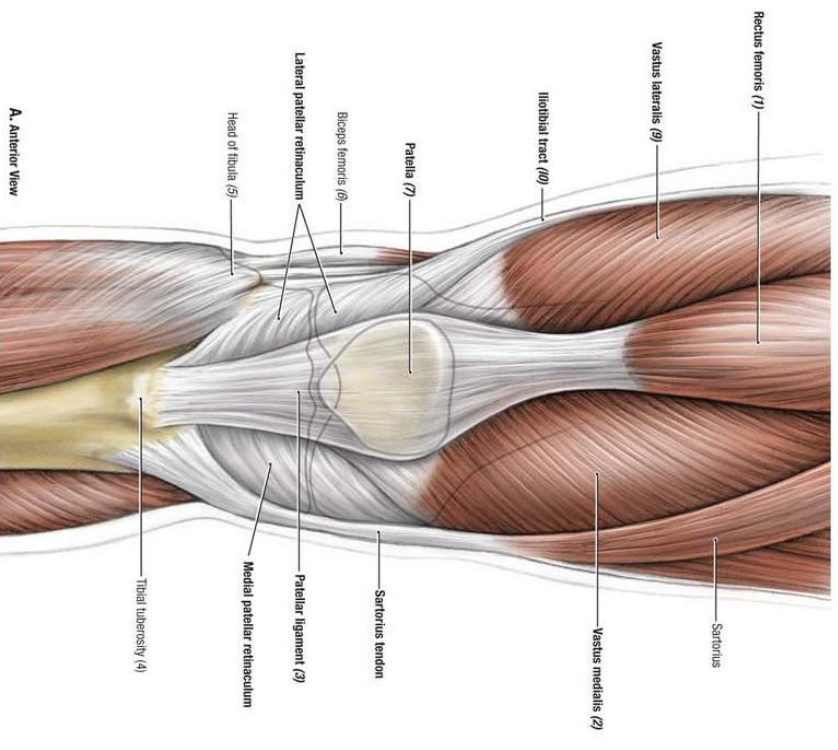
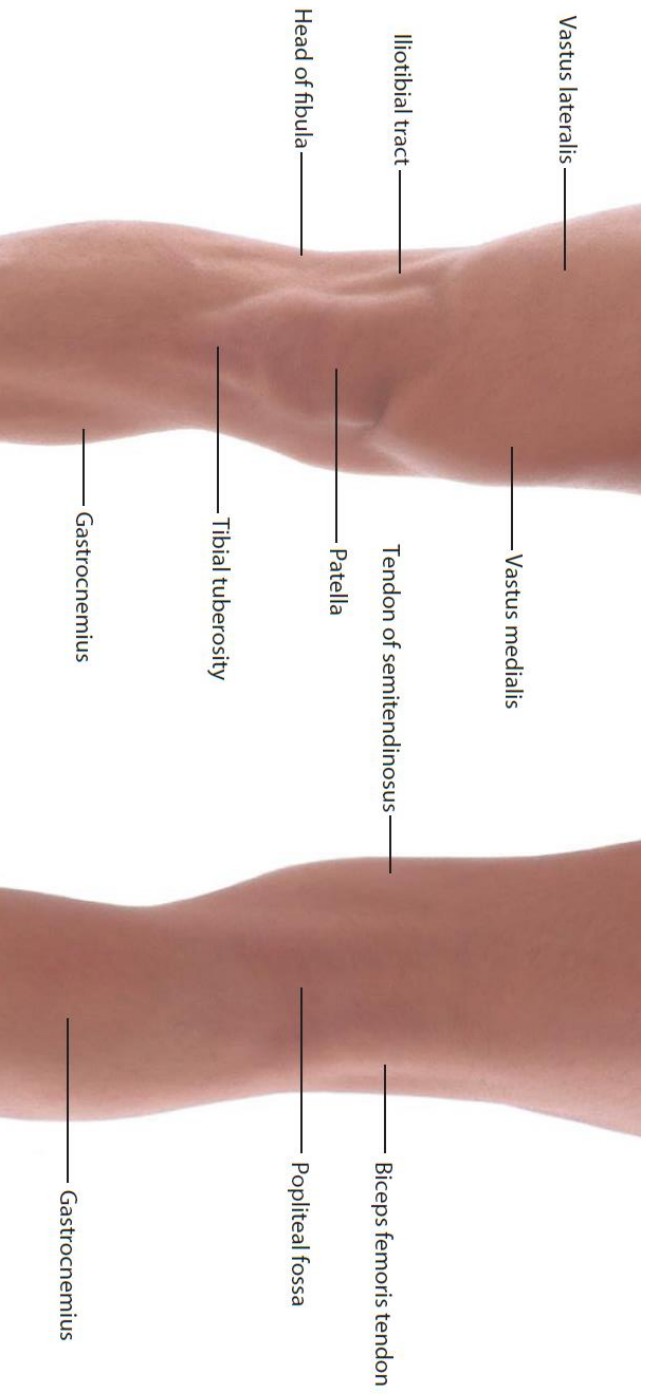


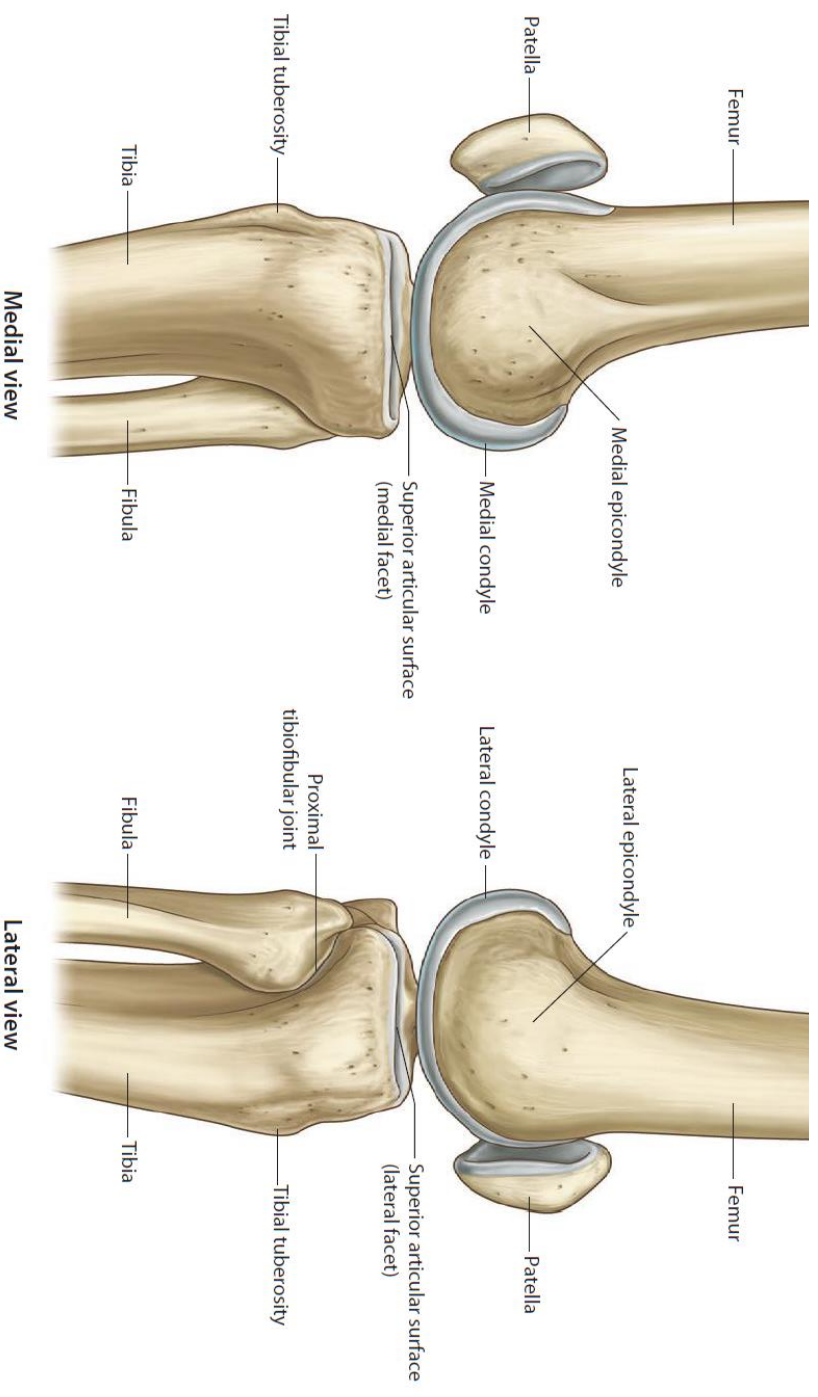
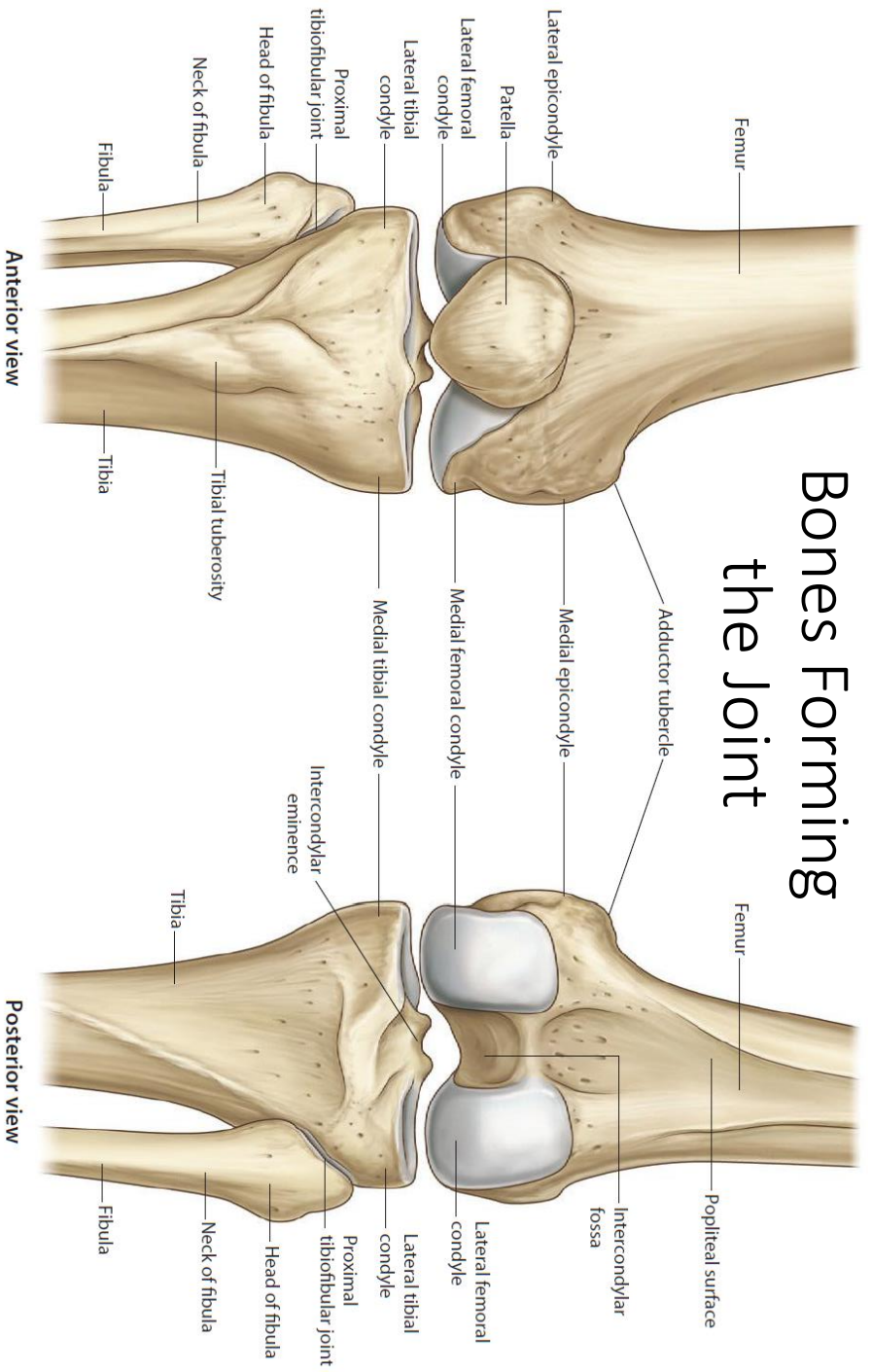
KNEE JOINT

