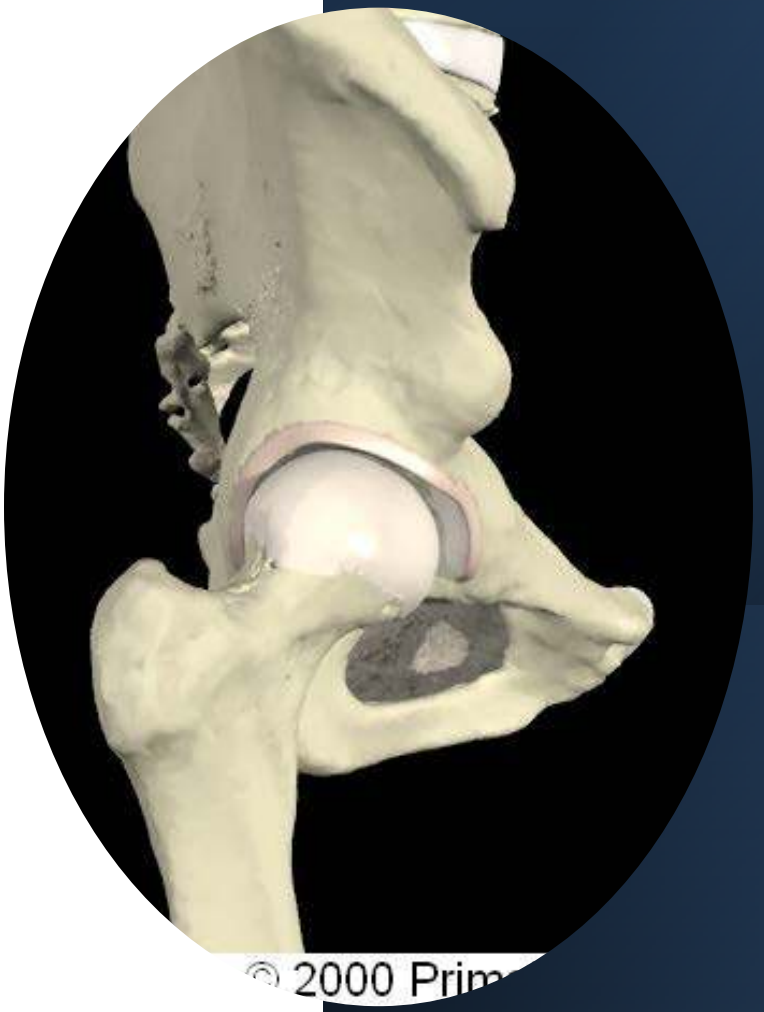
The Hip Joint



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General Structure: The Hip Joint

- Hip Joint: Synovial articulation between the acetabulum of pelvis and head of femur
- Stable ball and socket joint; great mobility
- Surrounded by several large muscles

General Structure: The Hip Joint

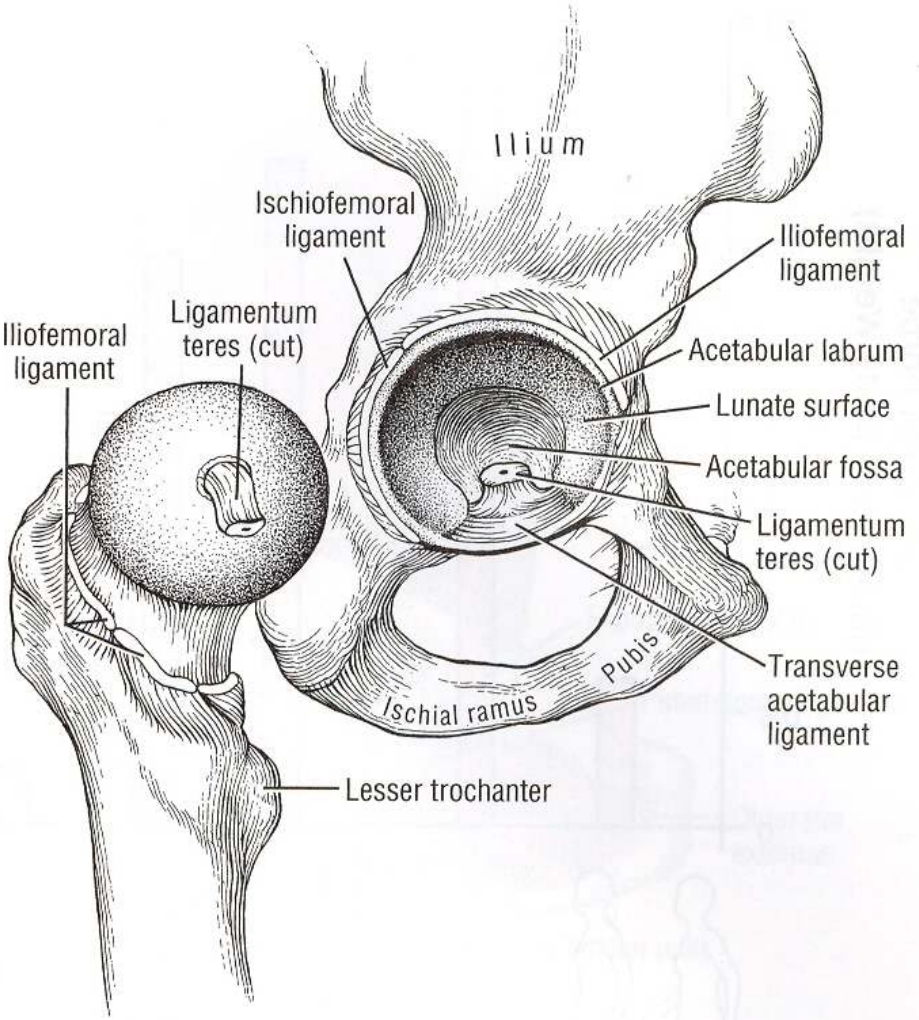
- The hip joint is the strongest and most stable joint in the body.
- Its stability results from
  - the mechanical strength of its ball and (deep) socket construction, allowing extensive articular surface contact
  - its strong joint capsule and ligaments
  - its many surrounding muscles

