Lower Limb Anatomy & Spine (Part 2)

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Learning Objectives

- Bones & Joints
- Quickfire questions!
- Vascular supply & Lymphatics
- Muscles: Attachments, neurovasculature, function - will not be covering foot
- Lumbosacral plexus
- Clinical relevance

Ask questions or have me repeat whenever!

P.s. No such thing as a stupid question :)

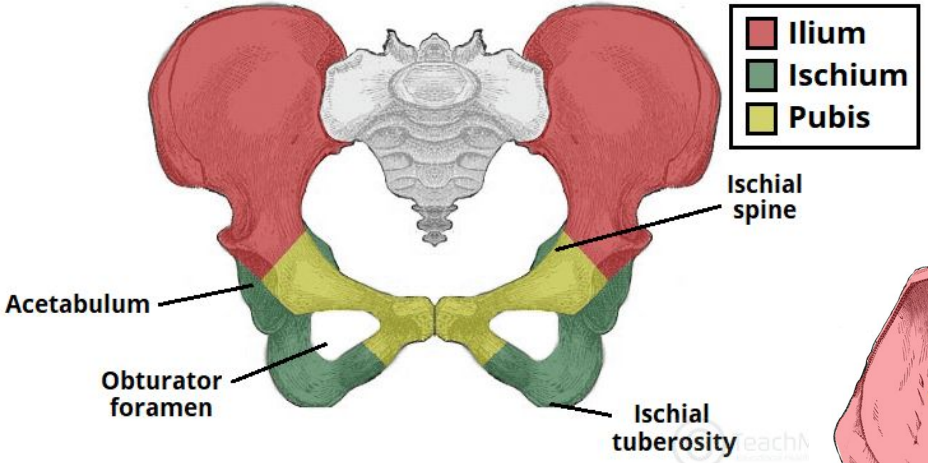
MSA Education

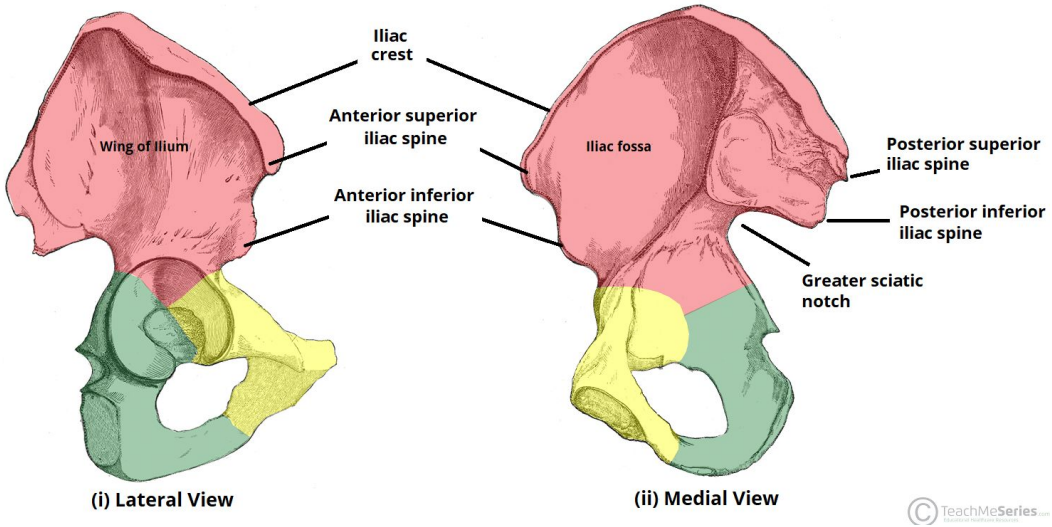
How confident lower limb?

SBA 1

Which of the following is not a bone of the lower limb?

A. Calcaneus
B. Navicular
C. Talus
D. Lunate
E. Tibia



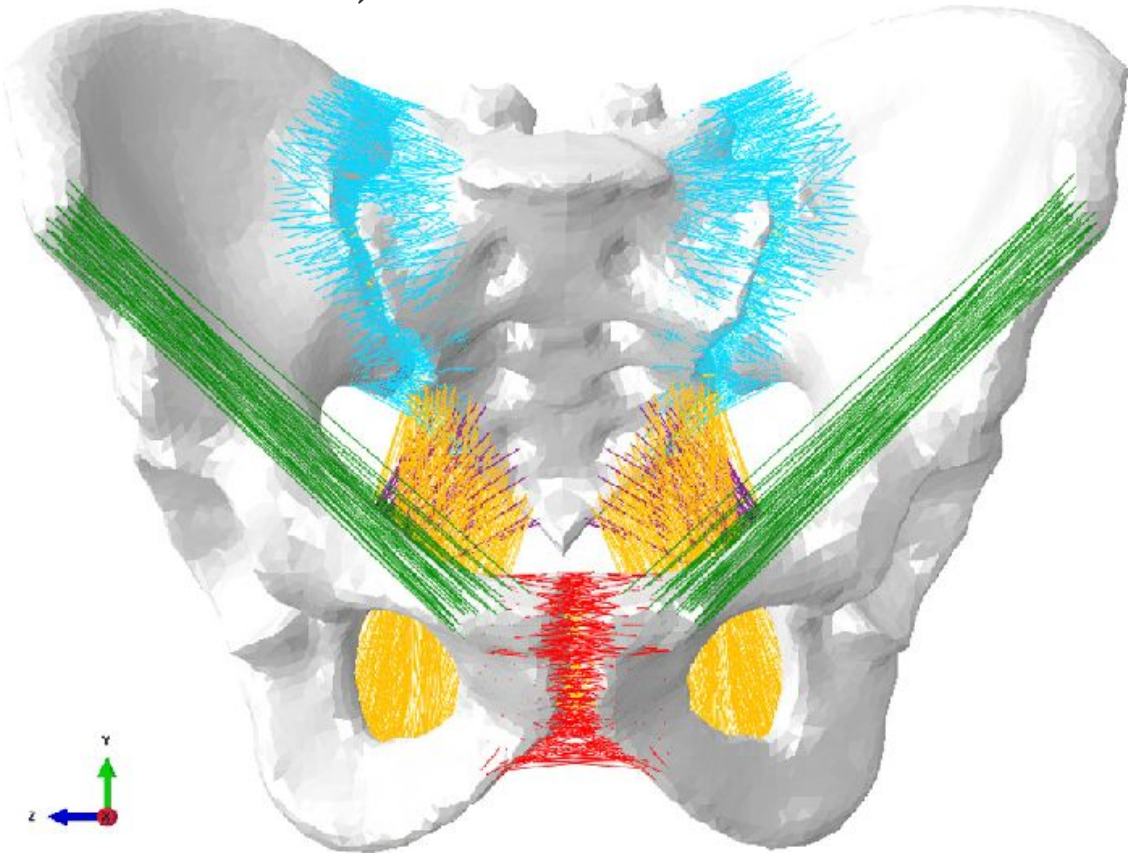


Functions:

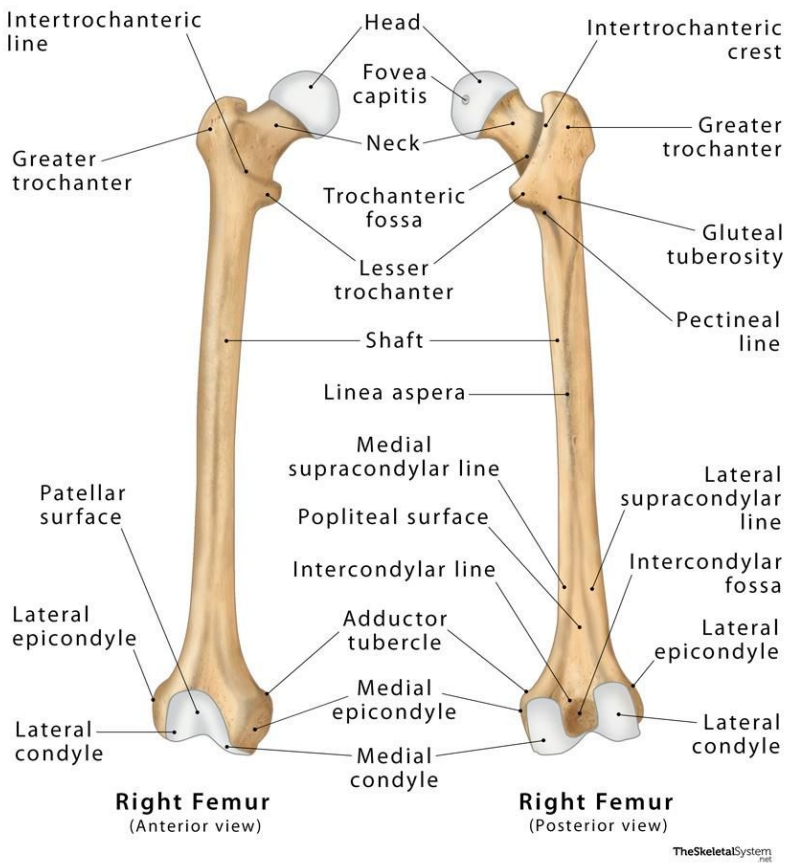
1. Weight bearing, and stabilisation
2. Providing support when seated, walking, running etc. (i.e. Locomotion)
3. Childbirth
4. Protection to the abdominal and pelvic visceral organs

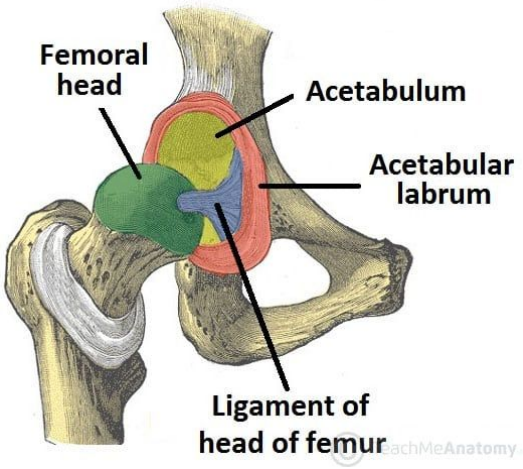
Ligaments (Innominate bone)

- Sacrospinous
- Sacroiliac
- Sacrotuberous
- Pubic symphysis
- Inguinal ligament



Femur


Intertrochanteric line
Head
Fovea capitis
Intertrochanteric crest
Greater trochanter
Neck
Greater trochanter
Trochanteric fossa
Gluteal tuberosity
Lesser trochanter
Pectineal line
Shaft
Linea aspera
Medial supracondylar line
Lateral supracondylar line
Patellar surface
Popliteal surface
Intercondylar line
Intercondylar fossa
Lateral epicondyle
Adductor tubercle
Lateral epicondyle
Medial epicondyle
Lateral condyle
Lateral condyle
Medial condyle
Right Femur
(Anterior view)
Right Femur
(Posterior view)
TheSkeletalSystem.net

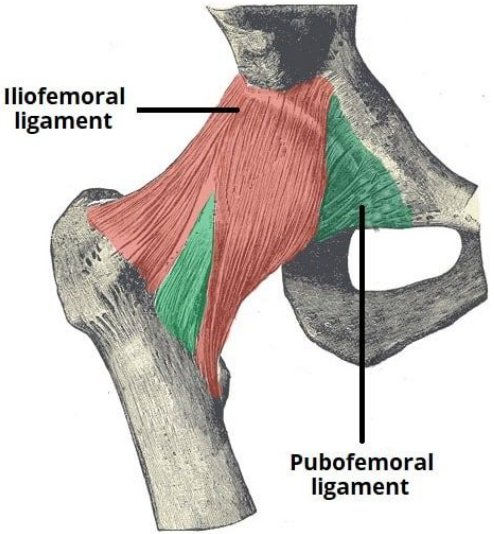

Femoral head
Acetabulum
Acetabular labrum
Ligament of head of femur

Hip joint

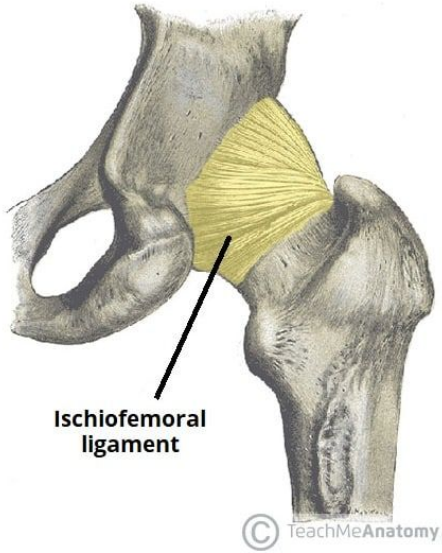
- Ball and socket articulation between acetabulum and femoral head
- Intracapsular ligament of the head of the femur (ligamentum teres) containing obturator artery
- Extracapsular ligaments include (i) iliofemoral, (ii) ischiofemoral and (iii) pubofemoral
- Arterial supply via circumflex femoral arteries - *Bonus: What are they a branch of and which is the major supply?*
- Innervated via femoral, obturator and sciatic nerves hence resulting in referred pain from the knee and vice versa

