

Muscles and actions of the knee joint.

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Knee joint:

Type: Pivot-hinge joint = Trochoginglymus

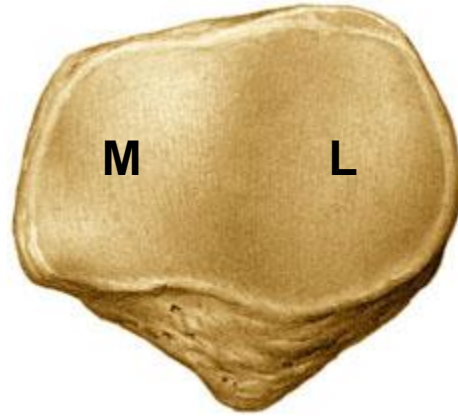
Movements:

- Flexion, extension
- Medial and lateral rotation (only in flexed position)

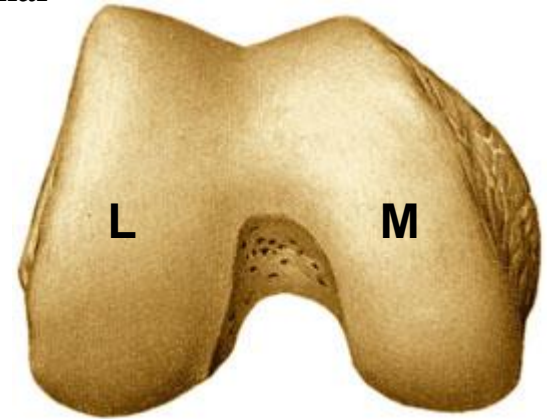
Description of a joint:

- Bony components
- Additional features
- Articular capsule
- Reinforcing ligaments
- Description of movements
- Muscles of actions

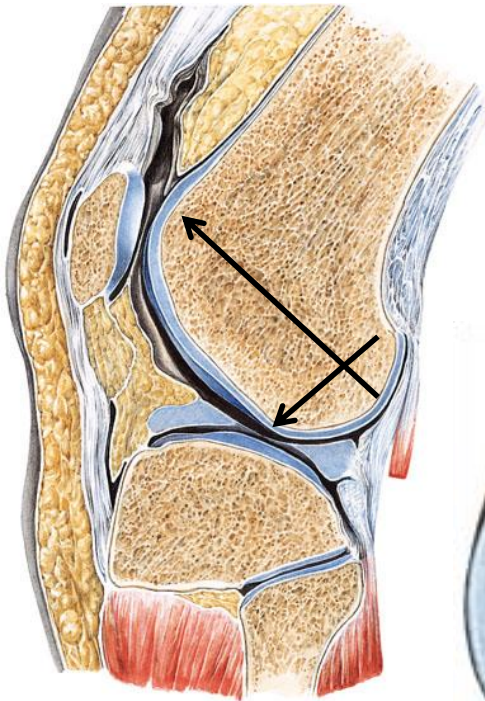
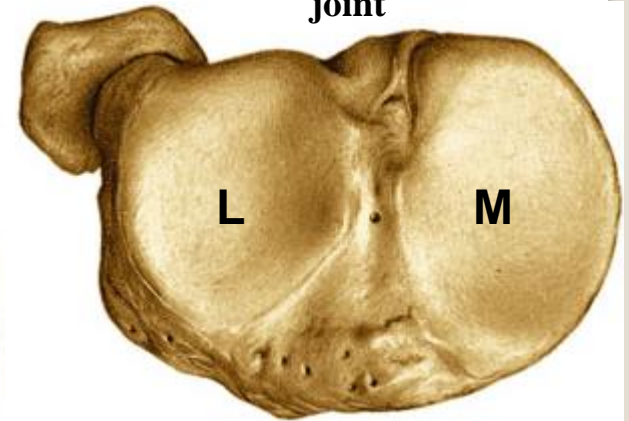
Bony components – additional features



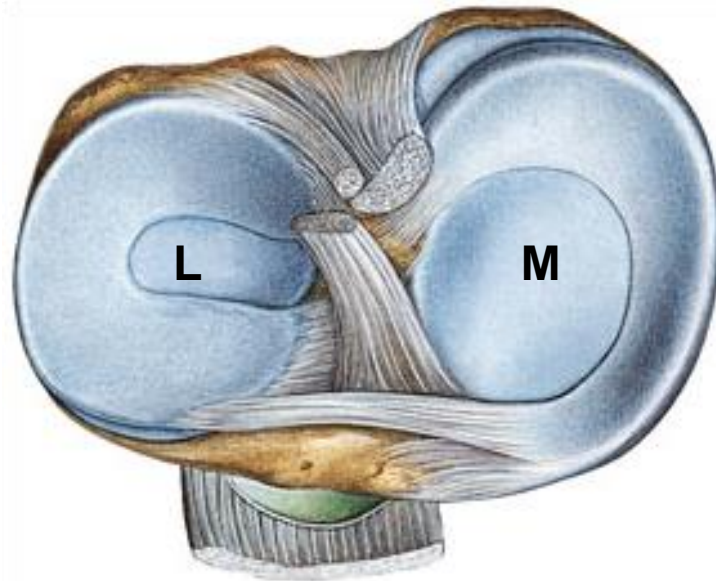
**Femoro-patellar
joint**



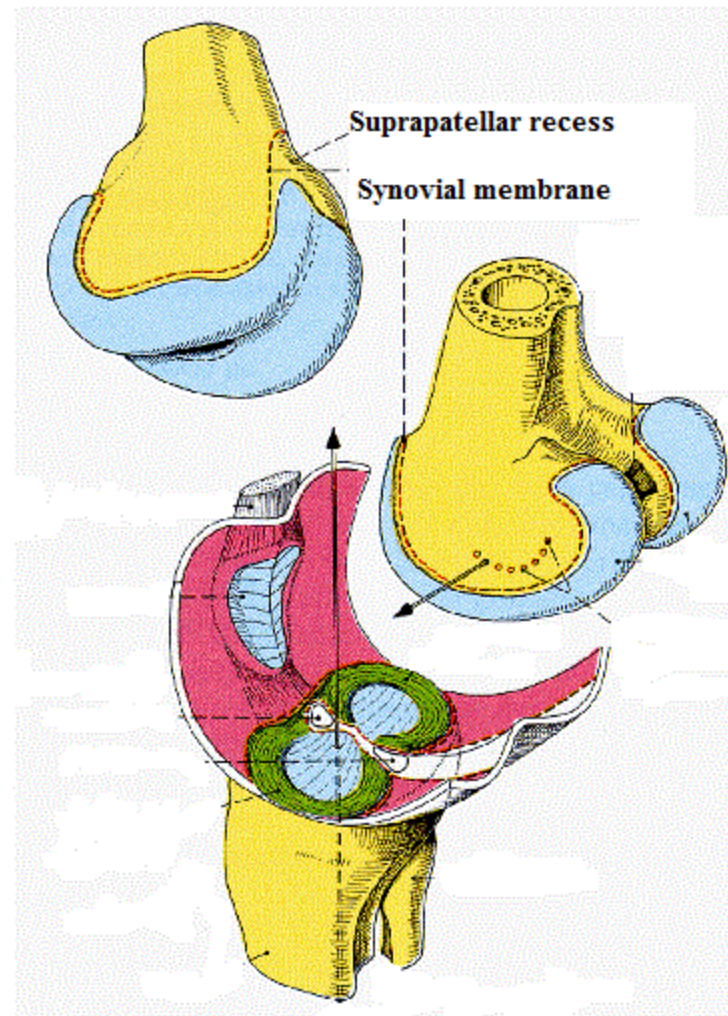
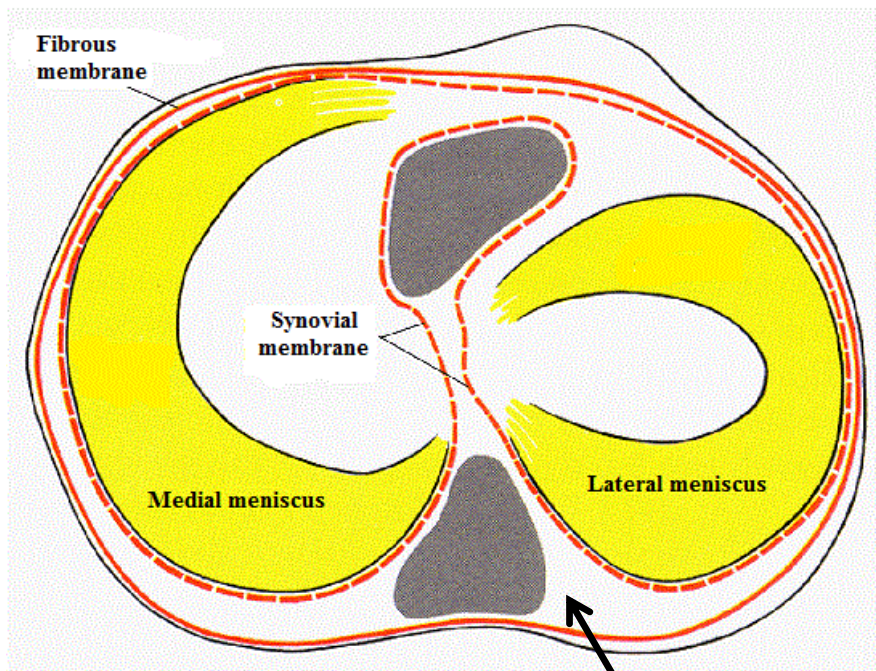
**Femoro-tibial
joint**