General Structure: The Hip Joint

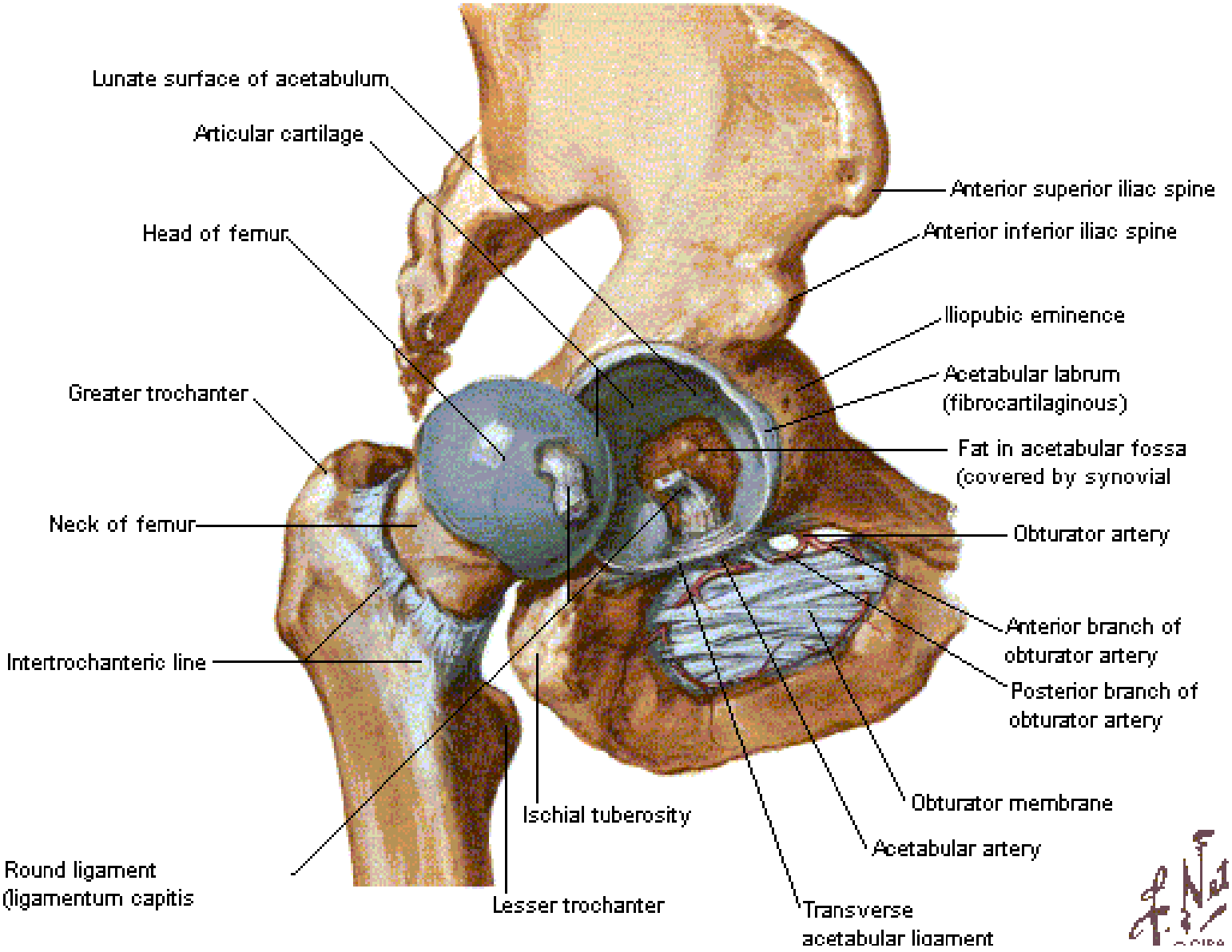
The articular surfaces of the hip joint are:

i. The head of the femur which is spherical (three-quarter of a sphere)

ii. The lunate surface of the acetabulum of the pelvic bone.

