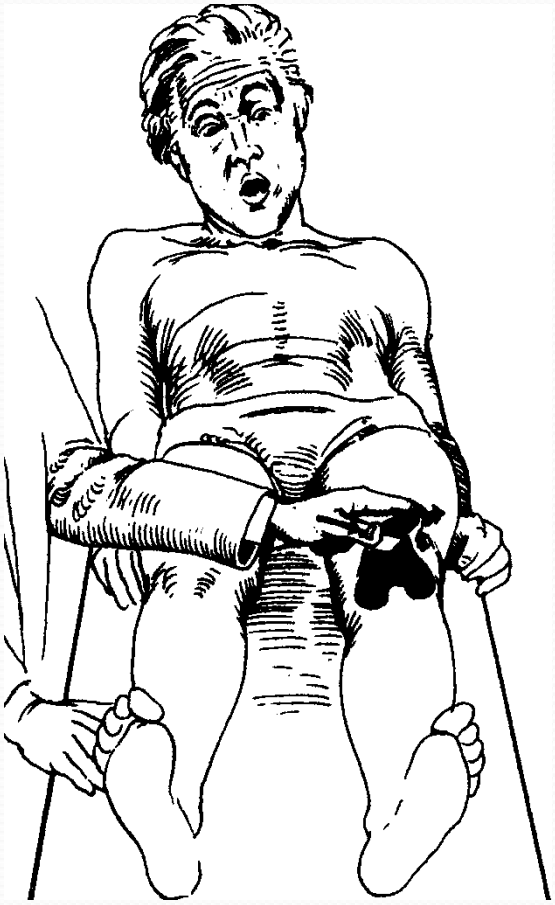
Patellar dislocation/instability

- Hx:
  - Feel a ‘pop’ and immediate pain
  - Obvious knee deformity
  - Painful, difficult to bend knee
  - May spontaneously relocate, left with feelings of instability

Patellar dislocation/instability

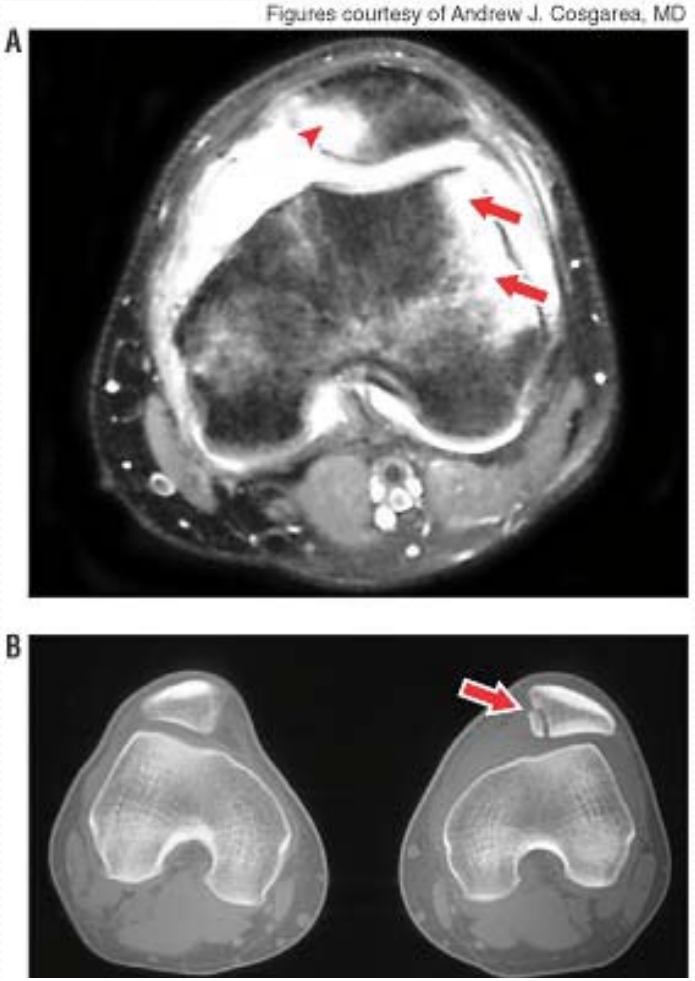
- PE:
  - Laterally shifted patella
  - Patellar apprehension
  - Swelling

Figures courtesy of Andrew J. Cosgarea, MD



Patellar dislocation/instability

- Imaging:
  - Standard knee x-rays a good start
  - Likely need an MRI if injury seems significant or associated injuries seem possible



MRI

Patellar dislocation/instability

- Treatment:
  - NSAIDS
  - Ice
  - Patellofemoral knee brace/rigid brace
  - PT
    - ROM quickly (~ 2week)
    - Quad strengthening
    - Elec. Stim
- Surgery
  - Recurrent instability

Patellar dislocation/instability

- Prognosis
  - Recurrent instability is common, but rehab is mainstay and very useful
- When to refer
  - Associated fracture
  - Poor response to rehab
  - Multiple dislocations (#?) & skill level

Other Injuries

- Plica syndrome
- Osteochondritis dissecans
- Osgood-schlatter's disease
- Pes-anserine bursitis
- Baker's cyst

Conclusion

- Remember to be thorough
- History is very important
- Make sure injury not too acute --- pain could inhibit a good exam
- If modifying activity, give alternative exercises
- Kinetic chain theory
  - Foot, ankle, knee, hip, back → it's all connected!