Movement	maximum (degrees)	limited by
Flexion	90-115 (60 with hamstrings)	hamstrings & trunk
Extension	15-30	iliofemoral & pubofemoral ligaments
Abduction	50-60	pubofemoral lig. & greater trochanter
Adduction	15-45 (hip flexed)	other limb
Medial Rotation	30-45	ischiofemoral ligaments
Lateral Rotation	45-60	pubofemoral ligaments

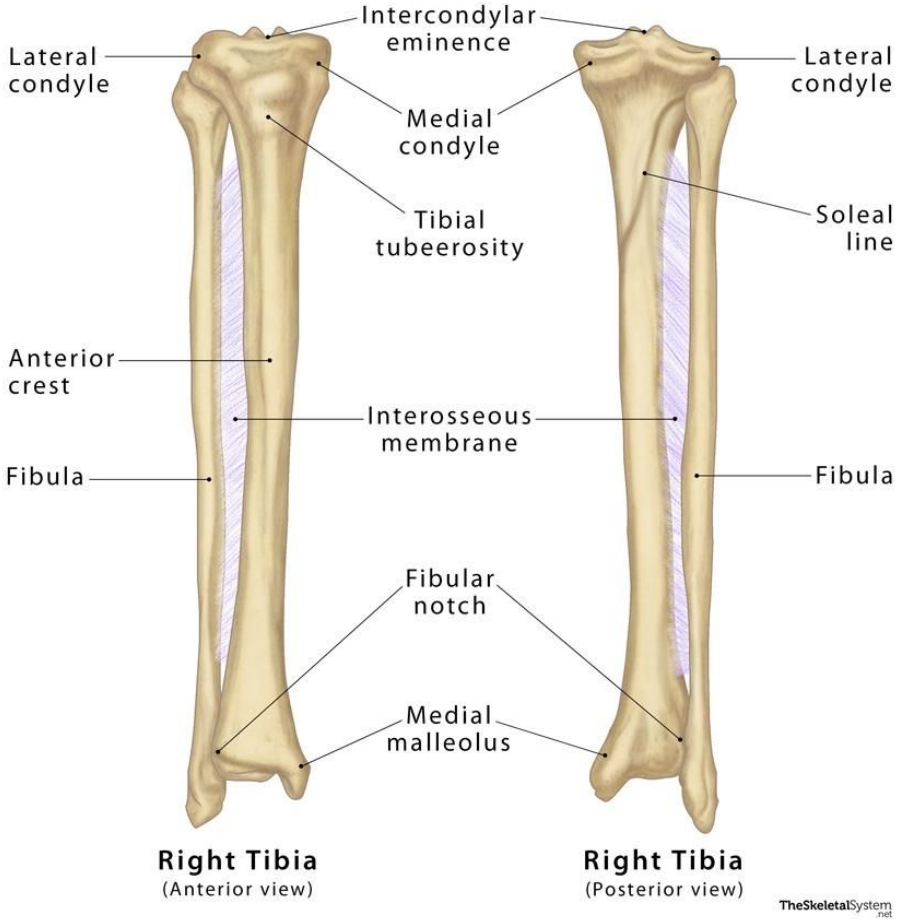
Anterior

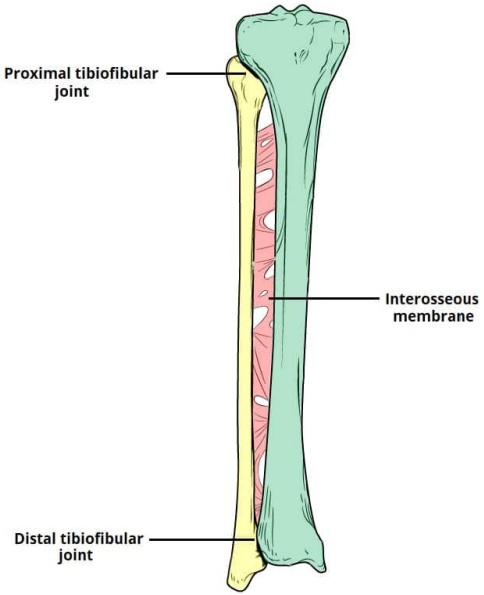


Posterior



Tibia


Intercondylar eminence
Lateral condyle
Medial condyle
Tibial tubeerosity
Anterior crest
Interosseous membrane
Fibula
Fibular notch
Medial malleolus
Right Tibia
(Anterior view)
Lateral condyle
Soleal line
Fibula
Right Tibia
(Posterior view)
TheSkeletalSystem.net


Proximal tibiofibular joint
Interosseous membrane
Distal tibiofibular joint

SBA 2

During a game of Australian Football, a player is tackled and sustains a soft tissue injury to his knee.

Which structure originates from the medial surface of the lateral femoral condyle and inserts itself anterior to the intercondylar eminence?

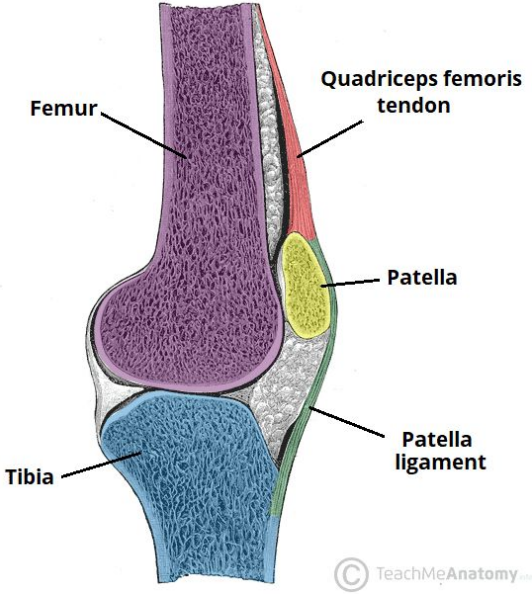
A. Medial collateral ligament
B. Lateral meniscus
C. Lateral arcuate ligament
D. Anterior cruciate ligament
E. Medial meniscus

MSA Education

Knee joint

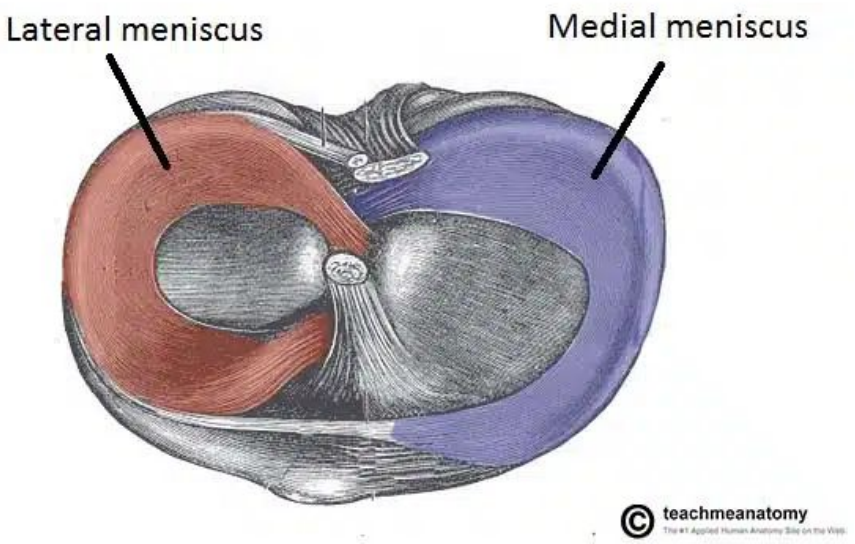
- Hinge-type, synovial permitting flexion, extension and small degrees of internal and external rotation - *knee has to be flexed to relax the collateral ligaments for the latter two movements*
- Two articulations: Patellofemoral + Tibiofemoral

- Arterial supply via **genicular anastomosis** from genicular branches of the femoral and popliteal arteries
- *Hilton's law: Nerves crossing the joint provides innervation to it - **femoral, tibial and common fibular nerves***



Menisci

- C-shaped fibrocartilage rings (Lateral meniscus is more of an “O” shape)
- Functions to (i) deepen the tibial articular surfaces, (ii) act as shock absorbers and (iii) lubrication
- Attached at both ends to the intercondylar area of the tibia
- Transverse genicular ligaments and surrounding coronary ligament provide additional support

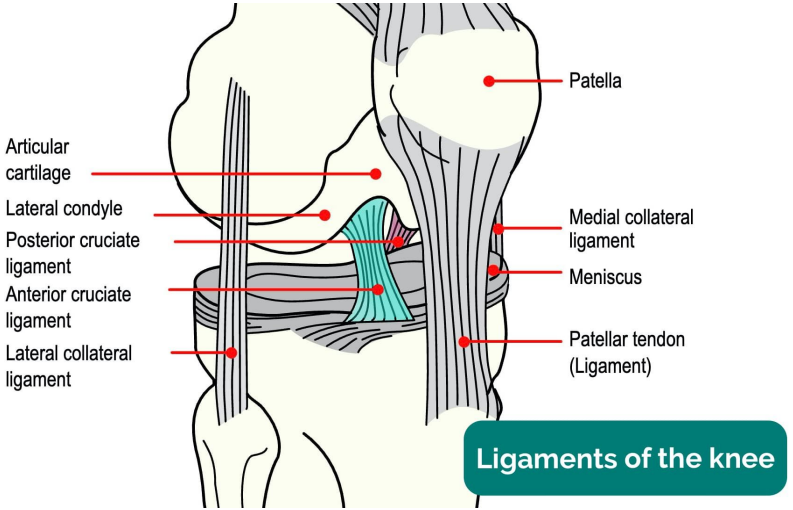


Ligaments

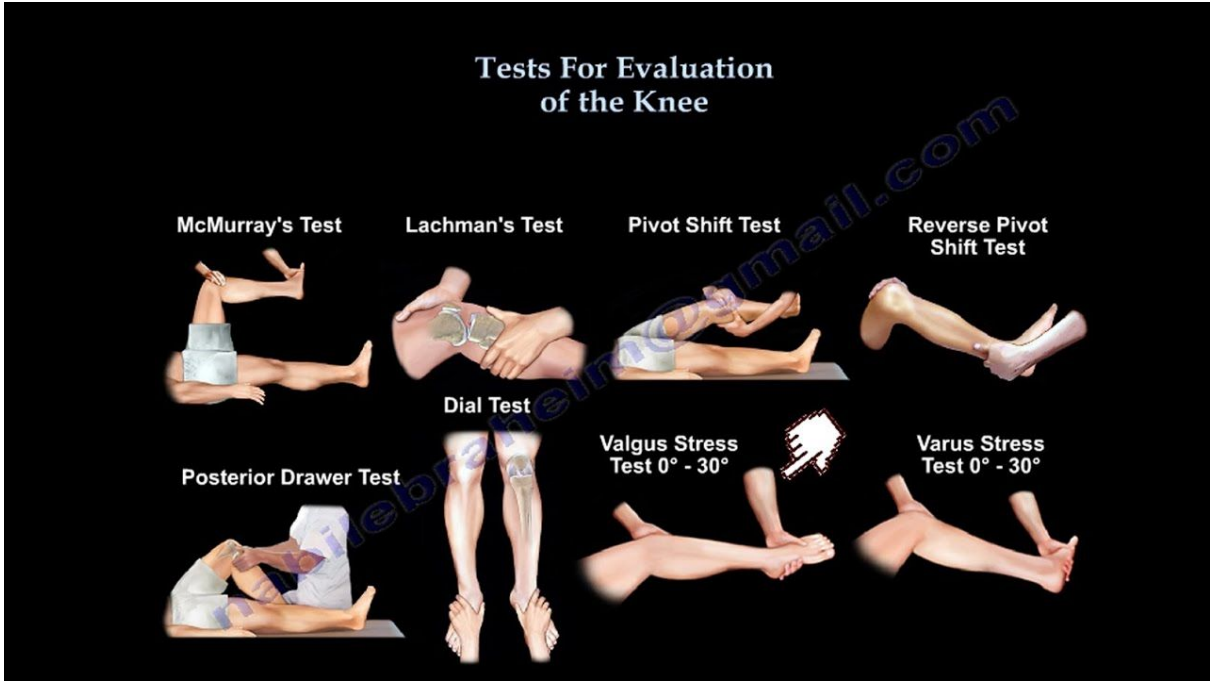
- **Patellar ligament**

- **Collateral ligament(s)** - medial and lateral: Prevent excessive valgus (medial) and varus (lateral) forces
- Medial collateral ligament (deep) is attached to the medial meniscus