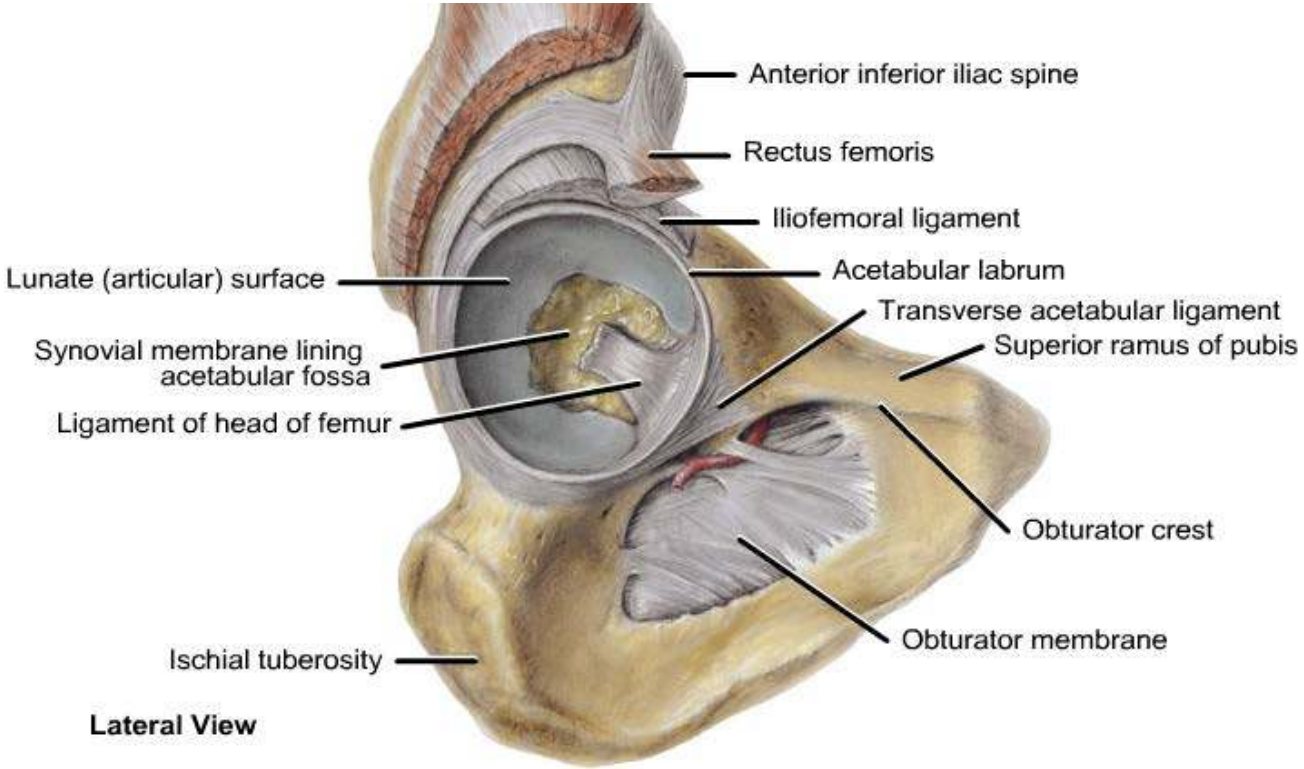


The Hip: General View



The Hip Joint: The Acetabulum

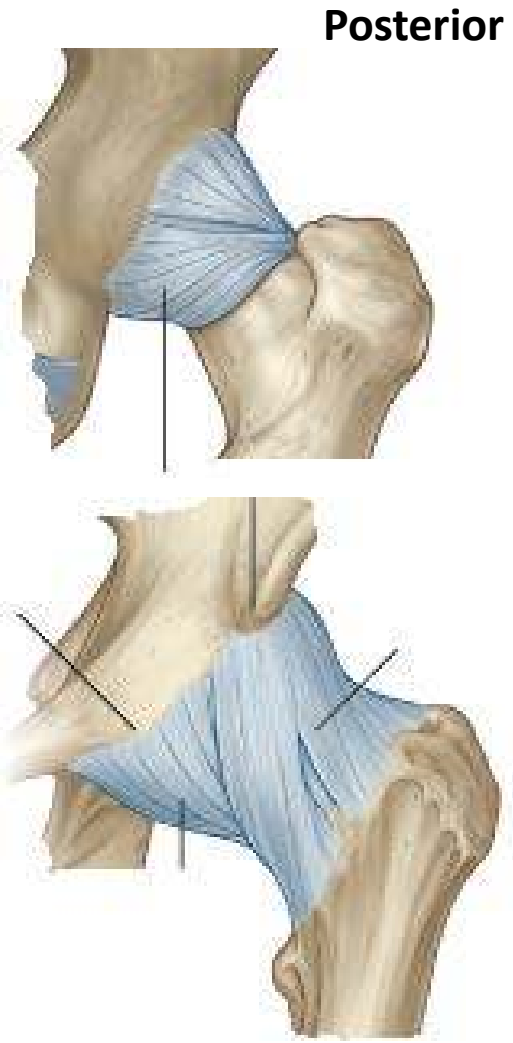
- The acetabulum labrum helps to deepen the acetabulum (approximately by 10%)
- It continues across the acetabular notch as the transverse acetabular ligament; converting the notch into a foramen
- Only the lunate surface(the articulating part of the acetabulum) is covered by cartilage



The Hip Joint: The Capsule

Consists of two layers:

- An outer fibrous layer
- An inner synovial membrane which lines everything in the joint.
- The capsule runs a spiral course between the pelvis and the femoral neck and tightens in extension.
- Flexion unwinds the capsule, making flexion > extension



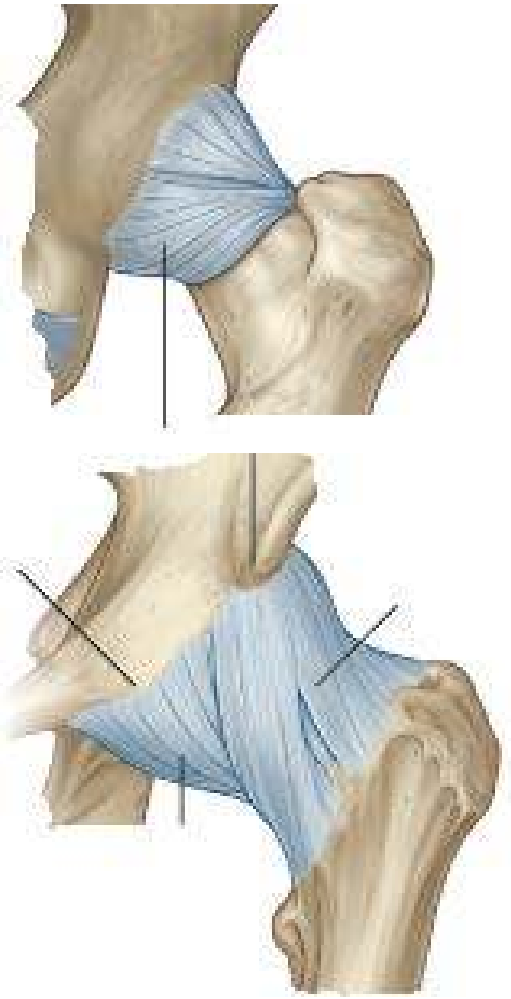
The Hip Joint: The Capsule

Medially, it attaches to:

- The acetabular rim, the transverse acetabular ligament and rim of obturator foramen

Laterally to:

- The intertrochanteric line anteriorly
- The neck of the femur posteriorly



Posterior View

Anterior View

The Hip Joint: The Ligaments

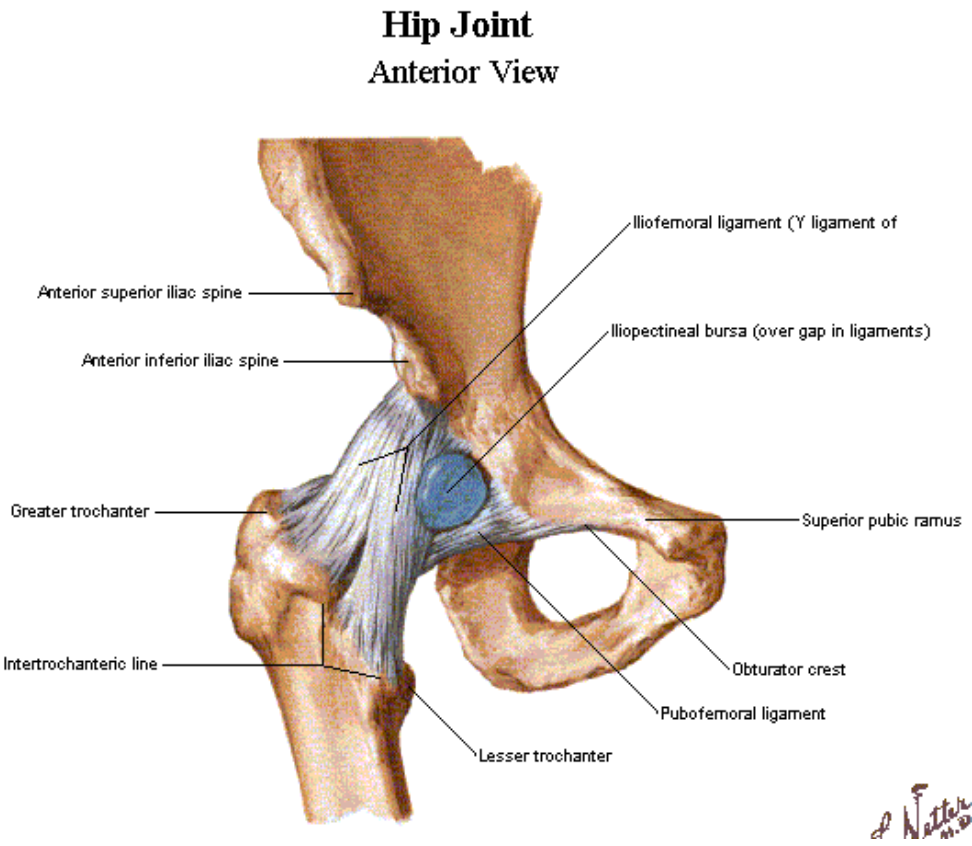
•3 Ligaments reinforces the capsule:

i. **Iliofemoral ligament**

ii. **Pubofemoral ligament**

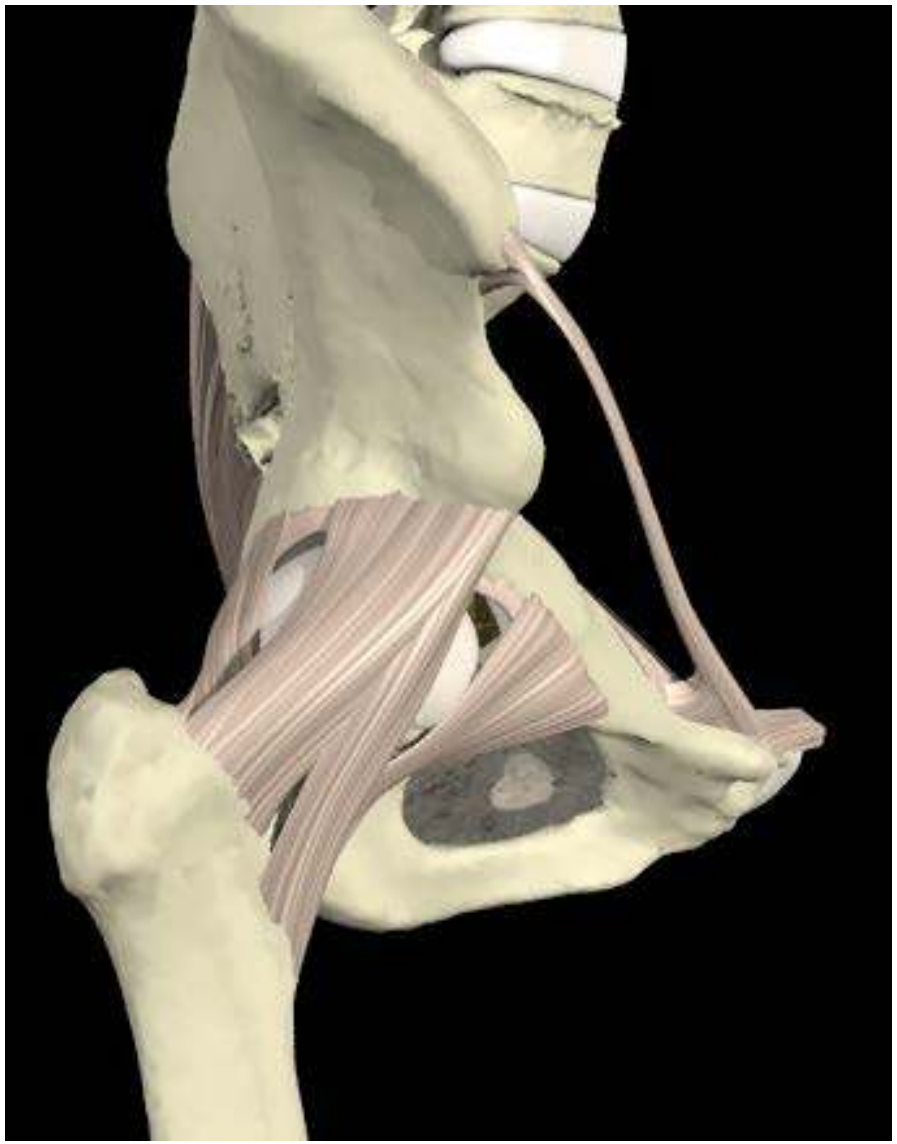
iii. **Ischiofemoral ligament**

- The fibres of all three ligaments are spiral and are taut in extension
- This helps to maintain posture when standing with minimum expenditure of energy