incongruences

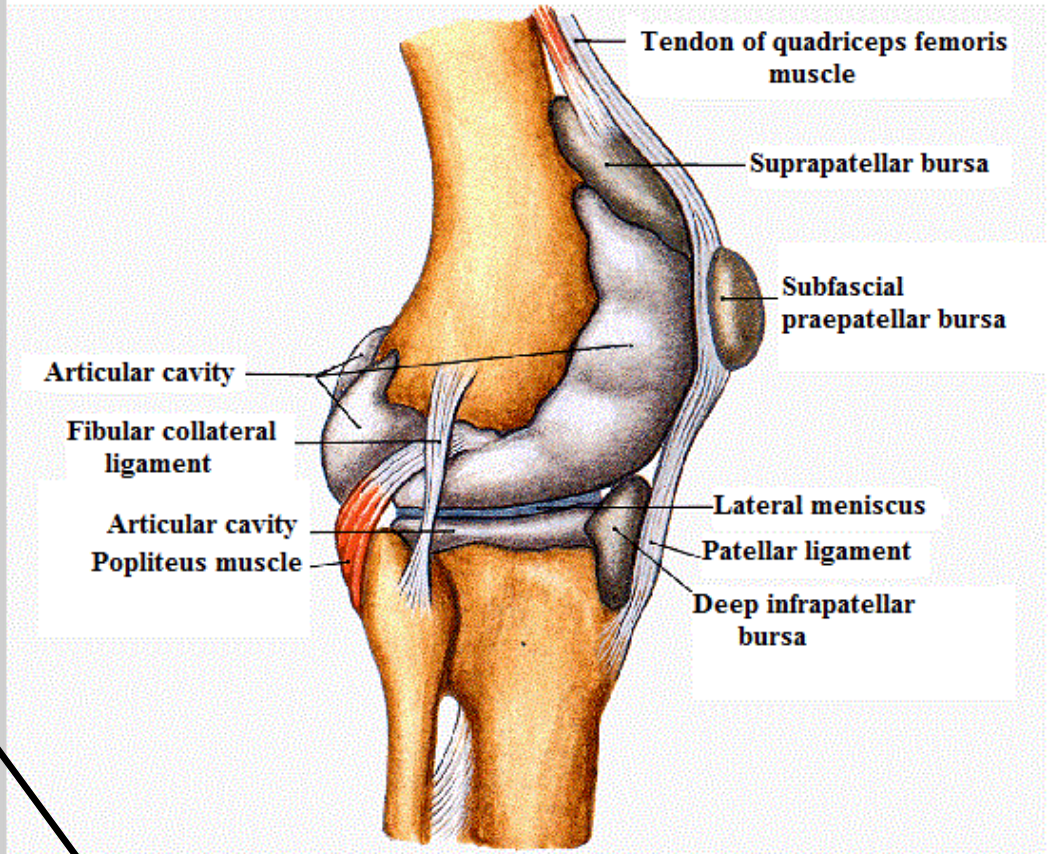


Articular capsule 1/2



The two membranes are separated by fatty deposits

Articular capsule 2/2



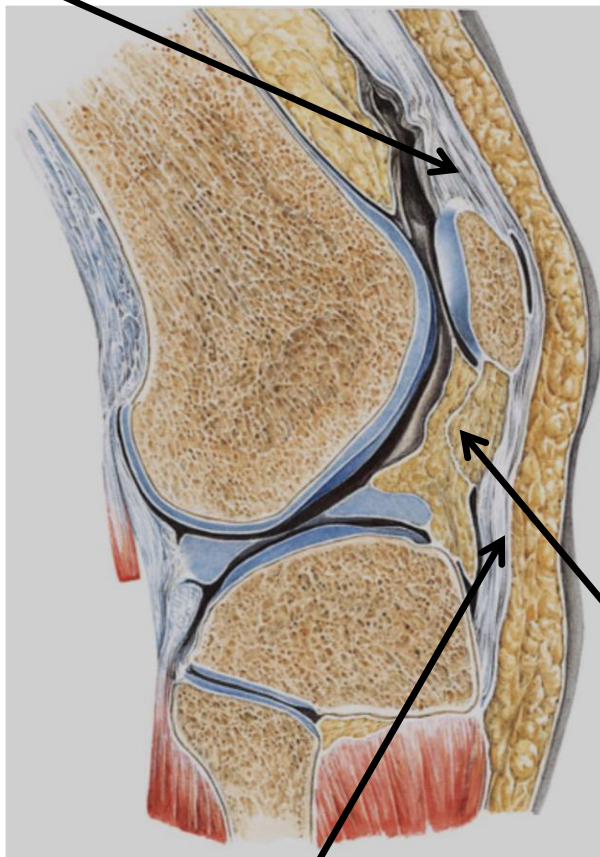
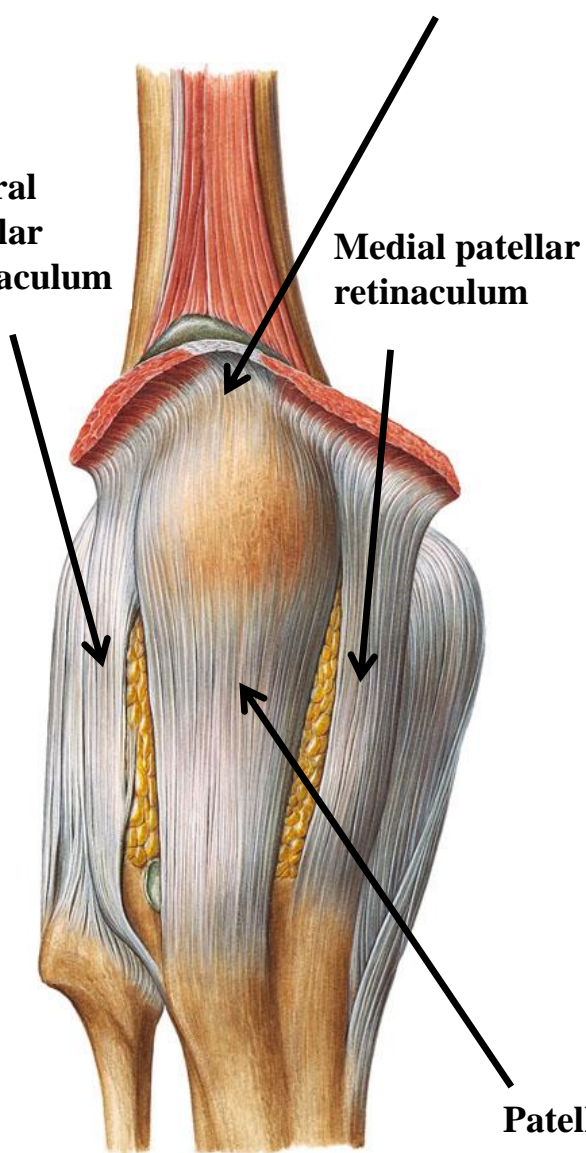
Infrapatellar fat pad

Reinforcing ligaments 1/3

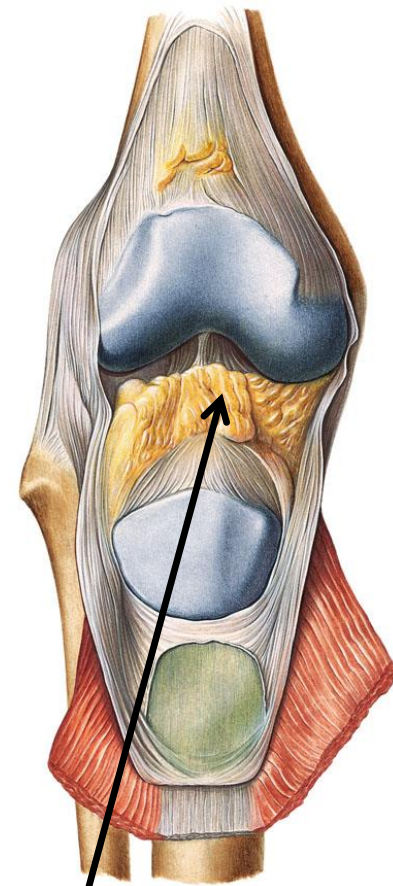
Tendon of quadriceps femoris muscle

Lateral patellar retinaculum

Medial patellar retinaculum

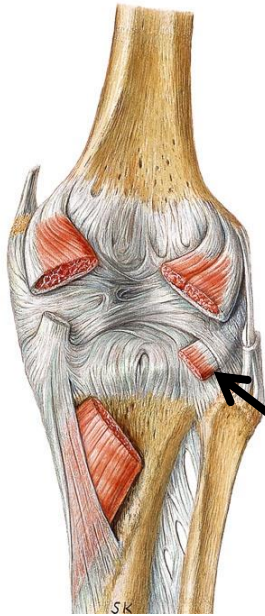
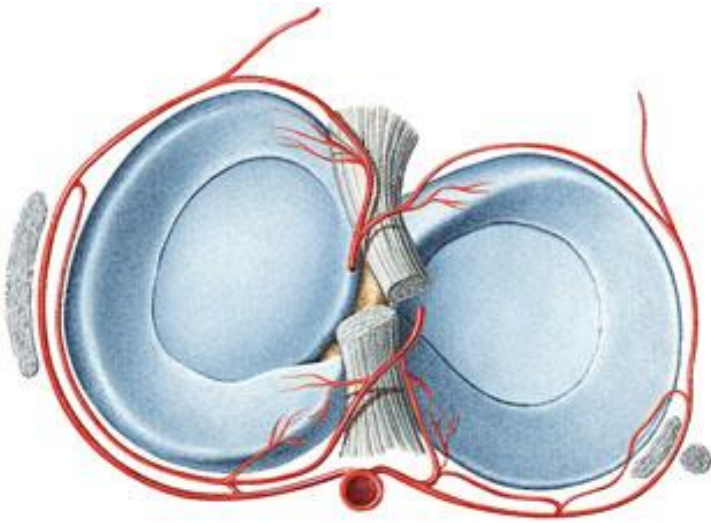