- **Cruciate ligament(s)** - anterior and posterior: Prevents excessive anterior and posterior tibial displacement
- Anterior cruciate ligament is thinner and hence more prone to injuries



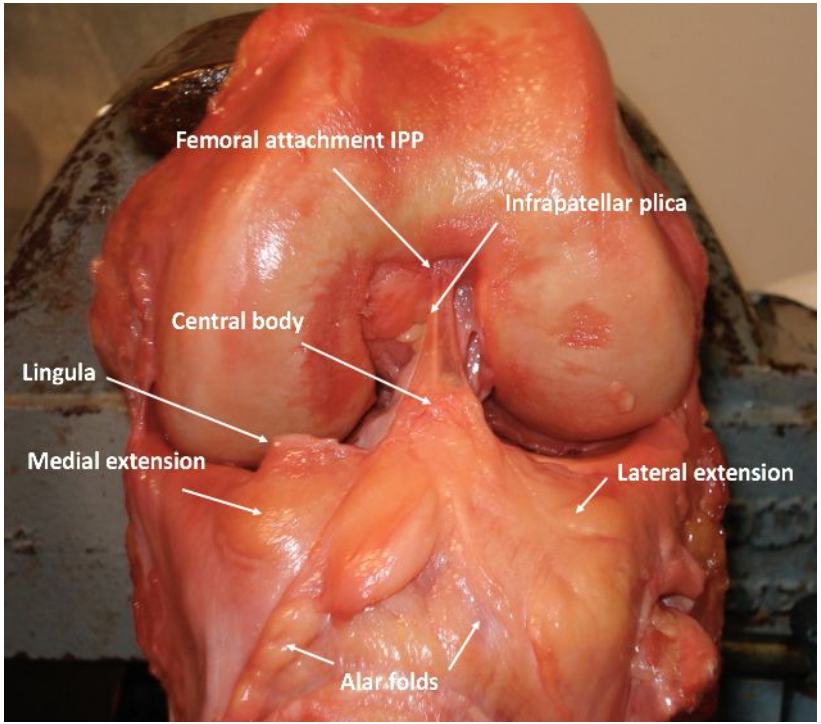
Sudden valgus forces on an extended leg may result in the presentation of an “**unhappy triad**”- tears to **ACL**, **MCL** and **medial meniscus**



Infrapatellar fat pad

Situated inferior and posterior to the patella, and anterior to the tibia, femur and tibiofemoral articulation

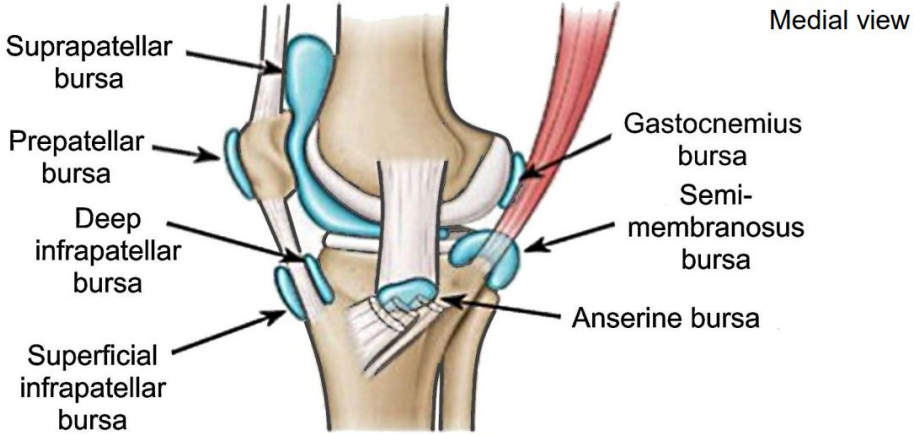
Functions to prevent posterior displacement of synovium, as a shock absorber and stabilisation of the patella during movements.



Bursae

Fluid-filled sac functioning to decrease friction between tendons, bones and skin during movement.

Inflammation = bursitis



Anterior: Prepatellar, infrapatellar (deep and superficial), suprapatellar

Lateral: Popliteus

Medial: Gastrocnemius, semimembranosus, anserine

Posterior: Varied

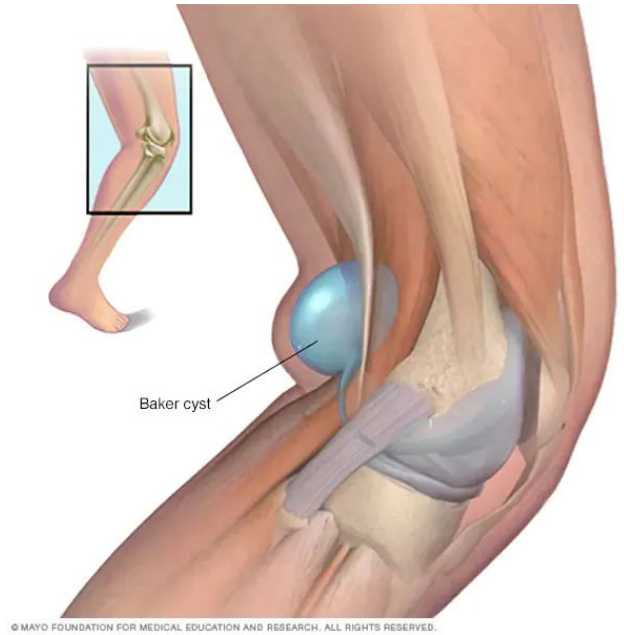
“Clergyman’s knee” - superficial infrapatellar bursitis

“Housemaid’s knee” - prepatellar bursitis

Bursae: Fluid-filled sac-like structures (often with synovial fluid) that do NOT connect to the joint space - with exceptions E.g. Iliopsoas bursa

(Synovial) Cyst: Outpouchings of synovial tissue into surrounding soft tissues, thus in connection with the joint space - E.g. “Baker’s (Popliteal) cyst”

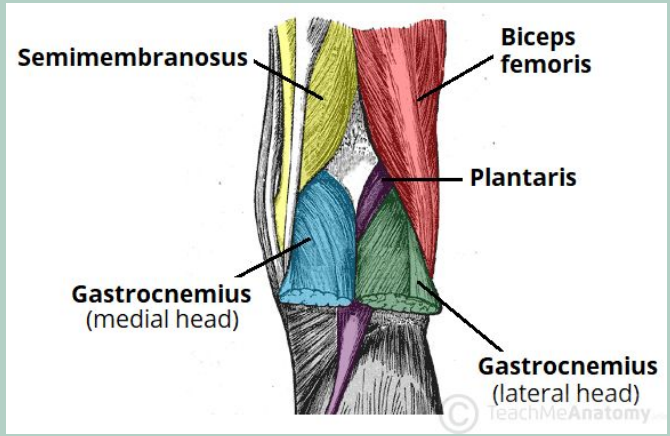
Nb. Popliteal swelling can be due to varied causes

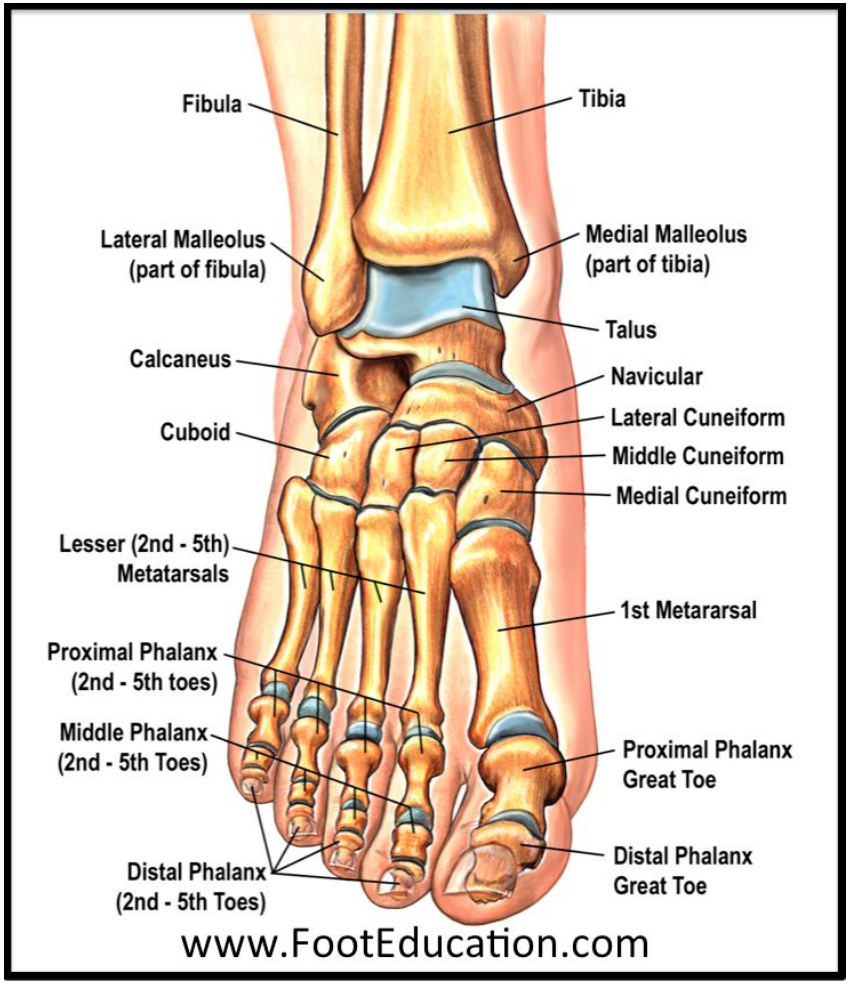


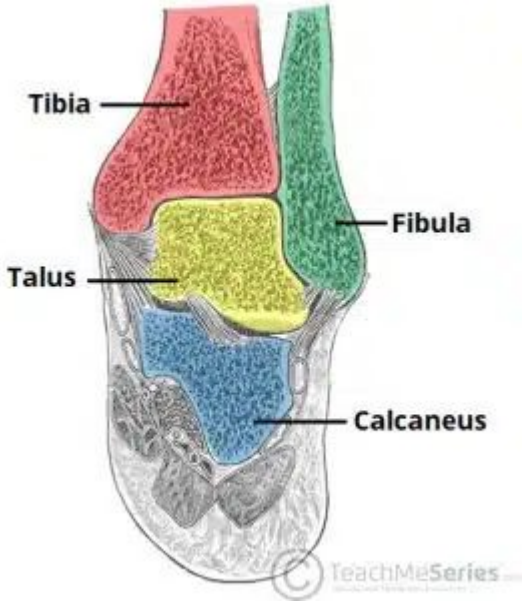
What structures are located deepest within the popliteal fossa? And what are its boundaries?

Structures: From deep to superficial; popliteal artery, popliteal vein, tibial nerve and common fibular (peroneal) nerve alongside fat and (deep) lymph nodes

Boundaries:




Fibula
Tibia
Lateral Malleolus
(part of fibula)
Medial Malleolus
(part of tibia)
Talus
Calcaneus
Navicular
Cuboid
Lateral Cuneiform
Middle Cuneiform
Medial Cuneiform
Lesser (2nd - 5th)
Metatarsals
1st Metararsal
Proximal Phalanx
(2nd - 5th toes)
Middle Phalanx
(2nd - 5th Toes)
Proximal Phalanx
Great Toe
Distal Phalanx
(2nd - 5th Toes)
Distal Phalanx
Great Toe
www.FootEducation.com


Tibia
Fibula
Talus
Calcaneus
TeachMeSeries

Ankle joint

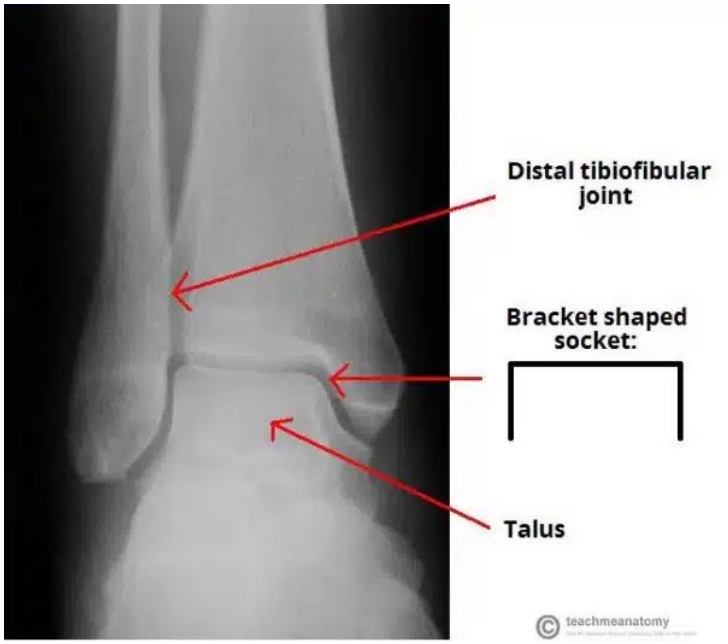
- Hinge-type joint, allowing plantarflexion and dorsiflexion (Nb. Eversion and inversion of the foot occurs at other joints, i.e. Subtalar joint)

Plantarflexion less stable due to narrow posterior aspect of the talus' articulating surface

- Three bones: Tibia, fibula and talus

Inferior tibiofibular joint is a fibrous syndesmosis, strong!

