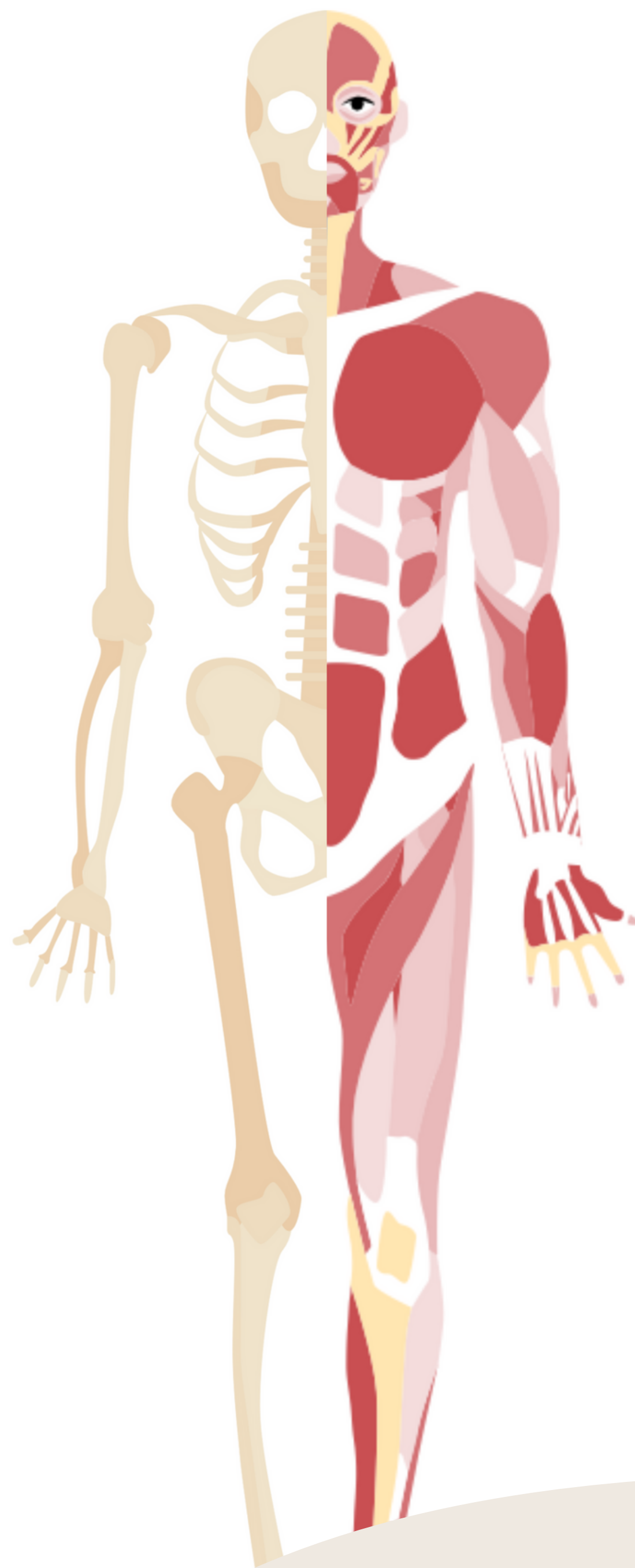


Lecture 18

SCIATIC NERVE

OBJECTIVES

- Describe the anatomy (origin, course and distribution) of the sciatic nerve.
- List the branches of the sciatic nerve.
- Describe briefly the main motor and sensory manifestations in case of injury of the sciatic nerve or its main branches.



Color Index:

- Main text
- Boys' Slides
- Girls' Slides
- Important
- Dr's Notes
- Extra

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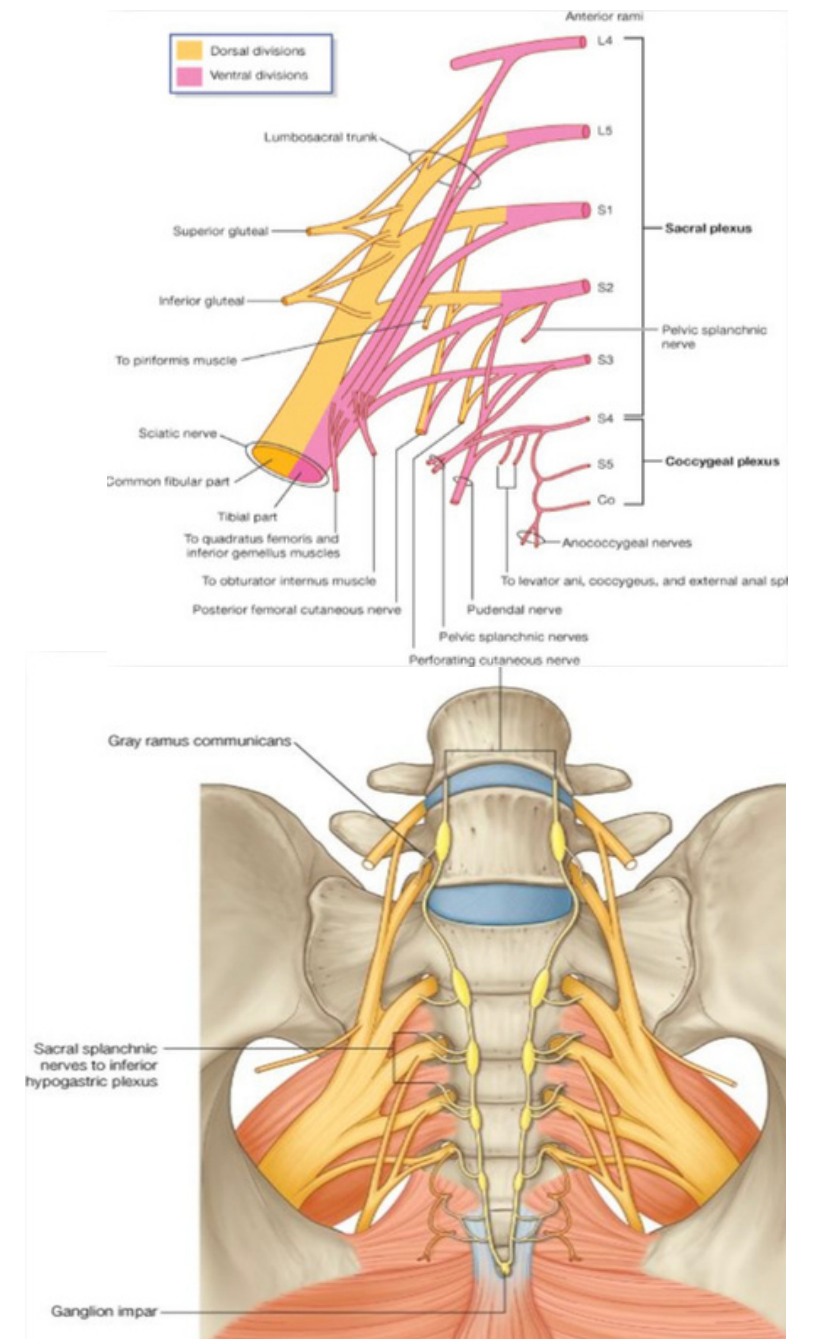
Sacral plexus

Formation:

- **Ventral** (anterior) rami of a part of **L4 & whole L5 (lumbosacral trunk)** & **S1,S2,S3** and most of **S4**

