

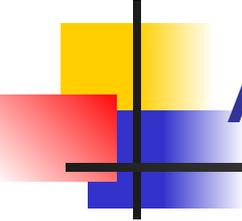


Sports Medicine 15

Unit I: Anatomy

Part 4 Anatomies of the Lower Limbs

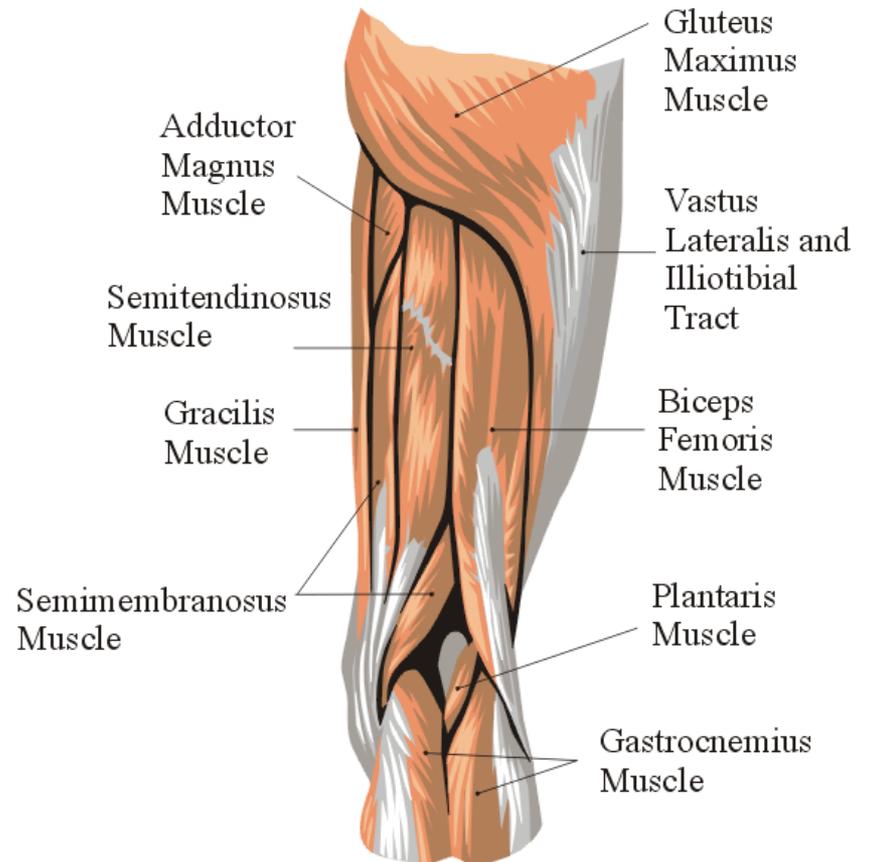
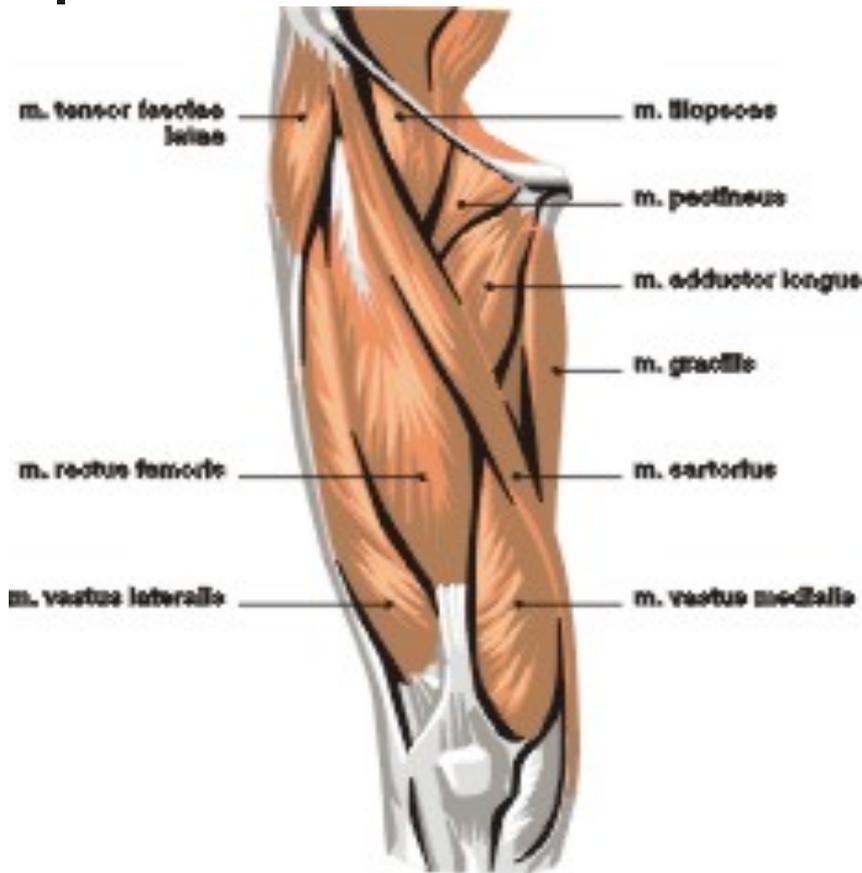
The knee, Thigh, Hip and Groin