- Arterial supply via malleolar branches of anterior tibial, posterior tibial and fibular arteries
- Innervation via tibial, superficial fibular and deep fibular nerves



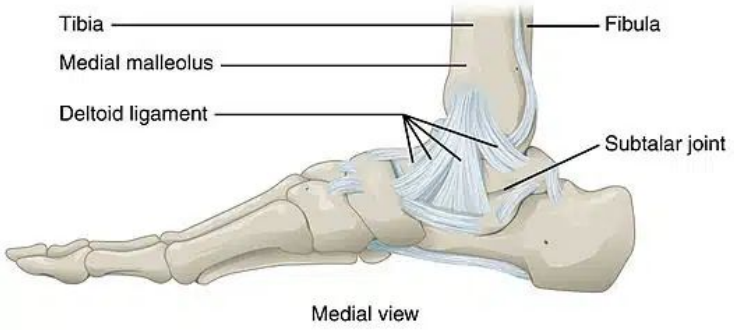
Ligaments

Medial ligament (Deltoid ligament, Δ)

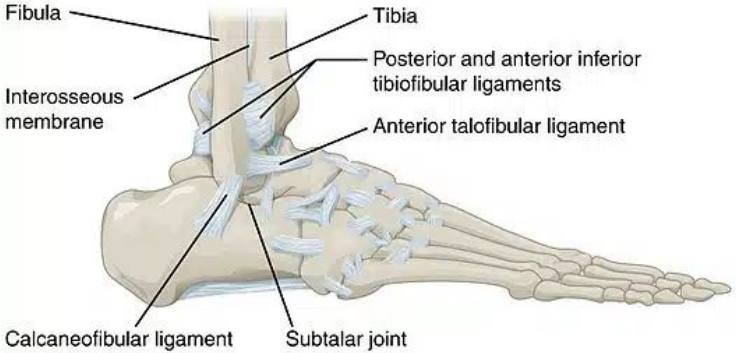
i. Anterior tibiotalar ligament
ii. Tibiocalcaneal ligament
iii. Posterior tibiotalar ligament
iv. Tibionavicular ligament

Lateral ligaments

i. Anterior talofibular
ii. Posterior talofibular
iii. Calcaneofibular

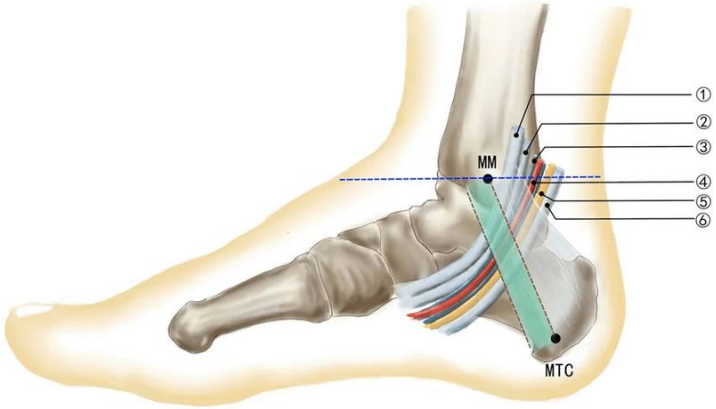


Medial view



Lateral view

“Tom, Dick and (Bloody) Nervous Harry”



1) Tibialis posterior, 2) Flexor digitorum longus, 3) Tibial vein, 4) Tibial artery, 5) Tibial nerve, 6) Flexor hallucis longus

Ankle injuries

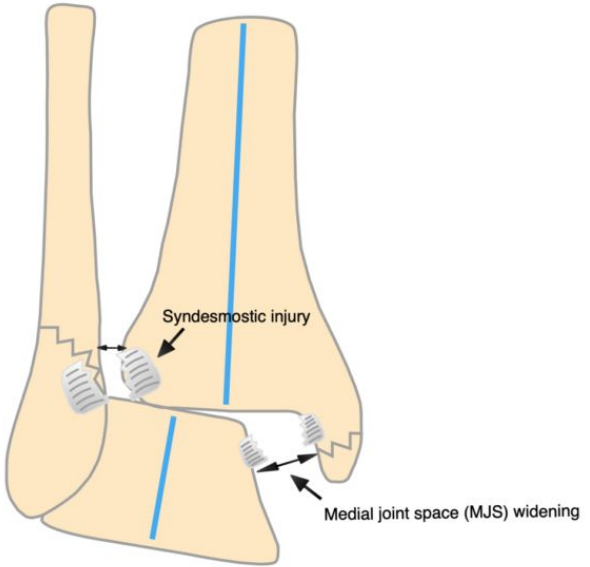
Forced inversion (Common)

- Anterior talofibular and calcaneofibular ligament sprain
- Concomitant lateral malleolar fracture

Forced eversion

- MMalleolar evulsion
- Lateral malleolar fracture
- Tibiofibular ligament tears (due to lateral displacement of fibula by the talus)

“Talar tilting” - instability of the ankle joint



Questions?

SBA 3

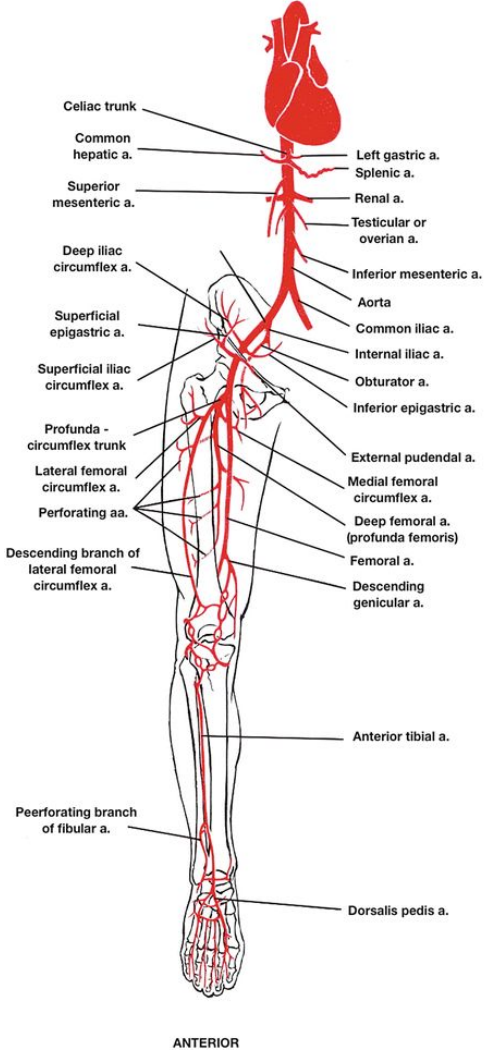
A 39 year-old man is involved in a road traffic accident and arrives to the Emergency Department with a shortened and externally rotated lower limb. A hip X-Ray is ordered: Given the diagnosis, what potential (acute) complication could arise if left untreated?

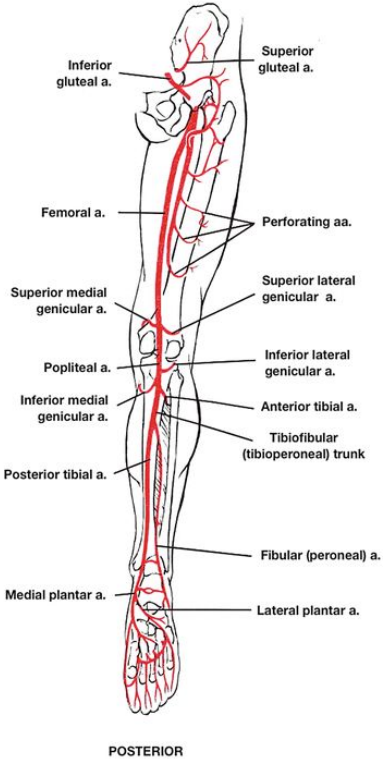
A. Rhabdomyolysis
B. Septic arthritis
C. Avascular necrosis of the femoral head
D. Gout
E. Osteoarthritis

SBA 4

Which of the following best describes the pathway of the femoral artery?

A. Internal iliac artery → Femoral artery → Popliteal artery → Great saphenous artery
B. External iliac artery → Femoral artery → Popliteal artery → Anterior and Posterior tibial arteries
C. External iliac artery → Femoral artery → Obturator artery → Popliteal artery





External iliac → Femoral artery → Profunda femoris

Femoral artery → *through adductor canal and adductor hiatus*
Popliteal artery → Anterior and posterior tibial arteries

Anterior tibial → Dorsalis pedis

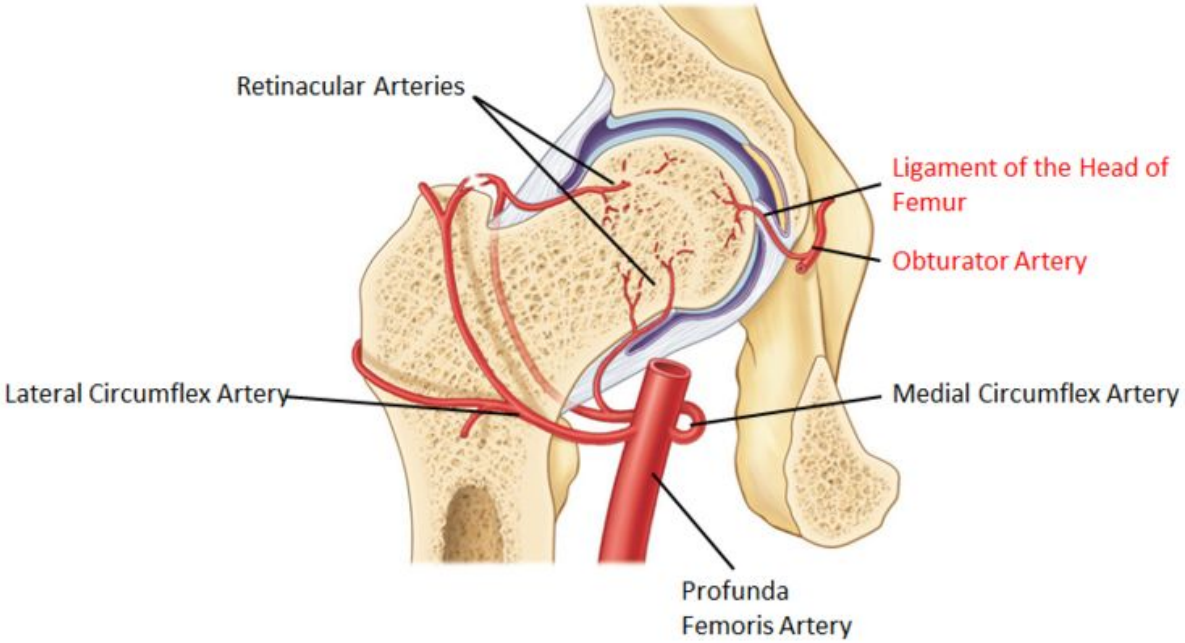
Posterior tibial artery → Fibular artery

Posterior tibial artery → Medial and lateral plantar arteries

- Limited vascular supply to the femoral head
- Medial (posterior) and lateral circumflex arteries form anastomoses - retinacular arteries