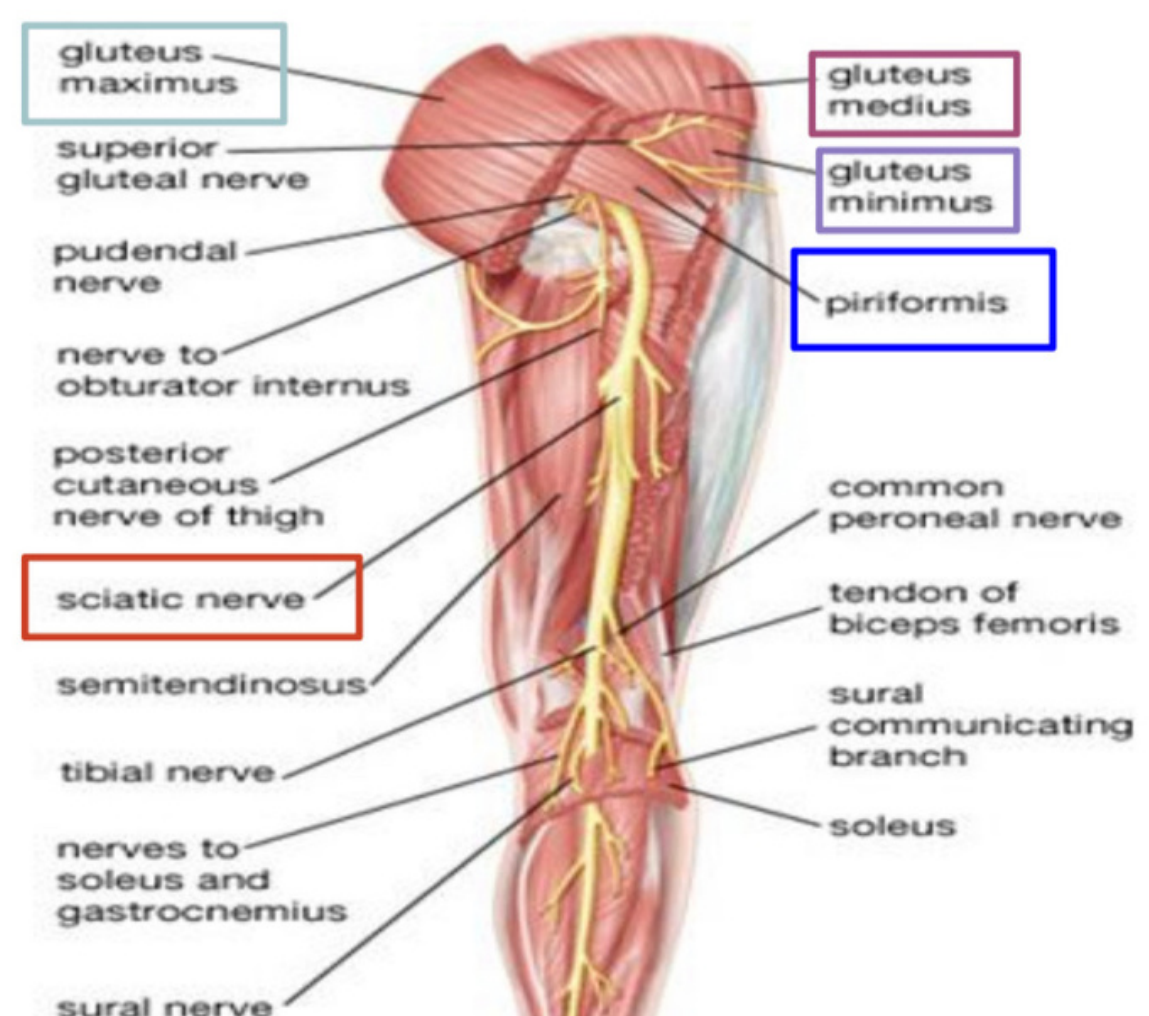
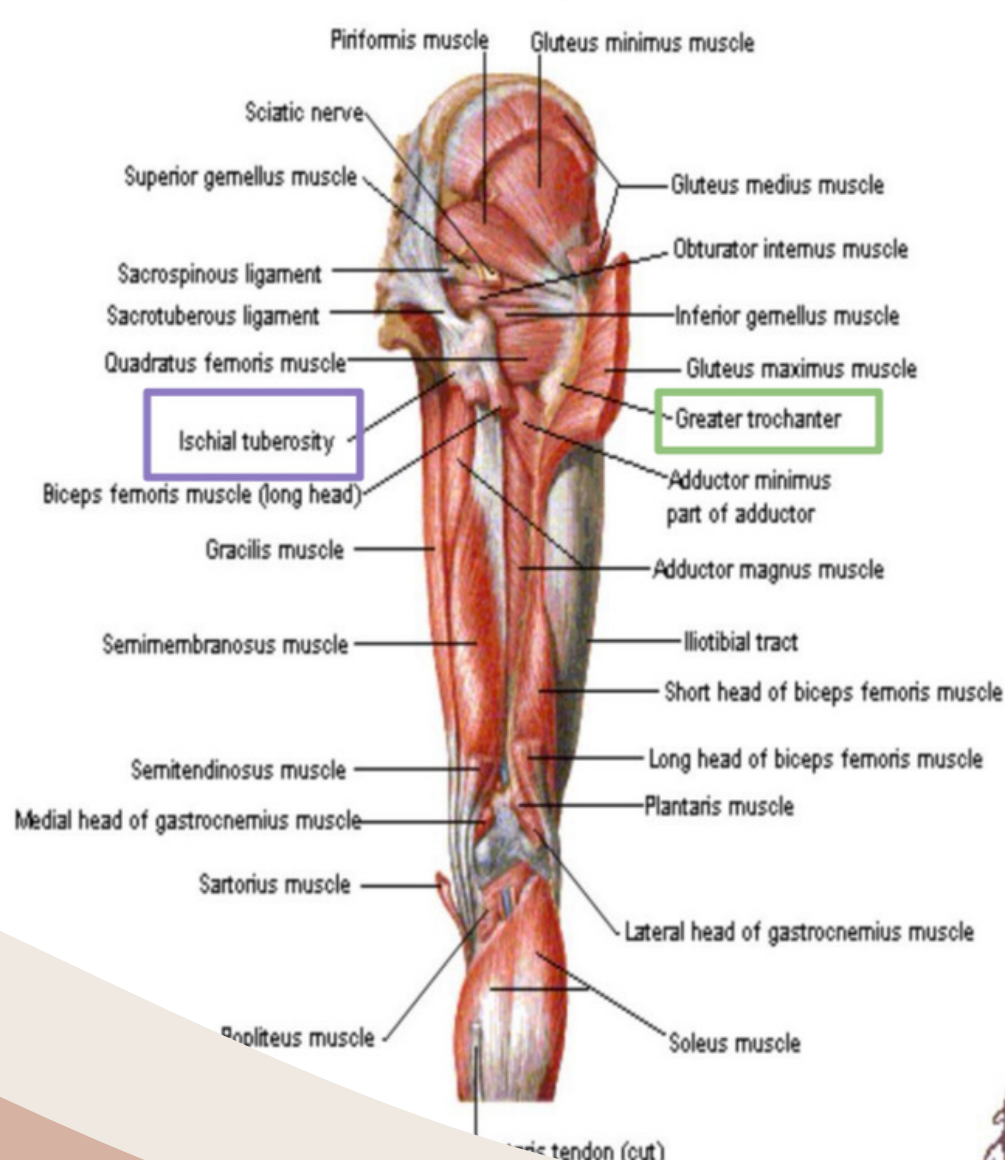
Site:

- On the posterior pelvic wall.
- In **front** of Piriformis muscle



Origin	Course & Distribution	Termination
<ul style="list-style-type: none"> • From the Sacral Plexus (L4,L5,S1,S2,S3) • It is the largest branch of the plexus. • It is the largest nerve of the body. <p>Med443 note: any plexus is from ventral (anterior) rami</p>	<ul style="list-style-type: none"> • The sciatic nerve leaves the pelvis through greater sciatic foramen, below the piriformis muscle. • It passes in the gluteal region midway (between ischial tuberosity & greater trochanter) • Then it enters the posterior compartment of the thigh. 	<p>In the middle (the lower third) of the back of the thigh it divides into 2 terminal branches:</p> <ol style="list-style-type: none"> 1. Tibial 2. Common Peroneal (Fibular).

