POPLITEAL FOSSA - Nerves

- **Tibial Nerve** - superficial, midline
  - Medial branch to the lateral side - except med. gastrocnemius
  - Sural cutaneous n. - accompanies small saphenous v.

- **Common Peroneal Nerve**
  - Lateral side along biceps femoris
  - Divides into superficial and deep peroneal nerves below head of fibula.
  - Cutaneous branches: lat. sural & sural communicating

Popliteal Artery & Vein

- Begins at add. Magnus
- Common fascial sheath (add. Hiatus)
- Divides into ant. & post. tibial a.
- Paired branches
  - Med. & lat. sup. genicular a.
  - Med. & lat. inf. genicular a.
  - Medial genicular - unpaired
- Collateral circulation
  - Descending genicular a.
- Ant. Tibial a.
- Peroneal Branch
**Muscles**

- Surrounded by powerful muscles that move and stabilize the joint
- **Compartments**
  - Anterior - extensors
  - Posterior - flexors
  - Medial - adductors and rotators
  - Lateral - abductors and rotators
- Specilized muscles/arrangements
  - Popliteus m. - lat. condyle of femur (inside joint capsule) to tibia (above soleal line)
  - Pes Anserinus - 3 muscles with common tendon from different compartments & nerves

**KNEE JOINT - General**

- Largest and most complicated joint
- **Compartments**
  - Med & Lat - condyles of femur & tibia
  - Ant - patella & femur
  - Upper & Lower - menisci
- **Movements**
  - Hinge (Flexion & Extension)
  - Slight axial rotation
- Strength of joint depends on strength of ligaments and muscles
- In full extension all ligaments are taut!
KNEE JOINT - Articulations

- Patellar - Patella (sesamoid) in contact with femur in all positions (no contact with tibia)
- Condylar - rounded condyles of femur with tibial condyles

KNEE JOINT - Extracapsular Ligaments

- Patellar ligament
  - Quadriceps tendon & Patellar tendon
- Infrapatellar fat pad
- Tibial (Med.) Collateral ligament
  - Med. epicondyle to femur (above) to upper 1/4 of shaft of tibia (below)
  - Deep fibers attached to med. meniscus
  - Crossed by 3 tendons (Pes Anserinus): sartorius, gracilis, semitendinosus
  - Tendon of semimembranosus passes forward between 2 layers of lig.
  - Oblique popliteal lig. - passes upward from tendon
  - popliteal fascia - expansion downward and outward over muscle
- Fibular (Lat.) Collateral ligament
  - Cord-like band from lat. epicondyle to head of fibula
  - Tendon of popliteus m. deep to lig.
  - Biceps tendon superficial to lig.

KNEE JOINT - Extracapsular Ligaments

KNEE JOINT – Fibrous Capsule & Synovial Membrane

- Coronary lig.
  - Attachments of menisci to bones above and below
- Oblique popliteal lig.
  - Part of semimembranosus tendon
- Synovial memb.
  - Lines capsule except around cruciate lig.
CRUCIATE LIGAMENTS

Cord-like structures that cross each other like “X” in all directions

Named for attachment and prevent displacements of tibia

Covered in front and sides by synovial membrane (inside capsule but outside synovial cavity & fluid)

ANTERIOR cruciate ligament
- Extends upward, backward and laterally
- Tense in extension - prevents hyperextension

POSTERIOR cruciate ligament
- Extends upward, forward, and medially
- Tense in flexion
- Restricts forward roll of femoral condyles - causes condyles to spin (hinge)

MENISCI

Fibrocartilage wedges attached around periphery by coronary lig. to femur and tibia

Functions
- Deepen articular contact surfaces
- Elastic tissue helps absorb shocks
- Aids in lubrication & distribution of synovial fluid
- Horns attached at intercondylar areas
- Transverse ligament - connects ant. horns of menisci
KNEE JOINT – Menisci

Lateral Meniscus (Little “O”)
- Circular in outline with horns attached close together
- Loosely attached to capsular ligament
- Popliteus tendon attached to margin of meniscus
- More mobile - less likely to be injured
- Fibrous extension along post. cruciate lig. (Wrisberg)

Medial Meniscus (“C” shaped)
- Horns attached farther apart (outside of lat. meniscus)
- Firmly attached around periphery to capsule
- Fixed at one point by tibial collateral lig. - more liable to injury

KNEE JOINT – Bursae

Communicating with synovial cavity (3)
- Suprapatellar - Deep to quadratus femoris
- Popliteus - Deep to popliteus tendon
- Gastrocnemius - Deep to med. head

Non-communicating bursae (9)

KNEE JOINT – Movements

Flexion

Extension - completed with med. rotation of femur
- Locks joint, all ligaments taut

Rotation - Lat. rotation of femur by popliteus initiates flexion
KNEE JOINT – Clinical Problems

- Terrible “Triad” - tears of
  - Tibial collateral lig.
  - Ant. cruciate lig.
  - Medial meniscus

- Arthritis
- Tears of menisci
  - Med. fixed and more likely to be injured
- Dislocations of patella
  - More common laterally during flexion
- Tears and strains of cruciate, collateral lig. or muscular attachments
- Fractures about the knee joint