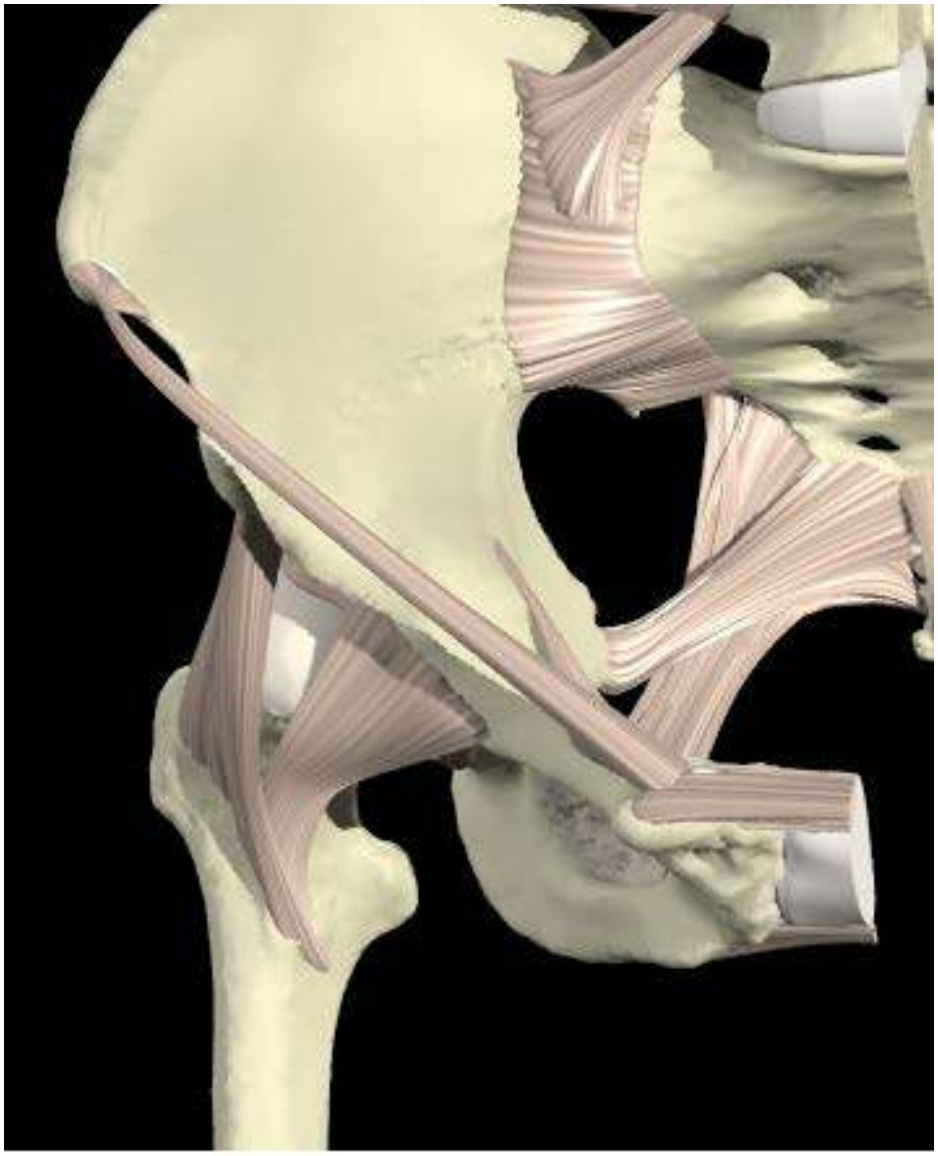
The Hip Joint: Iliofemoral ligament

- Is triangular shaped with a Y outline
- Anterior to the hip joint
- Apex attached superiorly to the ilium between the anterior inferior iliac spine and the margin of the acetabulum
- Base attached inferiorly along the intertrochanteric line of the femur
- It is the strongest ligament in the body

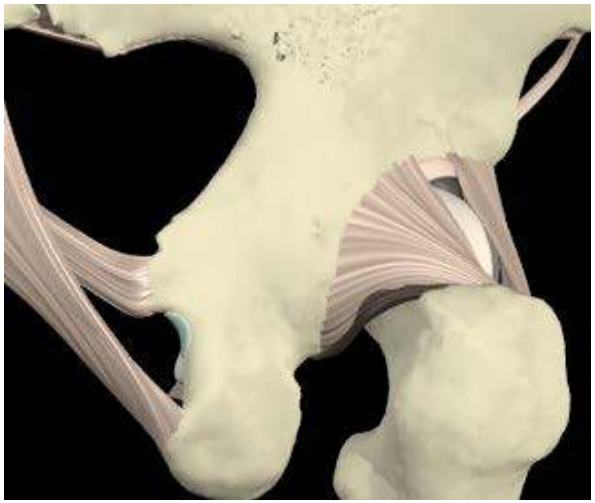


The Hip Joint: pubofemoral ligament

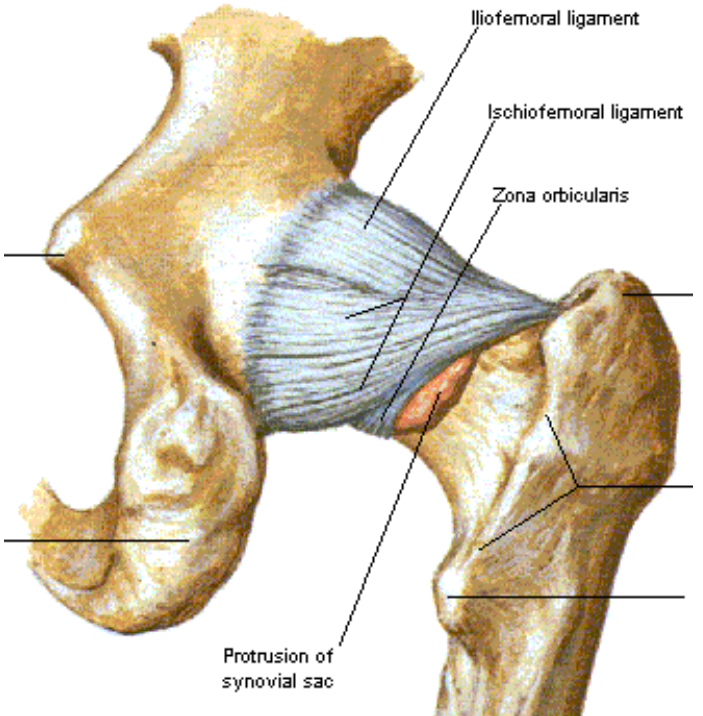
- Is also triangular
- It is a thickening in the fibrous layer of the capsule of the joint
- Anteroinferior to the hip joint
- Base attached medially to the iliopubic eminence, adjacent bone, and obturator membrane
- Laterally, it blends with the fibrous membrane (outer layer of the hip joint capsule) and with the deep surface of the iliofemoral ligament.
- It limits both extension and abduction