Posterior View - Deeper Dissection



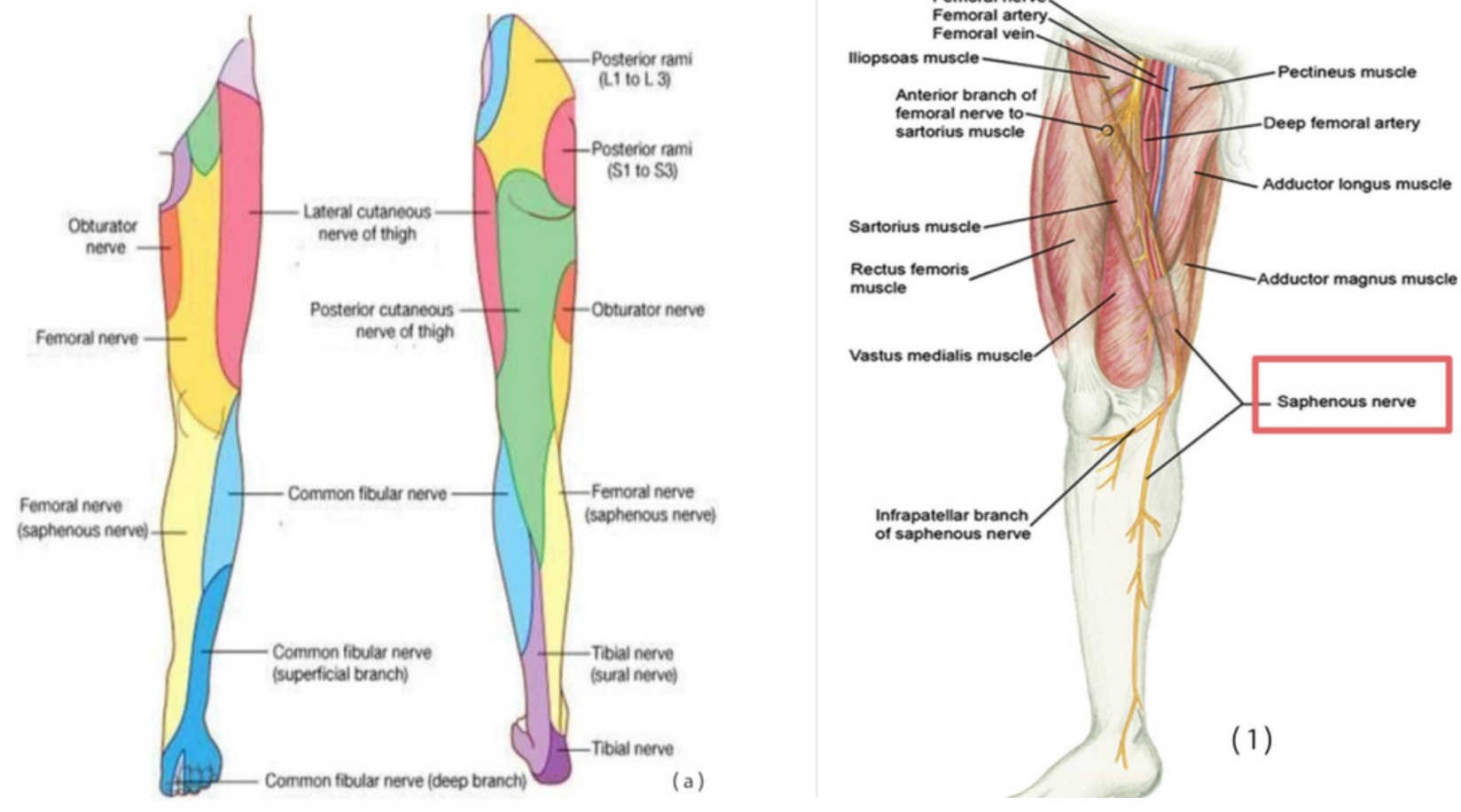
Branches of Sciatic Nerve

Cutaneous

To all leg & foot

EXCEPT: Areas supplied by the **saphenous nerve** (branch of femoral nerve).