Anatomy of the lower limbs

- In Part 3 of this section we focused upon 11 of the 12 extrinsic muscles of the foot.
- During the final part of this four part series, we focus on **7 more muscles** that make up front and rear parts of the thigh: the ‘hamstrings’ and ‘quadriceps’ groups. Plus we throw in the Gluteus Maximus just for good measure.
- We also take a brief look at the anatomy of the knee.

Anatomy of the Upper Leg



Below the Gluteal muscles there is a group of 6 muscles that externally rotate the hip.

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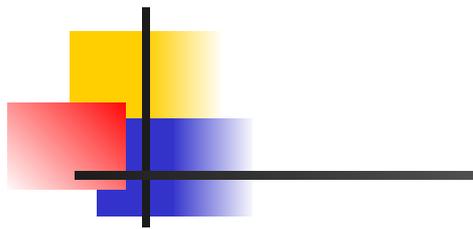
1. Gluteus Maximus:

- One of the posterior muscles of the hip region.
- **Muscle origin:** Posterior aspects of the sacrum and coccyx bones.
- **Muscle insertion:** Blends with Tensor fascia latae from Iliotibial Band (down the side of your leg)
- Cyclists and runners often have tight I.T. bands.
- **Muscle action:** Hip extension and external rotation, adduction and abduction of the hip.



Reynolds

My name is
Flavius Maximus.
This is my brother,
Gluteus Maximus.



Anatomy

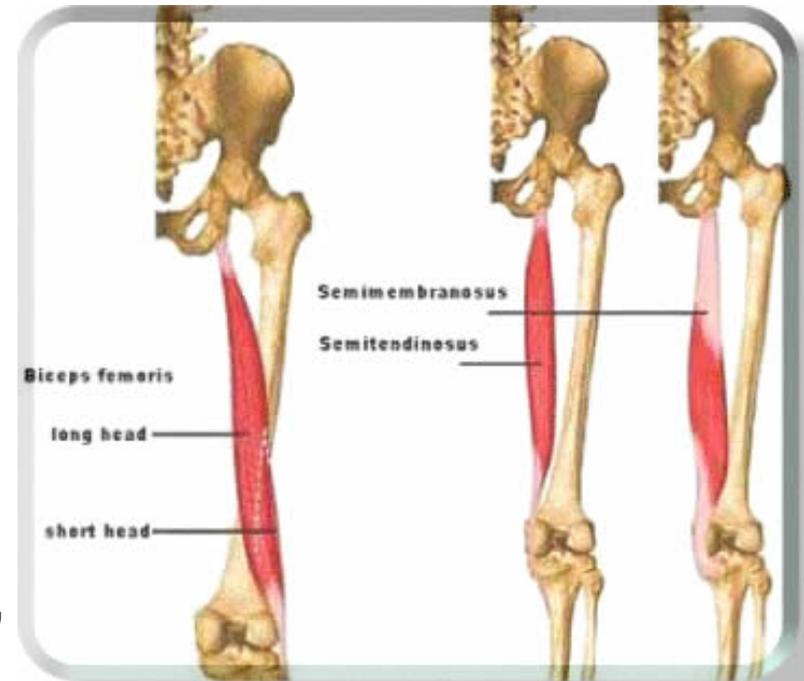
The **Hamstring** group:
they play a large role in
the hip and knee joint
movement.

