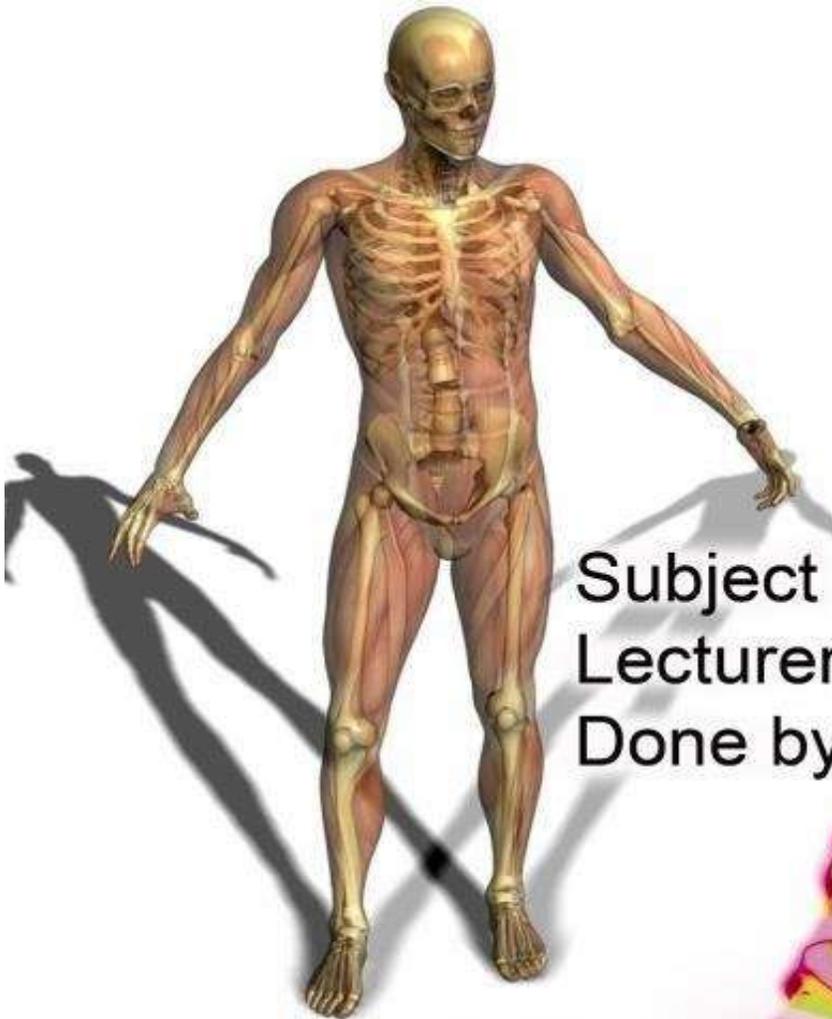




ANATOMY



Subject : *Introduction to Anatomy*
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lecture # : **16**

Date : **10th.March.2013**

Lower limb

⊕ Femur :

1) Proximal end:

1. It is the longest bone of the body.
2. It comprises $\frac{1}{4}$ of your height.
3. It is bowing anterior; moreover, it is divided into proximal end, shaft, and distal end (**LONG BONE**).
4. In the anterior aspect of the proximal end, there is a rough line connecting the greater and lesser trochanters. This line is called the intertrochanteric line; it is rough.
5. In the posterior part, the trochanters are connected via the intertrochanteric crest. Both, the intertrochanteric line and crest are for muscle attachment.
6. The shaft is smooth anteriorly, medially, and laterally. It is rough posteriorly; where it is called linea aspra (aspra is rough in Latin).
7. It is convex anterior and concave posterior.
8. If you look at it posteriorly, it is triangular in cross section.
9. It has 3 surfaces: medial, lateral, and anterior
10. It has 3 borders: posterior, medial, and lateral
11. Linea Aspra is the posterior border of the shaft of the femur and it has two lips: medial lip and lateral lip. These lips form a place for muscle attachment.