Dr. Ali Mohsin

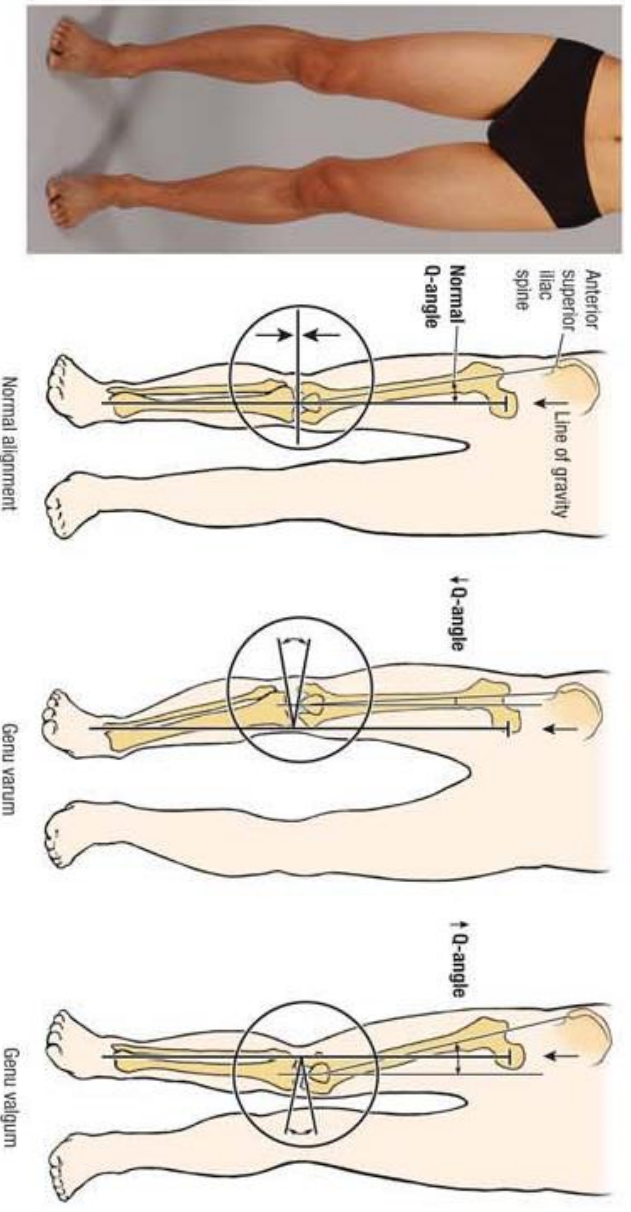
Surface Anatomy

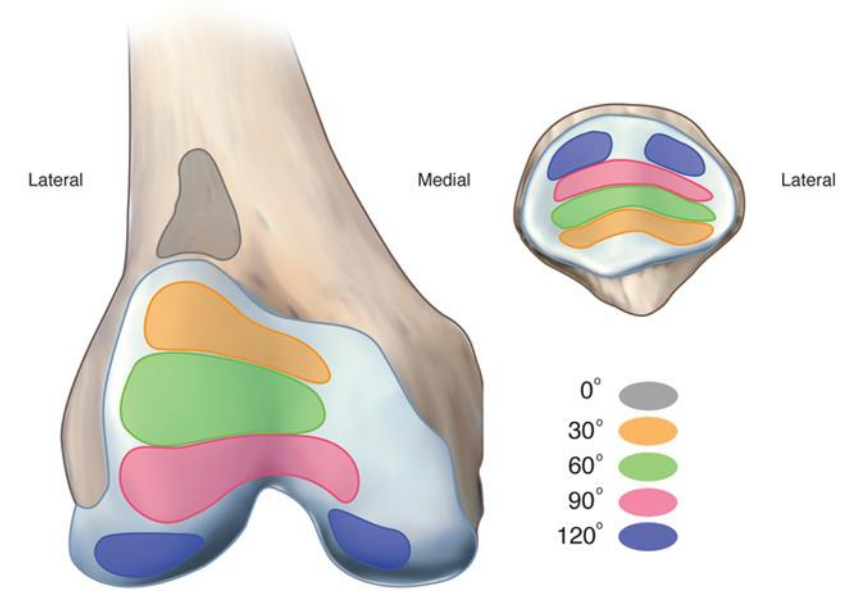
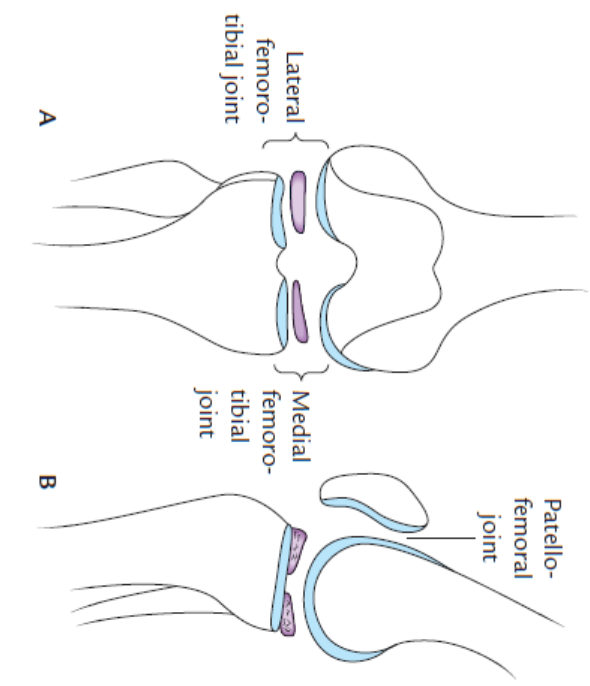
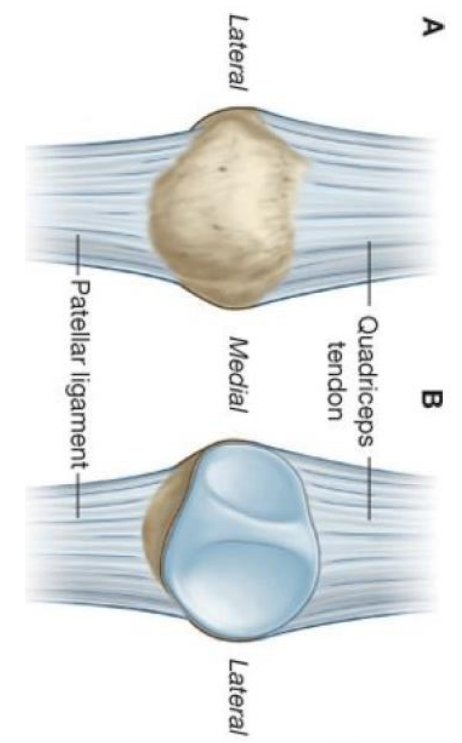
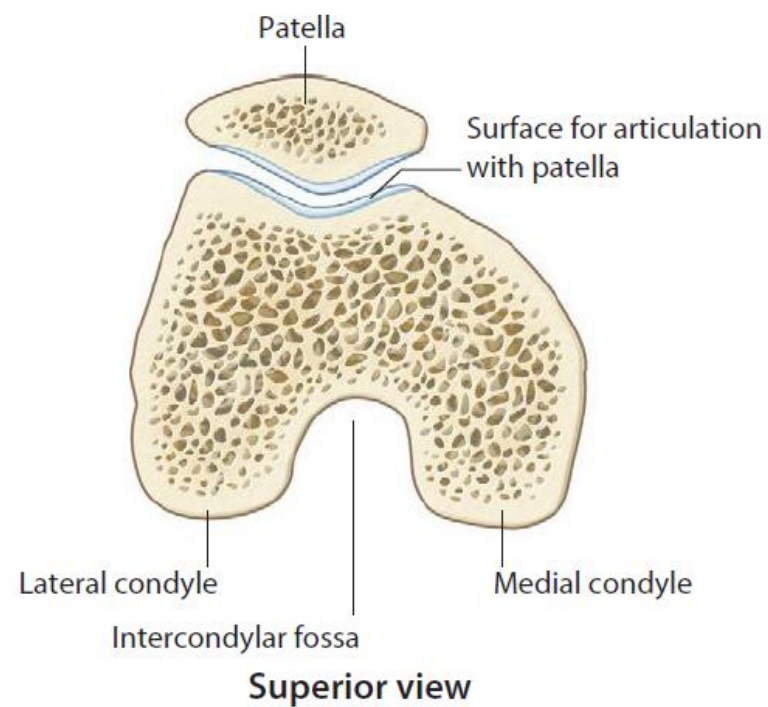
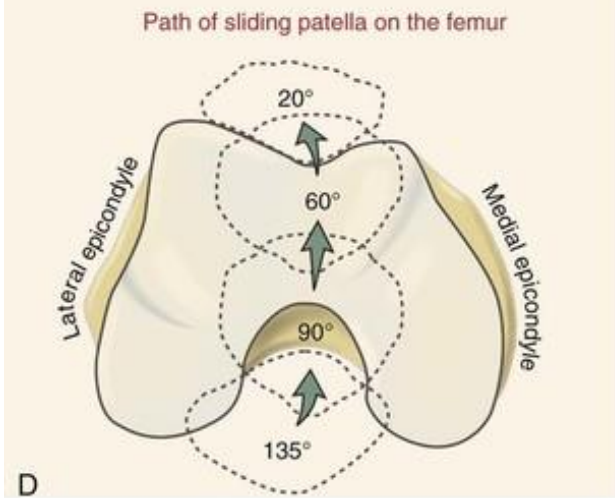
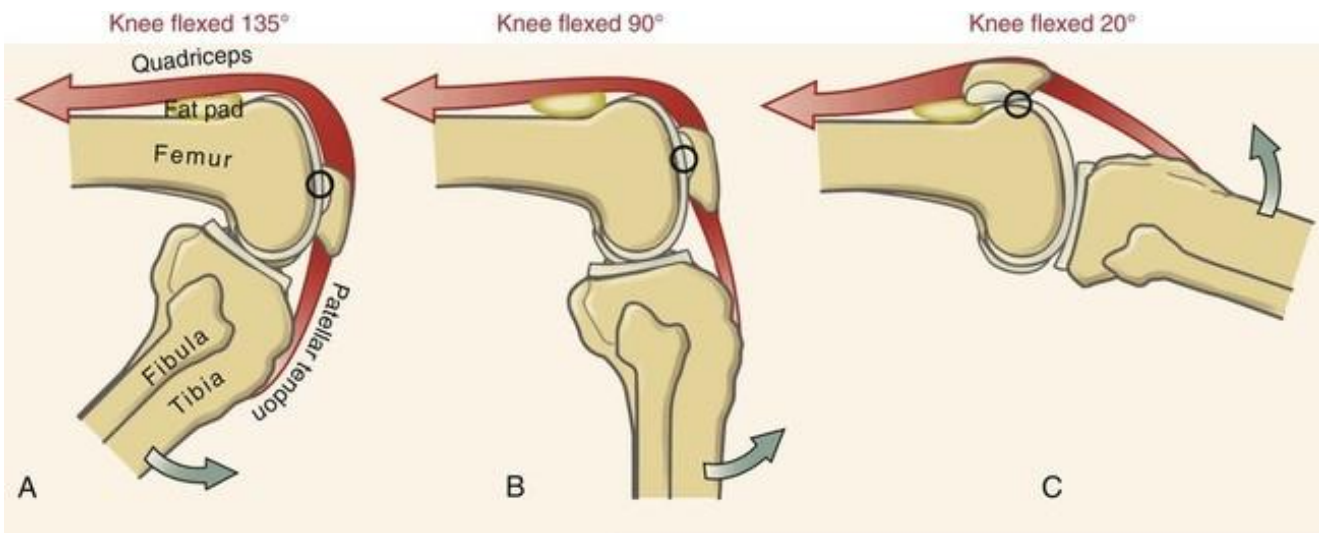