2. Biceps Femoris

3. Semitendinosus

4. Semimembranosus

- Muscle origins are the same,
and they all have the same
functions



Anatomy

2. Biceps Femoris

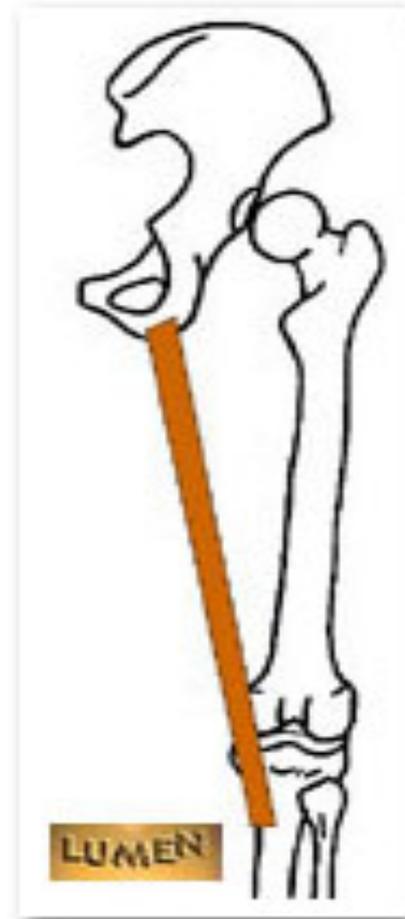
- Left – long head
- Middle – short head
- Right- two headed muscle.
- **Muscle origin:** Long head - Ischial tuberosity (next to the sacrum).
Short head: Lateral aspect midway down *femur*.
- **Muscle insertions:** Both heads combine into the belly of the muscle, which then *inserts on the head of the fibula*.
- **Muscle action:** *Extends the knee and flexes the hip.*



Anatomy

3. Semitendinosus

- **Muscle origin:** Ischial tuberosity.
- **Muscle insertion:** Medial aspect of the tibia.
- **Muscle action:** This muscle extends and assists with internal rotation and adduction of the hip joint.



Anatomy

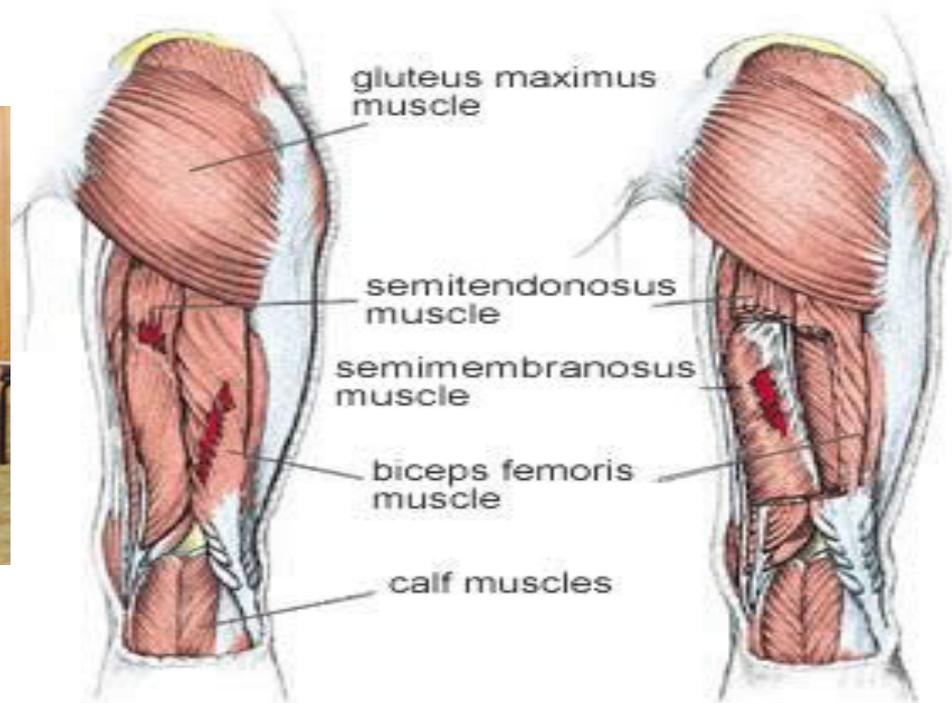
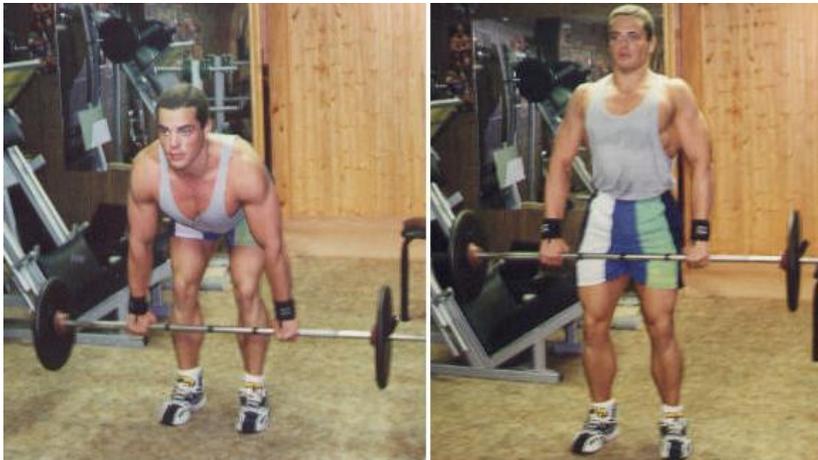
4. Semimembranosus