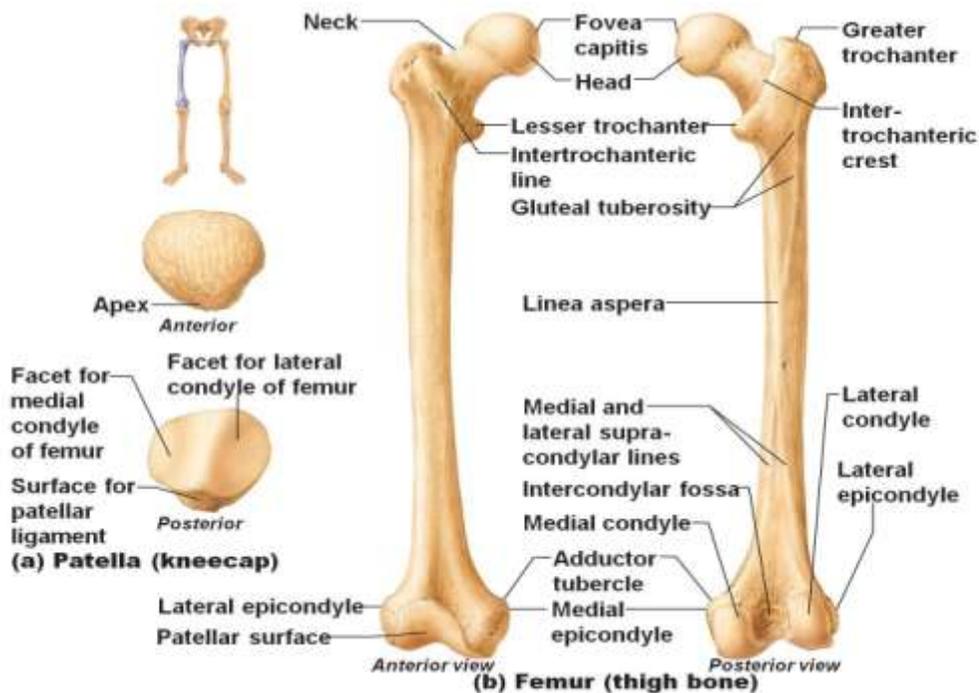
2) Distal end:

- 1) Medial condyle
- 2) medial epicondyle
- 3) lateral condyle
- 4) lateral epicondyle
- 5) adductor tubercle for muscle attachment
- 6) Patellar surface: It is an articular surface for the patella, where it can glide freely.
- 7) The distal end of the femur is large.
- 8) it has two condyles: medial and lateral
- 9) Over each condyle, there is an epicondyle (medial and lateral)
- 10) Condyles are for articulation with the tibia only.
- 11) Epicondyles are for muscle attachment
- 12) Posterior surface of the distal end has the following parts: Medial condyle, lateral condyle, intercondylar fossa or ((notch) it is the space between the medial and

lateral condyles. It is designed for cruciate ligaments), and Linea aspra (separated at its distal end forming medial and lateral supracondylar lines for muscle attachment. Tibia and femur are connected via the cruciate ligaments.)

◆ Tibia and fibula:

Tibia has two condyles at its proximal end: lateral and medial condyles. In front of those condyles, we can find the tibial tuberosity. When we feel our lower leg, what we feel is the anterior border of tibia because it is subcutaneous. At the end of the tibia and fibula there are two processes called malleolus (malleolus is singular).



◆ Thigh:

It is the part of the lower limb extending from hip joint to knee joint. Its skeleton is formed by one bone called femur.

- **Layers of the thigh:**

- 1) **Skin**

- 2) **Superficial fascia** that contains: Fats, two superficial veins, superficial arteries, superficial nerves (cutaneous), and inguinal lymph nodes. Inguinal refers to the private regions of the human.

- 3) **Deep fascia (fascia lata):** deep fascia is like tight jeans, because it holds all the structures of the lower limb together. However, it is defected in the upper medial aspect forming

saphenous opening. This opening gives an outlet for the great saphenous vein to drain into femoral vein.

Deep fascia is thickened laterally forming the iliotibial tract, which extends from the iliac tubercle to the lateral condyle of tibia. It confirms the extension of the knee by the effect of muscles. Two muscles insert in this tract. Deep fascia sends three septa: medial septum, lateral septum, and posterior septum. These septa divide the contents of the thigh into three compartments.

▶ Each compartment has its own muscles, its own blood supply, main action, and its own nerve supply. The anterior compartment is the extensor of the knee. The medial compartment is the adductor compartment. The posterior compartment is the flexor compartment.

Our lower limb is originally rotated outwards; however, by birth it is medially rotated 90 degrees.

- **Superficial veins:**

- 1) Great saphenous vein
- 2) Small Saphenous vein

▶ **Great saphenous vein:** you can see it anterior to the ankle joint. It starts at the medial side of the foot. Then, it passes anterior medial to the medial malleolus of the tibia. Then, it ascends at the medial side of the leg. After that, it ascends posterior medial to the knee. Then, it passes anterior medial to the thigh to pass through the saphenous opening to end into the femoral vein. This vein carries blood against gravity, so it has numerous valves. These valves may get disturbed during pregnancy or long standing. This causes varicose veins.

P.S.: When you have a lot of soft drinks or alcohol, you hurt liver cells and develop hepatitis. Liver cells are the body's filter. When you hurt them, you have less cells working. This means more blood in the veins, this causes vomiting and disturbances in the body.

▶ Between ASIS (anterior superior iliac spine) and pubic symphysis there is a ligament called **inguinal ligament**.