Patellar ligament

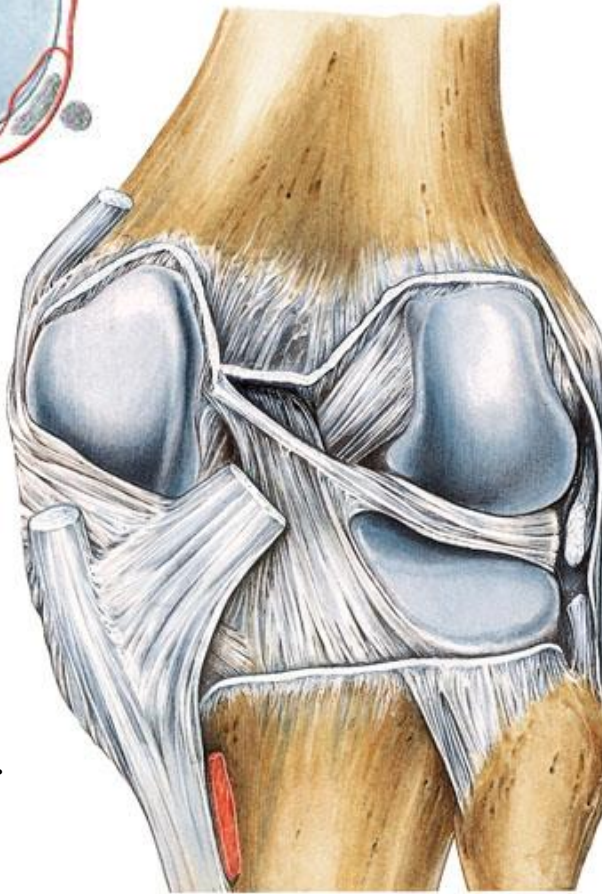


Infrapatellar fat pad

Reinforcing ligaments 2/3

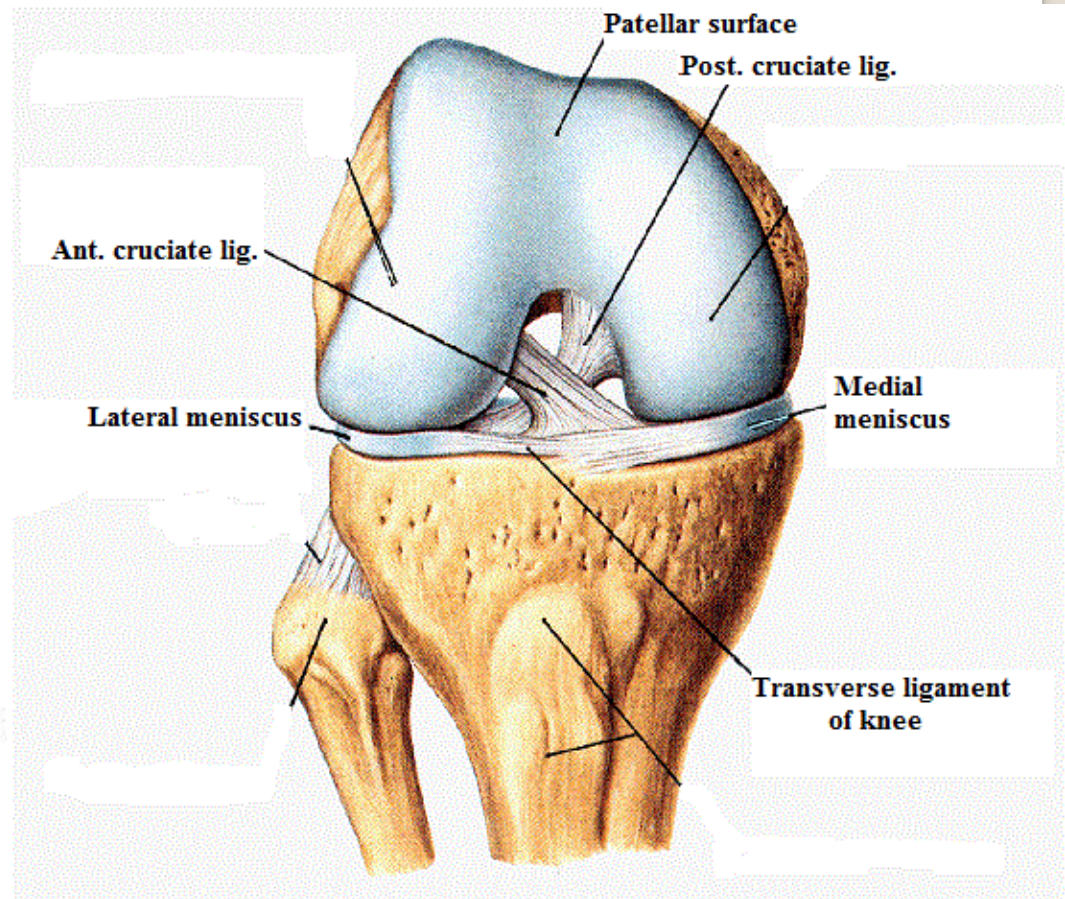
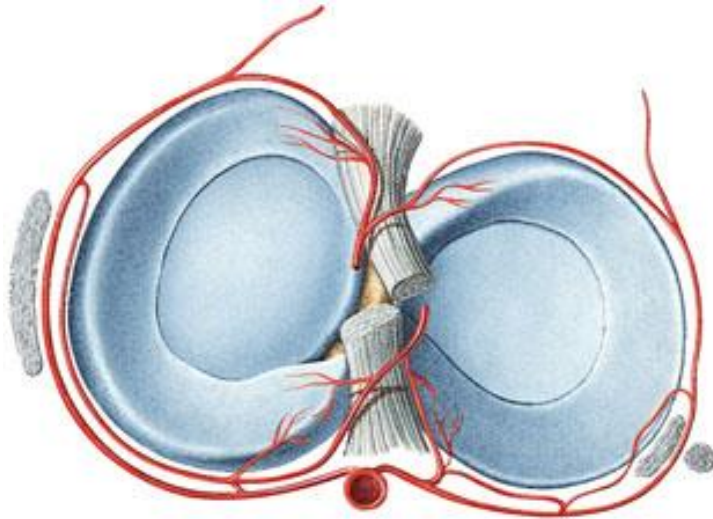
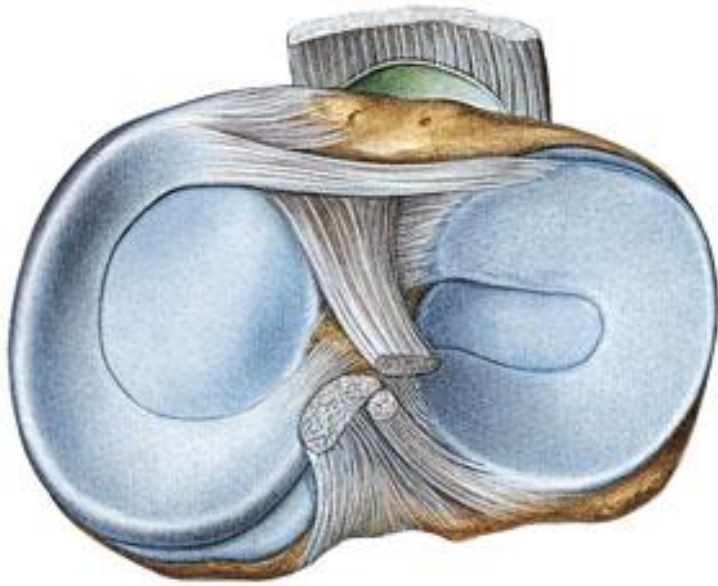


popliteal m.