Note439:saphenous nerve supplies the medial part of the leg and medial foot



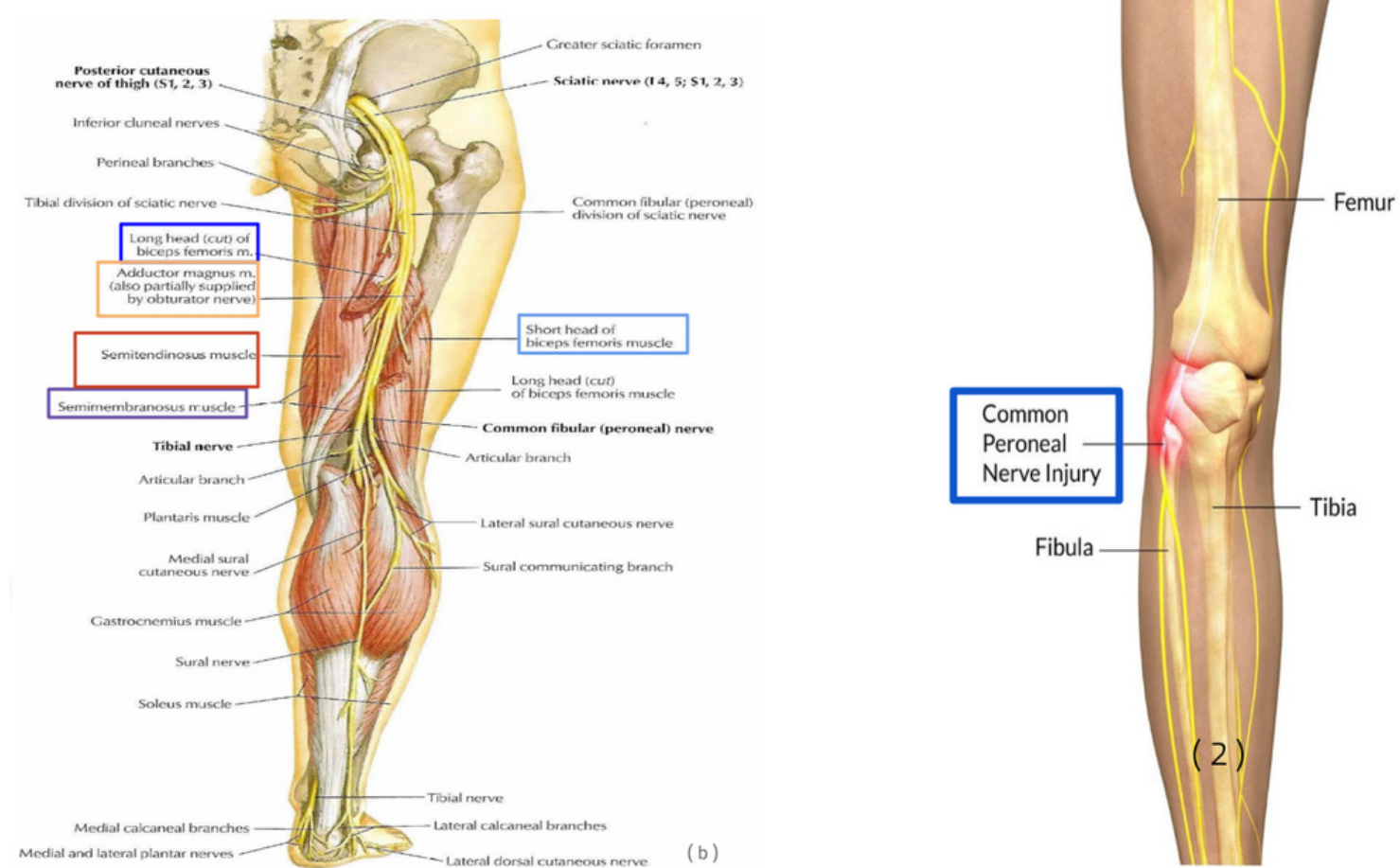
Muscular

Hamstrings:

- (flexors of knee & extensors of the hip).
- (through tibial part) to:

Long head of Biceps Femoris, Semitendinosus, Semimembranosus, Hamstring part of Adductor Magnus