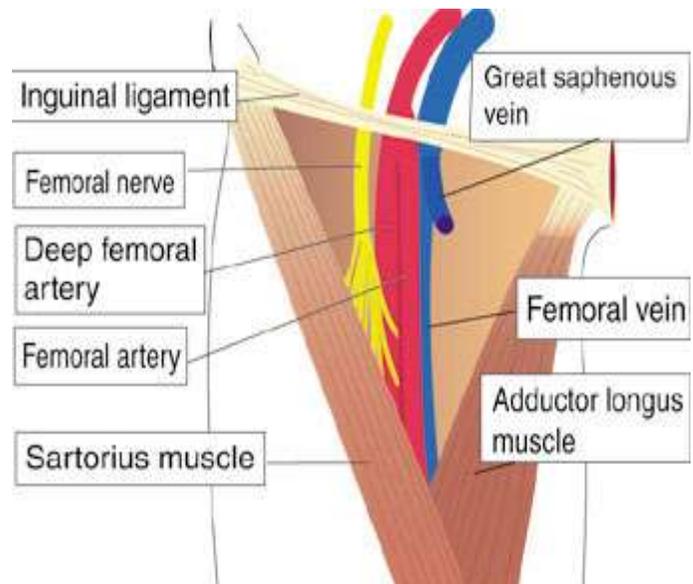
⊕ **Femoral triangle:**

It is a triangular space, located at the upper medial aspect of the thigh. It has borders, roof, floor, and contents>

▶ It is bounded laterally by Sartorius, medially by adductor longus, and superiorly by inguinal ligament.

▶ The roof is formed by skin, superficial fascia, great saphenous vein, and deep fascia.

▶ The floor is formed by adductor longus, pectineus (comb-like muscle), iliacus, and Psoas.



● **The contents of the femoral triangle:**

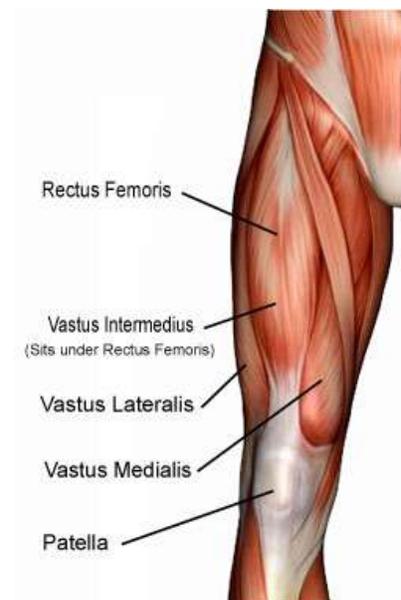
(medial to lateral)

- 1) femoral vein
- 2) femoral artery
- 3) femoral nerve
- 4) deep inguinal lymph nodes

⊕ **Muscles of the anterior compartment:**

1) **Sartorius:**

- a. *Origin:* (ASIS) it is lateral,
- b. *insertion:* upper medial surface of tibia (SGS area, S stands for Sartorius, G stands for Gracilis)
- c. *nerve supply:* femoral
- d. *action:* lateral rotation of the thigh (cross legs)



It is the longest muscle in the body (not part of quadriceps)

2) Rectus femoris:

- a. *origin*: anterior inferior iliac spine (AIIS)
- b. *insertion*: superior border of patella
- c. *nerve supply*: femoral
- d. *action*: extension of the knee joint and assists in flexion of hip joint

3) Vastus lateralis:

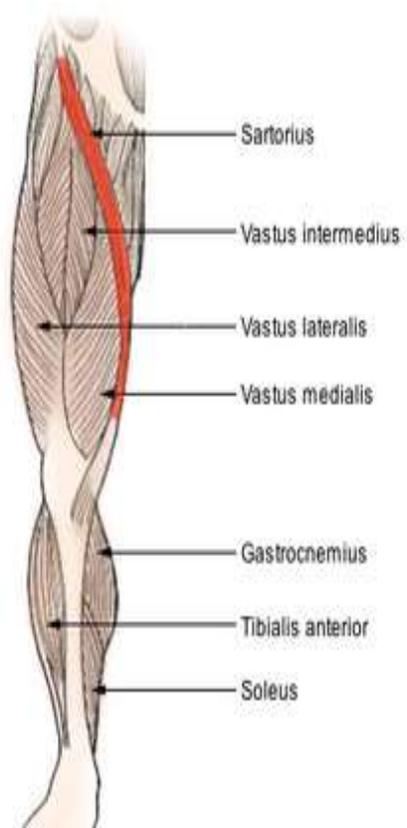
- a. *origin*: lateral lip of linea aspra
- b. *insertion*: lateral border of patella

4) Vastus medialis:

- a. *Origin*: medial lip of linea aspra
- b. *insertion*: medial border of the patella

5) Vastus intermedius :

- a. *Origin* : anterior surface of femur
- b. *insertion*: superior border of the patella



Muscles 2-5 are called quadriceps femoris (4 headed muscles). They are inserted in the tibial tuberosity. Their function is to extend the knee joint. They form the quadriceps tendon, which will converge to form patellar ligament. This inserts into the tibial tuberosity. The quadriceps femoris muscles are innervated by femoral nerve. They all originate from femur except rectus femoris which originates from anterior inferior iliac spine.

When people are not used to run and run suddenly the tendon gets torn.

Thank you all love you all 😊