Bones Forming the Joint



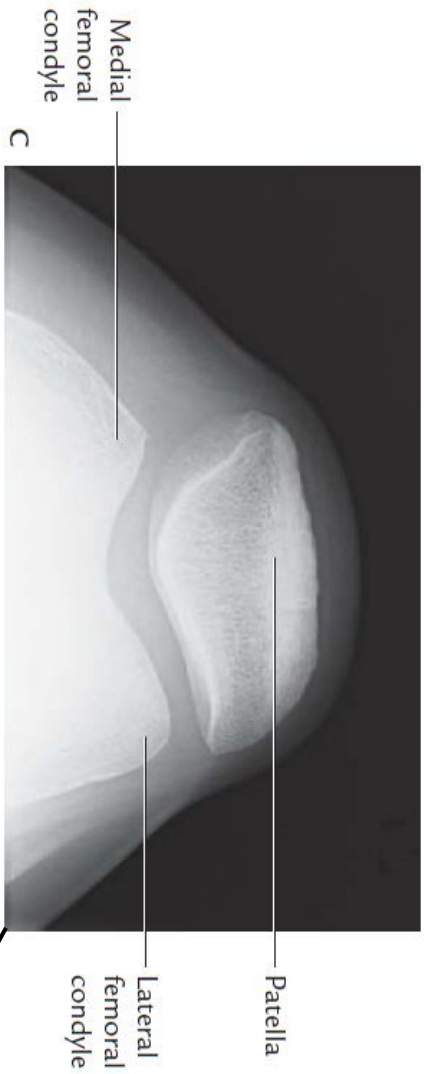
Thigh-leg alignment



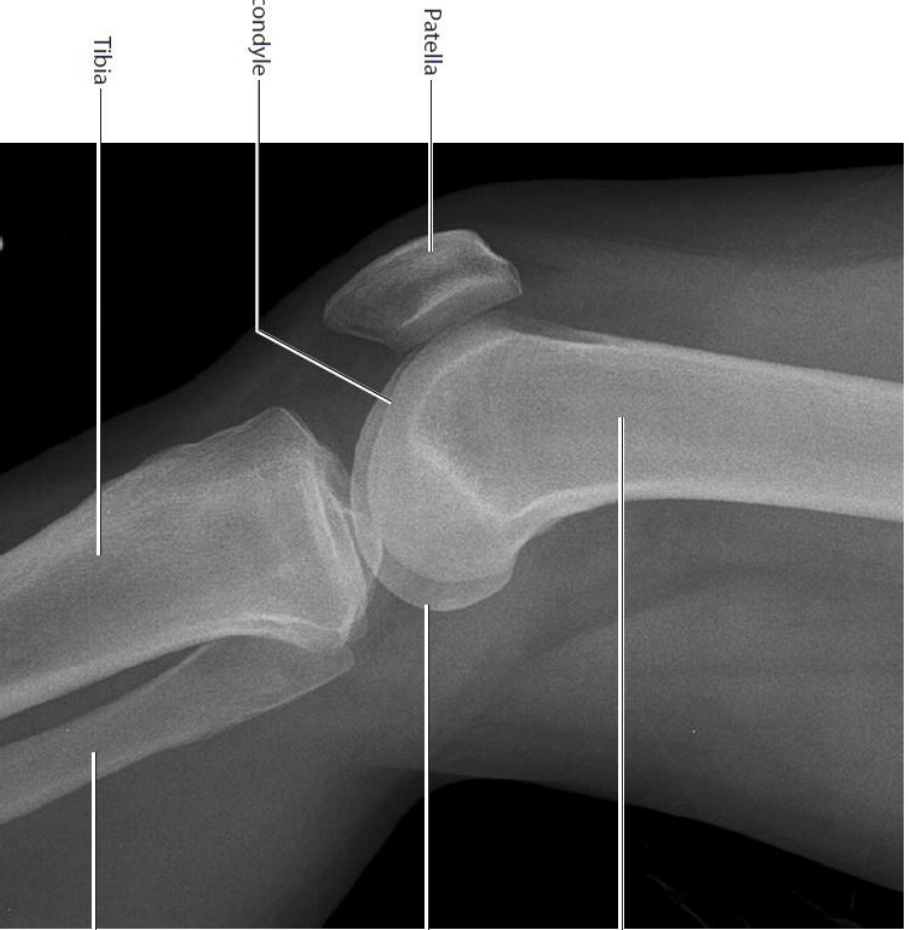


Patellar Movement

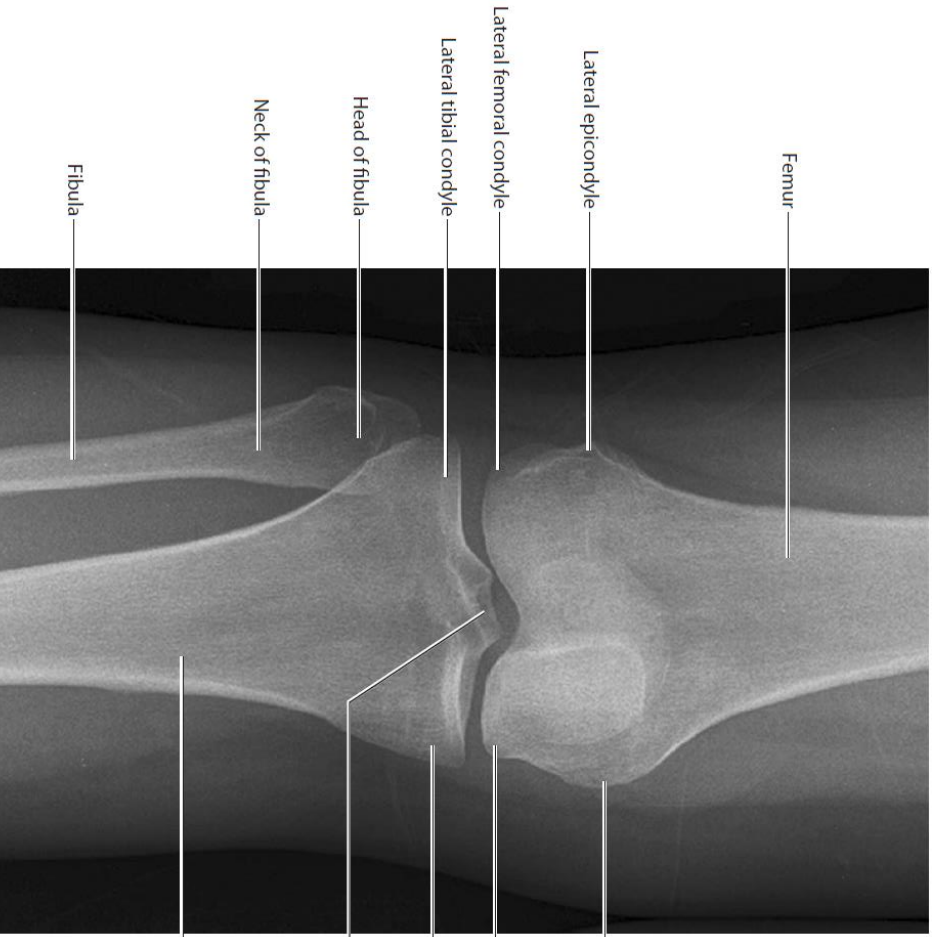
Knee Joint X-rays



Superior view of the flexed knee

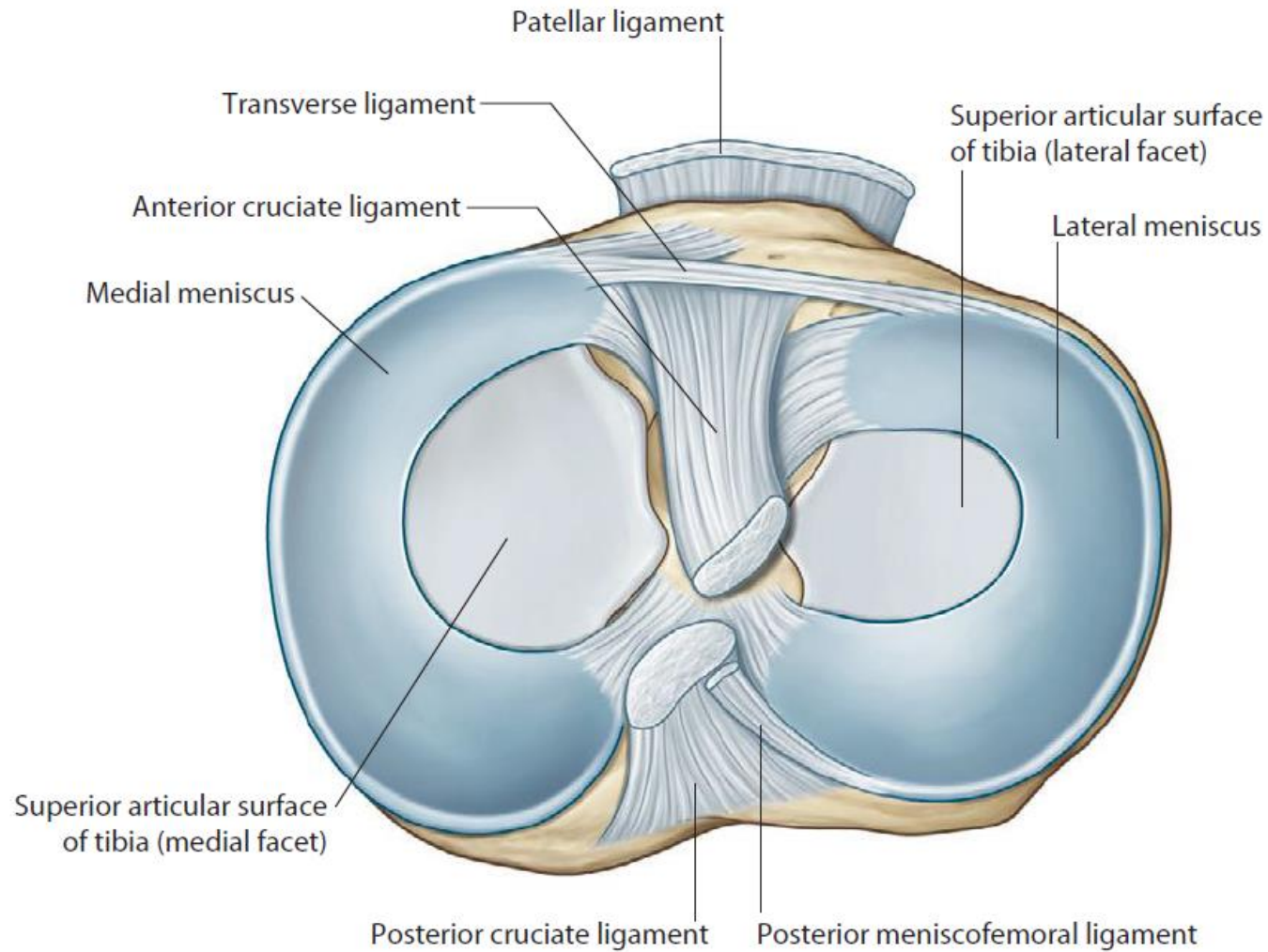


Normal knee joint.
Radiograph, lateral view

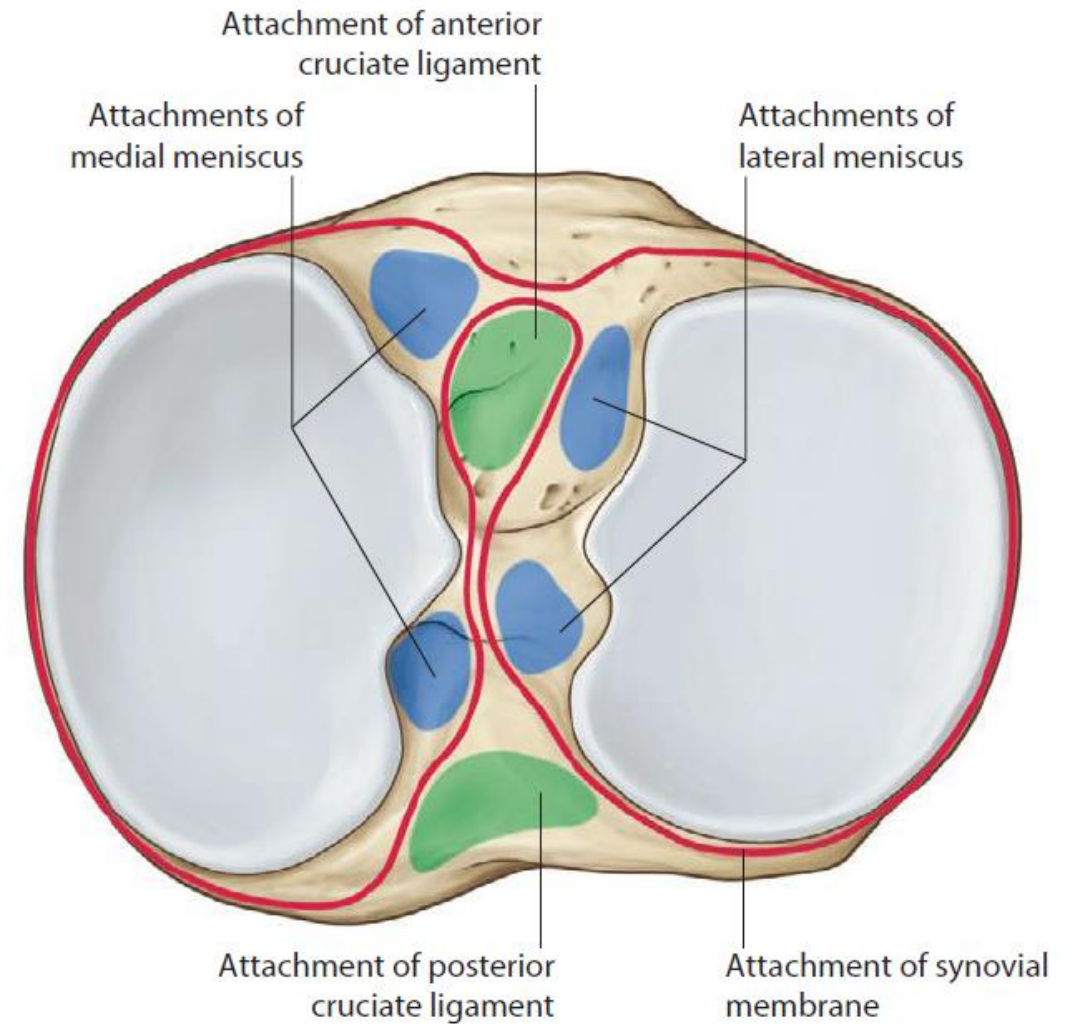


Normal knee joint.
Radiograph, AP view

Menisci, Ligaments, & Joint Capsule

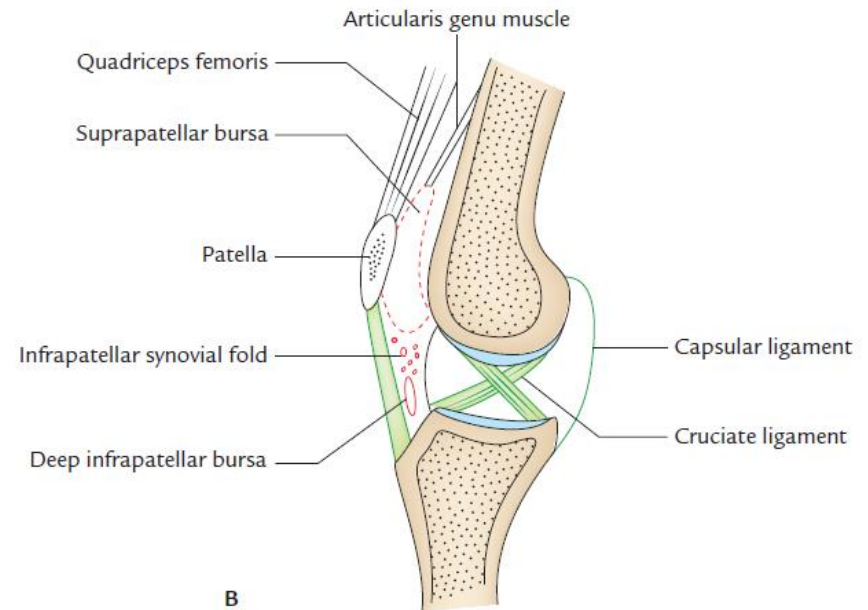
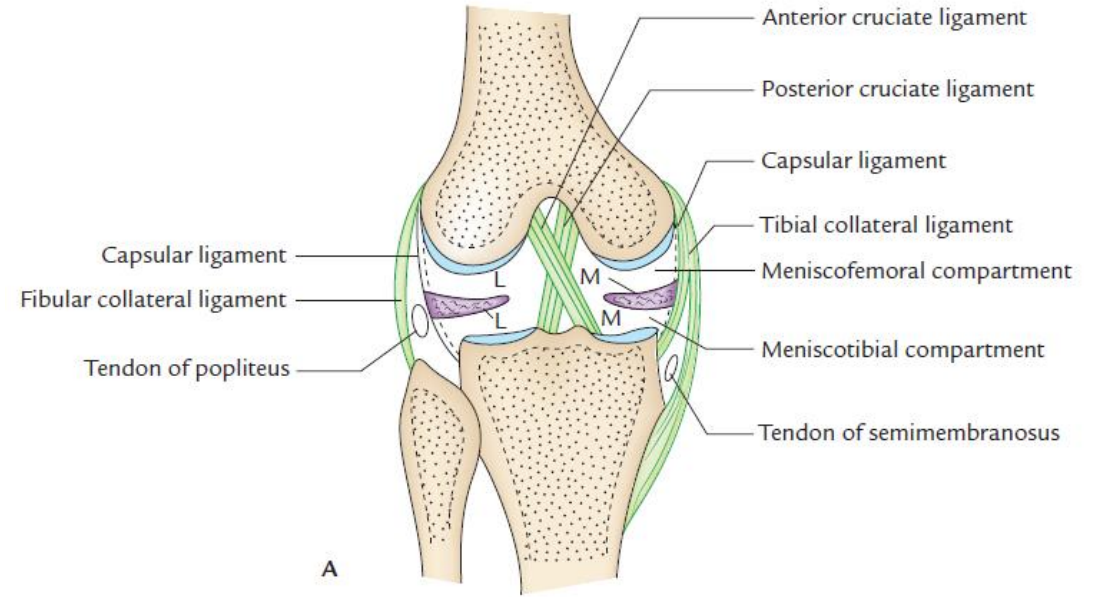
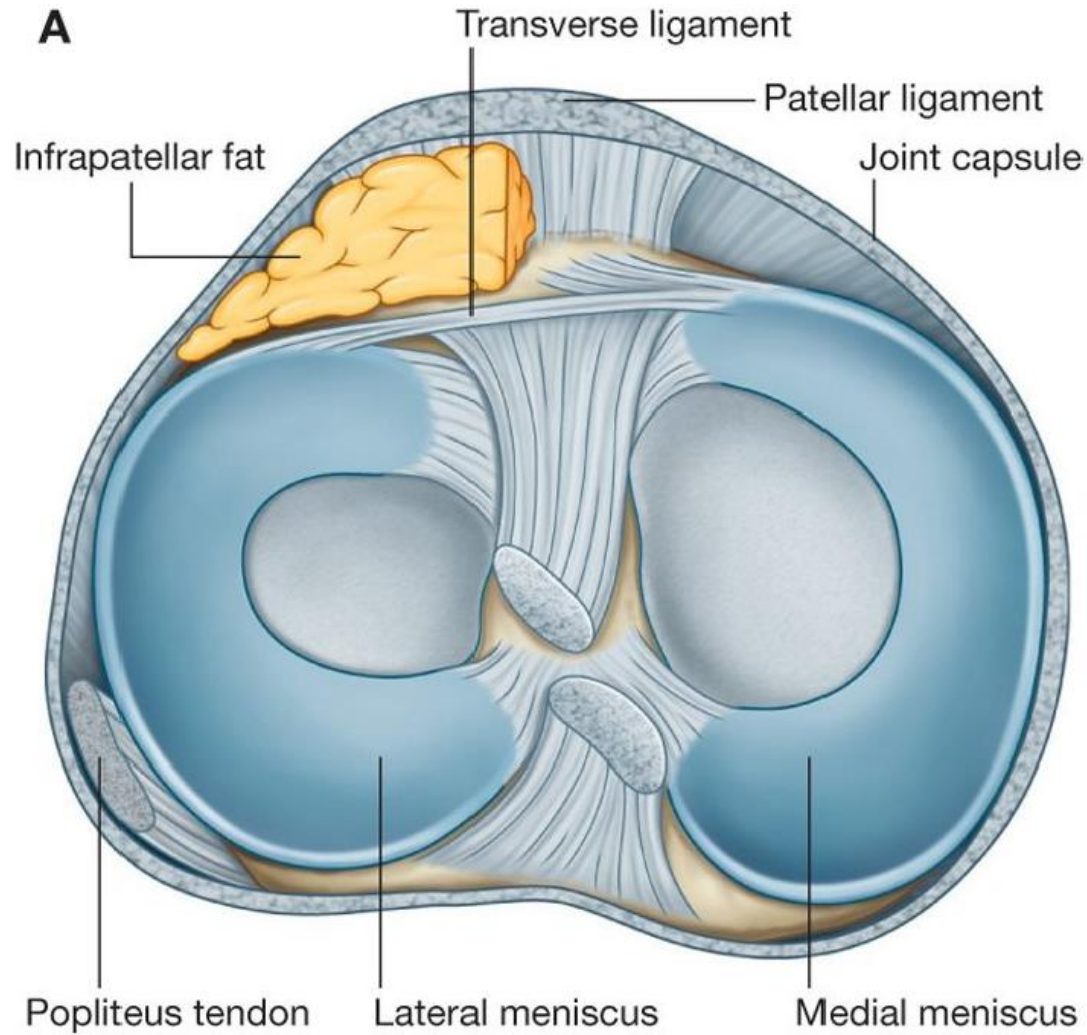