The final muscle of the hamstrings Group.

- **Muscle origin:** Ischial tuberosity.
- **Muscle insertion:** medial condyle of the tibia.
- **Muscle action:** extends the hip and assists with internal rotation and adduction of the hip joint.



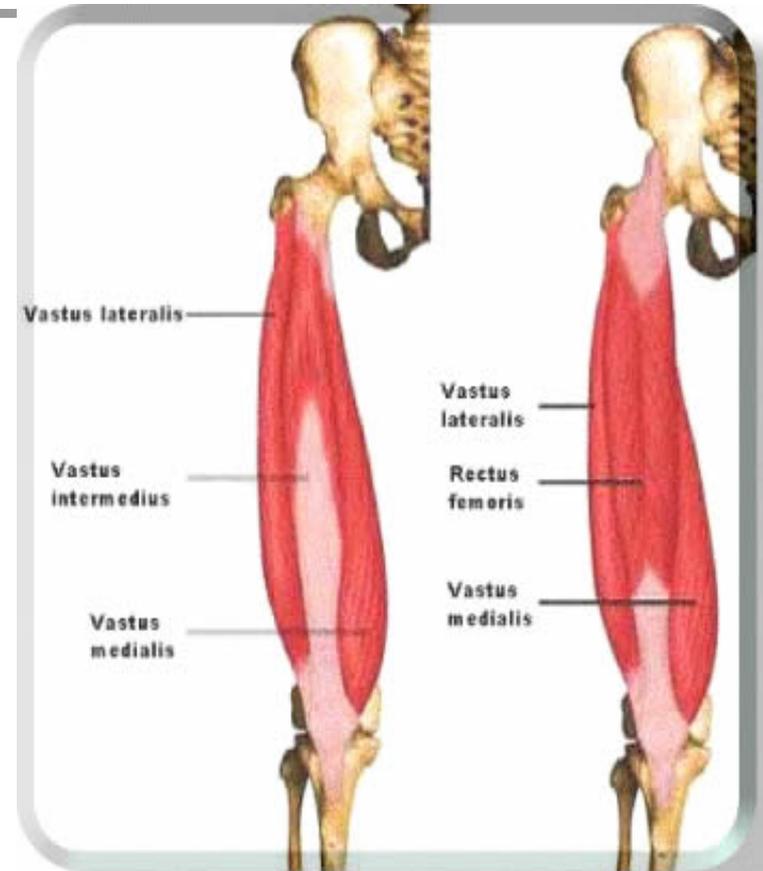
Anatomy – The Hamstring group



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Anatomy

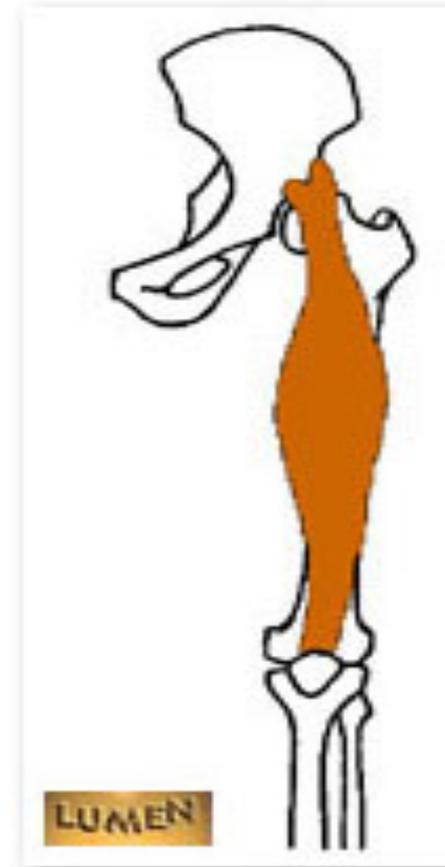
The **Quadriceps Femoris**, frequently referred to as the ‘**quads**’ is a group of **four muscles**. One of these muscles the ***Rectus Femoris***, crosses both the knee and the hip joint. The other *three* muscles – the ***Vastus Intermedius***, the ***Vastus Medius*** and the ***Vastus Lateralis*** cross only the knee joint and have only one function: *extension of the knee*.



