KNEE JOINT

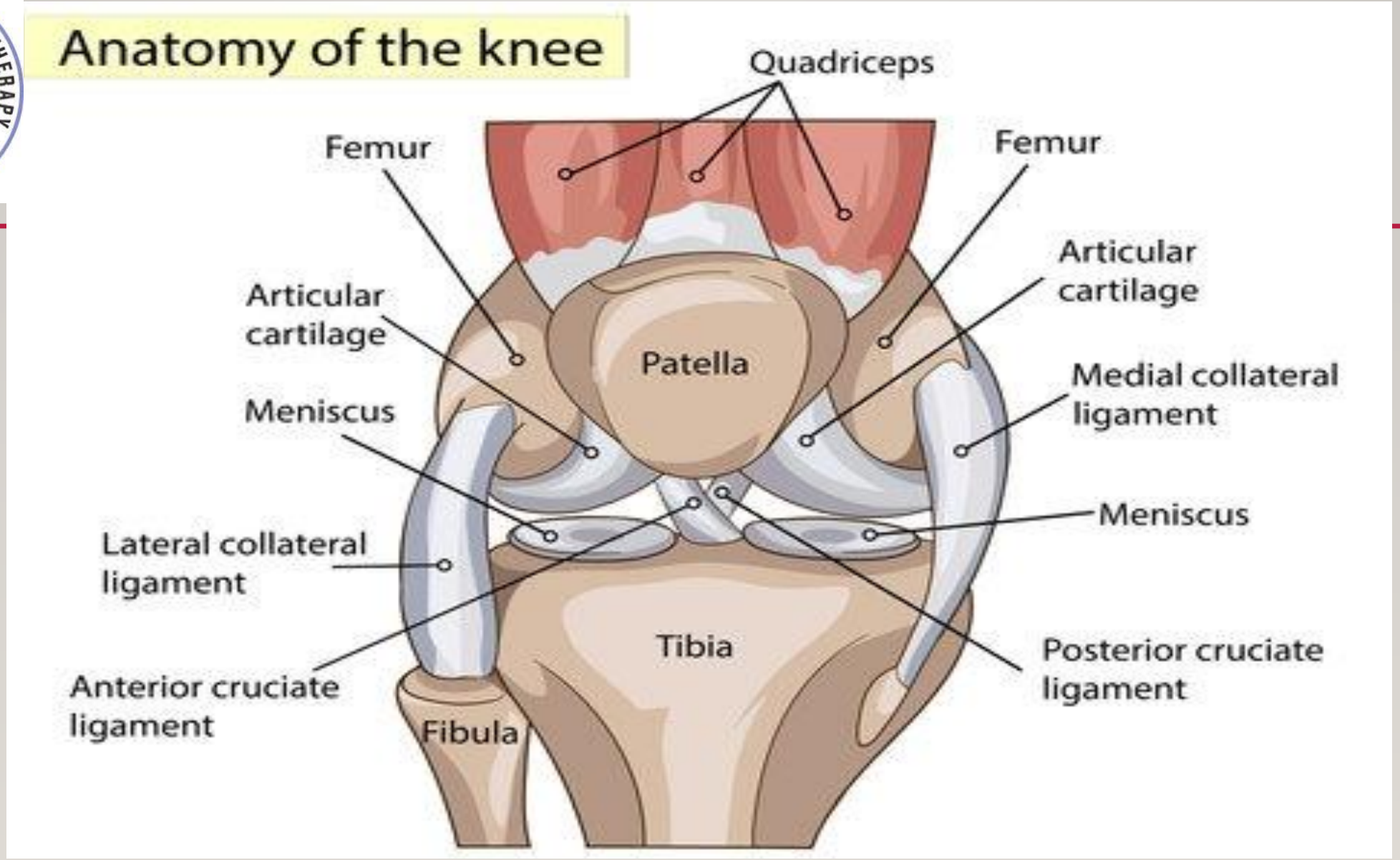
- Knee joint is largest and complex joint as a result of fusion of 3 joints in one.
- Formed by fusion of lateral femorotibial, medial femorotibial, and femoropatellar joints.
- Condylar synovial joint, incorporating 2 condylar joints between the condyles of femur and tibia, and 1 saddle joint between the femur and patella
- .Complex joint because the cavity is divided by menisci.