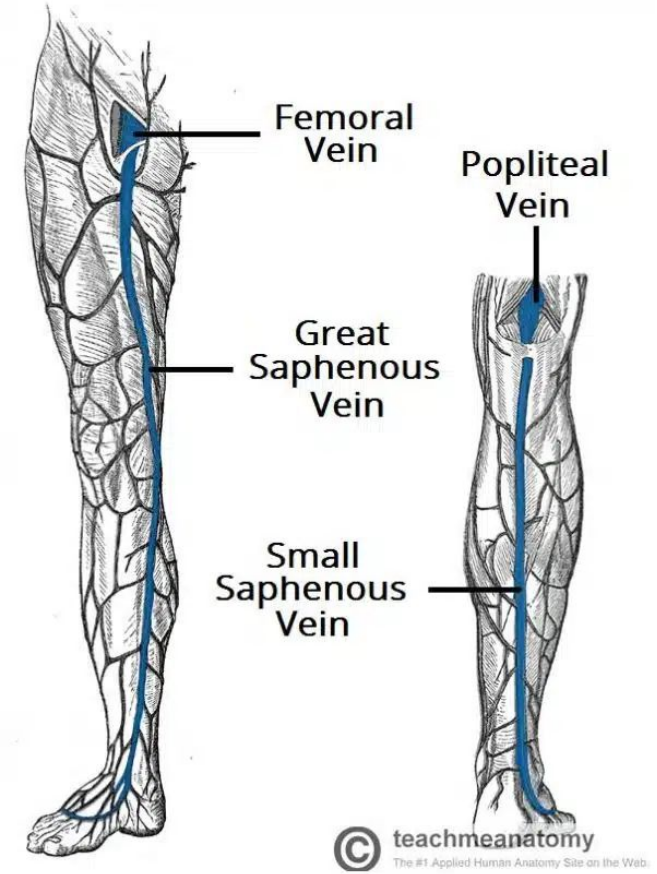
Medial>Lateral

- Small and variable supply via obturator artery - artery of ligamentum teres



Venous drainage

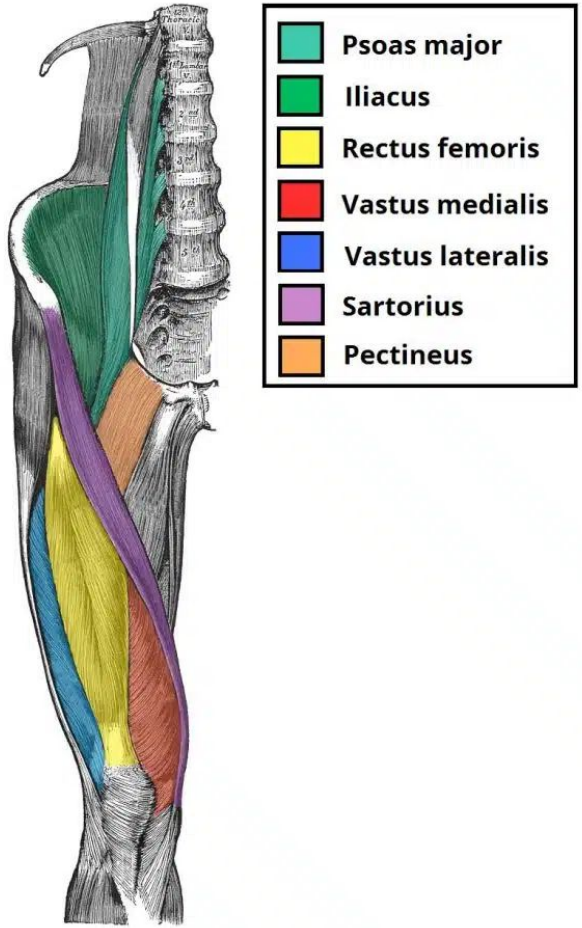
- Deep, perforating and superficial venous drainage (all contain valves - insufficiency = varicosities)
- **Deep:** Dorsal venous arch → posterior tibial vein → Popliteal vein → Femoral vein → External iliac vein
- **Superficial:**
    i. Long saphenous vein - medial drainage, terminates at the SFJ with femoral vein
    ii. Short (Small) saphenous vein - posterolateral, terminating at popliteal fossa with popliteal vein



Muscles: Anterior thigh

- (Most) extend the lower limb at the knee joint

- Collective innervation by **femoral nerve (L2-L4)**
- Arterial supply from **femoral artery** & obturator artery (pectineus), branch of the internal iliac artery

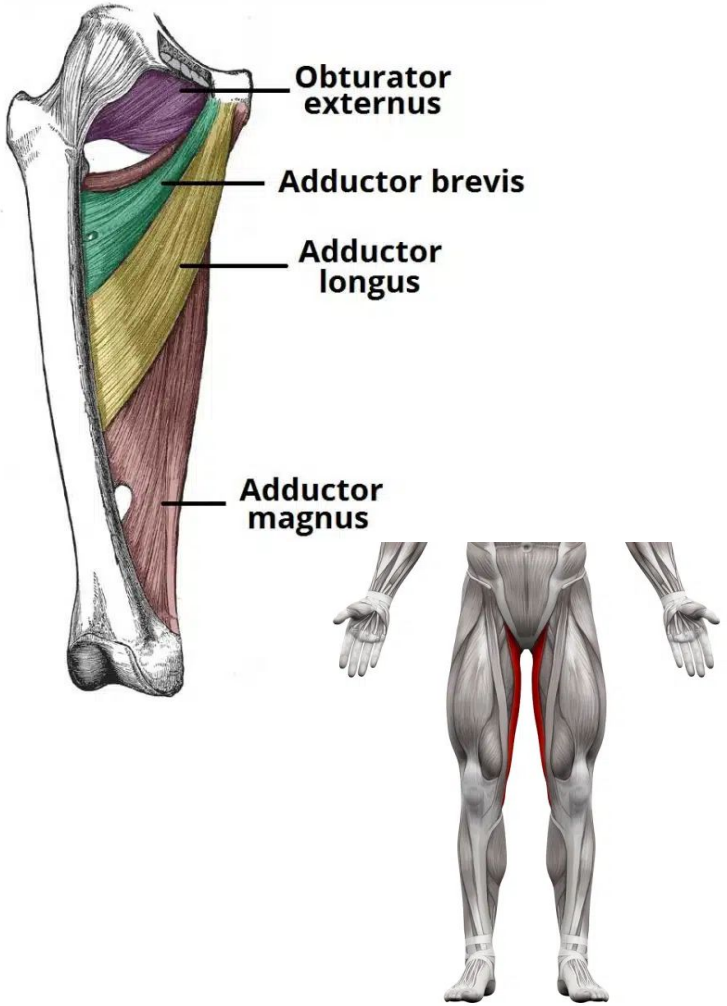


Muscle	Attachments	Innervation	Function
Iliopsoas	O: Psoas from lumbar vertebrae & iliacus from iliac fossa I: Lesser trochanter	Psoas - anterior rami of L1-3 Iliacus - Femoral nerve	Hip flexion
Pectineus	O: Superior ramus of pubis I: Pectineal line	Femoral nerve *Obturator nerve*	(Hip) Adduction, flexion and medial rotation
Sartorius	O: ASIS I: Superior, medial surface of tibia	Femoral nerve	(Hip) Flexion, abduction and lateral rotation; Knee flexion
Quadriceps femoris I: Common tendinous and independent attachments to patella (quadriceps tendon) + indirect attachment to tibial tuberosity (patellar ligament)			
Rectus femoris	O: ASIS and ilium	Femoral nerve	Hip flexion; Knee extension - *the only quadriceps m. crossing both joints*
Vastus medialis	O: Intertrochanteric line and medial lip of linea aspera	Femoral nerve	Knee extension
Vastus lateralis	O: Greater trochanter and lateral lip of linea aspera	Femoral nerve	Knee extension
Vastus intermedius	O: Anterior and lateral femoral shaft	Femoral nerve	Knee extension

Muscles: Medial thigh

- Hip adductors

- Innervated by the **obturator nerve**, arising from the lumbar plexus
- Arterial supply through the **obturator artery**

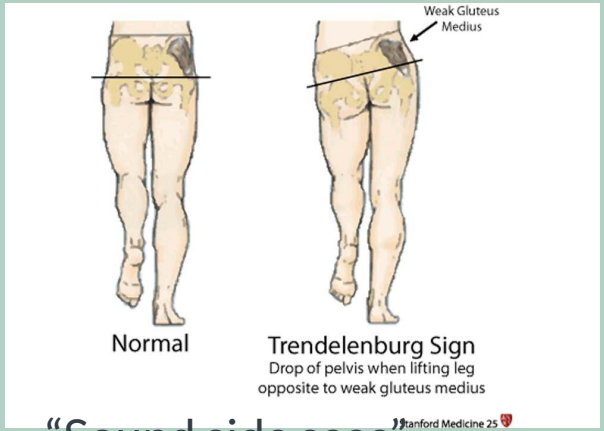


Muscle	Attachments	Innervation	Function
Adductor magnus *“Adductor hiatus” and “Adductor canal”*	O: Adductor part from inferior pubic ramus and ischium & hamstring from ischial tuberosity I: Adductor part to linea aspera & hamstring part to medial supracondylar line	Adductor: Obturator nerve Hamstring: Tibial part of sciatic nerve	Adductor: Adduction and hip flexion Hamstring: Adduction and hip extension
Adductor longus	O: Pubis bone I: (Broad) distal attachment along linea aspera	Obturator nerve	Adduction
Adductor brevis	O: Pubis and inferior pubic rami I: Linea aspera (proximal to adductor longus attachment)	Obturator nerve	Adduction
Gracilis	O: Pubis and inferior pubic rami I: Medial surface of tibial shaft	Obturator nerve	Adduction and knee flexion

SBA 5

You are a Junior Doctor at a General Practice, performing a lower limb examination on your 67 year-old patient. On assessing her gait, you note a left-sided pelvic tilt signifying a positive Trendelenburg's sign. What nerve has been damaged? Bonus points: Name the muscle(s)

A. Left inferior gluteal nerve
B. Right tibial nerve
C. Right superior gluteal nerve
D. Right obturator nerve
E. Left common fibular nerve

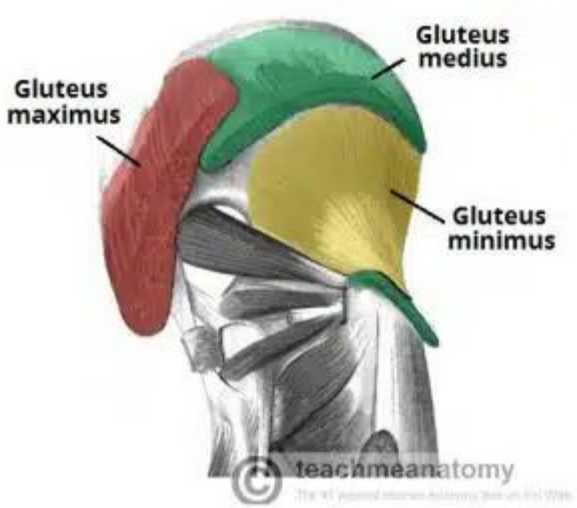


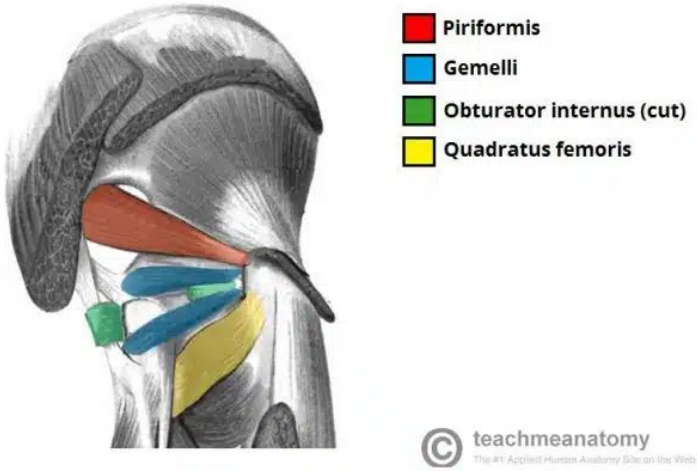
"Sound side sags"

Muscles: Gluteal region

- Superficial a**b**ductors and extensors
- Deep lateral rotators

- Arterial supply via the **superior** and **inferior gluteal arteries** - branches of the **internal iliac artery**





Muscle	Attachments	Innervation	Function
Gluteus maximus	O: Gluteal surface of ilium, sacrum and coccyx I: Iliotibial tract and gluteal tuberosity of the femur	Inferior gluteal nerve	Hip extension (when force is required), lateral rotation
Gluteus medius	O: Gluteal surface of ilium I: Lateral surface of greater trochanter	Superior gluteal nerve	Abduction, medial rotation Stabilises pelvis during locomotion preventing ‘dropping’ to the contralateral side
Gluteus minimus	O: Ilium I: Anterior surface of greater trochanter	Superior gluteal nerve	Abduction, medial rotation Stabilises pelvis during locomotion preventing ‘dropping’ to the contralateral side
Tensor fascia latae	O: Anterior iliac crest, ASIS I: Iliotibial tract → Lateral condyle of tibia	Superior gluteal nerve	Assists gluteus medius, minimus in abduction and medial rotation Supportive role in gait cycle & permits knee locking when bracing to lift the other foot

What are the nerve roots of the superior gluteal nerve?