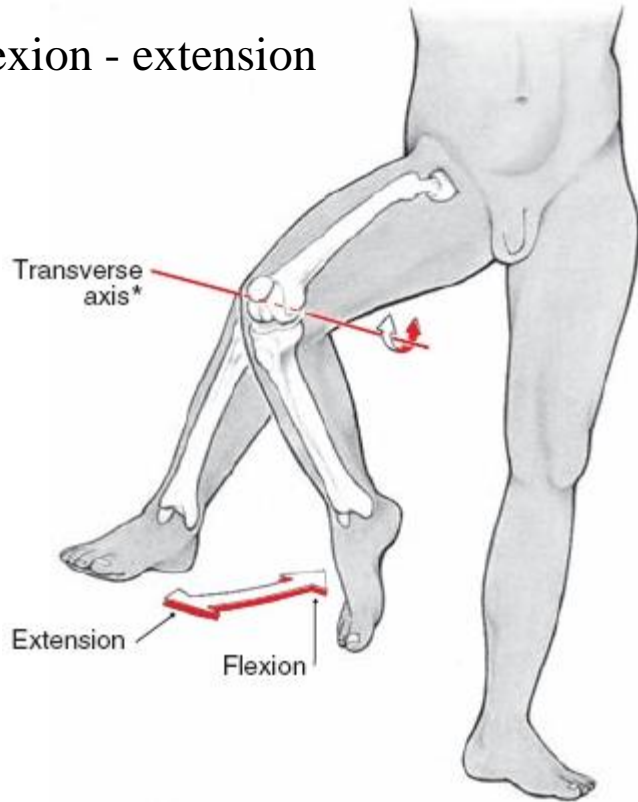


Reinforcing ligaments 3/3

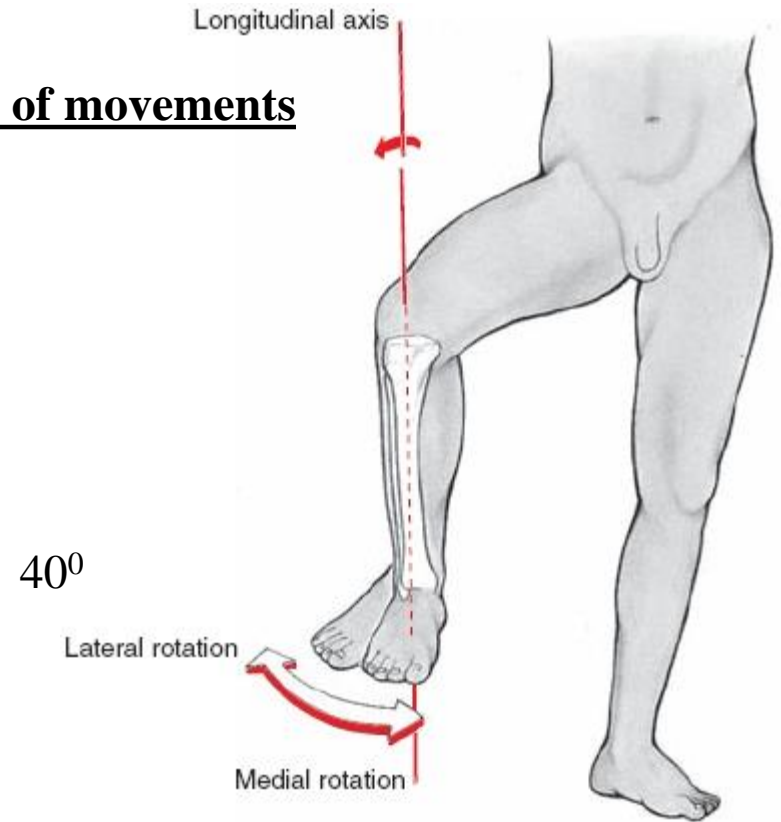
Cruciate ligaments



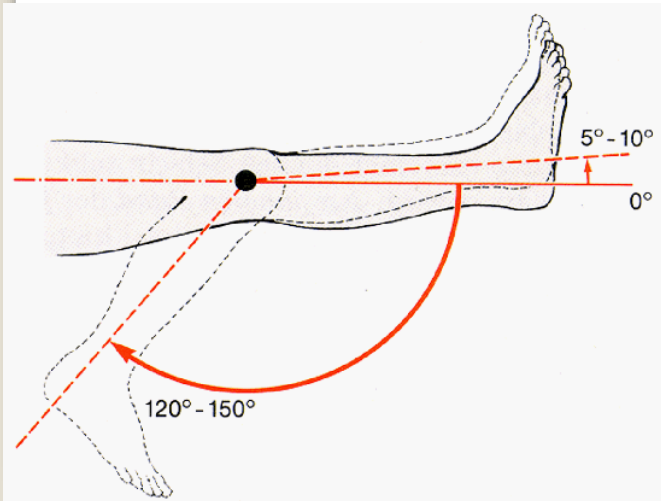
Flexion - extension

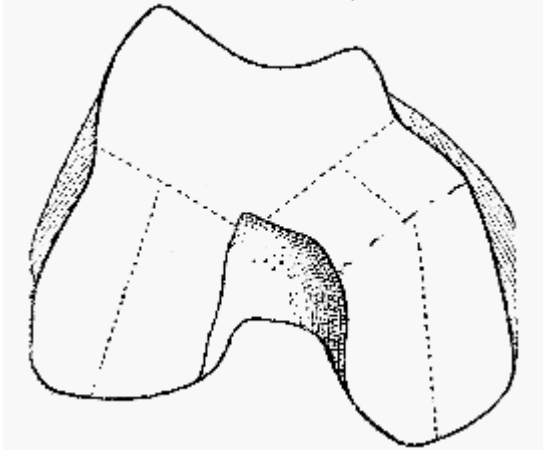


Description of movements



„active rotation”





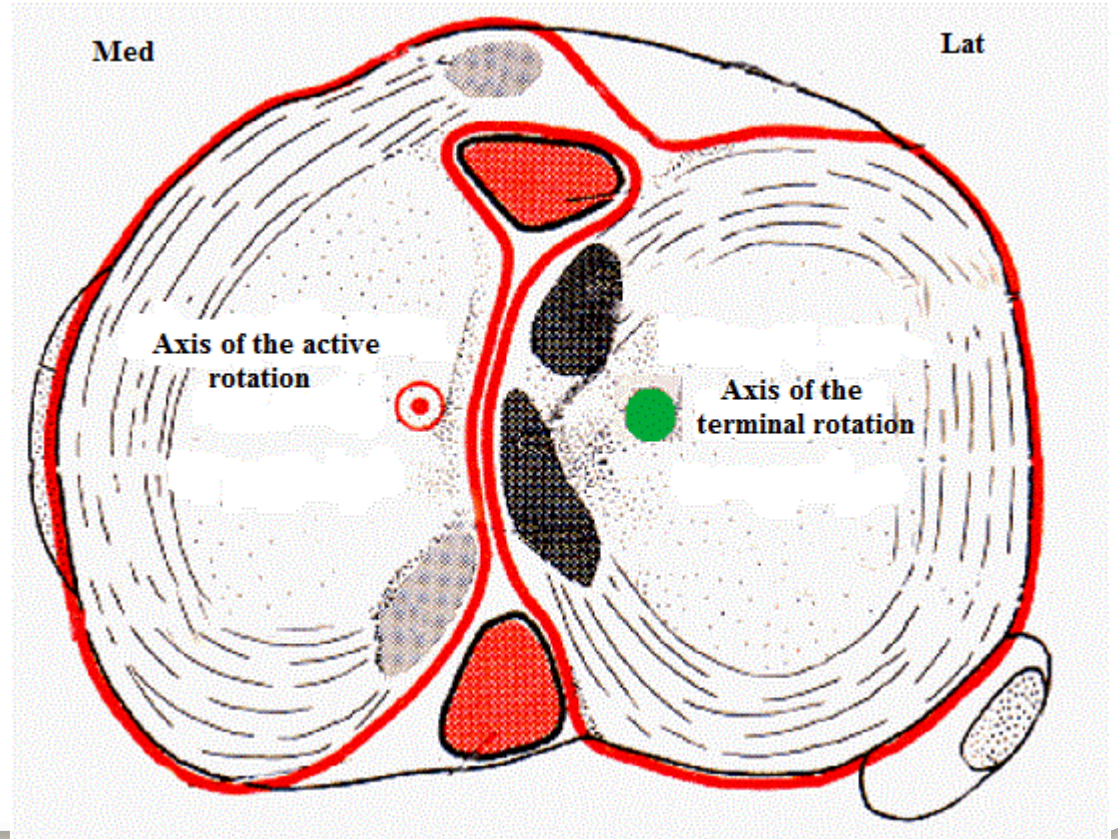
Obligatory terminal/final rotation (5°) /"passive rotation"/

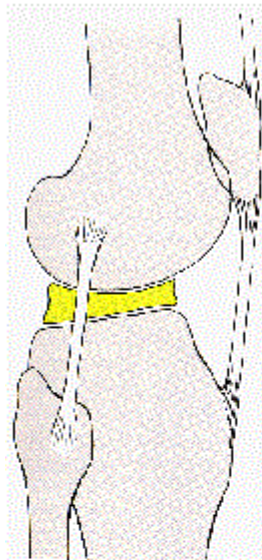
During the last 10° of movement before complete extension.

Reasons:

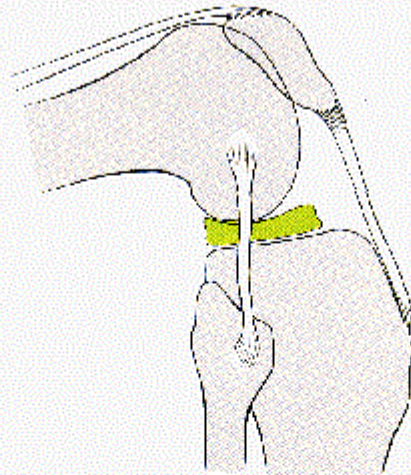
- 1) The anterior cruciate ligament shorter than the posterior.
- 2) The medial condyle longer by 2 cm than lateral.

(the joint is „screwed home”)





Extended knee

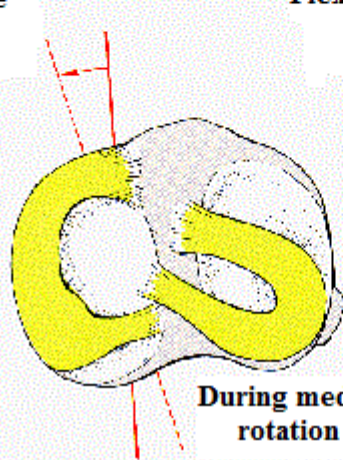


Flexed knee

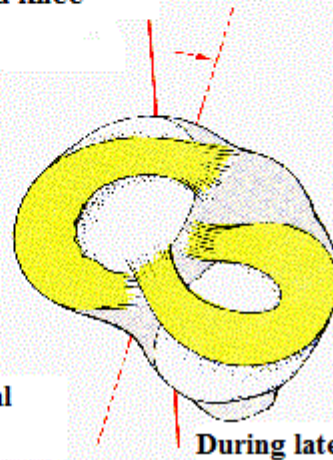


Extended

Flexed



**During medial
rotation**



During lateral rotation

The muscles acting upon the knee joint

Extensor muscles of the leg:

(max. 180°)

m. quadriceps femoris,
m. tensor fasciae latae

Flexor muscles of the leg:

(max. 130°)

m. semimembranosus,

A) *m. semitendinosus,*
m. biceps femoris,

B) *m. gracilis,*

C) *m. sartorius,*

m. popliteus,

D) *m. plantaris*

m. gastrocnemius.

Medial rotator muscles of the leg:

(10°)

m. semimembranosus,

m. semitendinosus,

m. gracilis,

m. sartorius (they are also flexors).