The Hip Joint: ischiofemoral ligament



- Posterior to the hip joint
- It is also a thickening in the fibrous layer of the capsule of the joint
- Attached medially to the ischium, just posteroinferior to the acetabulum
- Laterally to the greater trochanter deep to the iliofemoral ligament
- It is the weakest of the three ligaments



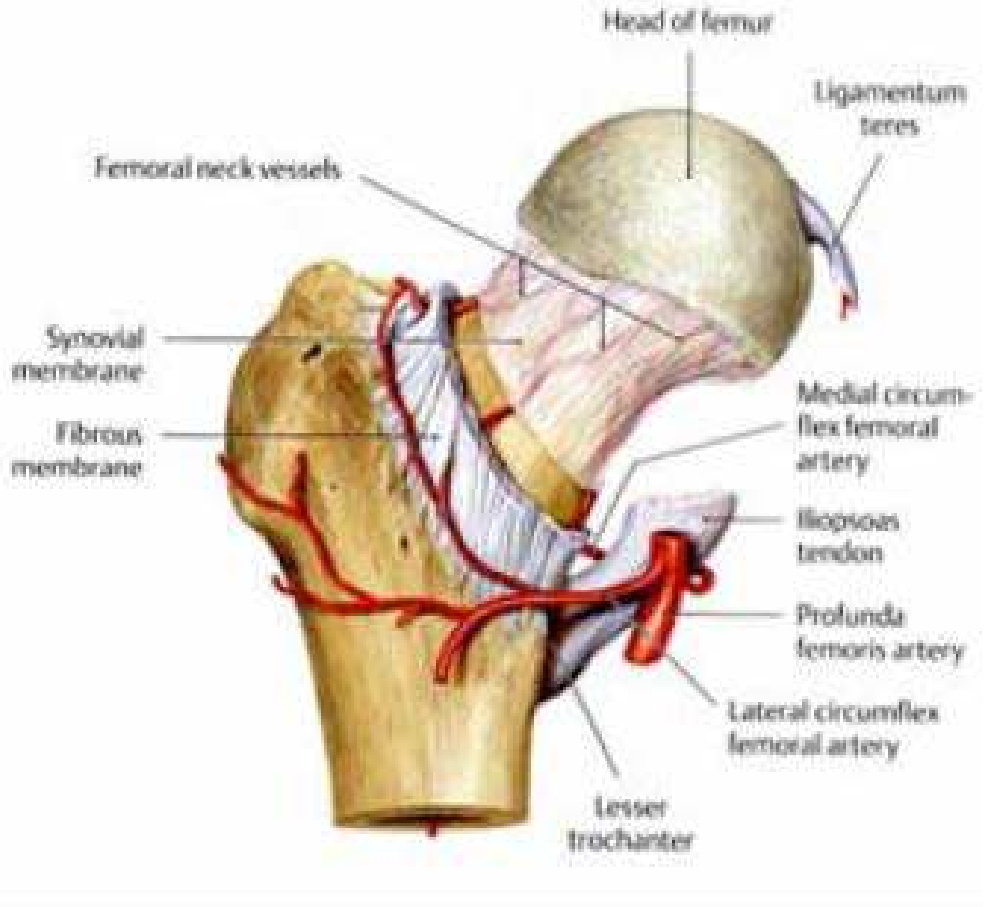
The Hip: Blood supply

Blood supply to the head of the femur is from the following sources:

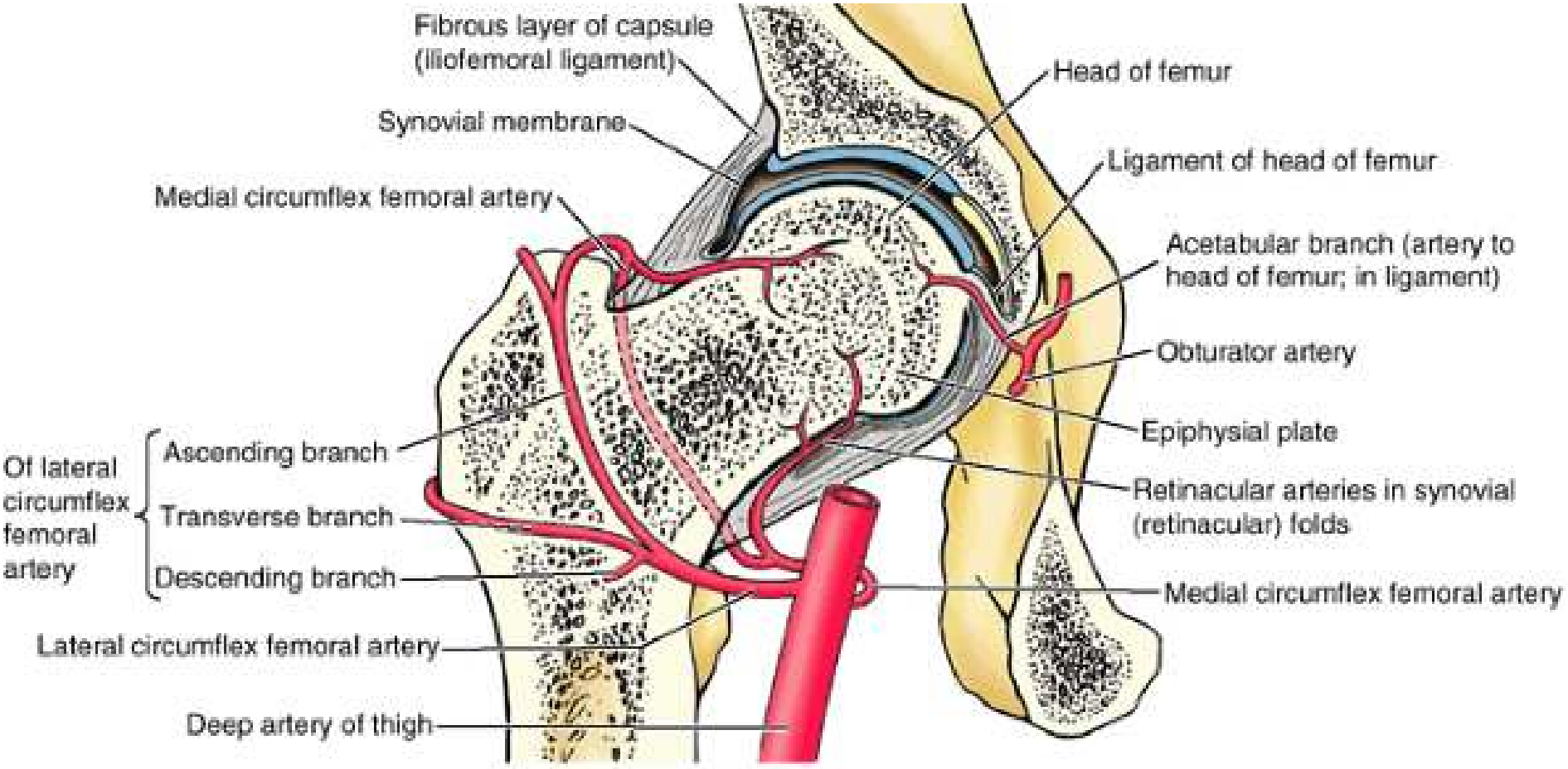
i. Branches from **medial** and **lateral** circumflex arteries, which forms a vascular circle around the neck, from which metaphyseal and epiphyseal vessels penetrates the head