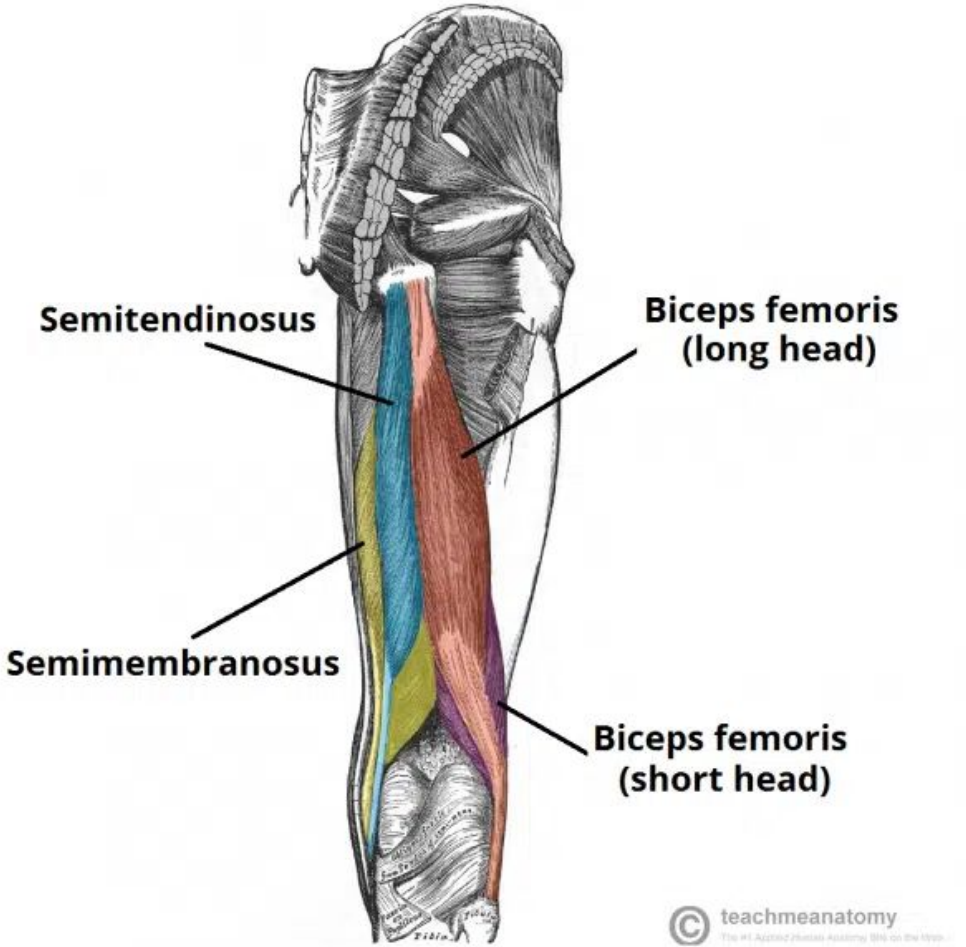
Muscle	**Attachments**	***Innervation***	**Function**
Piriformis	O: Anterior sacrum I: Greater trochanter	*Nerve to piriformis*	Lateral rotation and abduction
The Gemelli	O: Superior from ischial spine and inferior from ischial tuberosity I: Greater trochanter	*Superior: Nerve to obturator internus* *Inferior: Nerve to quadratus femoris*	Lateral rotation and abduction
Obturator internus	O: Medial surface of obturator membrane I: Greater trochanter	*Nerve to obturator internus*	Lateral rotation and abduction
Obturator externus	O: Lateral surface of obturator membrane I: Posterior aspect of greater trochanter (lower edge of obturator internus)	*Posterior branch of obturator nerve (L3, L4)*	Lateral rotation and a**d**duction
Quadratus femoris	O: Ischial tuberosity I: Quadrate tuberosity of intertrochanteric crest (posterior)	*Nerve to quadratus femoris*	Lateral rotation

Lateral rotators: “P GO GO Q”

Muscles: Posterior thigh

- “Hamstrings” (excluding short head of BF), collectively act to facilitate hip extension and knee flexion

- Innervated by **sciatic nerve (L4-S3)**
- Arterial supply by **inferior gluteal artery** and perforating branches of deep femoral artery



Muscle	Attachments	Innervation	Function
Biceps femoris	O: Long head from ischial tuberosity & short head from linea aspera I: Fibular head (single tendon)	Long head via tibial part of sciatic nerve Short head via common fibular part of sciatic nerve	Knee flexion Hip extension (long head) and lateral rotation of knee and hip
Semitendinosus	O: Ischial tuberosity I: Medial surface of tibia *Superior to SM*	Tibial part of sciatic nerve	Knee flexion Hip extension and medial rotation of knee and hip
Semimembranosus	O: Ischial tuberosity I: Medial tibial condyle	Tibial part of sciatic nerve	Knee flexion Hip extension and medial rotation of knee and hip

Pes Anserinus (Latin: Goose's foot)

SerGeanT: Sartorius, Gracilis, Semitendinosus - attachment of sartorius, gracilis and semitendinosus - in order of attachment from anterior to posterior

Broad conjoined tendon of insertion of three muscles on the medial surface of the proximal tibia

Facilitate in knee stability and resistance towards excessive valgus forces

SBA 6

Which of the following correctly describes the boundaries of the femoral triangle? Bonus: What are its contents?

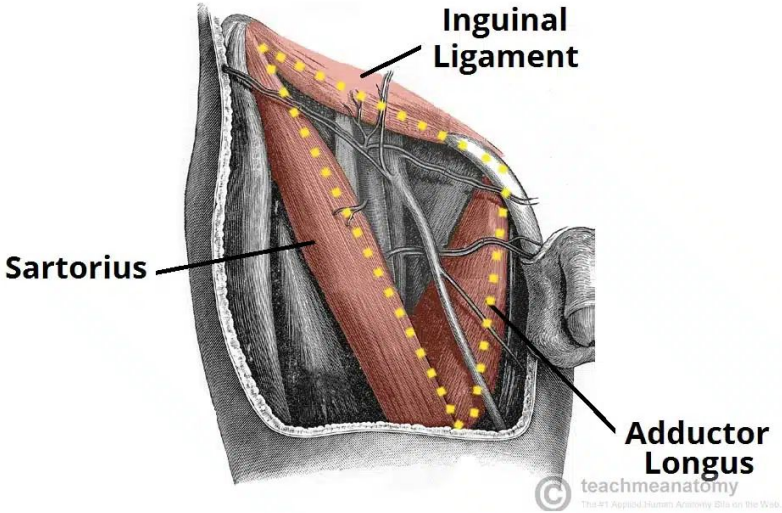
A. Lateral border: Pectineus, Medial border: Sartorius, Superior border: Pubic symphysis
B. Lateral border: Sartorius, Medial border: Adductor longus, Superior border: Inguinal ligament
C. Lateral border: Iliacus, Medial border: Pectineus, Superior border: Iliopsoas

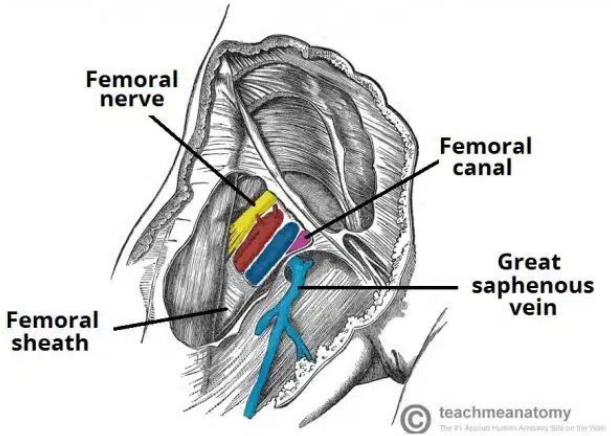
Femoral triangle

N.A.V.E.L: Nerve, artery, vein, empty space (fat), lymphatics (Cloquet's node - superior-most deep inguinal node)

- Femoral canal = Empty space + Deep lymph nodes
- Artery, vein and canal enveloped by femoral sheath

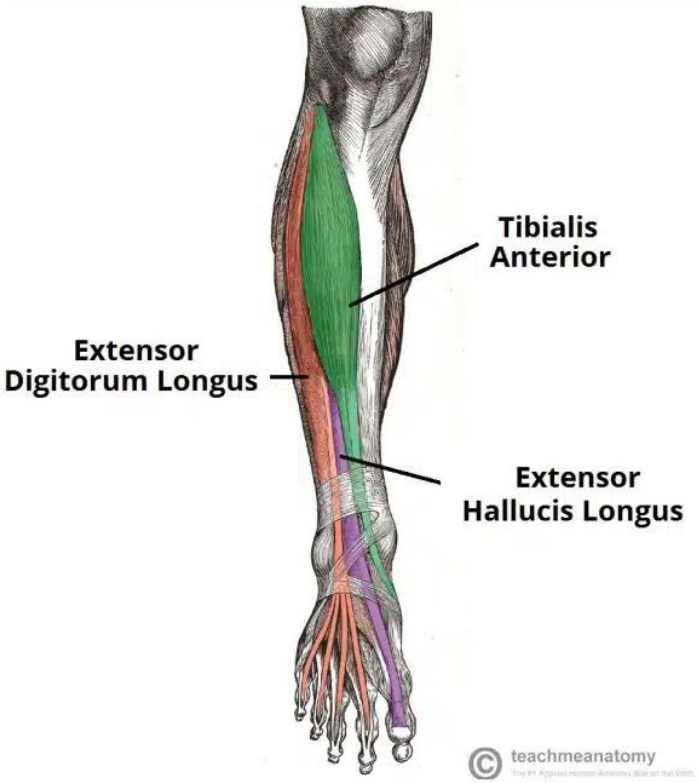
- Femoral pulse; Femoral artery access (E.g. Angiography); Femoral hernia (canal)





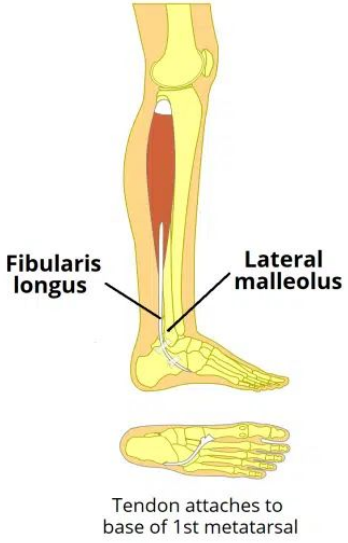
Muscles: Anterior leg

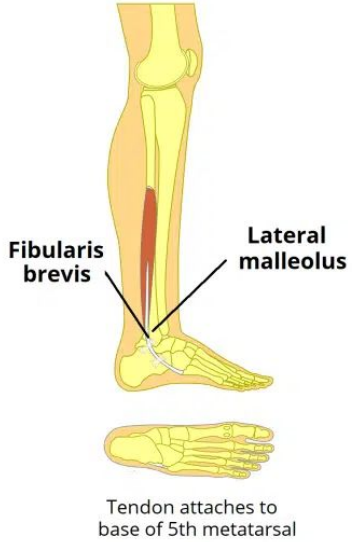
- Dorsiflexion and inversion
- Innervation via **deep fibular nerve (L4-S2)**
- Vascular supply through **anterior tibial artery**



Muscle	Attachments	Innervation	Function
Tibialis anterior	O: Lateral tibia I: Medial cuneiform and base of MT1	Deep fibular nerve	Dorsiflexion and inversion
Extensor hallicus longus	O: Medial fibular shaft I: Base of the distal phalanx of the hallux	Deep fibular nerve	Extension of hallux and dorsiflexion
Extensor digitorum longus	O: Lateral tibial condyle and medial fibula Fibres converge to a singular tendon that splits into four I: Individual toes (4)	Deep fibular nerve	Extension of lateral four toes and dorsiflexion