Anatomy – the Quadriceps group

1. Rectus Femoris

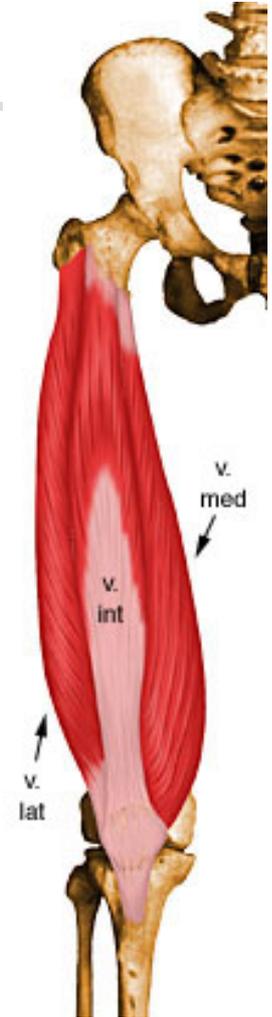
- It is the most superficial of the anterior thigh muscles.
- **Muscle origin:** The iliac spine (anterior).
- **Muscle insertion:** Base of the patella.
- **Muscle action:** Extension of the knee joint



Anatomy

2. Vastus Lateralis

- The largest of the **three vastus muscles**.
- ***Muscle origin:*** Top of femur.
- ***Muscle insertion:*** Lateral border of patella.
- ***Muscle action:*** Extends the knee joint.



Anatomy

3. Vastus Medialis

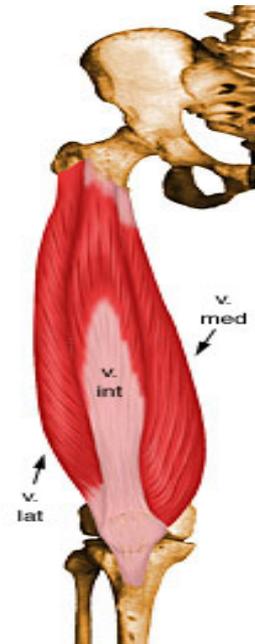
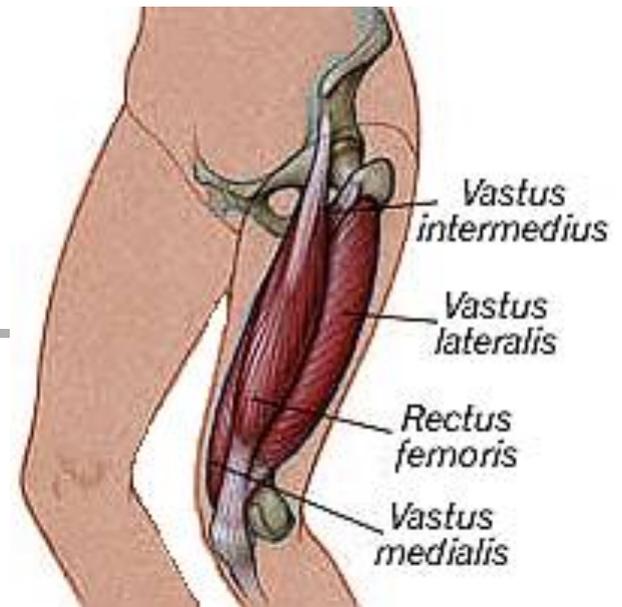
- ***Muscle origin:*** Medial lip of the linea aspera (head of femur bone).
- ***Muscle insertion:*** Medial border of patella.
- ***Muscle action:*** Extends the knee joint.