ARTICULAR SURFACE

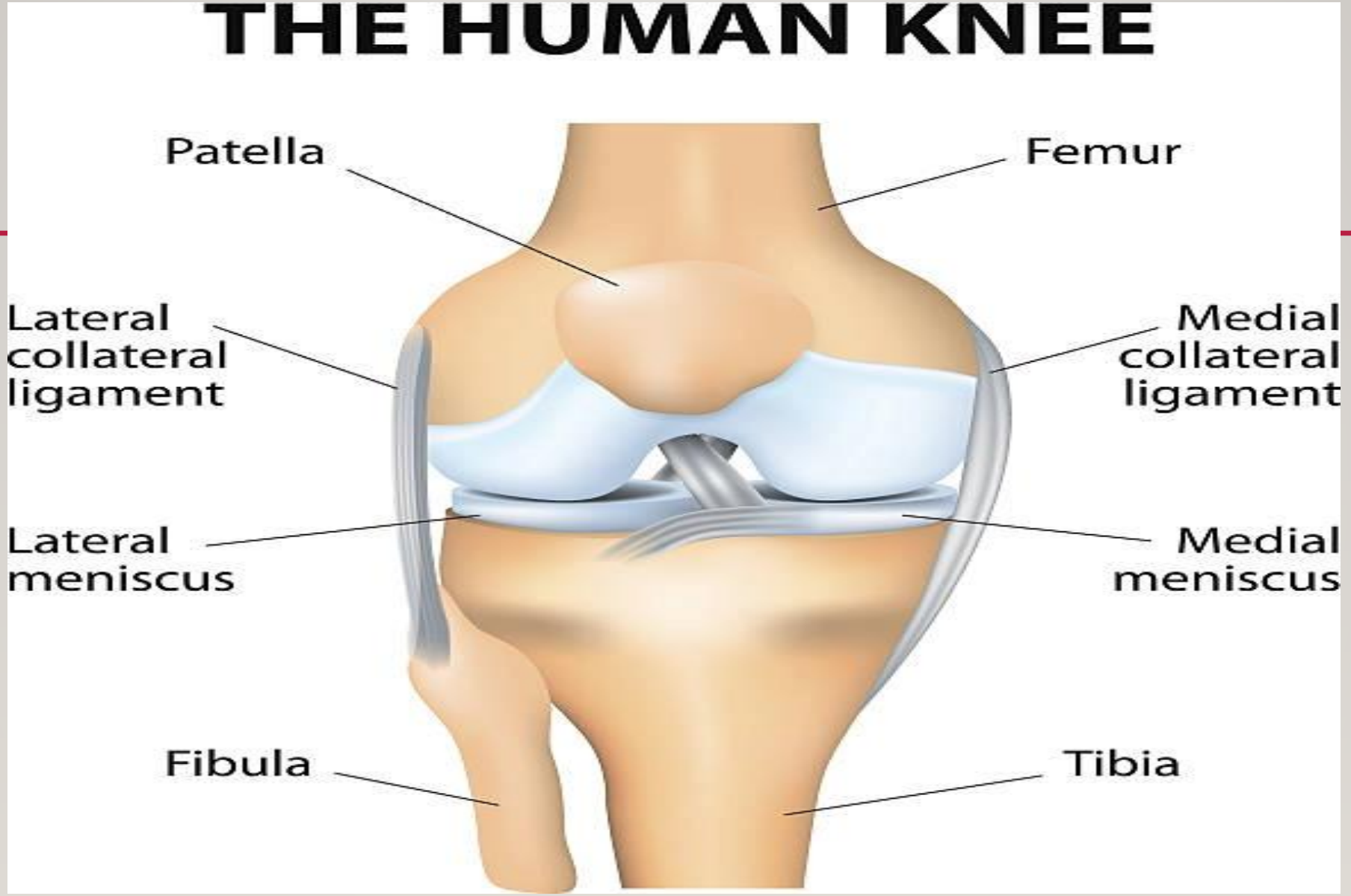
The knee joint is formed by:

- 1. The condyles of femur
- 2. The patella
- 3. The condyles of tibia
- The femoral condyles articulate with the tibial condyles below and behind, and with the patella in front.

Anatomy of the knee



THE HUMAN KNEE



LIGAMENTS

The knee joint is supported by the following ligaments:

- 1. Fibrous capsule
- 2. Ligamentum patellae
- 3. Tibial collateral (medial ligament) and Fibular collateral (lateral ligament
- 4. Oblique popliteal ligament and Arcuate popliteal ligament
- 5. Anterior cruciate ligament and Posterior cruciate ligament
- 6. Medial meniscus and lateral meniscus
- 7. Transverse ligament

nee joint


Femur
Articular cartilage
Meniscus
Fibula
Tibia
Posterior cruciate ligament
Medial collateral ligament
Anterior cruciate ligament


Quadriceps tendon
Patella
Lateral collateral ligament
Meniscus
Patellar tendon (ligament)

SYNOVIAL MEMBRANE

- The synovial membrane of knee joint lines the capsule, except posteriorly where it is reflected forwards by the cruciate ligaments, forming a common covering for both ligaments.
- In front, it is absent from the patella.
- Above the patella, it is prolonged upwards for 5cm or more as the suprapatellar bursa.
- Below the patella, it covers the deep surface of the infrapatellar fat pad, which separates it from ligamentum patellae.