**Menisci of the right knee joint.
(superior view)**

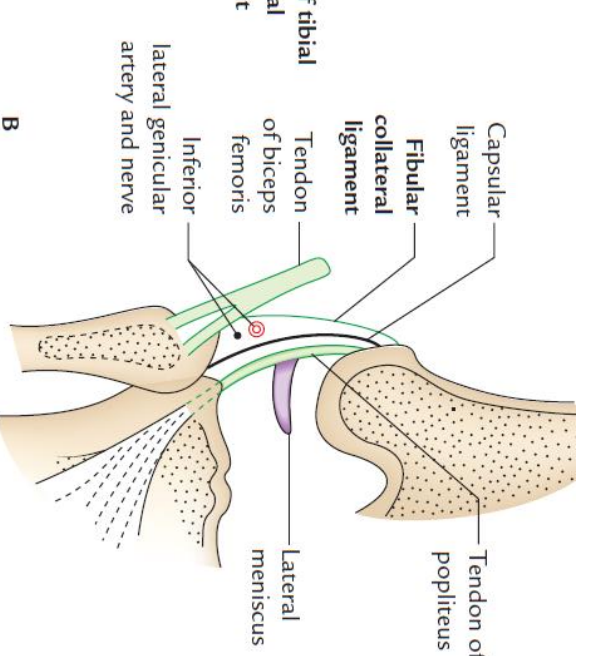
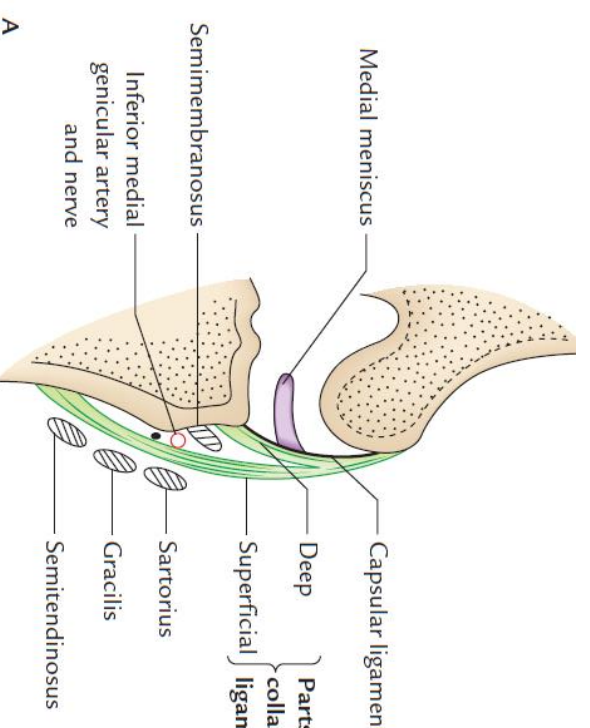
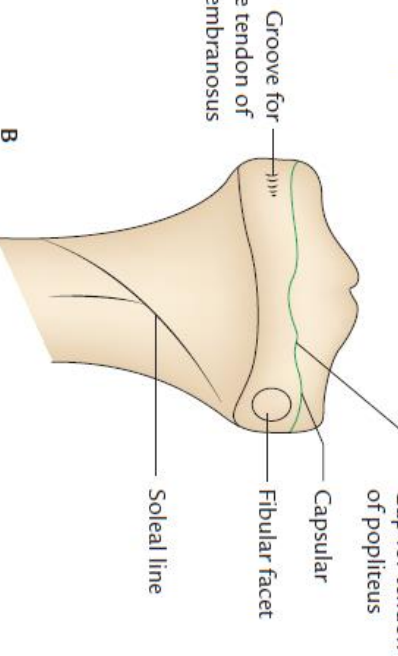
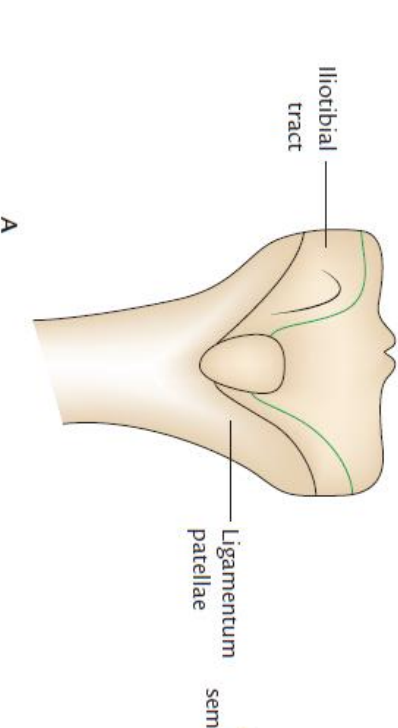
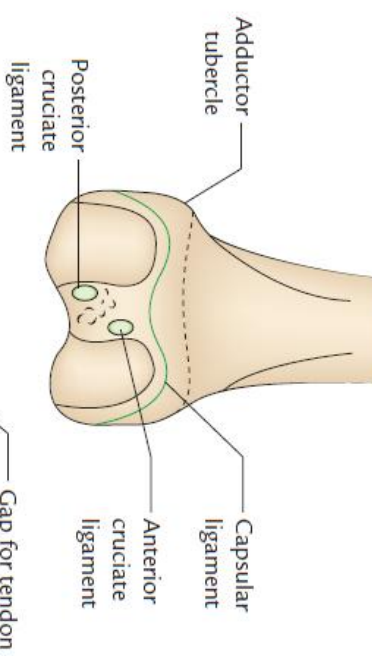
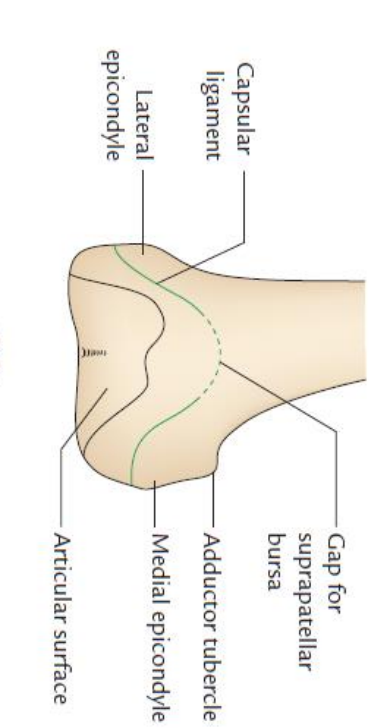
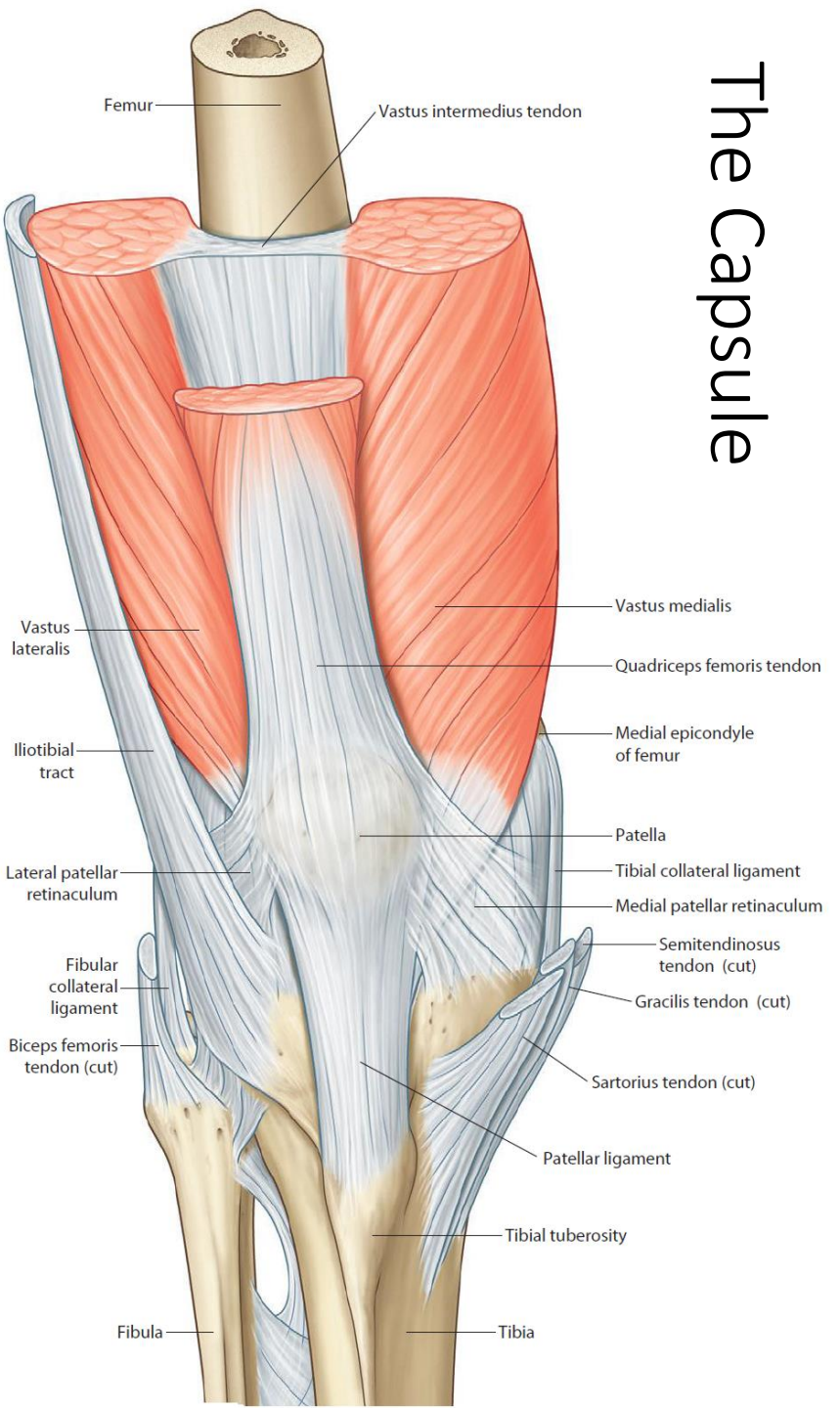


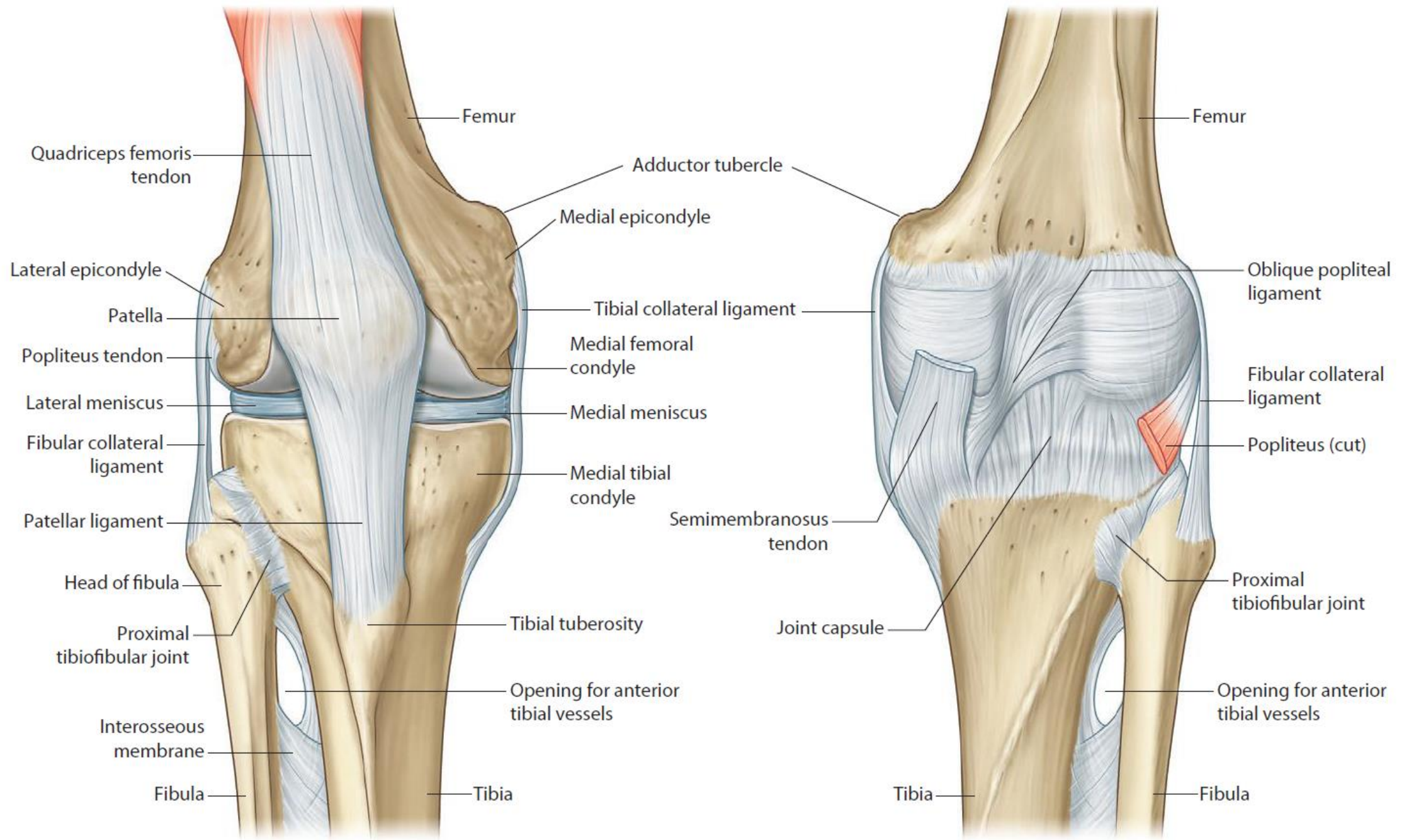
**Attachments of menisci, cruciate ligaments, and
synovial membrane of the right tibia.
(superior view)**

Menisci, Ligaments, & Joint Capsule



The Capsule





Quadriceps femoris tendon

Lateral epicondyle

Patella

Popliteus tendon

Lateral meniscus

Fibular collateral ligament

Patellar ligament

Head of fibula

Proximal tibiofibular joint

Interosseous membrane

Fibula

Femur

Medial epicondyle

Tibial collateral ligament

Medial femoral condyle

Medial meniscus

Medial tibial condyle

Tibial tuberosity

Opening for anterior tibial vessels

Tibia

Adductor tubercle

Semimembranosus tendon

Joint capsule

Tibia

Femur

Oblique popliteal ligament

Fibular collateral ligament

Popliteus (cut)