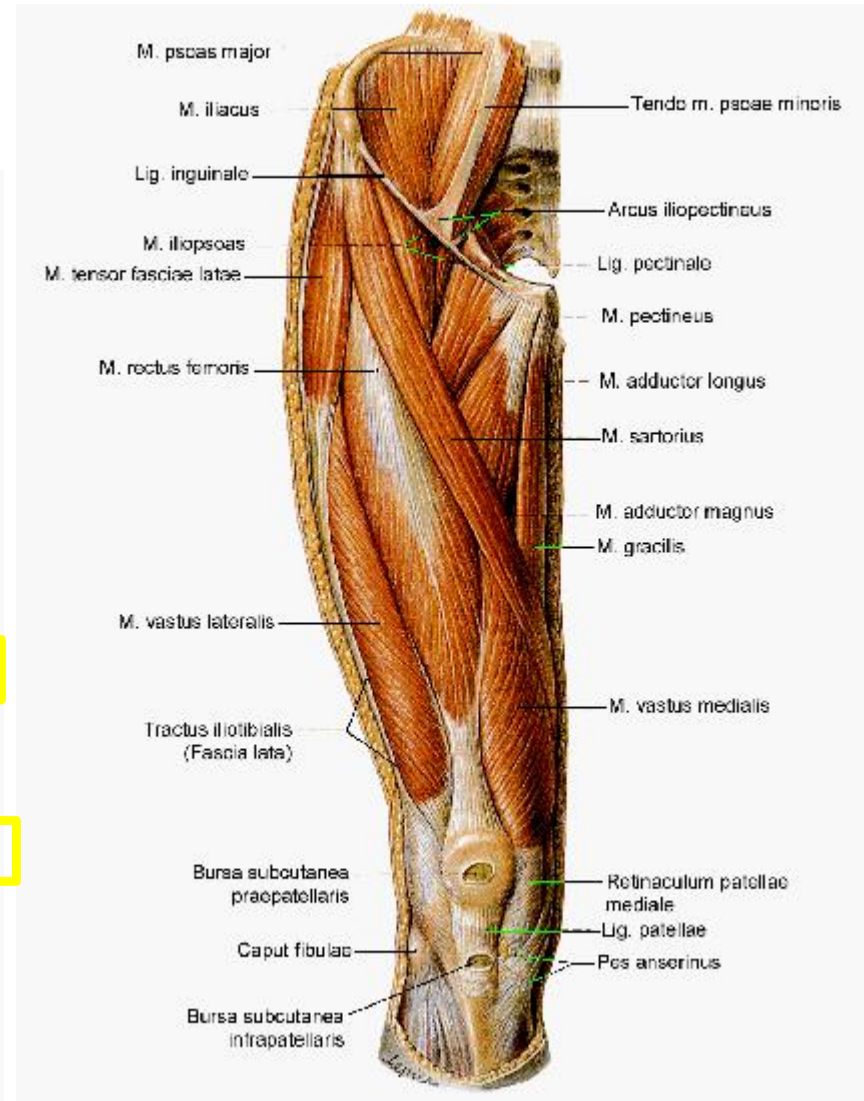
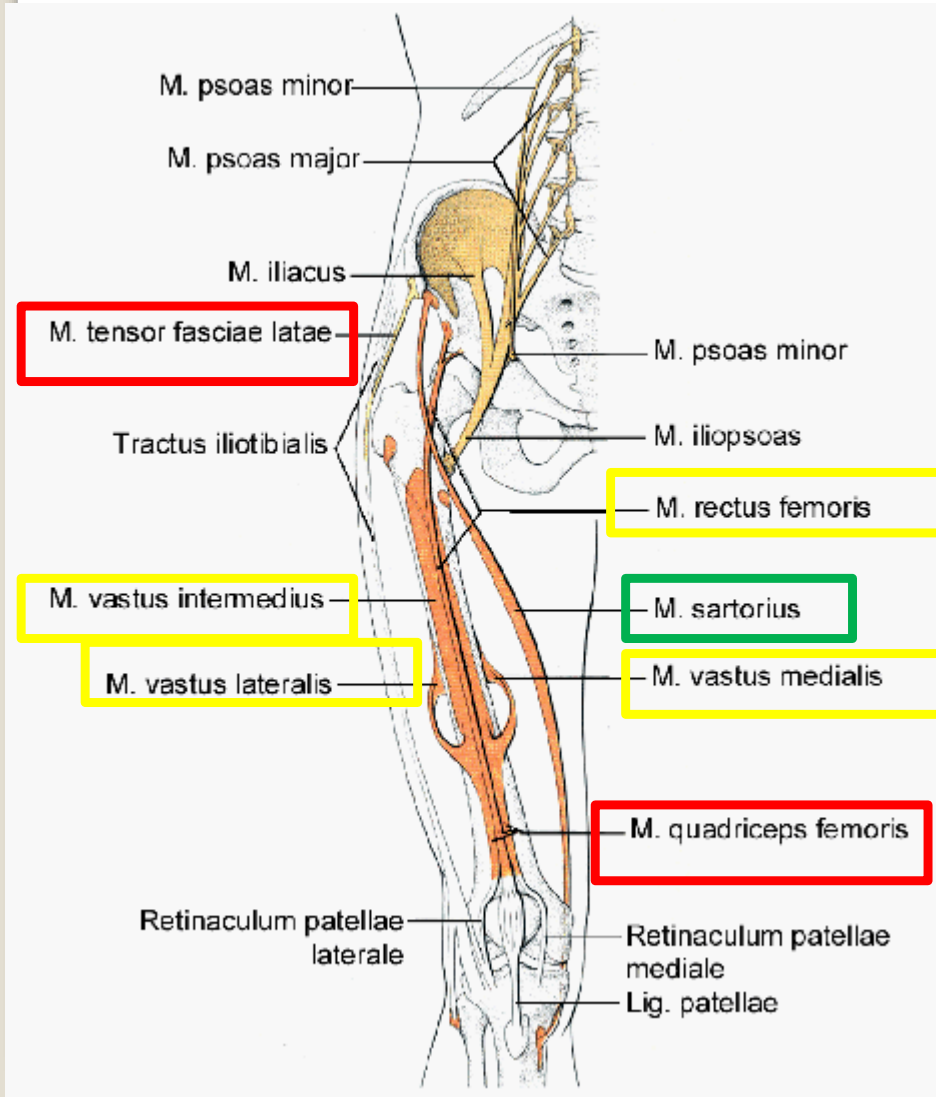
Lateral rotator muscles of the leg:

(40°)

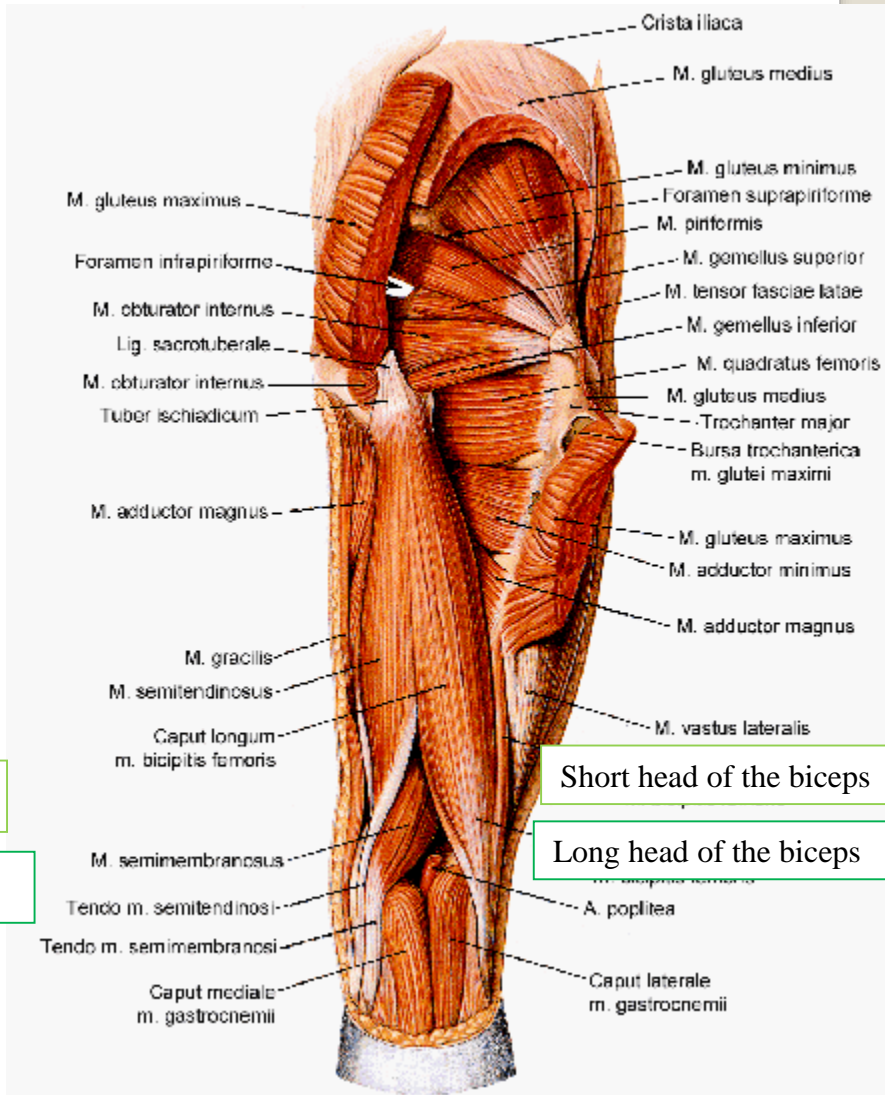
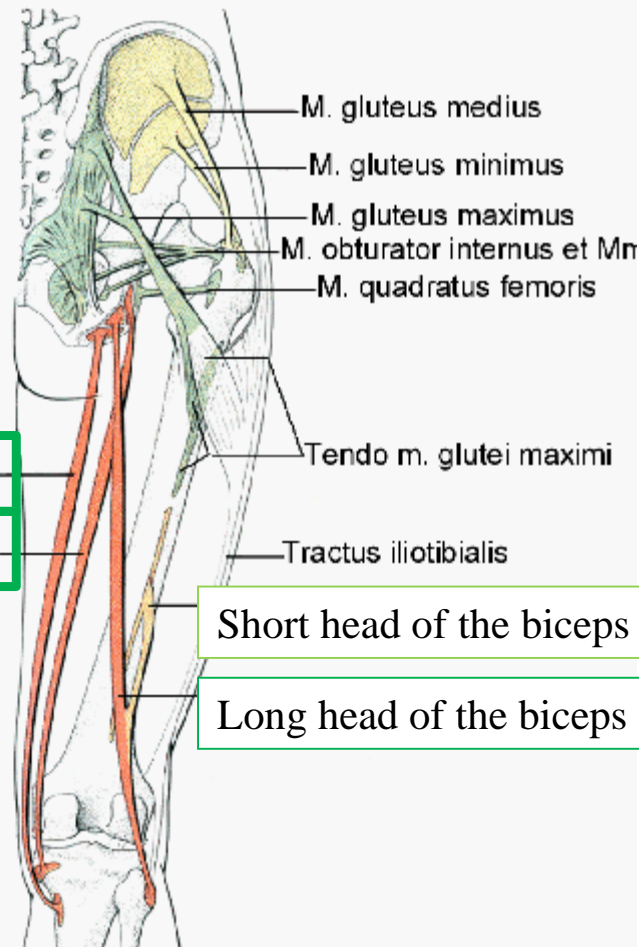
m. biceps femoris (also flexor),

m. tensor fasciae latae (also extensor).