BURSAE

12 bursae around knee joint:

Four anterior

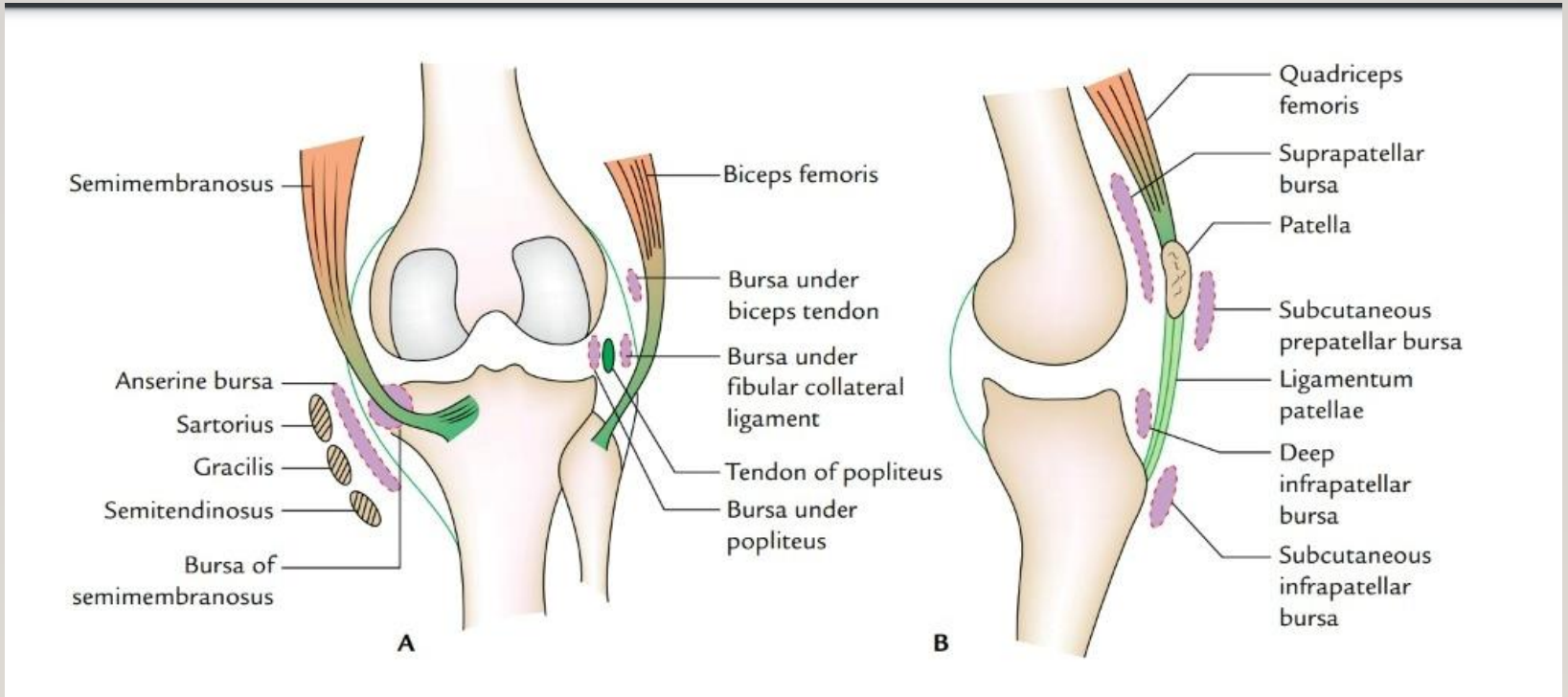
Four lateral

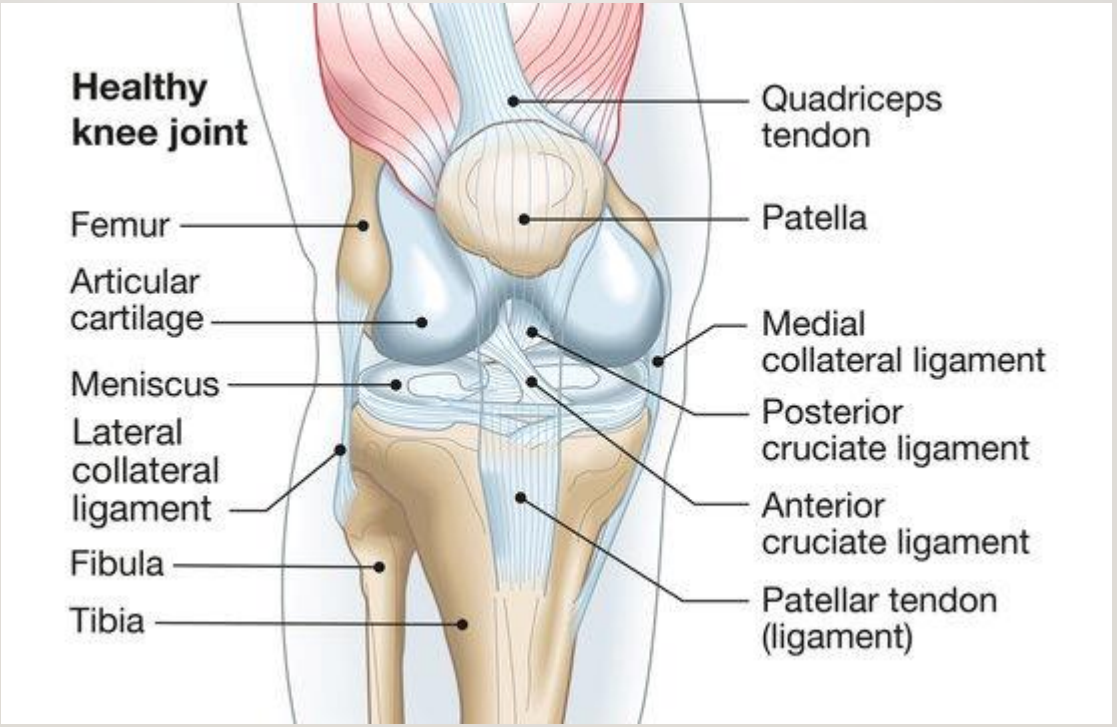
Four medial

Anterior

1. Subcutaneous prepatellar bursa
2. 2. Subcutaneous infrapatellar bursa
3. 3. Deep infrapatellar bursa
4. 4. Suprapatellar bursa

BURSAE


Semimembranosus
Biceps femoris
Bursa under biceps tendon
Bursa under fibular collateral ligament
Anserine bursa
Sartorius
Gracilis
Semitendinosus
Tendon of popliteus
Bursa under popliteus
Bursa of semimembranosus
A
Quadriceps femoris
Suprapatellar bursa
Patella
Subcutaneous prepatellar bursa
Ligamentum patellae
Deep infrapatellar bursa
Subcutaneous infrapatellar bursa
B


Healthy knee joint
Femur
Articular cartilage
Meniscus
Lateral collateral ligament
Fibula
Tibia
Quadriceps tendon
Patella
Medial collateral ligament
Posterior cruciate ligament
Anterior cruciate ligament
Patellar tendon (ligament)

- Lateral
- A bursa deep to the lateral head of gastrocnemius
- A bursa between the fibular collateral ligament and biceps femoris
- A bursa between the fibular collateral ligament and tendon of popliteus
- A bursa between the tendon of popliteus and the lateral condyle of tibia

- Medial
- A bursa deep to the medial head of gastrocnemius
- The anserine bursa is the complicated bursa which separates the tendons of sartorius, the gracilis, and the semitendinosus from one another, from the tibia, and from the tibial collateral ligament