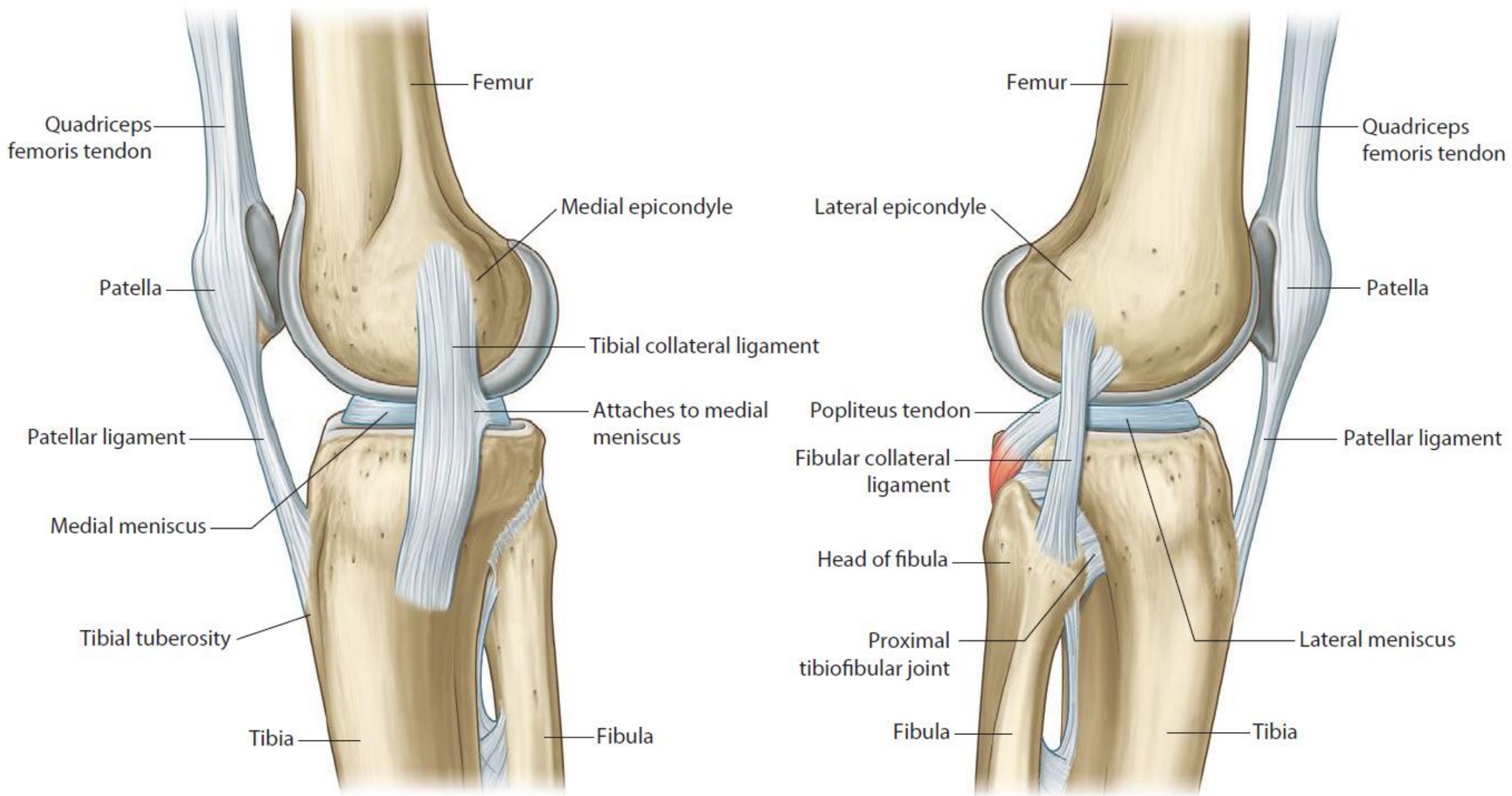
Proximal tibiofibular joint

Opening for anterior tibial vessels

Fibula

Anterior view

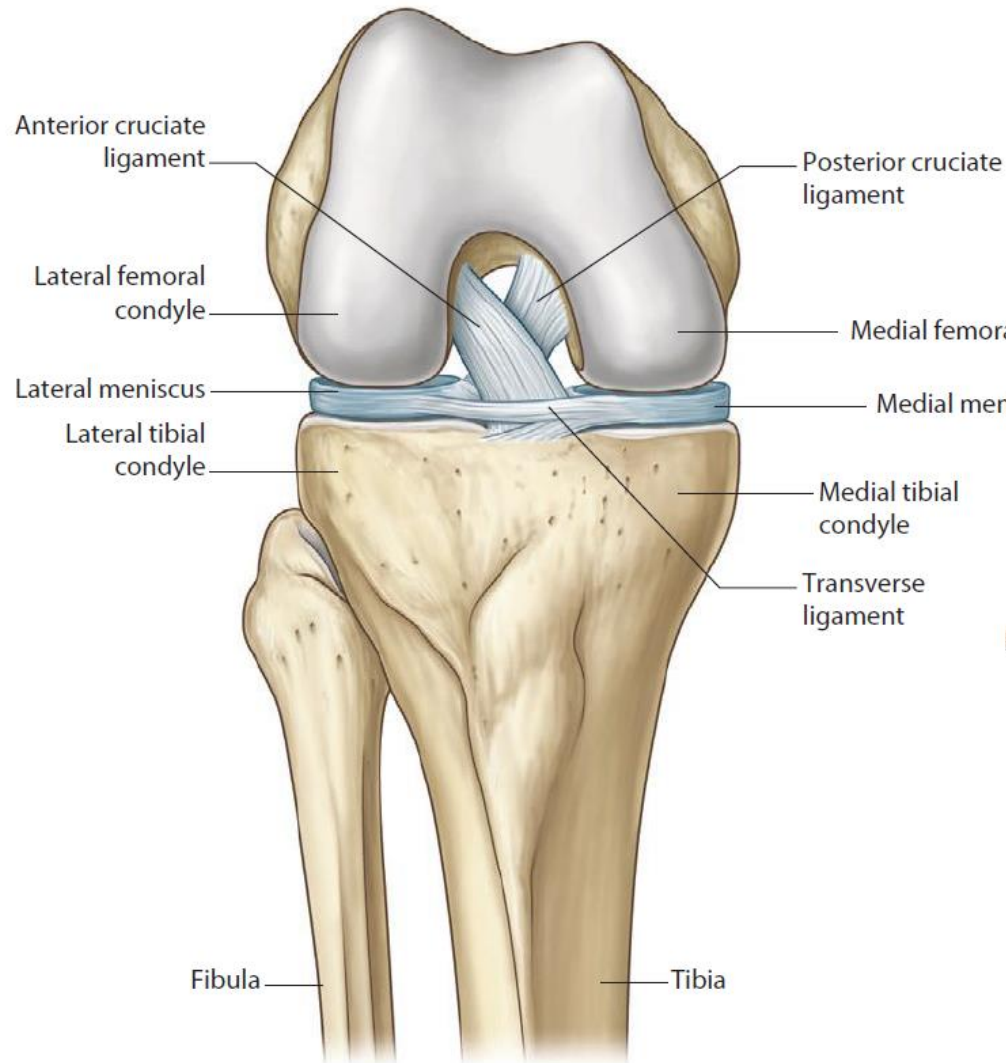
Posterior view



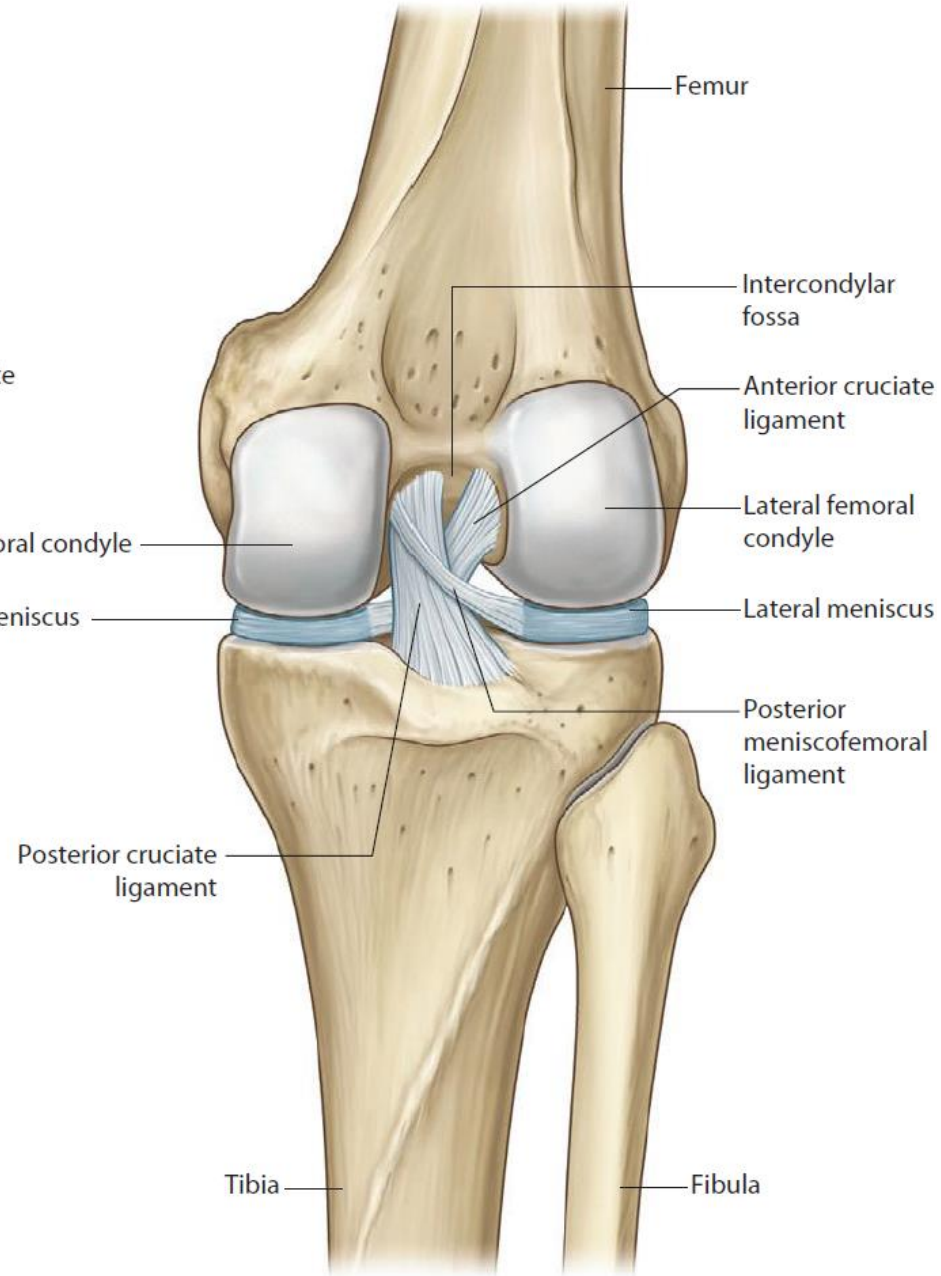
Medial view

Lateral view

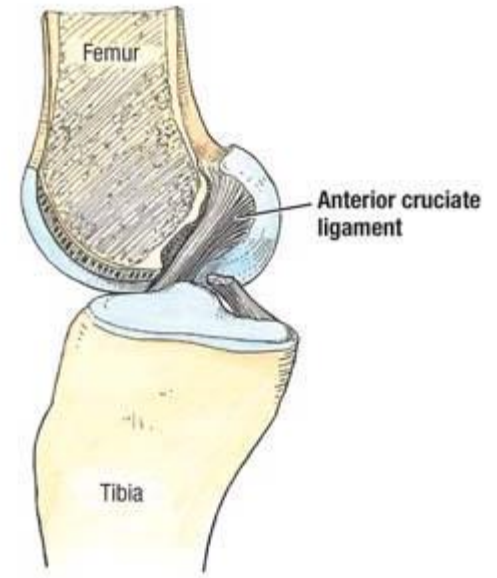
Cruciate Ligaments



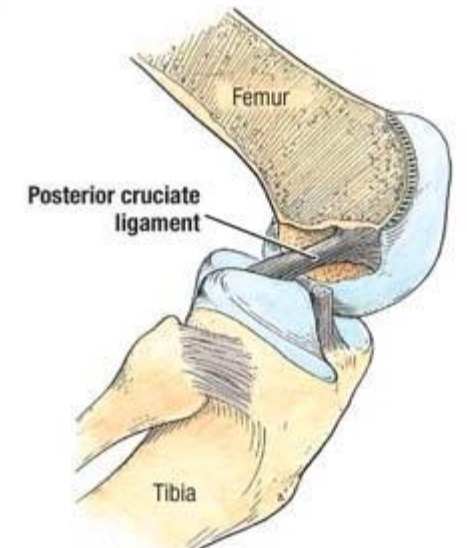
Anterior view (flexed)

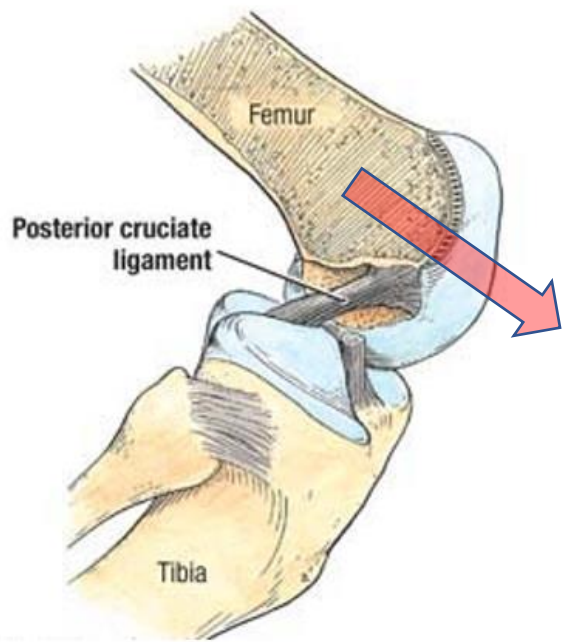
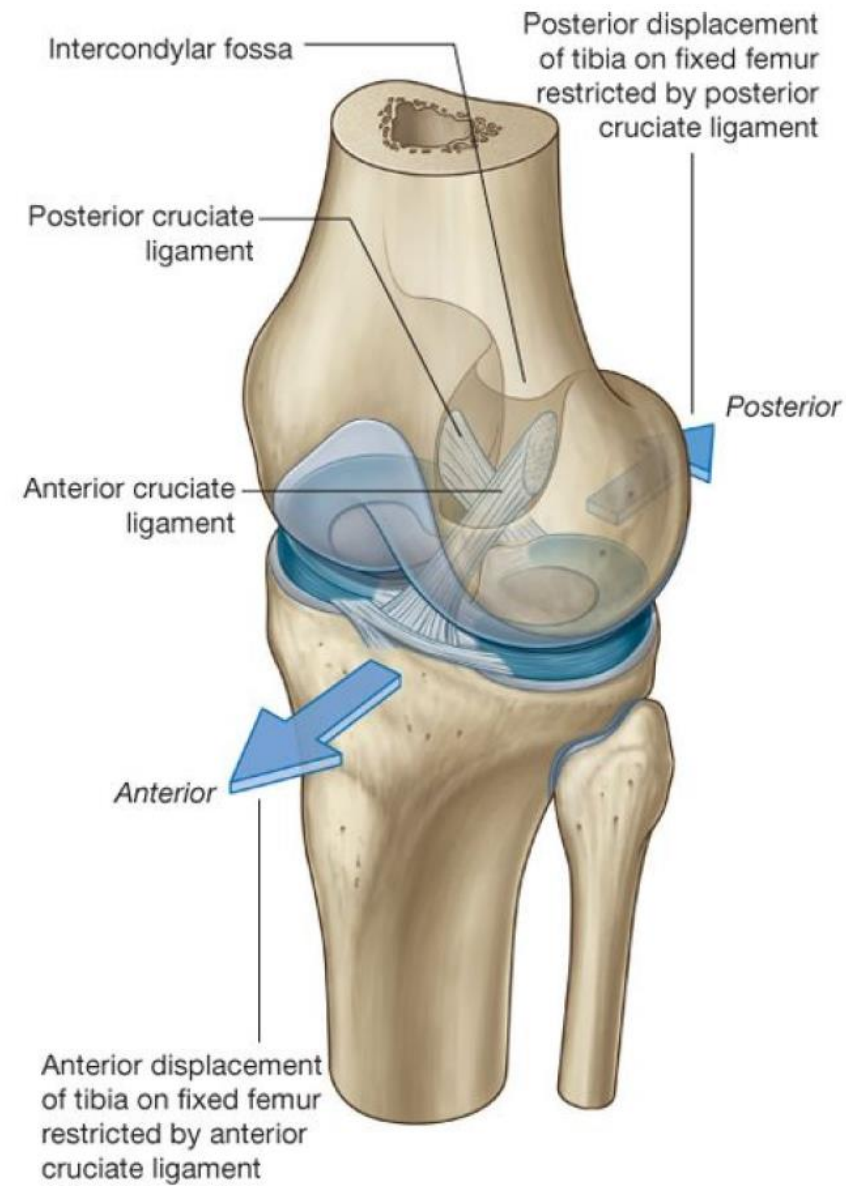
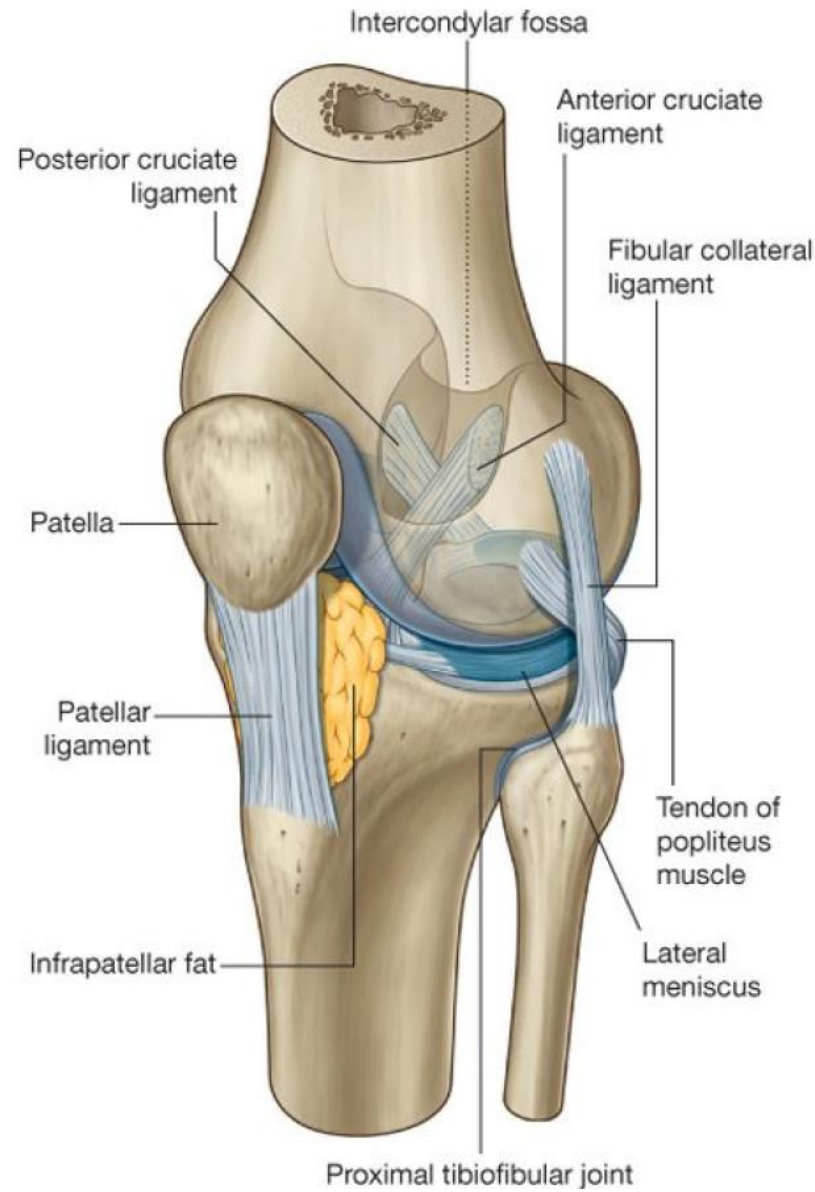