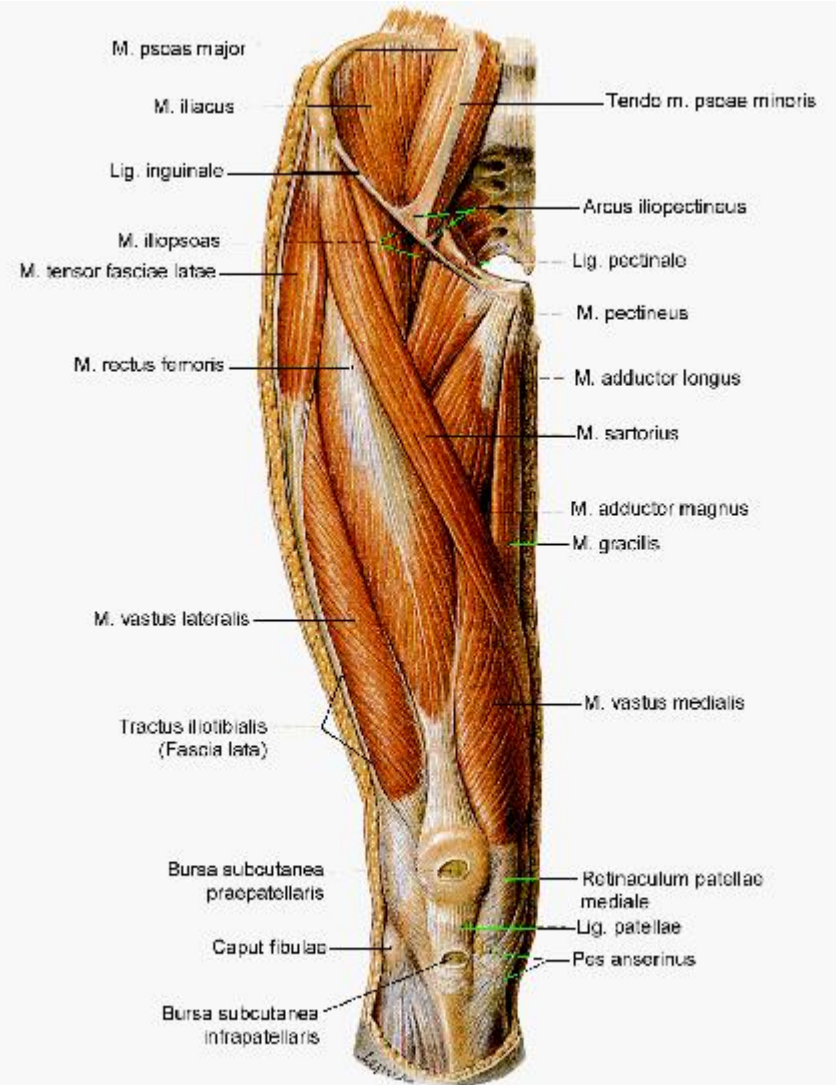
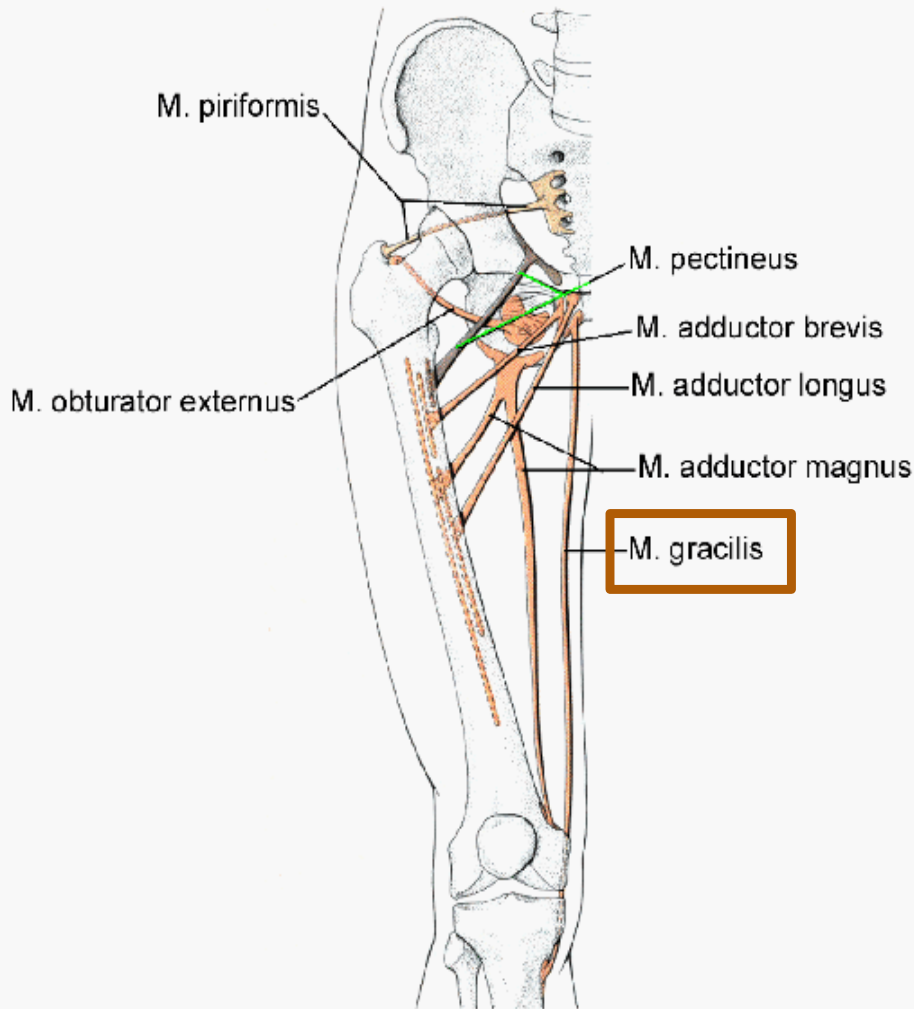
m. quadriceps femoris,
 m. tensor fasciae latae,
 m. sartorius

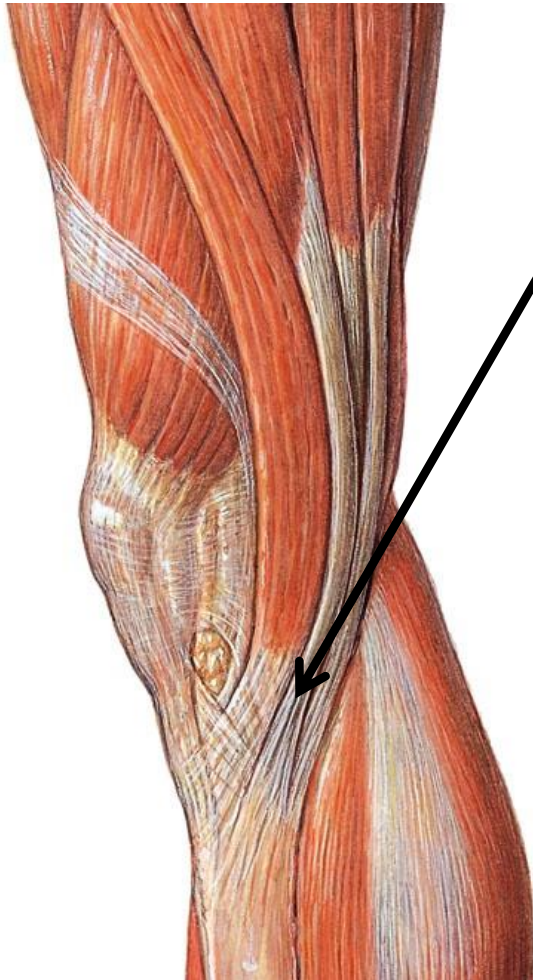


m. semimembranosus,
m. semitendinosus,
m. biceps femoris,



m. gracilis





Superficial pes anserinus

Common insertion - of the **sartorius, gracilis, semitendinosus muscles** - just below the medial condyle of the tibia

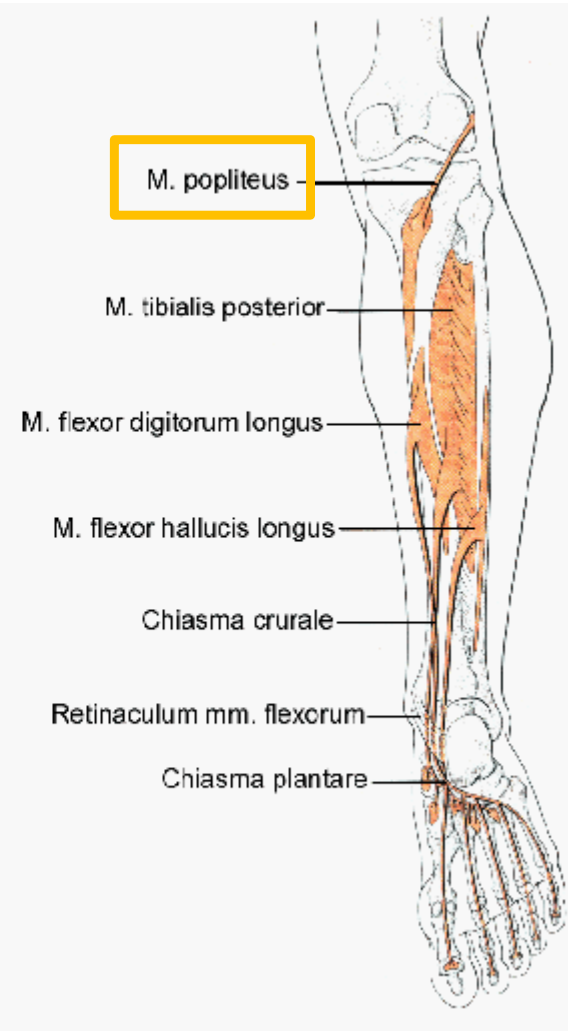
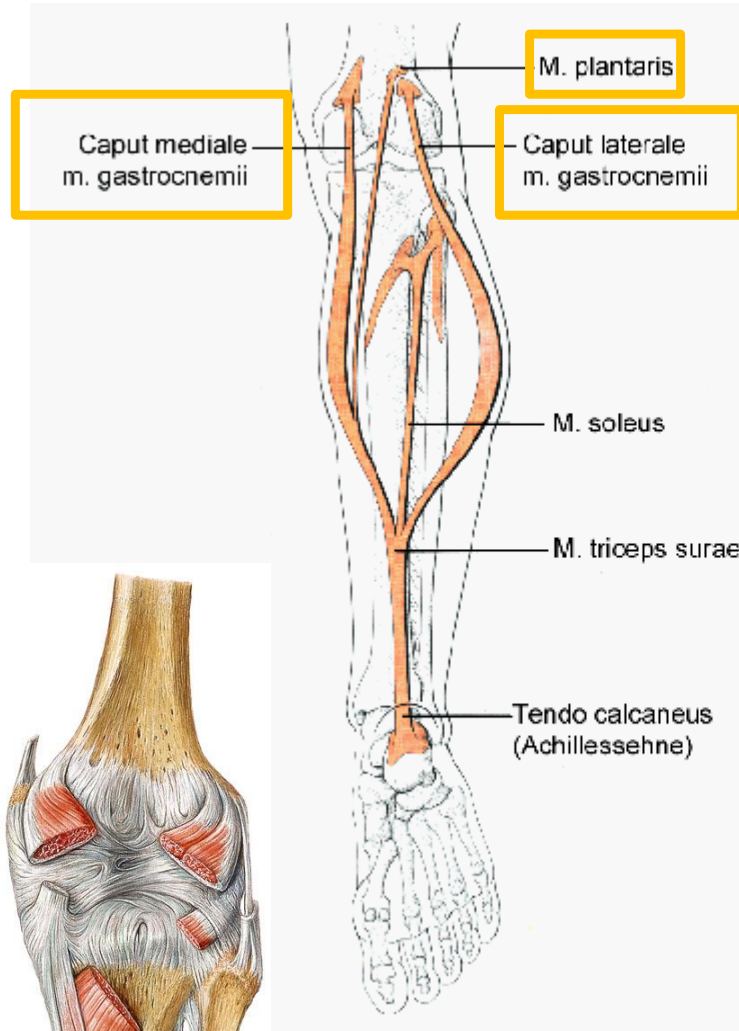
Deep pes anserinus