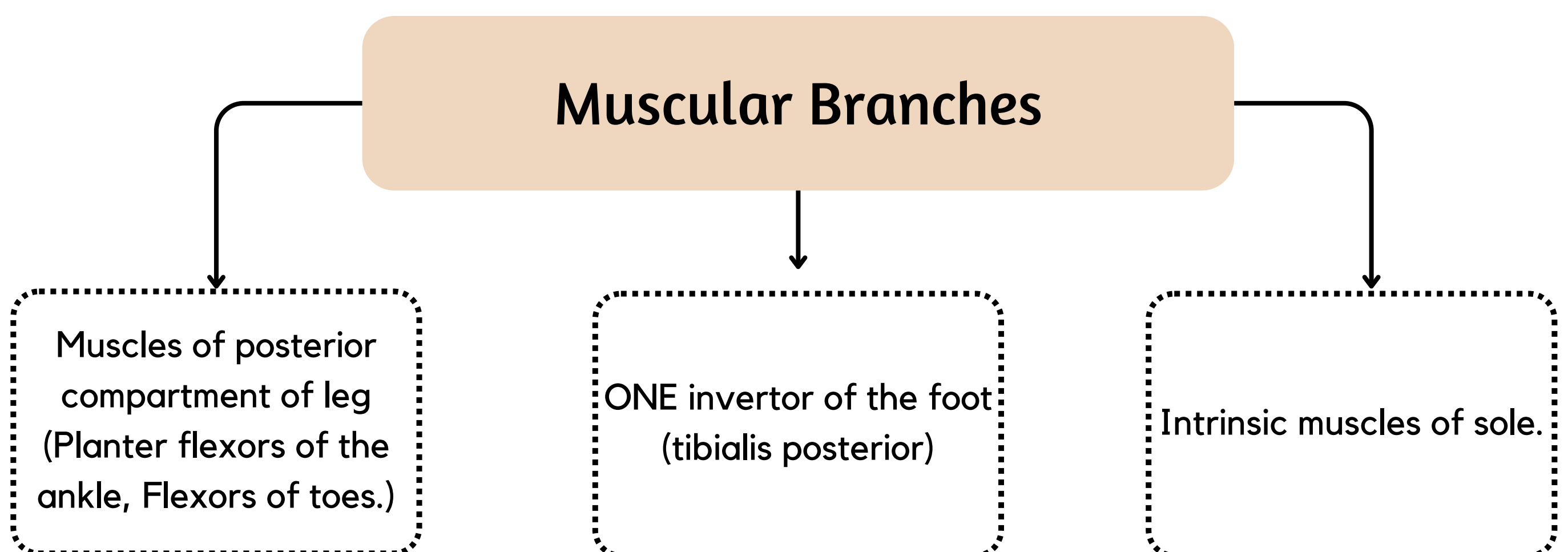
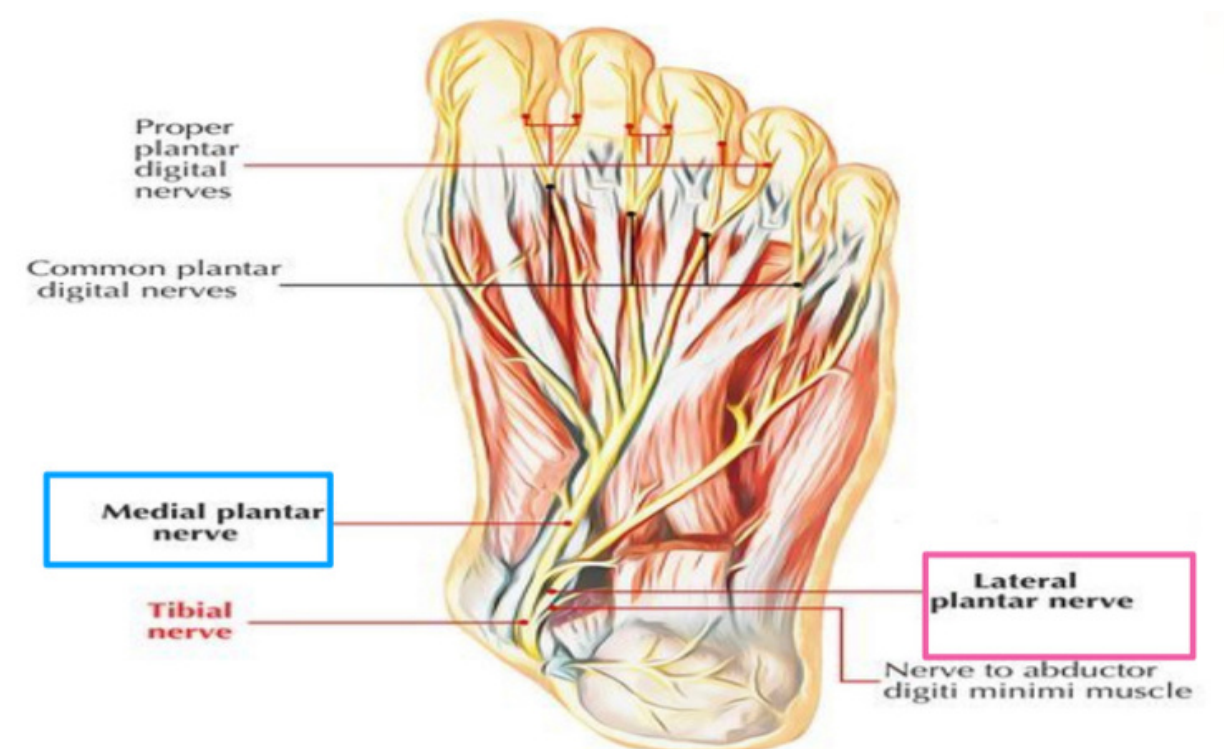
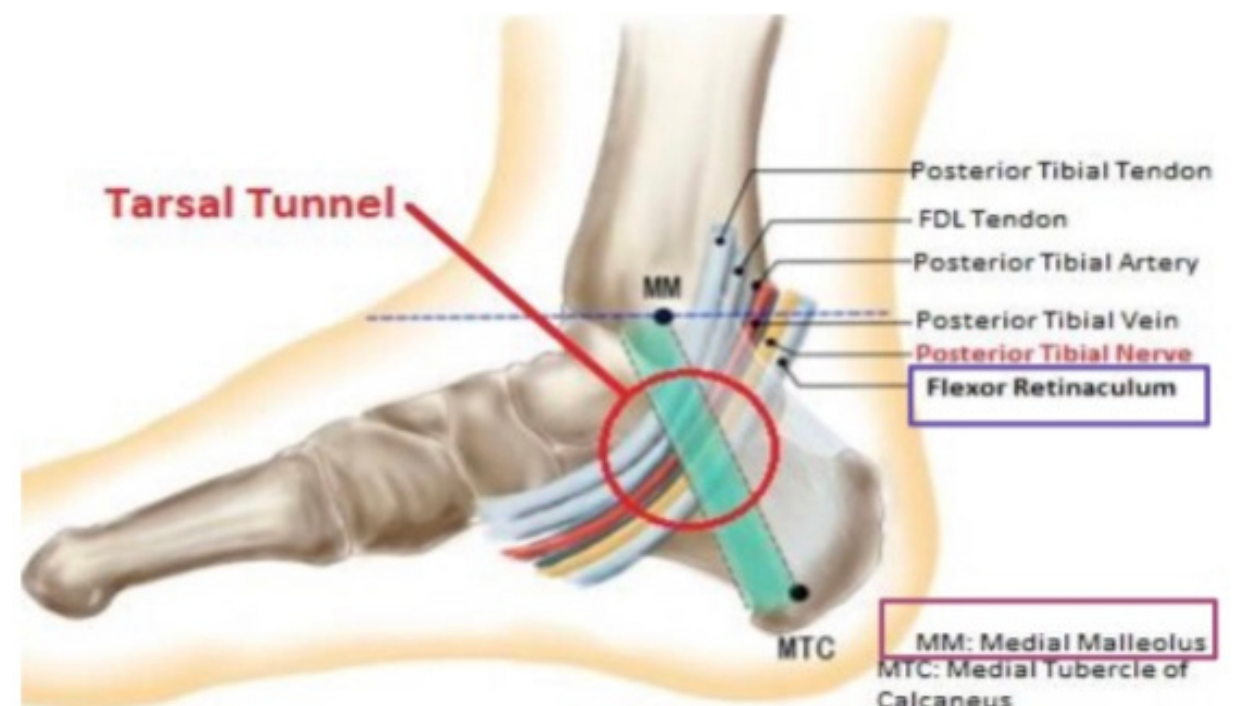
- The short head of biceps receives its branch from the lateral popliteal (common peroneal) nerve.