Posterior view



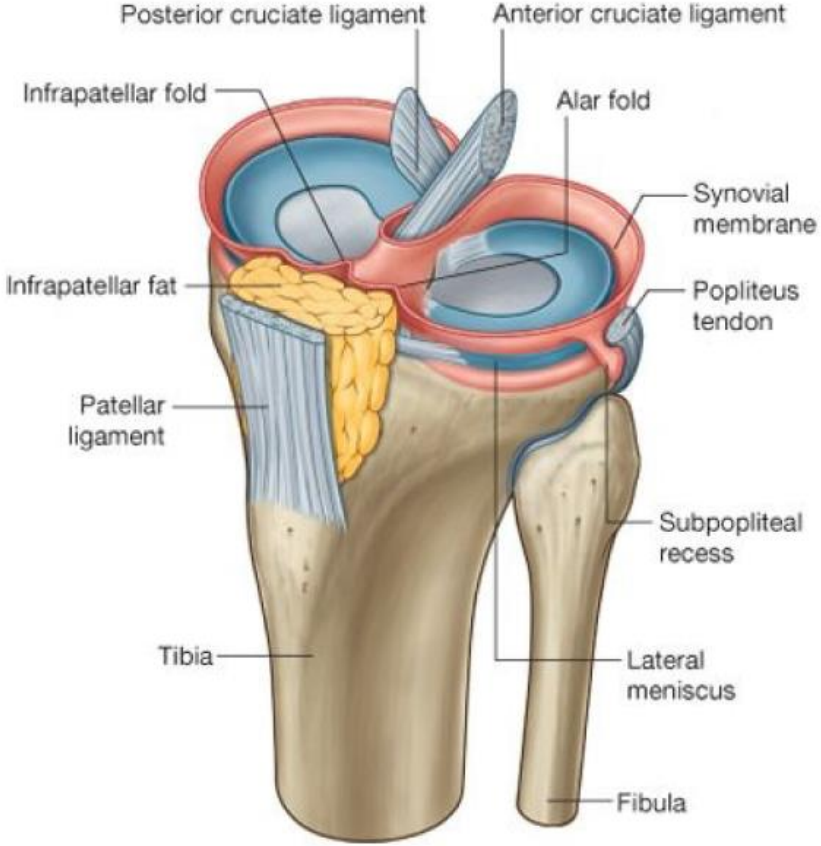
B. Medial View



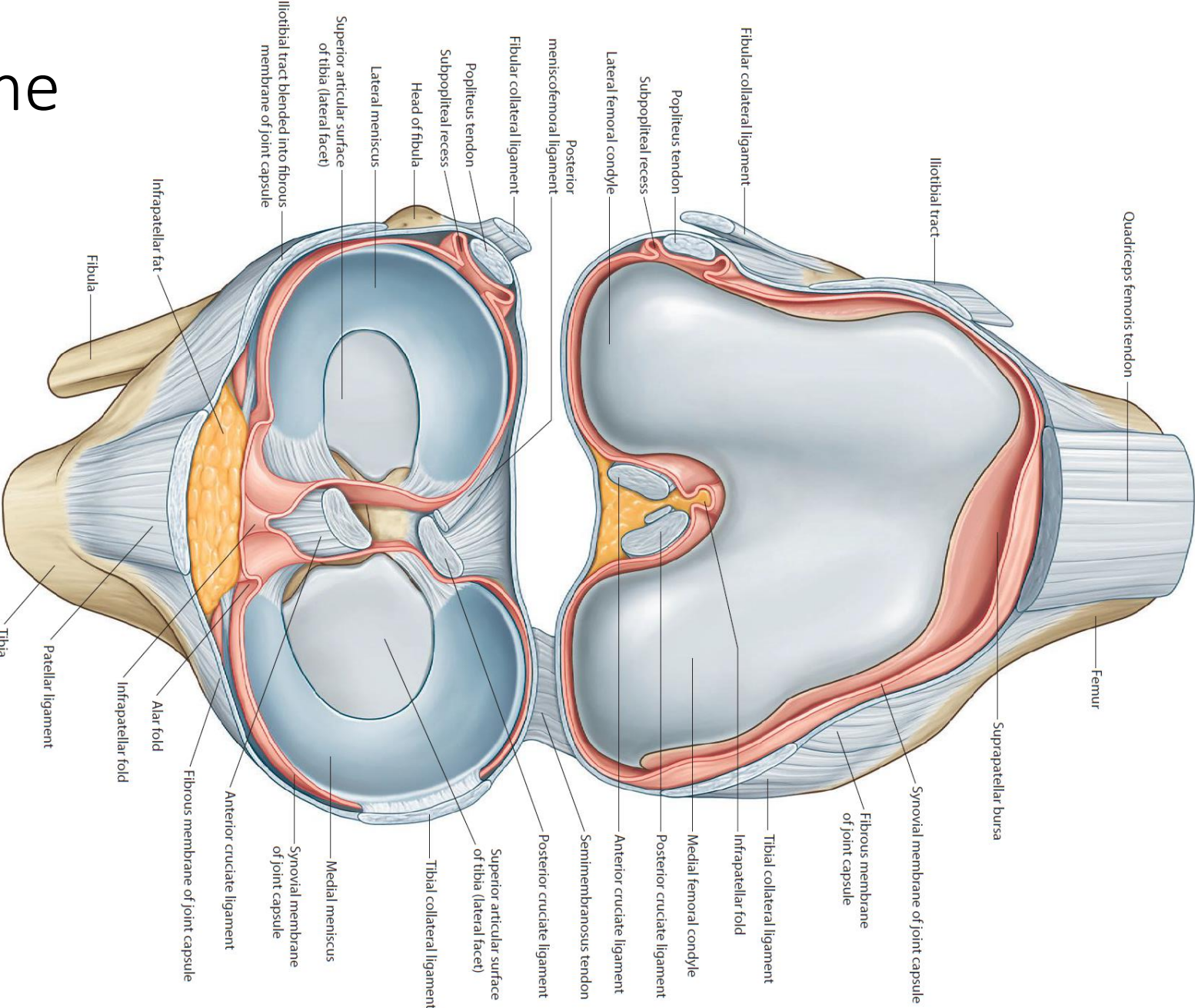


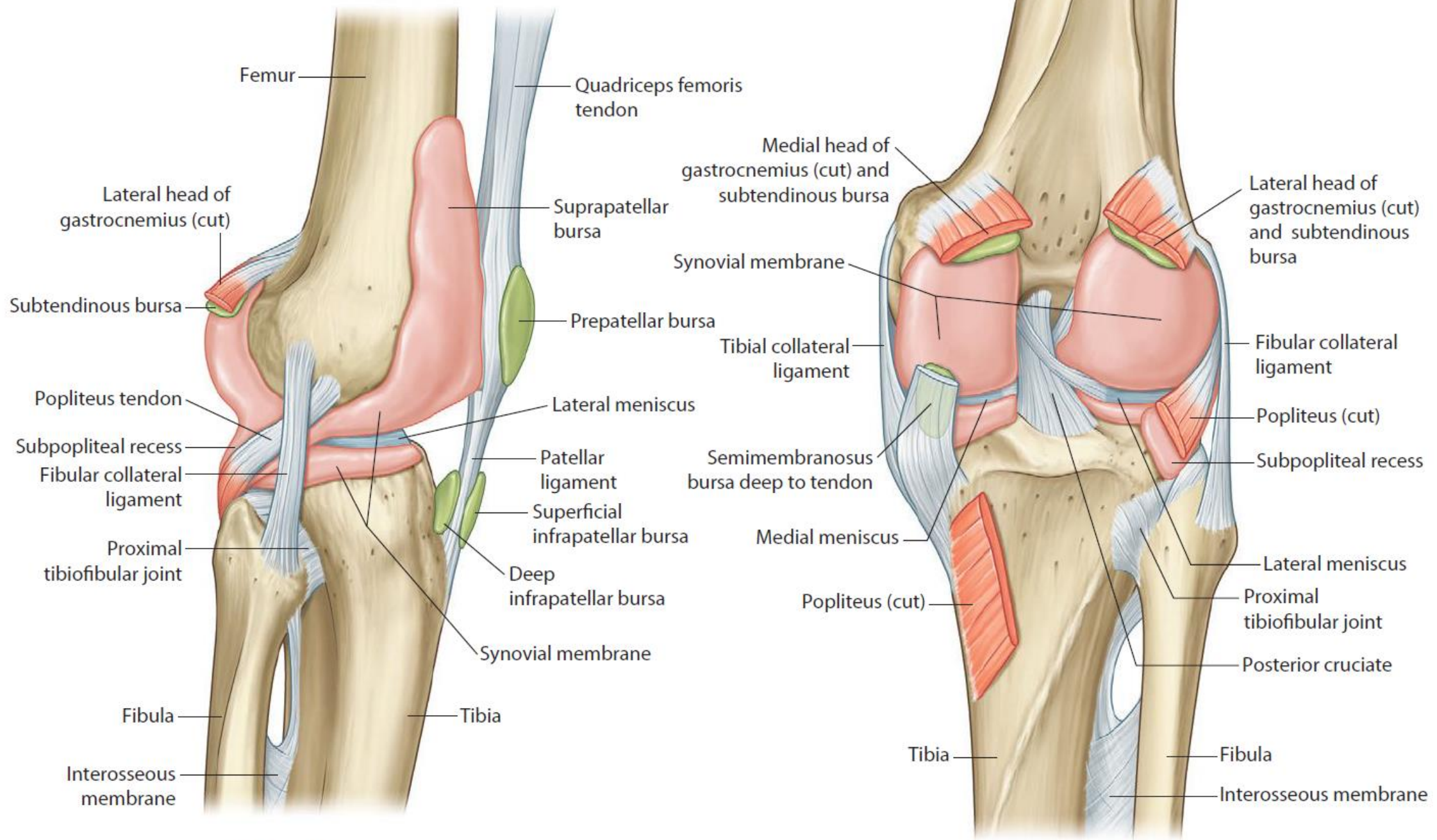
When the person stands with flexed knees (like in the above picture), the body weight pushes the femurs forwards & downwards over the tibias. The posterior cruciate ligament is the main factor preventing knee dislocation in this position.

The Synovial Membrane



Knee joint (anterosuperior view)





Lateral view

Posterior view

Femur

Quadriceps femoris tendon

Lateral head of gastrocnemius (cut)

Suprapatellar bursa

Subtendinous bursa

Prepatellar bursa

Popliteus tendon

Lateral meniscus

Subpopliteal recess

Patellar ligament

Fibular collateral ligament

Superficial infrapatellar bursa

Proximal tibiofibular joint

Deep infrapatellar bursa

Synovial membrane

Fibula

Tibia

Interosseous membrane

Medial head of gastrocnemius (cut) and subtendinous bursa

Synovial membrane

Tibial collateral ligament

Semimembranosus bursa deep to tendon

Medial meniscus

Popliteus (cut)

Tibia

Lateral head of gastrocnemius (cut) and subtendinous bursa

Fibular collateral ligament

Popliteus (cut)

Subpopliteal recess

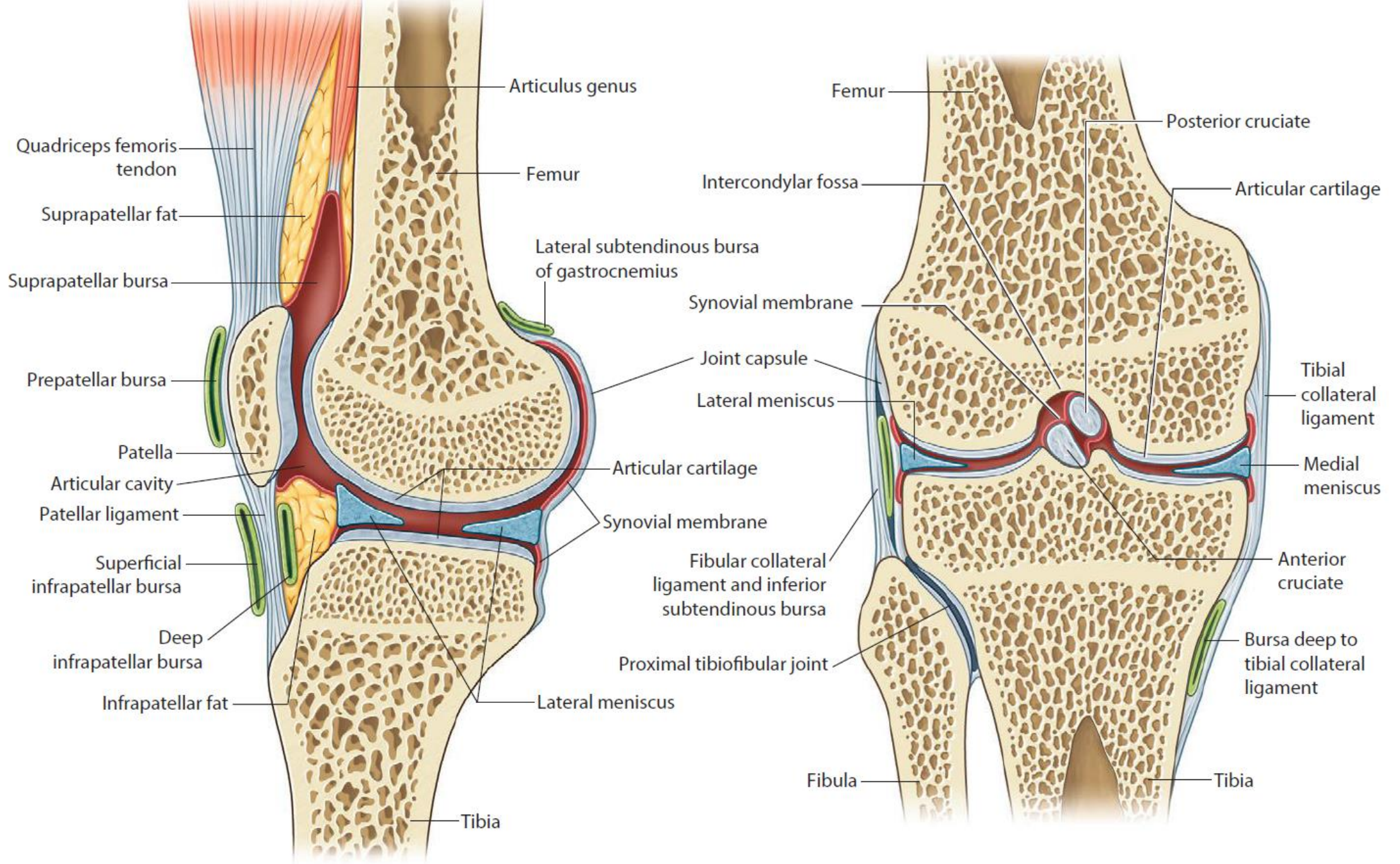
Lateral meniscus

Proximal tibiofibular joint

Posterior cruciate

Fibula

Interosseous membrane



Articulus genus
 Femur
 Lateral subtendinous bursa of gastrocnemius
 Joint capsule
 Lateral meniscus
 Articular cartilage
 Synovial membrane
 Fibular collateral ligament and inferior subtendinous bursa
 Proximal tibiofibular joint
 Lateral meniscus
 Tibia

Quadriceps femoris tendon
 Suprapatellar fat
 Suprapatellar bursa
 Prepatellar bursa
 Patella
 Articular cavity
 Patellar ligament
 Superficial infrapatellar bursa
 Deep infrapatellar bursa
 Infrapatellar fat