Muscles: Lateral leg

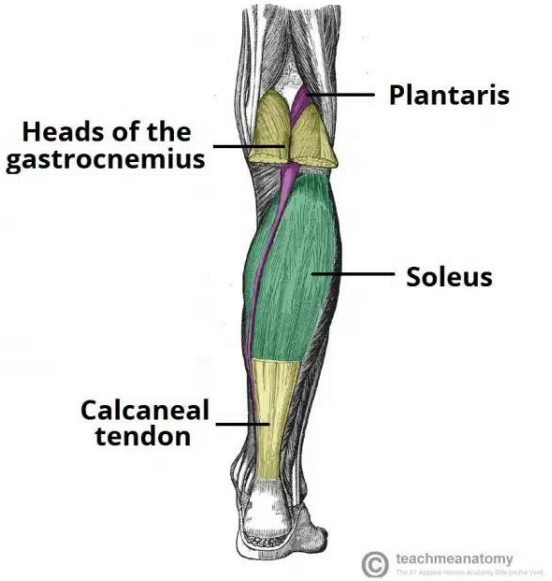


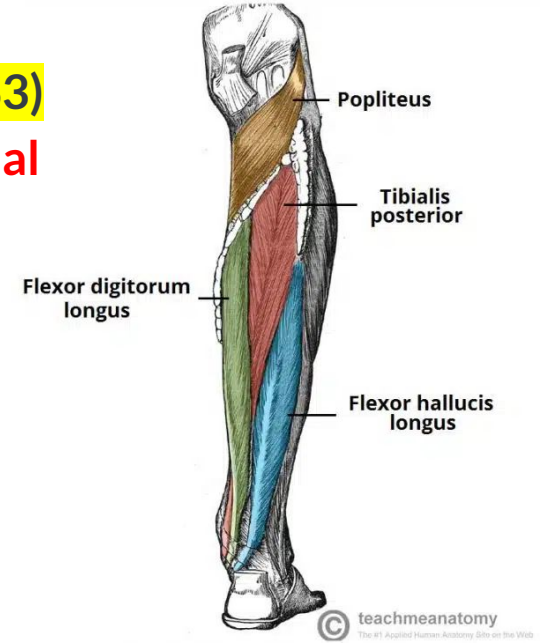


Muscle	Attachments	Innervation	Function
Fibularis longus	O: Superior and lateral fibula & lateral tibial condyle I: Medial cuneiform and base of MT1	Superficial fibular nerve	Eversion and plantarflexion Support to lateral and transverse arches
Fibularis brevis	O: Inferolateral surface of fibular shaft I: 5th MT tubercle	Superficial fibular nerve	Eversion

Muscles: Posterior leg

- Plantarflexion and inversion, divided into superficial and deep compartments
- Innervation via **tibial nerve (L4-S3)**
- Vascular supply via **posterior tibial artery**





Superficial compartment

Muscle	Attachments	Innervation	Function
Gastrocnemius	O: Lateral head from lateral femoral condyle & medial from medial femoral condyle *Singular muscle belly converging with soleus* I: Calcaneus (as calcaneal tendon)	Tibial nerve	Plantarflexion of ankle joint Knee flexion
Soleus (Latin: Sandal)	O: Soleal line I: Calcaneus (as calcaneal tendon)	Tibial nerve	Plantarflexion
Plantaris	O: Lateral supracondylar line (femur) I: Calcaneus (as calcaneal tendon)	Tibial nerve	Plantarflexion of ankle joint Knee flexion

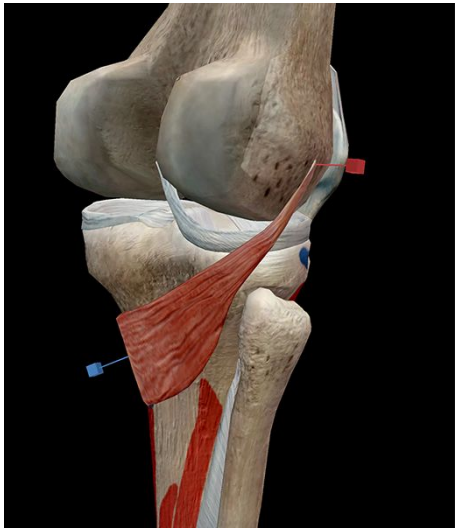
Deep compartment

Muscle	Attachments	Innervation	Function
Popliteus	O: Lateral femoral condyle and lateral meniscus I: Proximal tibia	Tibial nerve	Lateral femoral rotation relative to tibia to ‘unlock’ the knee joint permitting flexion
Tibialis posterior	O: Posterior surface and interosseous membrane of T&F *Enters foot posterior to medial malleolus* I: Plantar surfaces of medial tarsal bones	Tibial nerve	Plantarflexion and inversion
Flexor digitorum longus	O: Medial tibia I: Plantar surfaces of lateral 4 digits	Tibial nerve	Flexion of lateral four toes
Flexor hallucis longus	O: Posterior fibula I: Plantar surface of phalanx of the hallux	Tibial nerve	Flexion of hallux

Popliteus m. : ‘Unlocks’ knee joint prior to flexion

Knee FLEXED: Internal rotation of tibia just prior to the open swing phase *OR lateral rotation of femur on tibia to facilitate entering the open “swing” phase*

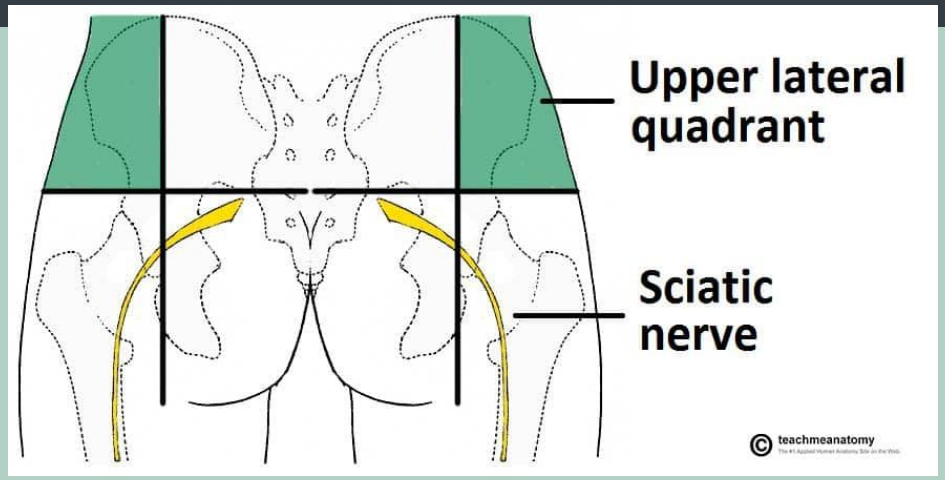
Knee EXTENDED: (Slight) internal/medial rotation of femur to lock the joint



SBA 7

A 38 year-old man visits his general practitioner with a 3-day history of right hip pain and weakness on mobilising the limb. He received his travel vaccinations via intramuscular injection to his buttock 4 days earlier. On examination you note paralysis of knee flexion and all movements below the knee. There is also marked sensory loss below the knee, alongside absent ankle reflex. Lesion to which of the following nerve root(s) has resulted in this presentation?

A. L3-S5
B. L2-S1
C. L4-S3
D. L6-S0
E. S1-S3



Lumbosacral plexus

Lumbar plexus: Anterior rami of L1-L4 (~T12)

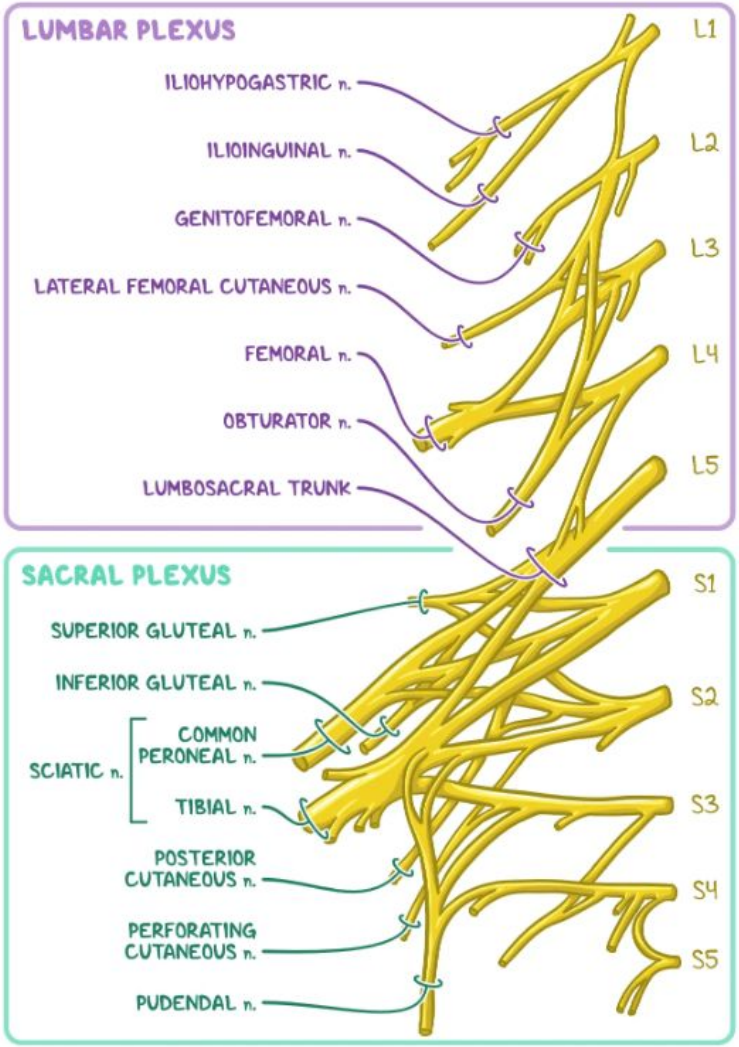
"I (twice) Get Laid On Fridays"

Lumbosacral trunk: Anterior rami of L4, L5

Provides branches for motor and sensory innervation

Sacral plexus: Anterior rami of S1-S4 (~L4, L5)

S5 typically included in coccygeal plexus

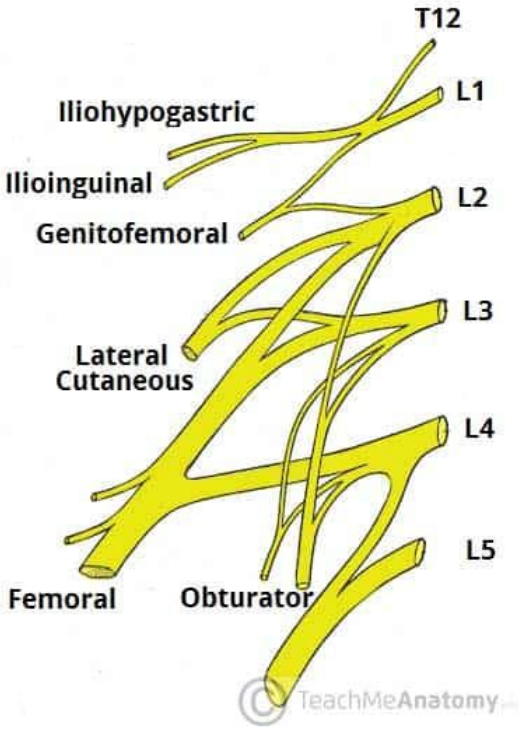


Lumbar plexus

- All nerves, except genitofemoral n. (anterior) and obturator n. (medial) emerge lateral to the psoas major muscle

“2 from 1, 2 from 2 and 2 from 3”

- Iliohypogastric, ilioinguinal - L1
- Genitofemoral - L1, L2
- Lateral femoral cutaneous nerve - L2, L3 - *Bonus: Compression results in what condition?*
- Obturator nerve - L2, L3, L4
- Femoral nerve - L2, L3, L4



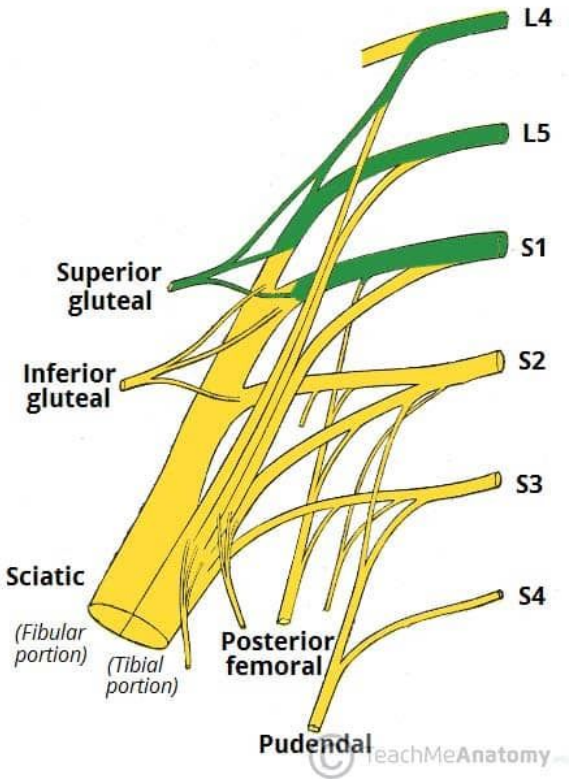
Sacral plexus

Anterior to the piriformis (→ piriformis syndrome)

Lumbosacral trunk (L4, L5) & S1-S4, emerging from sacral foramina

Potential paths:

1. **Greater sciatic foramen → above/below piriformis → gluteal region**
2. Remains within pelvis
3. Greater sciatic foramen → loops around sacrospinous ligament → re-enters via the lesser sciatic foramen



Superior gluteal n.	L4, L5, S1	Greater sciatic foramen → superior to piriformis	Gluteus minimus Gluteus medius TFLatae Mixed sensory
Inferior gluteal n.	L5, S1, S2	Greater sciatic foramen → inferior to piriformis	Gluteus maximus
Sciatic nerve	Common fibular n. (L4-S2, dorsal divisions) Tibial n. (L4-S3, ventral divisions)	Greater sciatic foramen → inferior to piriformis	*REFER TO PREVIOUS SLIDES*
Posterior femoral cutaneous	S1, S2, S3	Greater sciatic foramen → inferior to piriformis → descends deep to gluteus maximus, down the posterior thigh	Sensory innervation to posterior thigh, leg and perineum
Pudendal nerve	S2, S3, S4	Greater sciatic foramen, inferior to piriformis → loop around sacrospinous ligament → lesser sciatic foramen	Perineal skeletal muscles, EUS, EAS and levator ani muscle Sensory to penis, clitoris and perineum
Nerve to obturator internus	L5, S1, S2		

Perforating cutaneous n., Nerve to piriformis, Nerve to quadratus femoris

SBA 8

A 63 year-old woman presents to the Emergency Department with a painful left leg following a fall down some stairs. She reports that her right foot was forced into an external rotation during the incident, and she has since been unable to weight bear on it. On examination, there is reduced sensation over the lateral aspect of her right lower leg and dorsum of the foot, coupled with an inability to dorsiflex the foot.