Tibial Nerve

- ◆ **Course:**
Descends through popliteal fossa to posterior compartment of leg
- ◆ Accompanied with **posterior tibial vessels**.
- ◆ Passes deep to **flexor retinaculum** (through the tarsal tunnel, behind **medial malleolus**) to reach the sole of foot.
- ◆ In the sole it divides into 2 terminal branches:

1. **Medial planter nerve.**
2. **Lateral planter nerve.**



Common peroneal (fibular) Nerve

★ Course:

- Leaves popliteal fossa & turns around lateral aspect of neck of fibula (dangerous position) (uncovered by muscle)
- then divides into:

1

superficial peroneal or (musculocutaneous) to supply lateral compartment of the leg

2

Deep peroneal or (anterior tibial) to supply anterior compartment of the leg

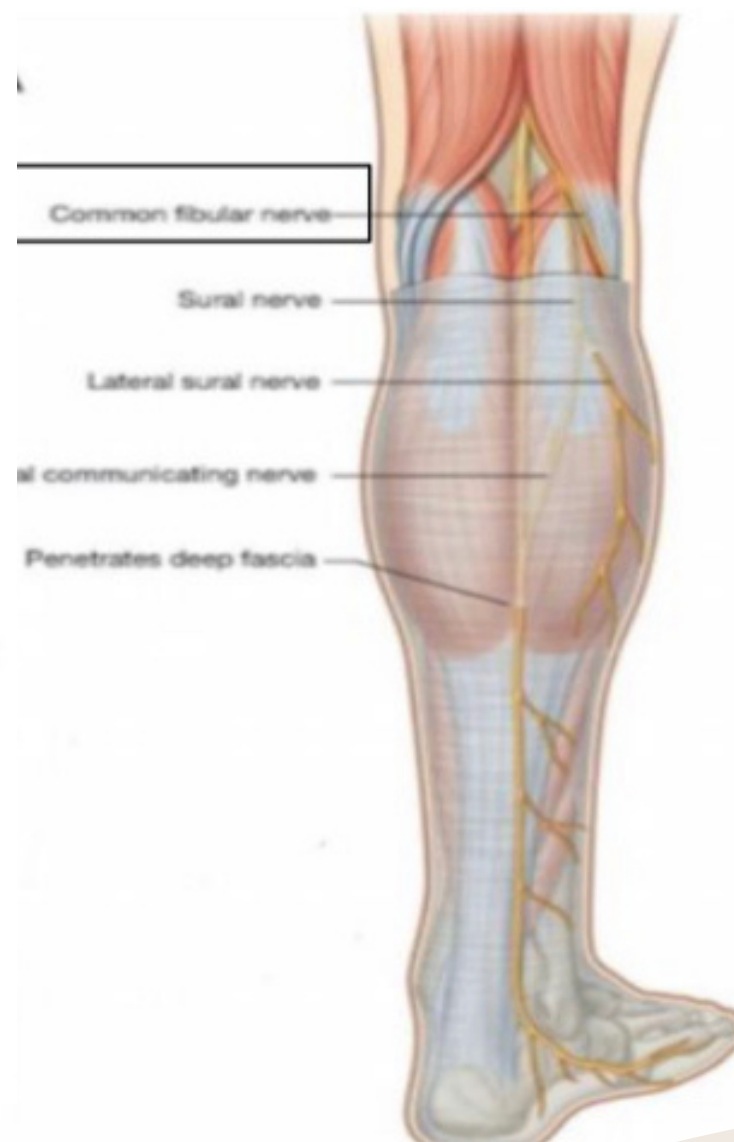
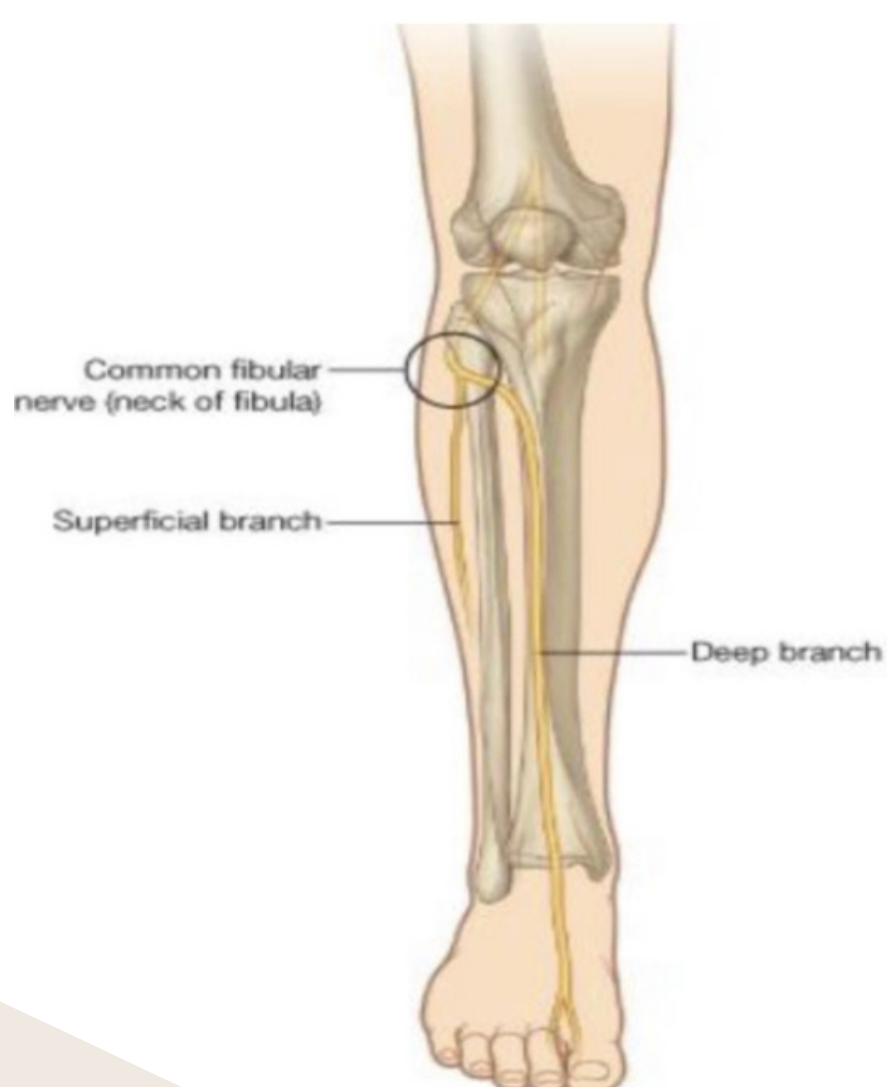
Muscular Branches