ii. A small supply from acetabular branches of obturator and medial circumflex arteries via the ligament of the head.

Blood supply to the head



Blood supply to the head

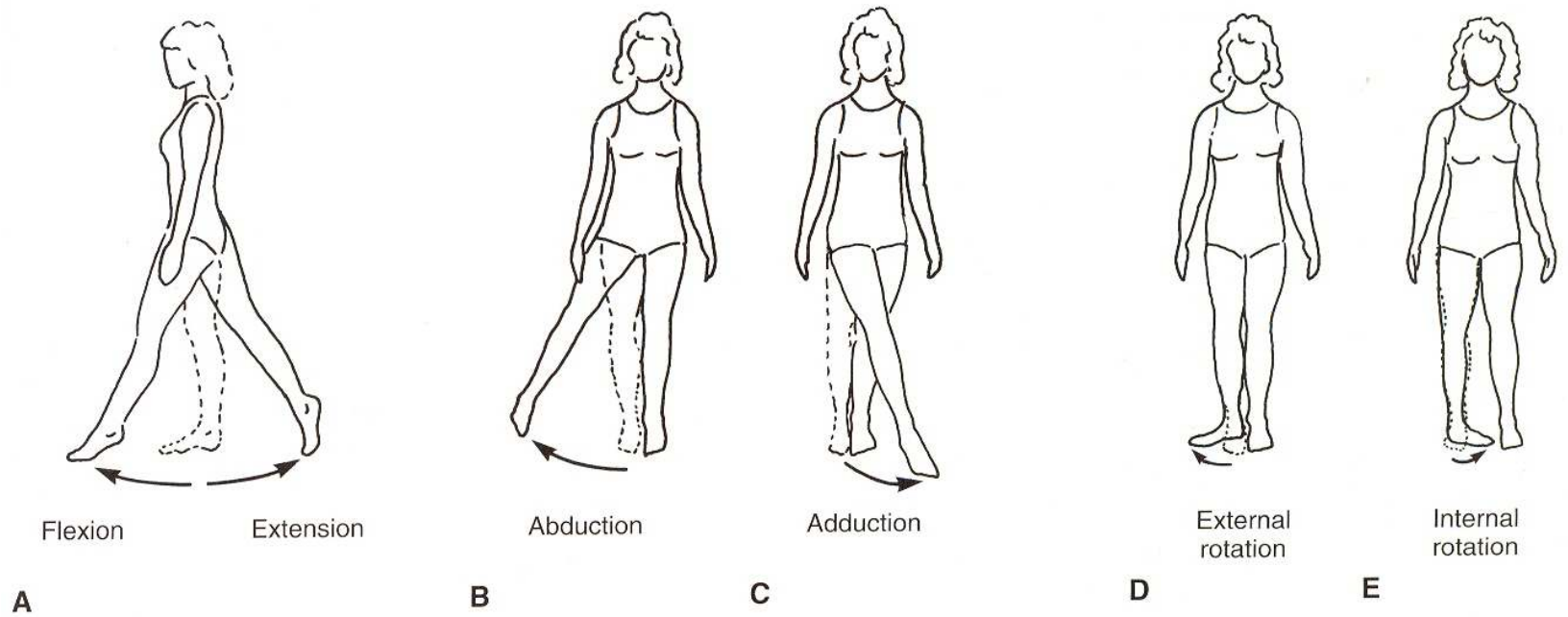


General Function

- Provides stability for weight bearing
- Allows for mobility of the lower limb
- Load transmission (To and from lower limb)

Movements of the Hip Joint

- Flexion and Extension
- Abduction and Adduction
- External Rotation and Internal Rotation.