Insertion of the **semimembranosus muscle**, below the superficial pes anserinus

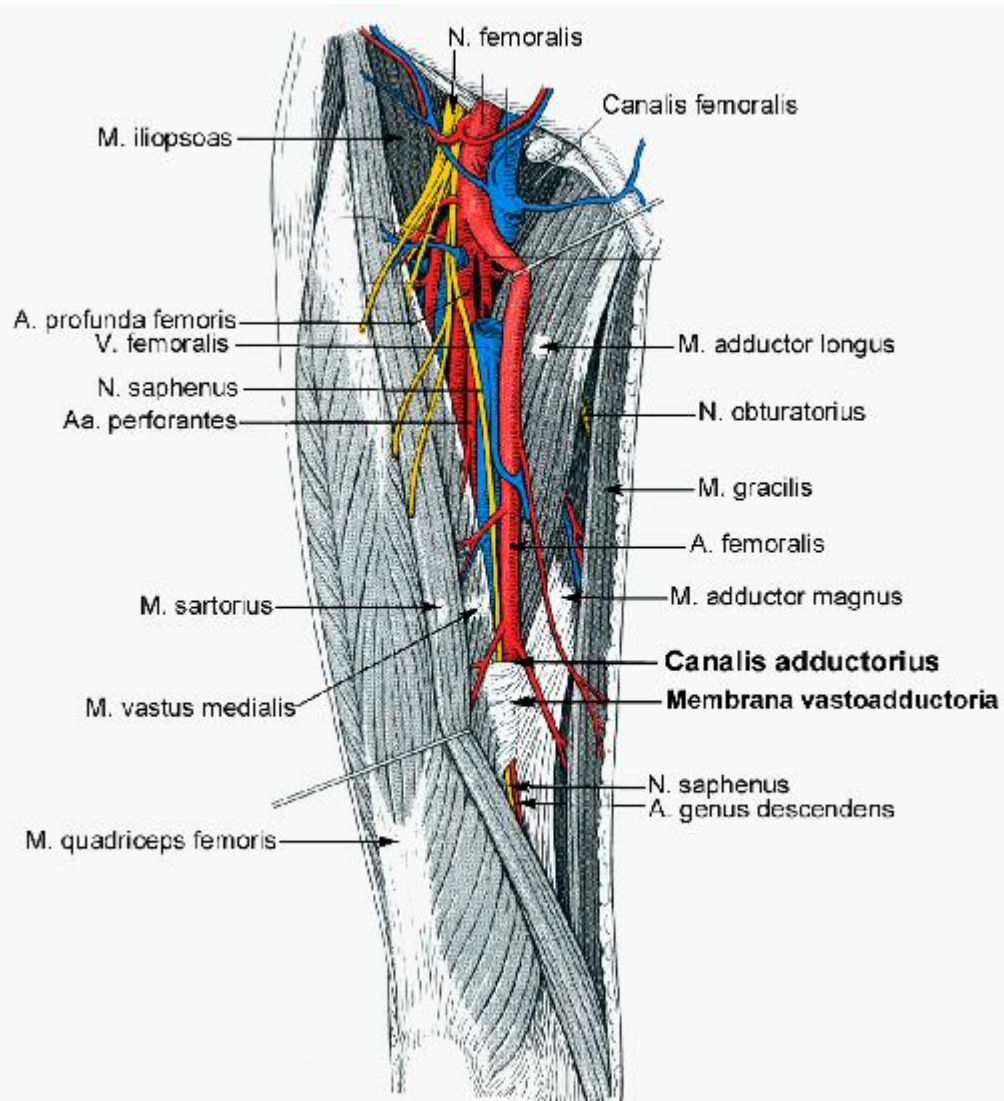
„pes anserinus” = „leg of goose”