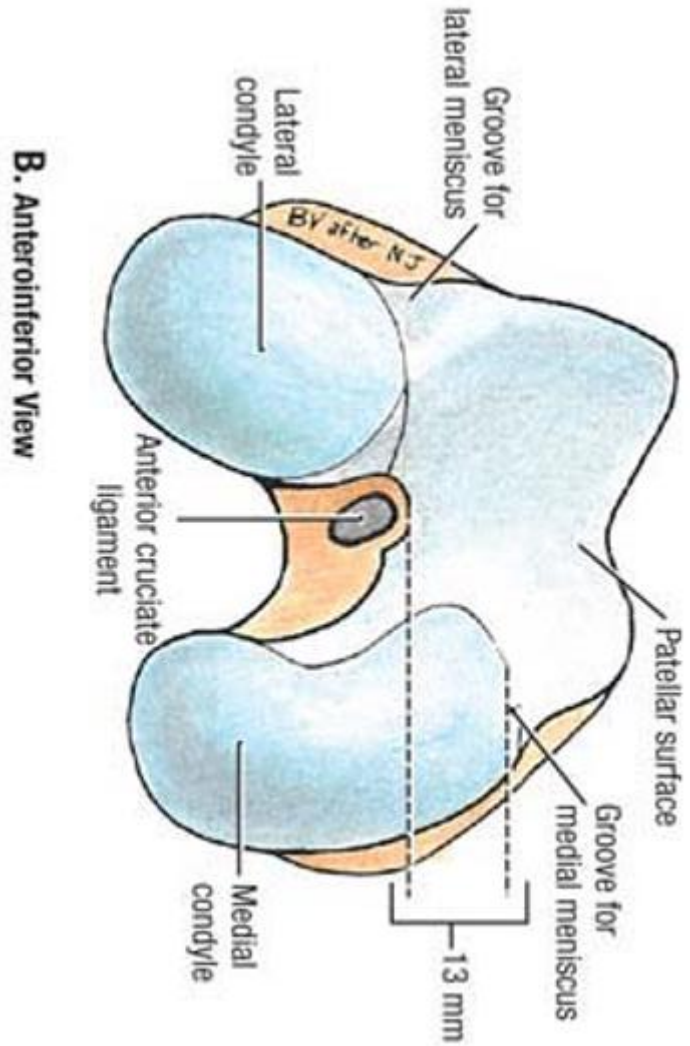
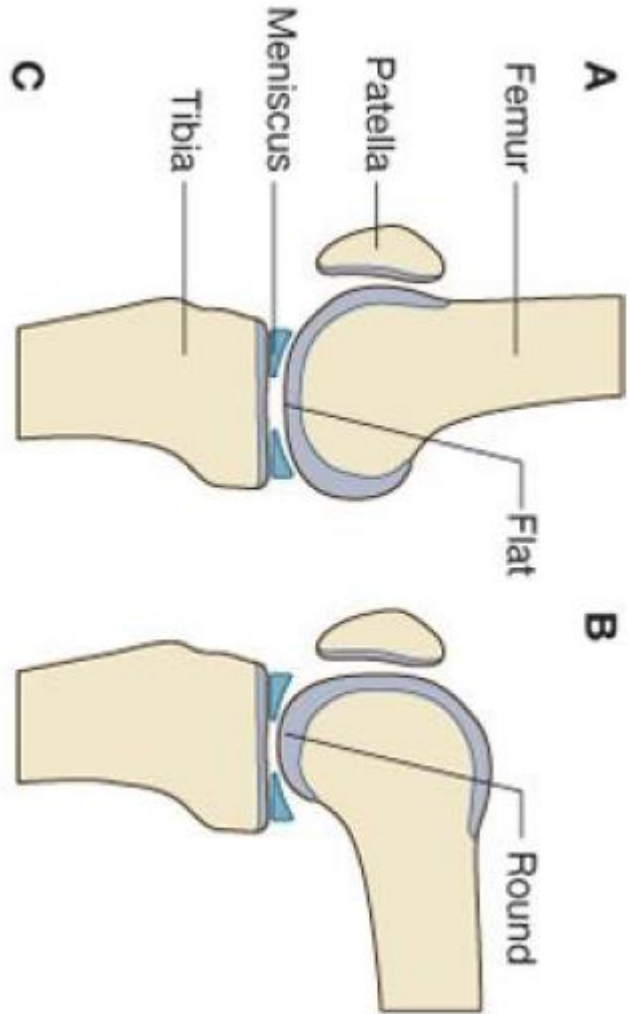
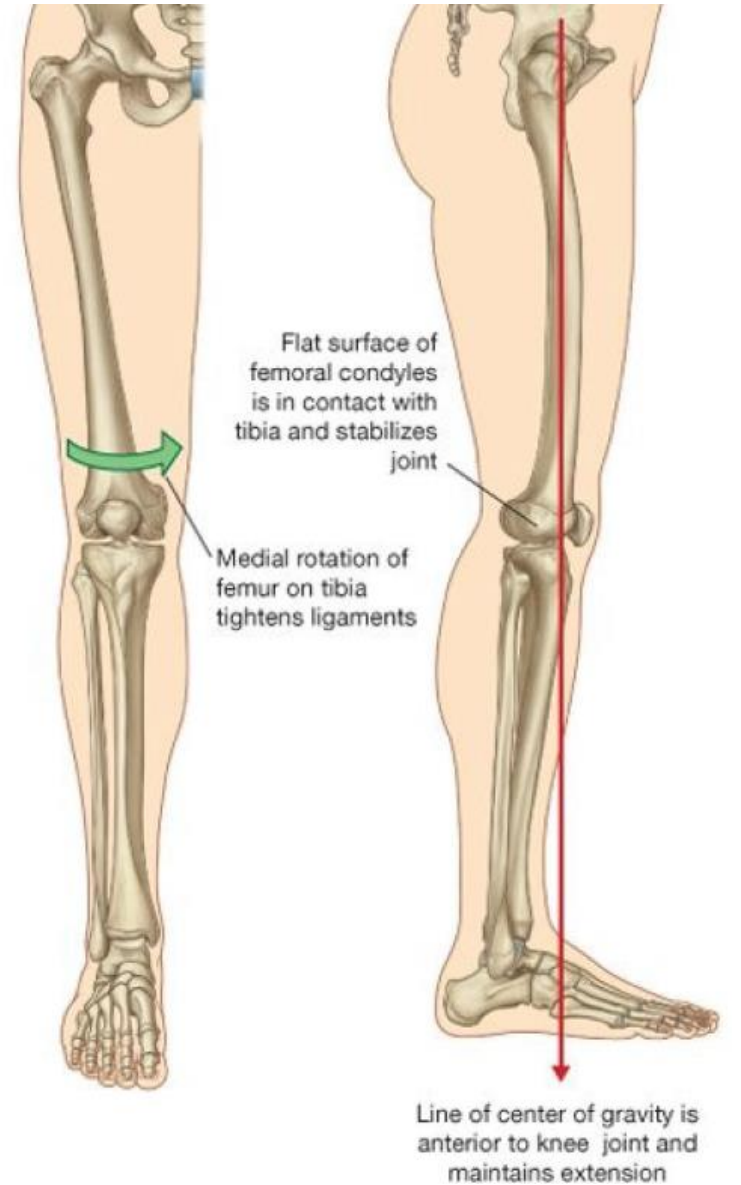
Femur
 Intercondylar fossa
 Synovial membrane
 Joint capsule
 Lateral meniscus
 Fibular collateral ligament and inferior subtendinous bursa
 Proximal tibiofibular joint
 Fibula
 Tibia

Posterior cruciate
 Articular cartilage
 Tibial collateral ligament
 Medial meniscus
 Anterior cruciate
 Bursa deep to tibial collateral ligament

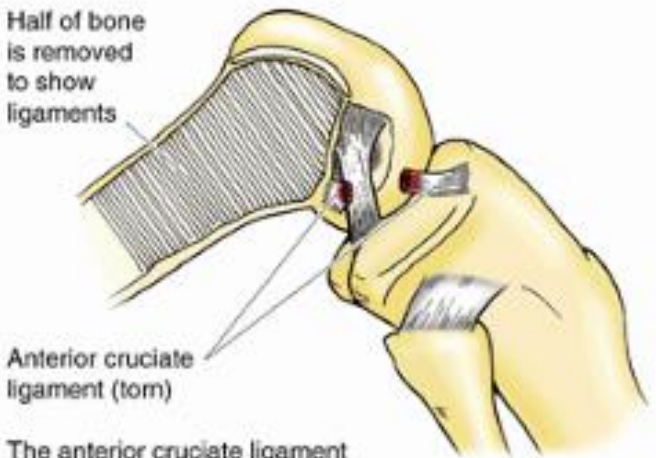
Paramedian section through knee joint

Coronal section through knee joint (anterior view)

Locking & Unlocking of the Knee



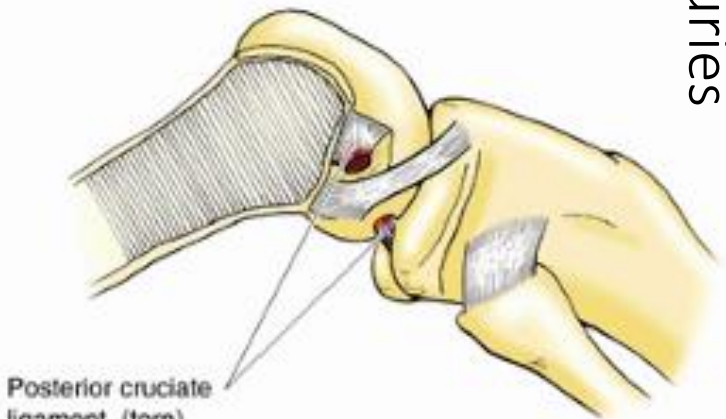
Cruciate Ligaments Injuries



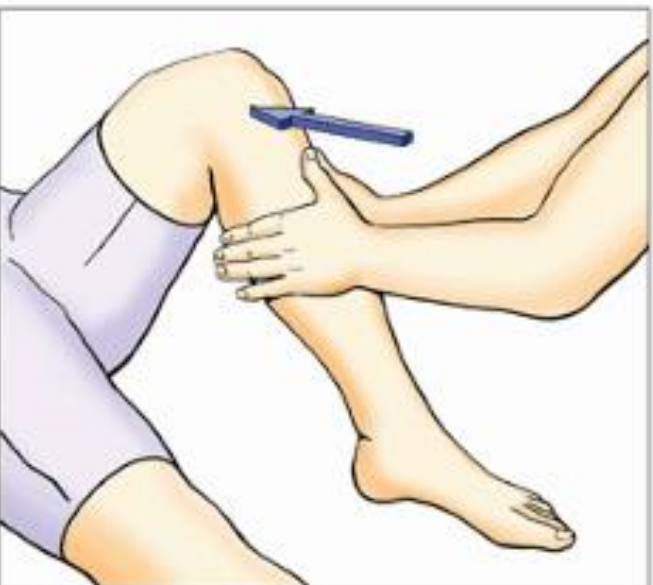
The anterior cruciate ligament prevents the femur from sliding posteriorly on the tibia and hyperextension of the knee and limits medial rotation of the femur when the foot is on the ground, and the leg is flexed.



(B) Anterior drawer sign (ACL)



The posterior cruciate ligament prevents the femur from sliding anteriorly on the tibia, particularly when the knee is flexed.

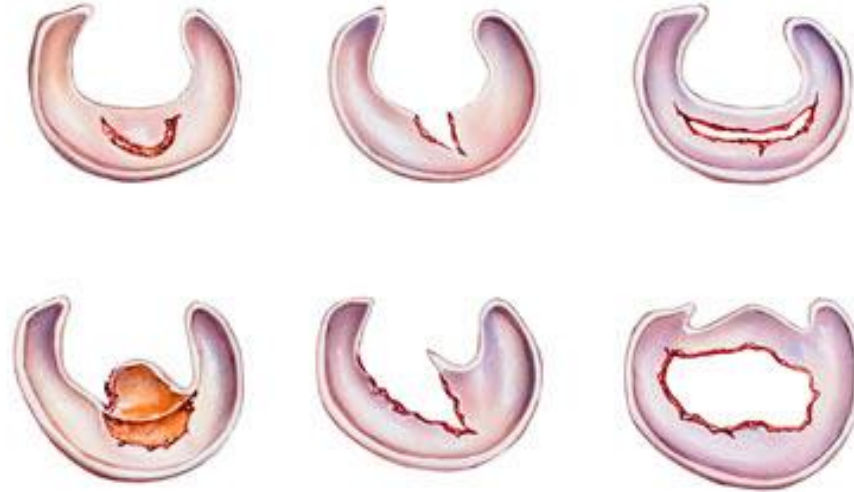


(C) Posterior drawer sign (PCL)

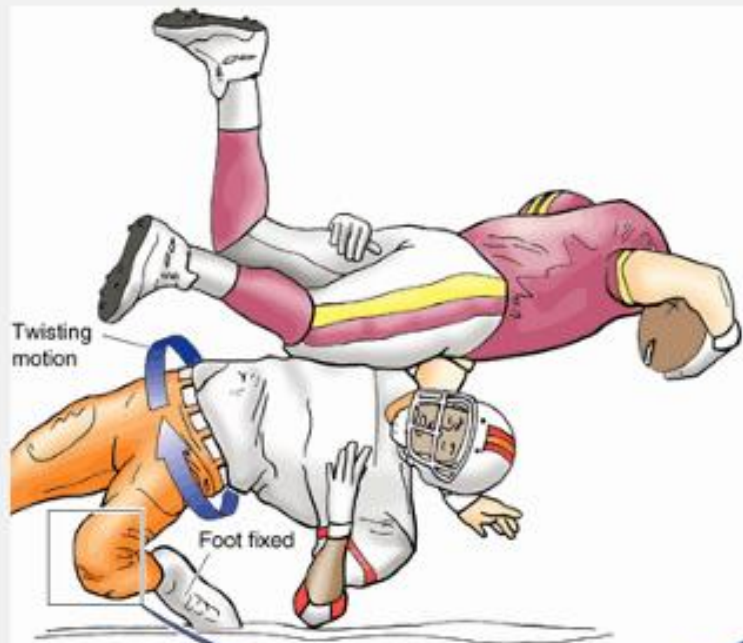
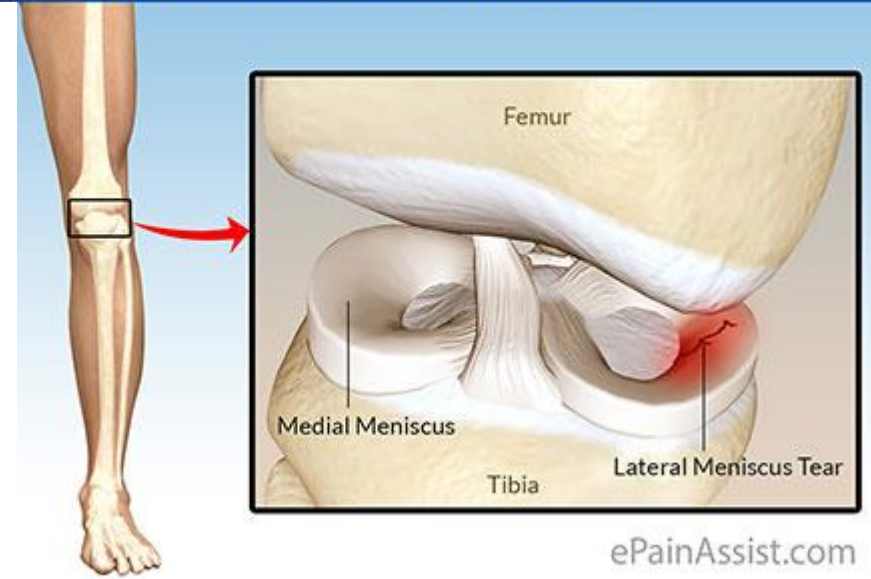
Knee Joint Movements

Movement	Chief Muscles	Accessory Muscles
Flexion	Biceps femoris Semimembranosus Semitendinosus	Sartorius Gracilis Gastrocnemius Plantaris Popliteus
Extension	Quadriceps femoris	
Medial rotation	Semitendinosus Semimembranosus Popliteus	Sartorius Gracilis
Lateral rotation	Biceps femoris	