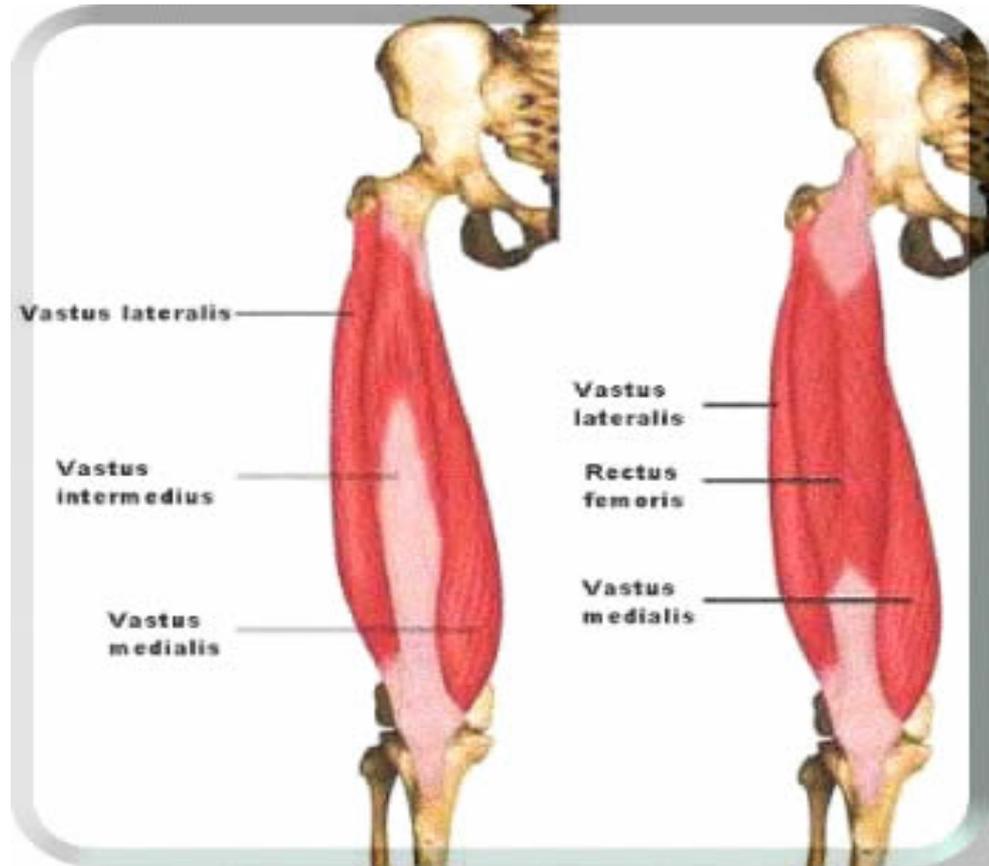
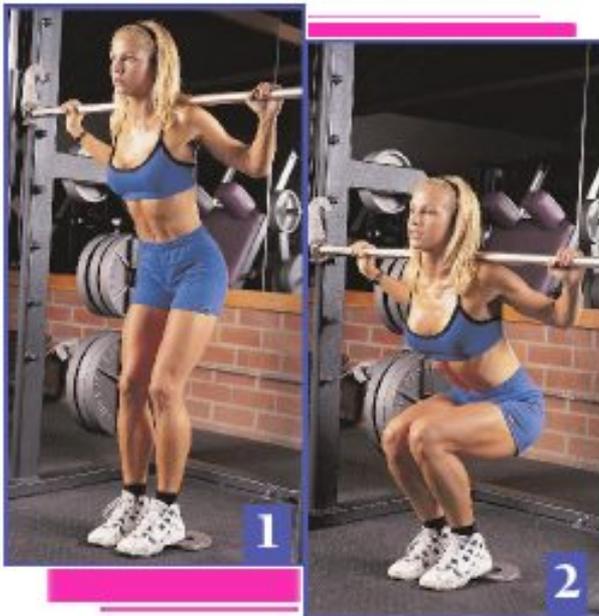
Anatomy

4. Vastus Intermedius

- *Beneath the rectus femoris lies the vastus intermedius.*
- **Muscle origin:** Proximal two-thirds of the anterior surface of the femur.
- **Muscle insertion:** Inferior surface of the patella.
- **Muscle action:** knee extension.