m. popliteus, m. plantaris, m. gastrocnemius

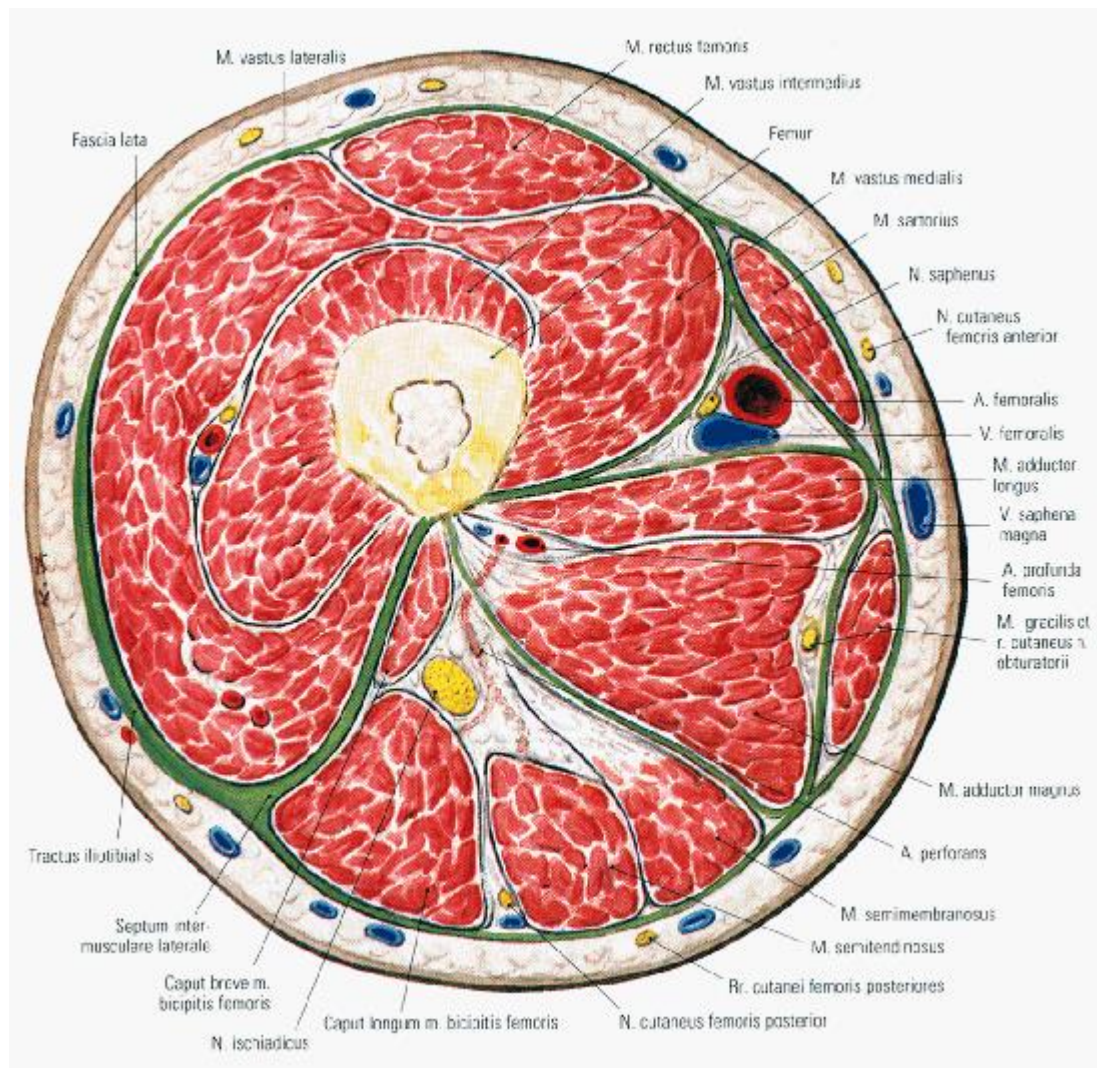


Femoral triangle



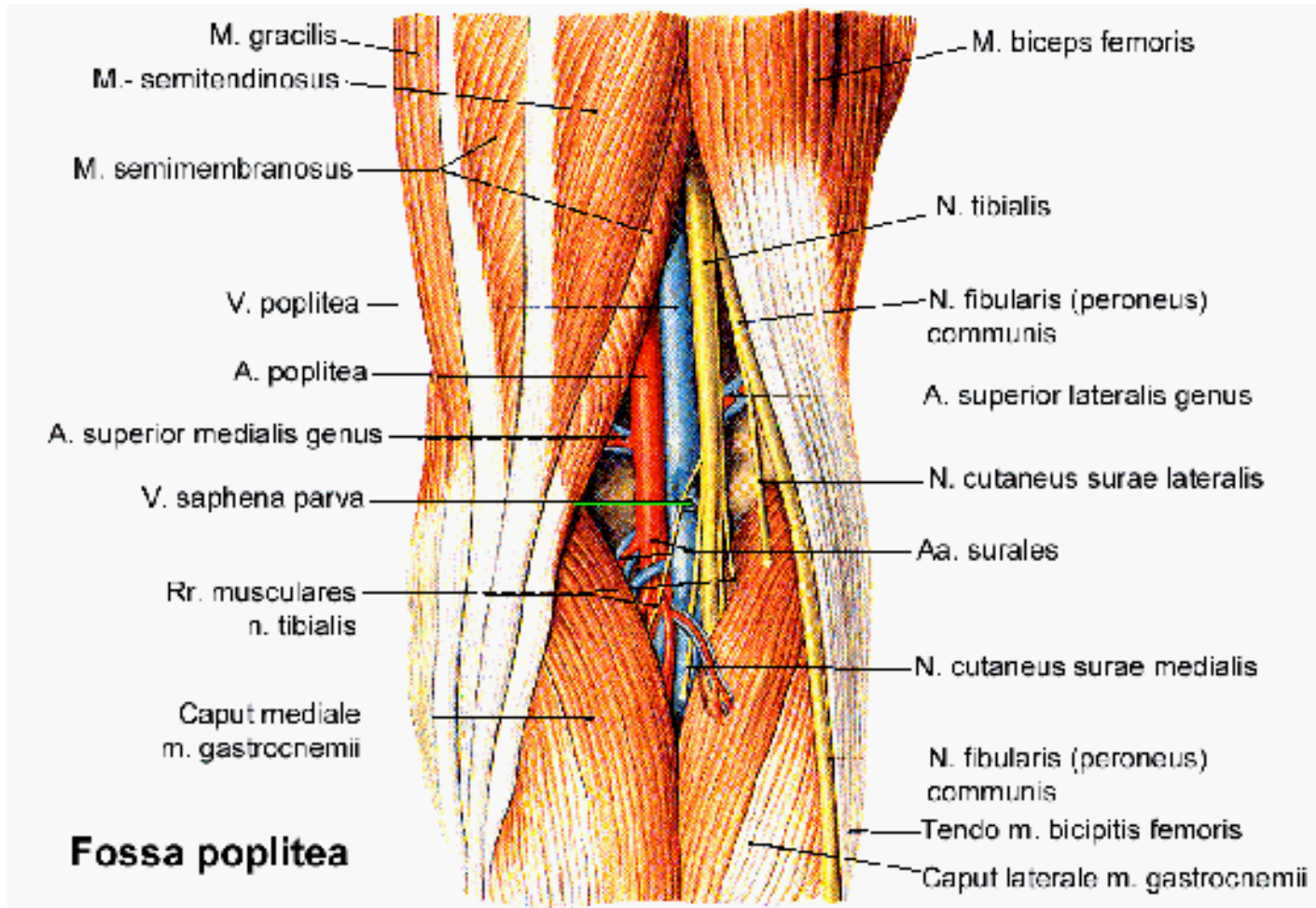
Adductor canal

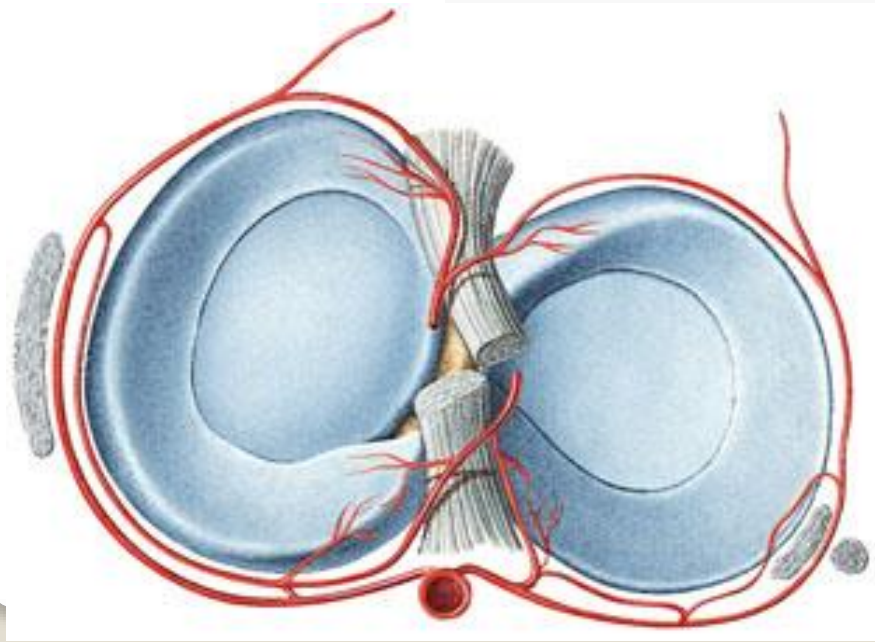
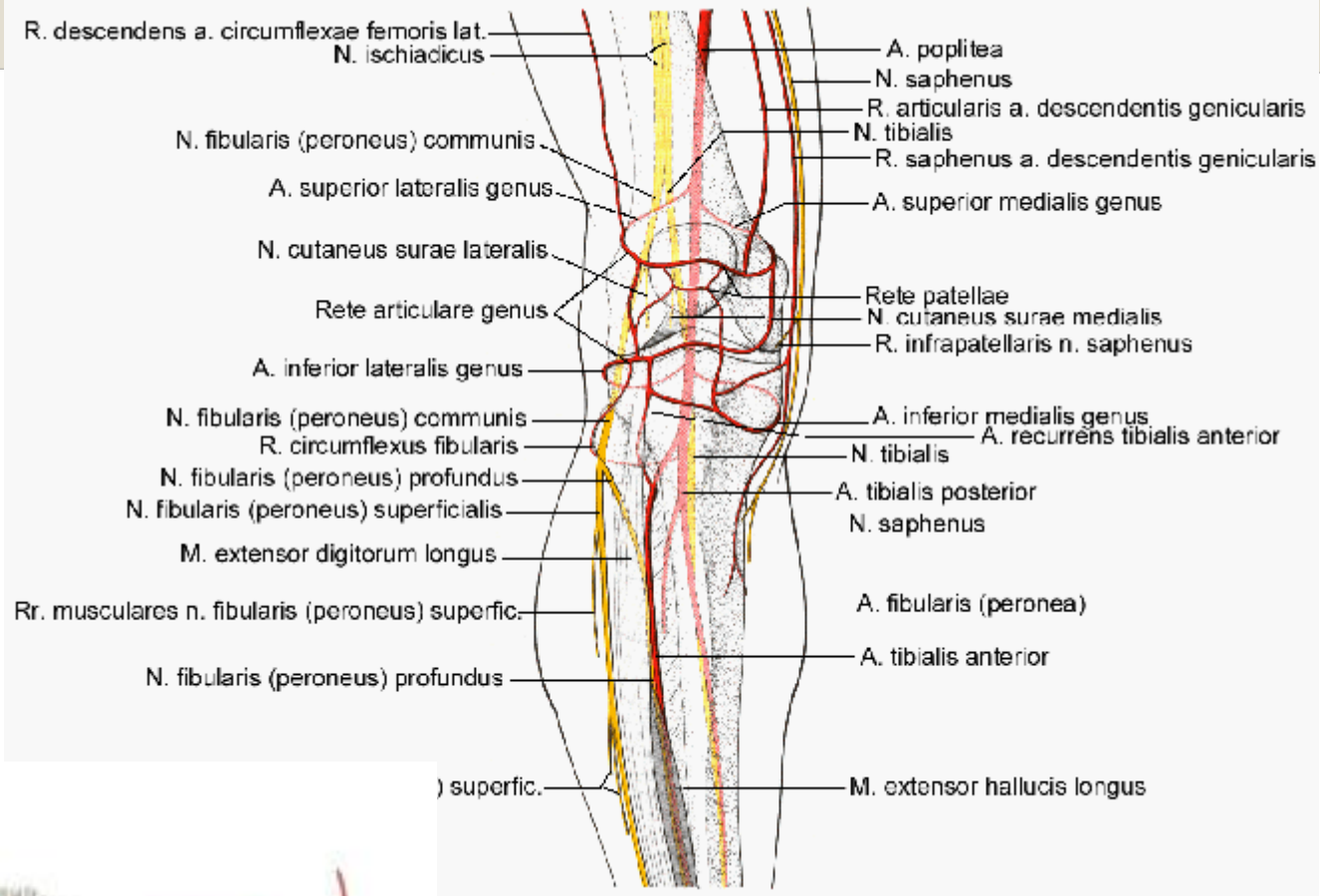


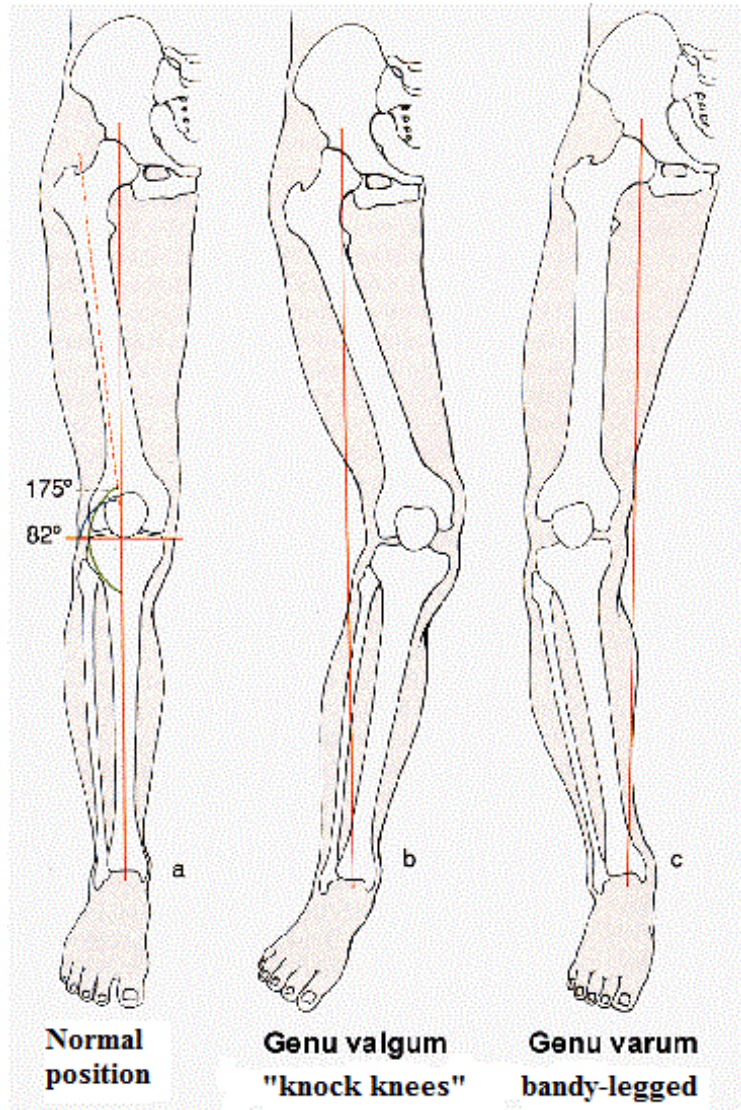


Popliteal fossa

„NeVA rule”









Thank you for your attention!!!