An XRay reveals a fibular shaft fracture and a transverse fracture of the medial malleolus.

What nerve is most likely to have been injured?

A. Common peroneal
B. Medial plantar nerve
C. Superficial fibular nerve
D. Sural nerve
E. Tibial nerve

SBA 9

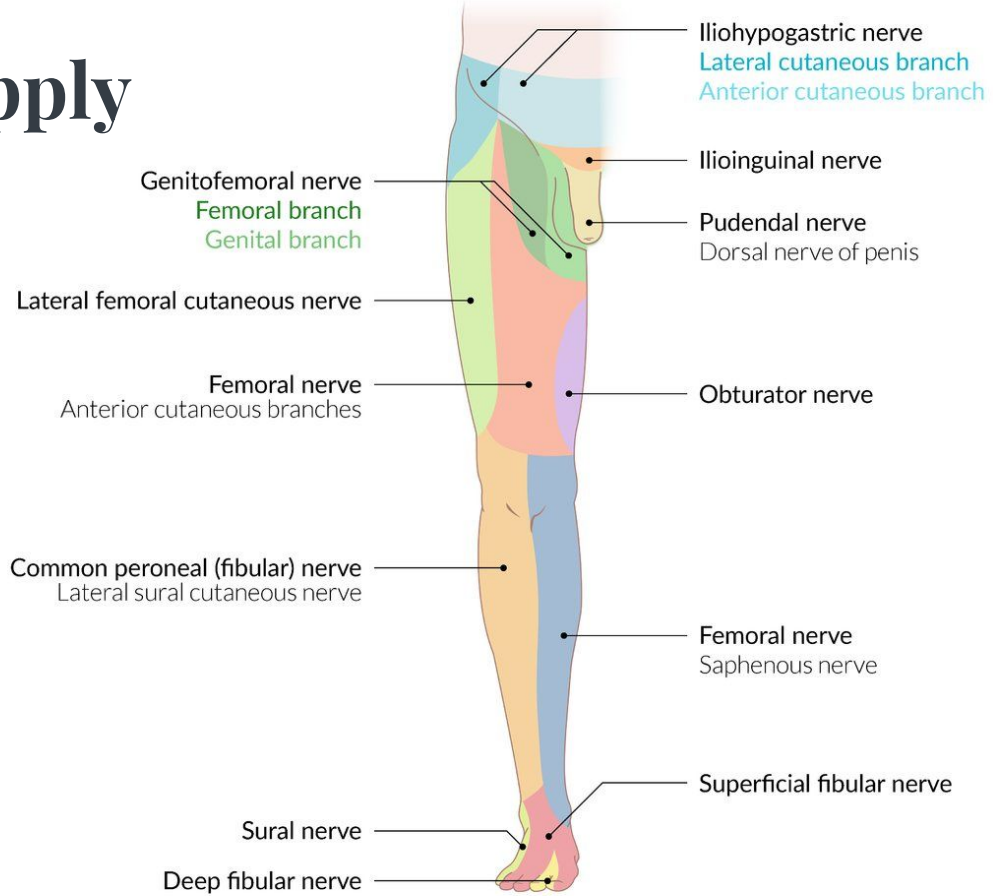
Which nerve supplies the skin of the first web space of the foot?

A. Superficial fibular nerve
B. Deep fibular nerve
C. Tibial nerve
D. Common fibular nerve
E. Medial cutaneous sural nerve

Cutaneous nerve supply

Femoral nerve → Lateral, posterior and anterior femoral cutaneous nerves; Saphenous nerve

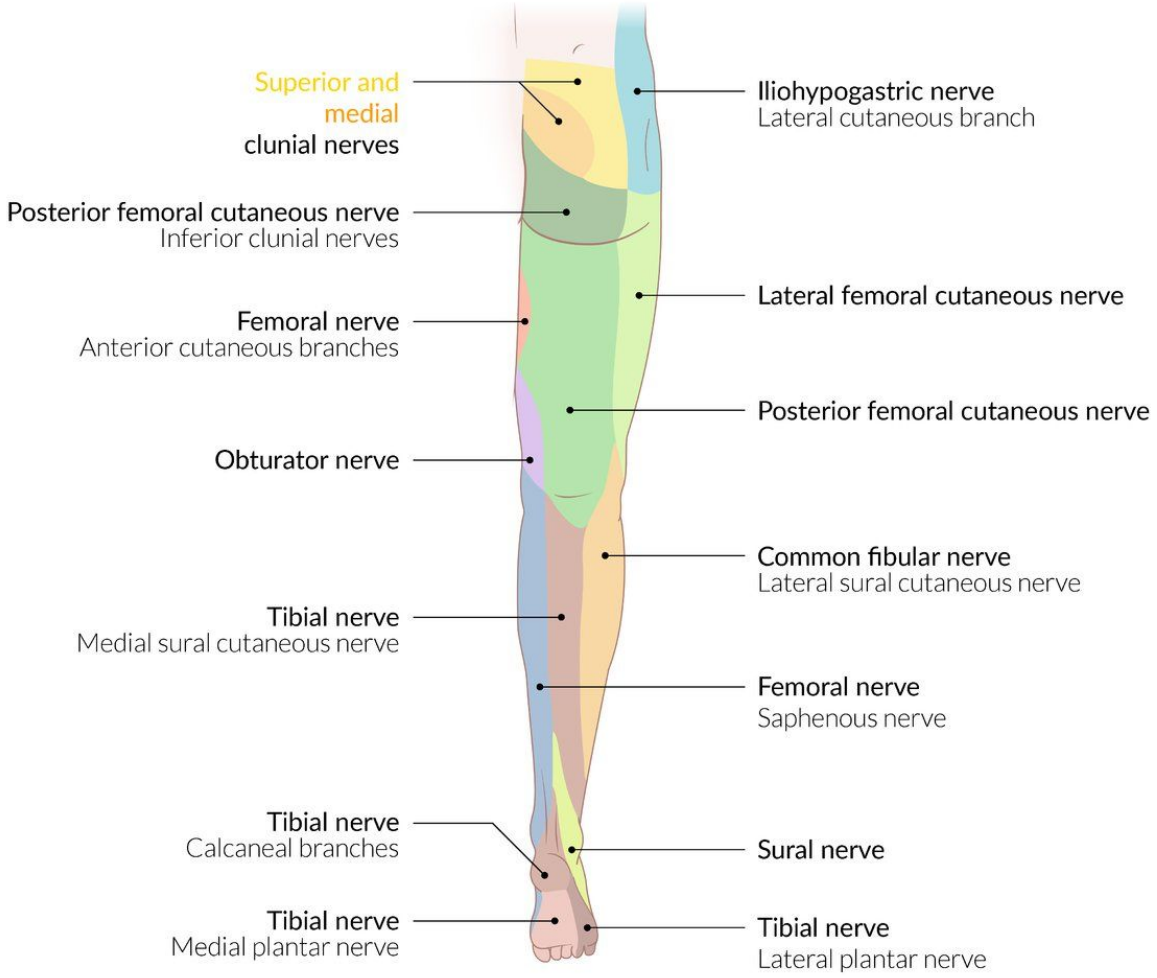
Common fibular nerve → Lateral sural cutaneous nerve; Deep fibular; Superficial fibular



Tibial nerve → Medial sural cutaneous nerve; Medial calcaneal; Medial and Lateral plantar

Medial and Lateral (via peroneal communicating nerve) sural cutaneous nerve → Sural nerve

Nb. Peroneal communicating nerve can be a branch of either the common peroneal or lateral SC nerve



SBA 10

A 21 year-old male presents to the Emergency Department with an injury to his foot sustained after being tackled during a rugby match. On examination, he has loss of sensation over the anterolateral aspect of the leg and dorsum of the foot with sparing to the first web space. Which one of the following nerves is likely to have been injured?

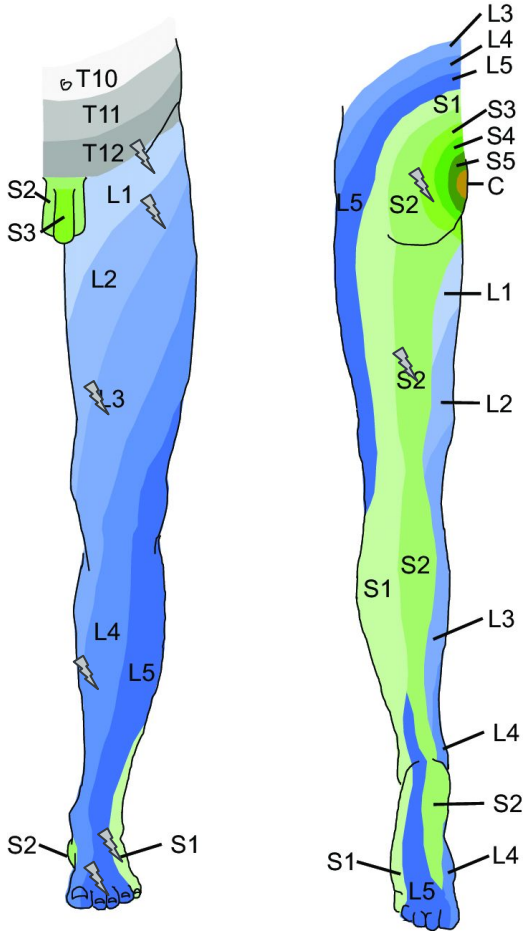
A. Sural nerve
B. Deep fibular nerve
C. Lateral femoral cutaneous nerve
D. Superficial fibular nerve
E. Saphenous nerve

Dermatomes

Area of innervation by a single spinal nerve root

Peripheral cutaneous innervation: Area of innervation by a specific cutaneous nerve (individual peripheral nerves are composed of multiple nerve roots)

- Indicates area to test sensation



Myotomes

		L1	L2	L3	L4	L5	S1	S2	S3
Hip	Flexion								
	Extension								
Knee	Extension								
	Flexion								
Ankle	Extension (Dorsi)								
	Flexion (Plantar)								
Foot	Inversion								
	Eversion								
	Intrinsic								

Stretch reflex(es) rhyme

1, 2 buckle my shoe - ankle reflex

3, 4 kick the door - knee reflex

5, 6 pick up sticks - biceps reflex

7, 8 push the gate - triceps reflex

SBA 11

Which of the following best describes the pathway of the pudendal nerve?

A. Lesser sciatic foramen → Greater sciatic foramen → Pudendal canal
B. Greater sciatic foramen → Obturator foramen → Pudendal canal
C. Obturator foramen → Greater sciatic foramen → Lesser sciatic foramen
D. Greater sciatic foramen → Lesser sciatic foramen → Pudendal canal
E. Lesser sciatic foramen → Obturator foramen → Pudendal canal

SBA 12

A 36 year-old man is stabbed in the thigh following an assault, and has impaired ability to flex his hip. Which of the following muscles is **not** a hip flexor?

A. Pectineus
B. Iliopsoas
C. Rectus femoris
D. Vastus intermedius
E. Sartorius

SBA 12

You are the Junior Doctor at the Emergency Department when a 22 year-old man arrives due to an accident at the gym. He complains that he felt a “pull” in his hamstrings. On examination, you note weak knee flexion.

Having remembered your lectures from Year 1, you suspect a nerve injury to the muscles supplying the biceps femoris. Which of the following nerves innervate the short head of the biceps femoris?

A. Superior gluteal nerve
B. Common peroneal nerve
C. Pudendal nerve
D. Femoral nerve
E. Obturator nerve

Questions?

To summarise

MSA Education

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