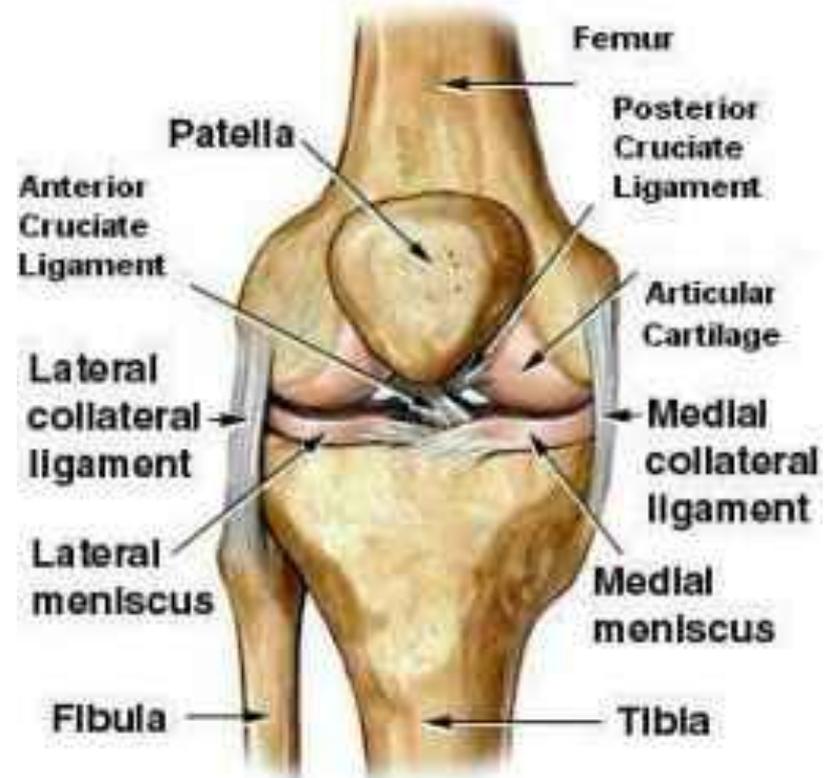


Anatomy – Quadriceps group



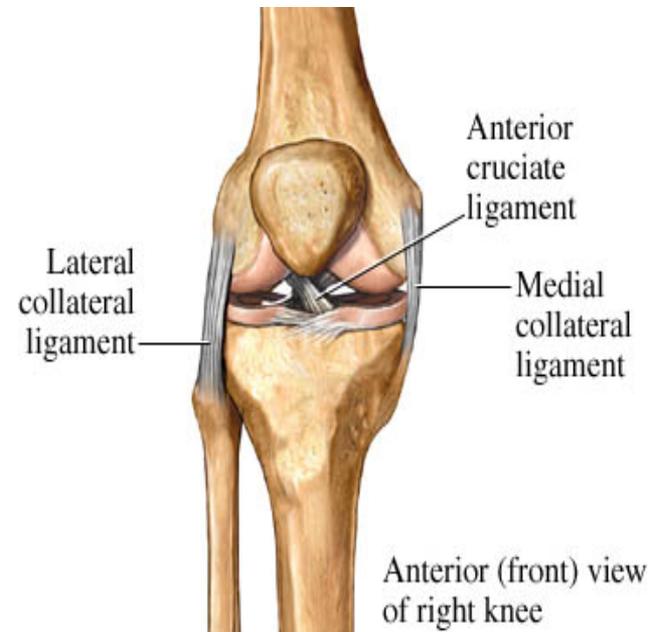
Anatomy – The Knee

- The knee joint, one of the largest joints in the body is a uniaxial, synovial joint and is often referred to as a hinge joint.
- Although the knee is well built structurally, it was not built to withstand many of the stresses placed on it by athletic activities.



Anatomy – Ligaments of the knee

- The **MCL** and **LCL** (medial and lateral collateral ligaments) are fibrous expansions of the quads, the iliotubial band, the vastus muscles, the sartorius and the semimembranosus muscle.
- MCL and LCL provide stability and essentially stop adduction and abduction of the knee.