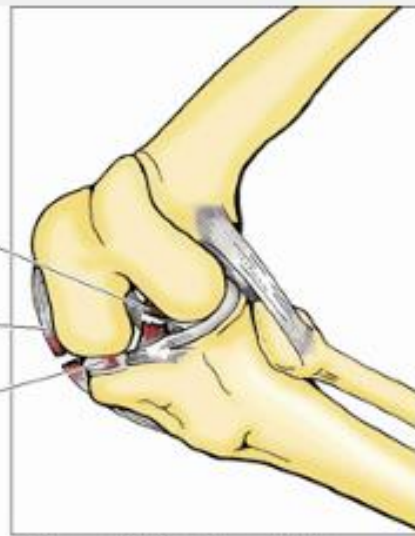
Meniscal Injuries



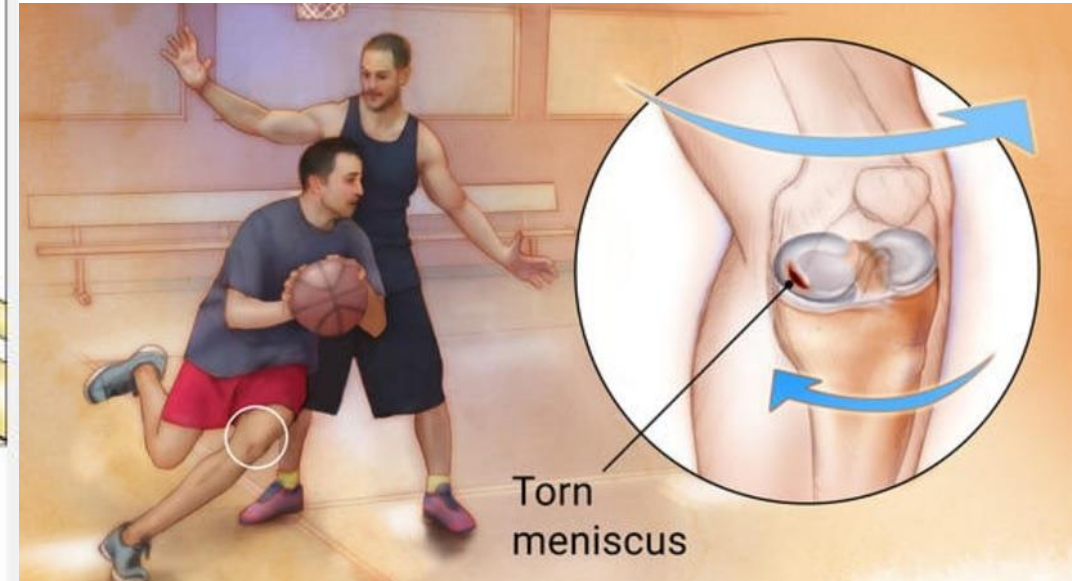
Lateral Meniscus Tear of Knee Joint



- Anterior cruciate ligament (torn)
- Tibial collateral ligament (torn)
- Medial meniscus (torn)



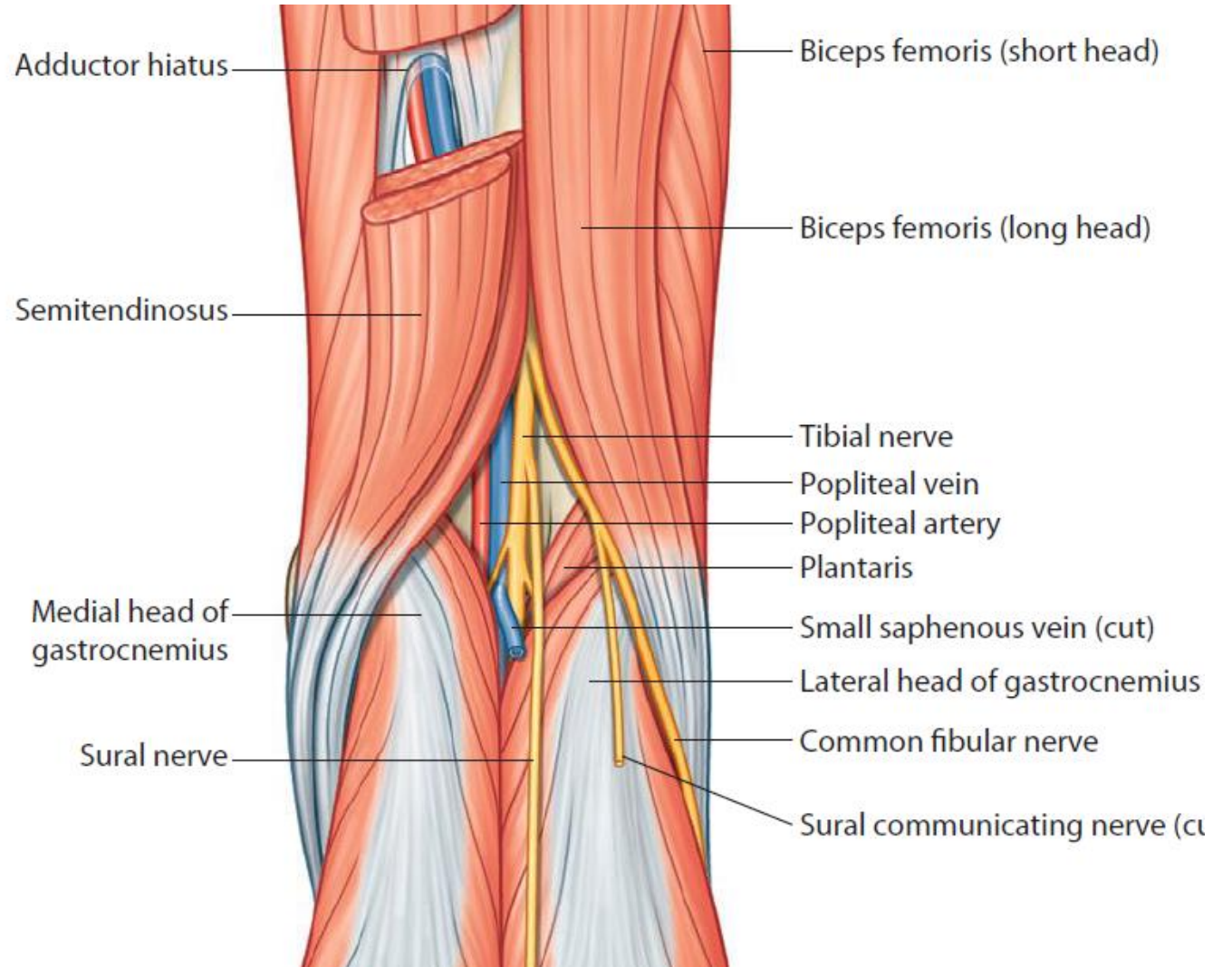
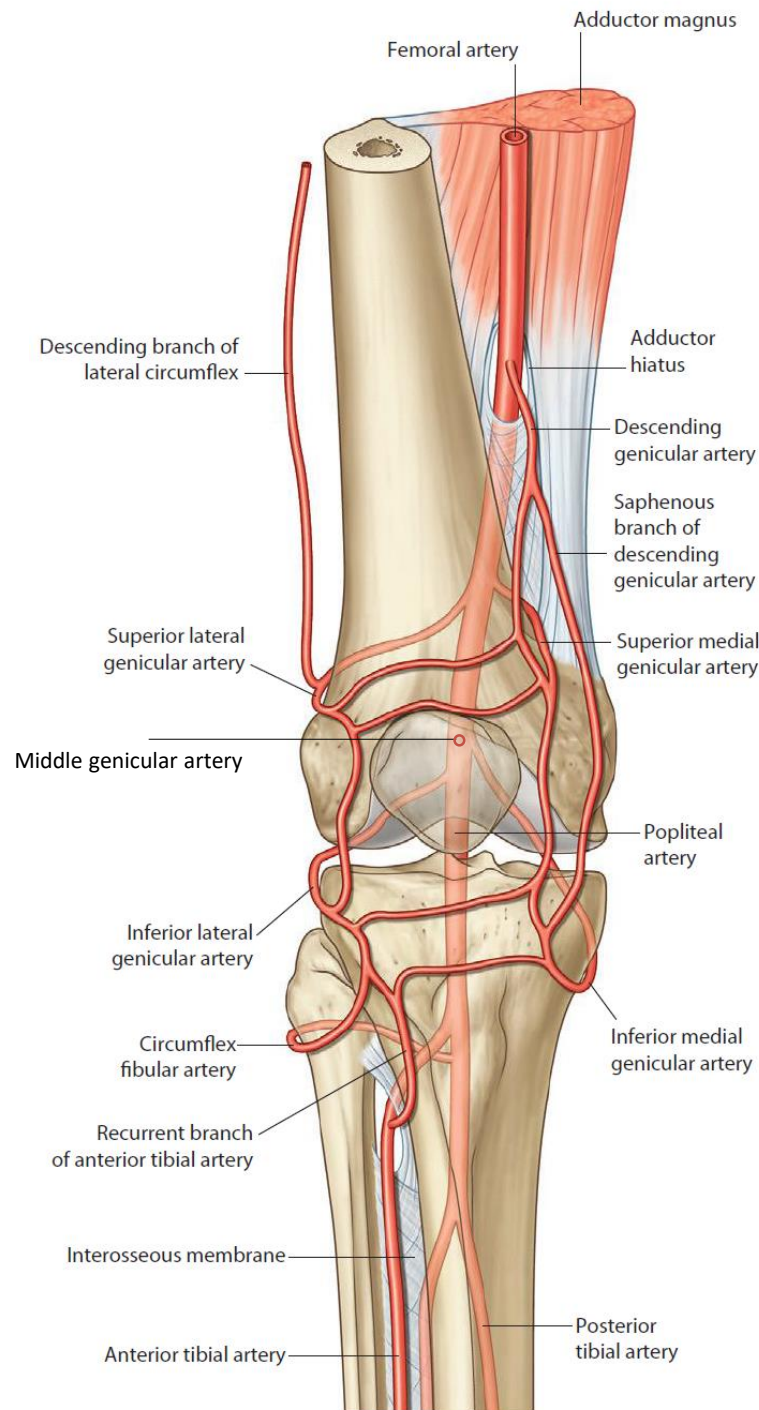
"Unhappy triad" of knee injuries



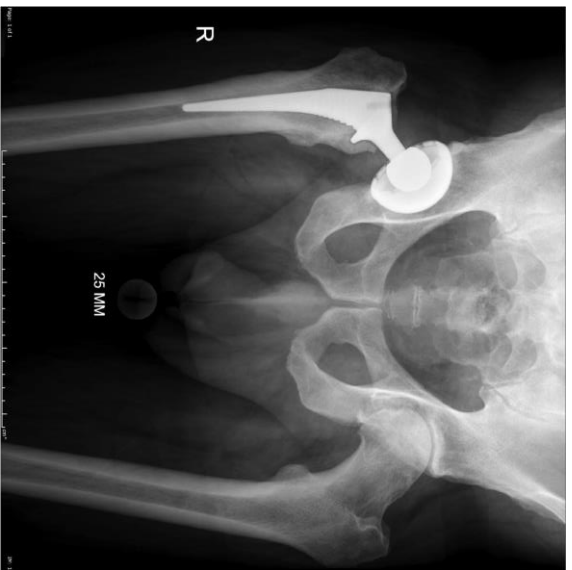
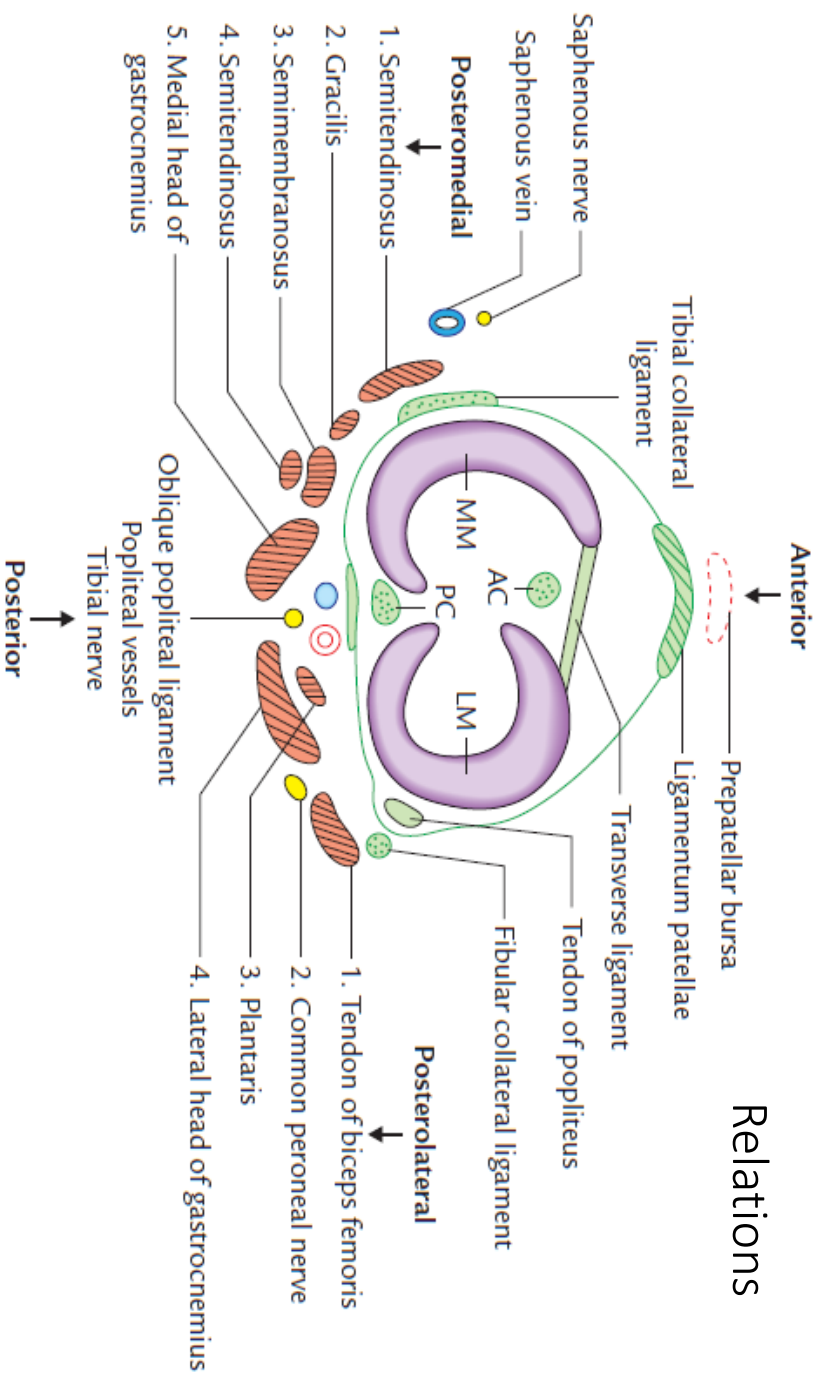
Torn meniscus

(A)

Vessels & Nerves



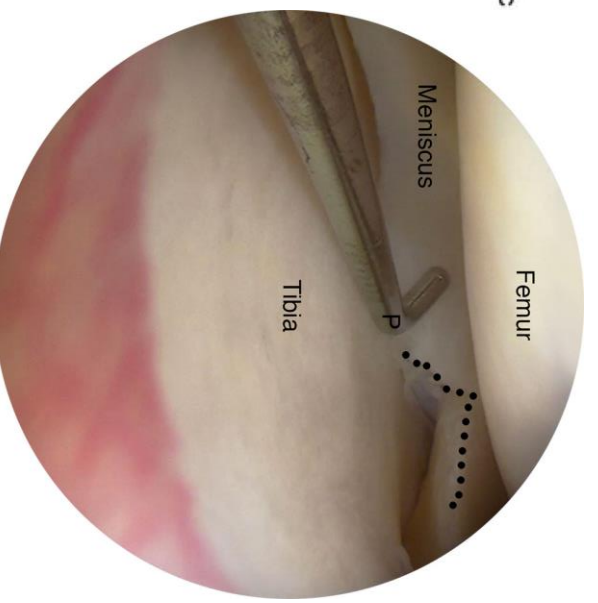
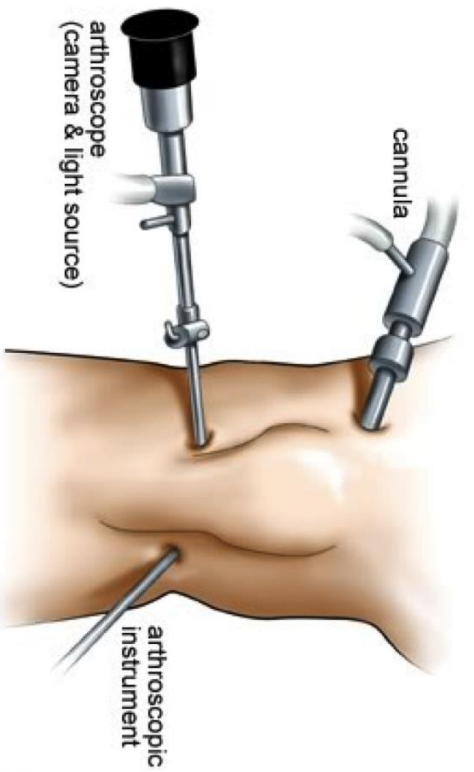
Relations



Prosthetic hip



Prosthetic knee



Knee Arthroscopy