Movements of the Hip Joint

Limits of Ranges of Motion (ROM)

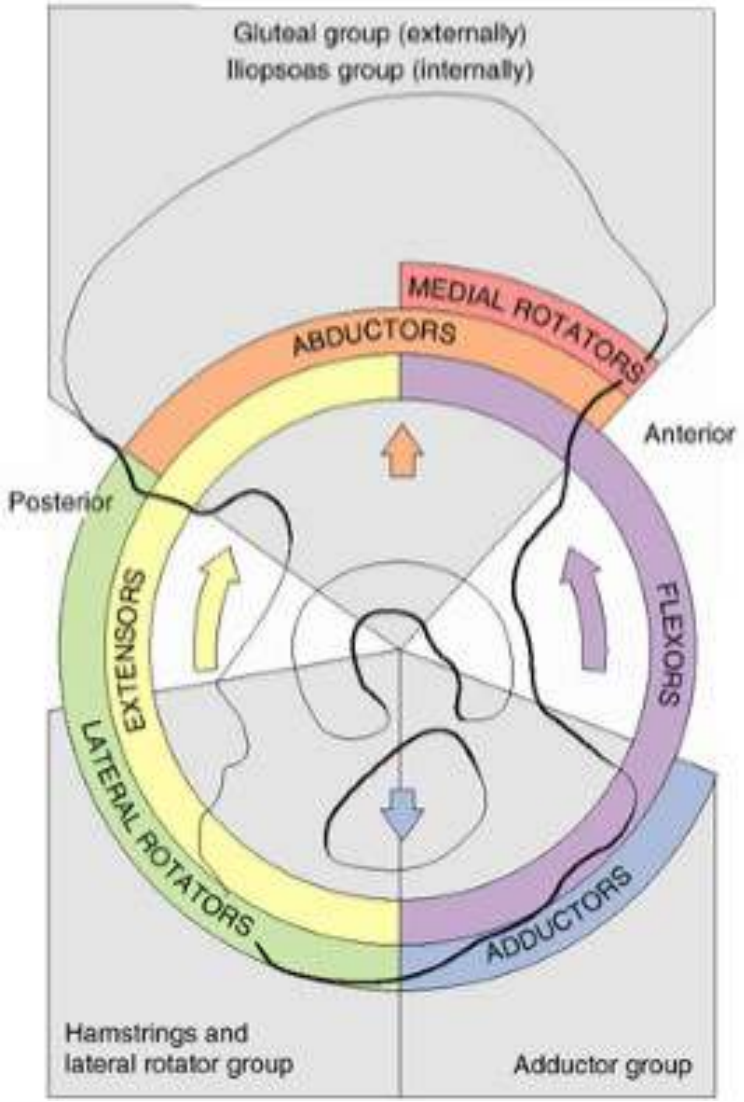
- Flexion - 0 to 140 degrees
  Extension - 0 to 15 degrees
- Abduction - 0 to 30 degrees
  Adduction - 0 to 25 degrees
- External Rot. - 0 to 90 degrees
  Internal Rot. - 0 to 70 degrees (Range is greater in flexion than when extension)

Movements of the Hip and its main Muscles

- **Flexion**
  - Illiopsoas, sartorius, tensor fascia lata, rectus femoris, pectineus, adductor longus, adductor brevis, adductor magnus, gracilis
- **Extension**
  - Hamstrings, adductor magnus, gluteus maximus
- **Abduction**
  - Gluteus medius, gluteus minimus, tensor fascia lata

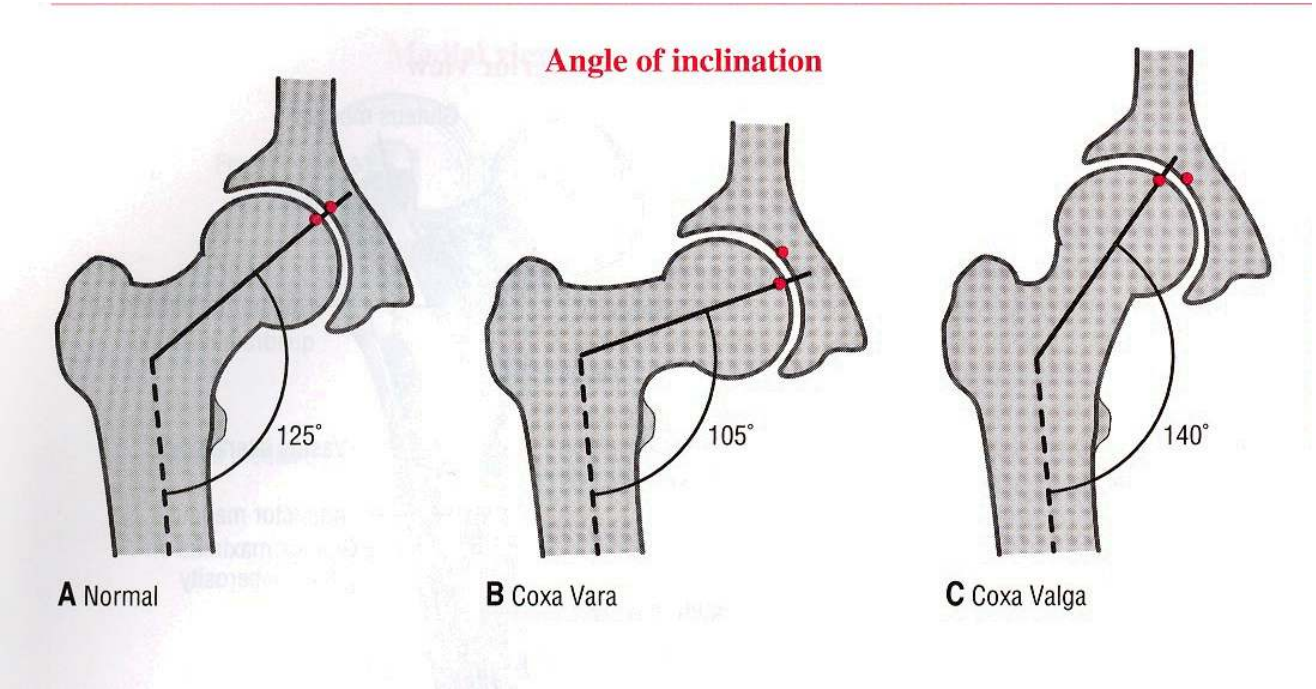
- **Adduction**
  - Adductor longus, adductor brevis, adductor magnus, gracilis, pectineus, oburator externus
- **Rotation**
  - **Medial**
    - Gluteus medius, gluteus minimus, tensor fascia lata
  - **Lateral**
    - Obturator externus, obturator internus, gemelli, piriformis, quadratus femoris, gluteus maximus

Scheme of muscle supply



Hip joints movement

- Abnormalities of the neck shaft angle may affect hip functions



The End

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