- A bursa deep to the tibial collateral ligament
- A bursa deep to the semimembranosus

RELATIONS OF THE KNEE JOINT

- Anteriorly:
- Anterior bursae, ligamentum patellae, and patellar plexus of nerves.

Posteriorly:

- At the middle- popliteal vessels, tibial nerve
- Posterolateral- lateral head of gastrocnemius, plantaris, & common peroneal nerve

RELATIONS

- Medially:
- Sartorius, gracilis, & semitendinosus, semimembranosus, great saphenous vein with saphenous nerve
- Laterally:
- biceps femoris, & tendon of origin of popliteus

BLOOD SUPPLY

- The knee joint is supplied by the anastomoses around it.
- The chief sources of blood supply are:
- Five genicular branches of the popliteal artery
- The descending genicular branch of the femoral artery
- The descending genicular branch of the lateral circumflex femoral artery
- Two recurrent branches of anterior tibial artery
- The circumflex fibular branch of the posterior tibial artery

NERVE SUPPLY

- Femoral nerve, through its branches to the vasti, especially the vastus medialis
- Sciatic nerve, through the genicular branches of the tibial and common peroneal nerves
- Obturator nerve, through its posterior division

MOVEMENTS

- FLEXION AND EXTENSION
- Flexor muscles:
- Biceps femoris ,semitendinosus and semimembranosus
- Extensor muscles:
- Quadriceps femoris[four heads]