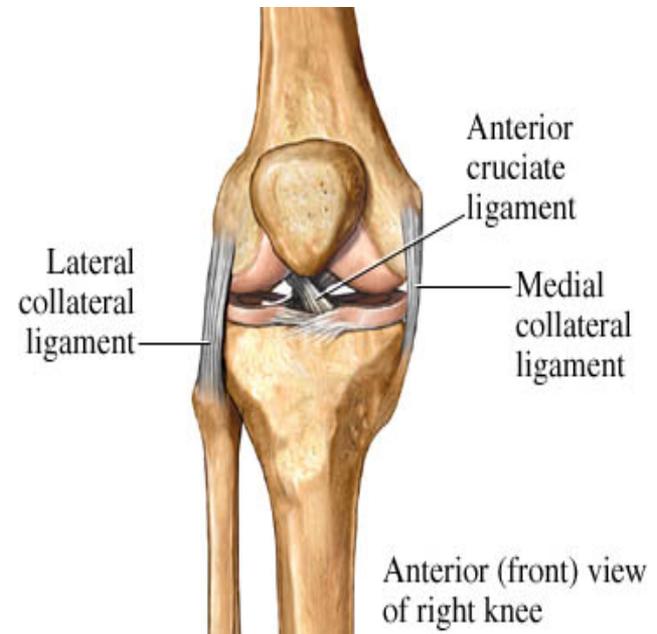


Cruciate – means
cross

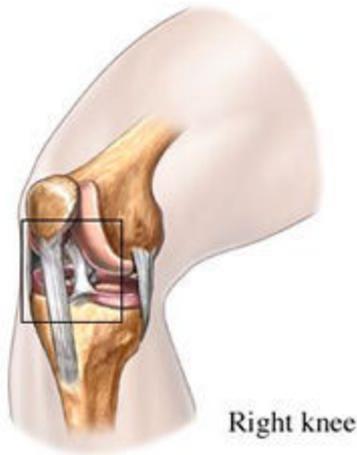
Anatomy- Ligaments of the Knee

Knee ligaments (cont.d)

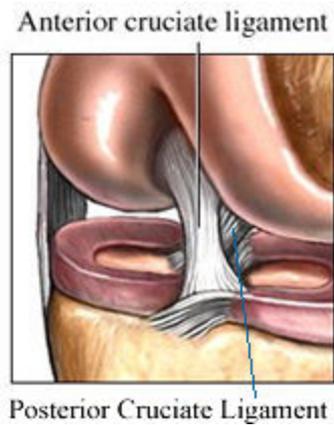
- In the middle of the knee joint are two ligaments known as the ACL and PCL (**Anterior and Posterior Cruciate Ligaments**)
- These two ligaments actually *cross* each other.
- The ACL and the PCL stop the tibia from displacing from the femur



Anatomy – Ligaments of the Knee

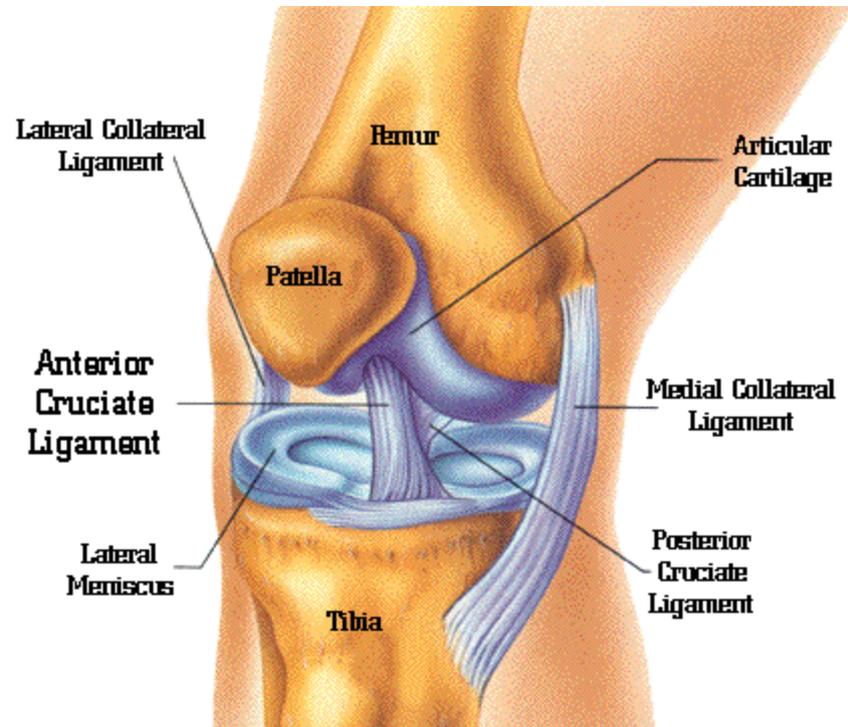


Right knee



Anterior cruciate ligament

Posterior Cruciate Ligament



Lateral Collateral Ligament

Femur

Articular Cartilage

Patella

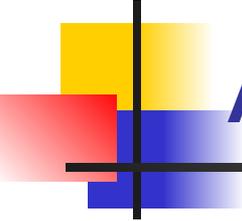
Anterior Cruciate Ligament

Medial Collateral Ligament

Lateral Meniscus

Posterior Cruciate Ligament

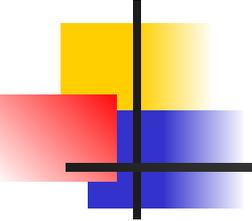
Tibia



Anatomy

Movements of the knee

- Flexion and Extension: When the knee flexes and extends the Tibia and Fibula rotate. When the knee **flexes** the leg **internally rotates**, and when it **extends** the knee **externally rotates**.



Anatomy – The Upper Leg



Anatomy – The Upper Leg