Muscles of anterior & lateral compartment of the leg.

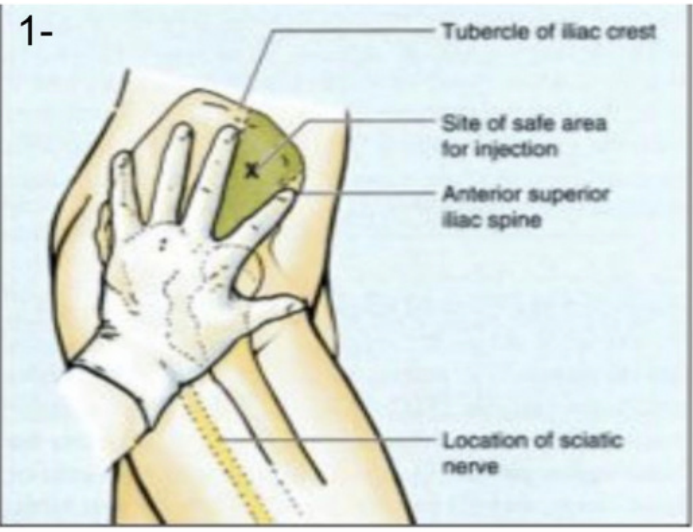

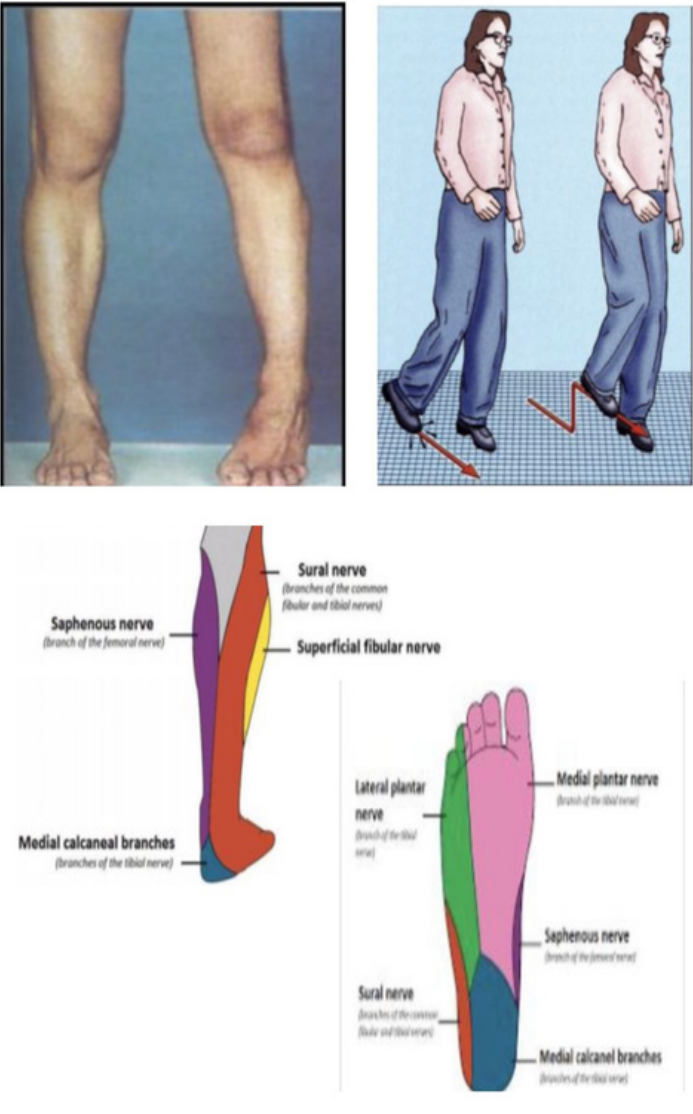
Dorsiflexors of ankle

Extensors of foot

Extensors of toes



Sciatic nerve injury

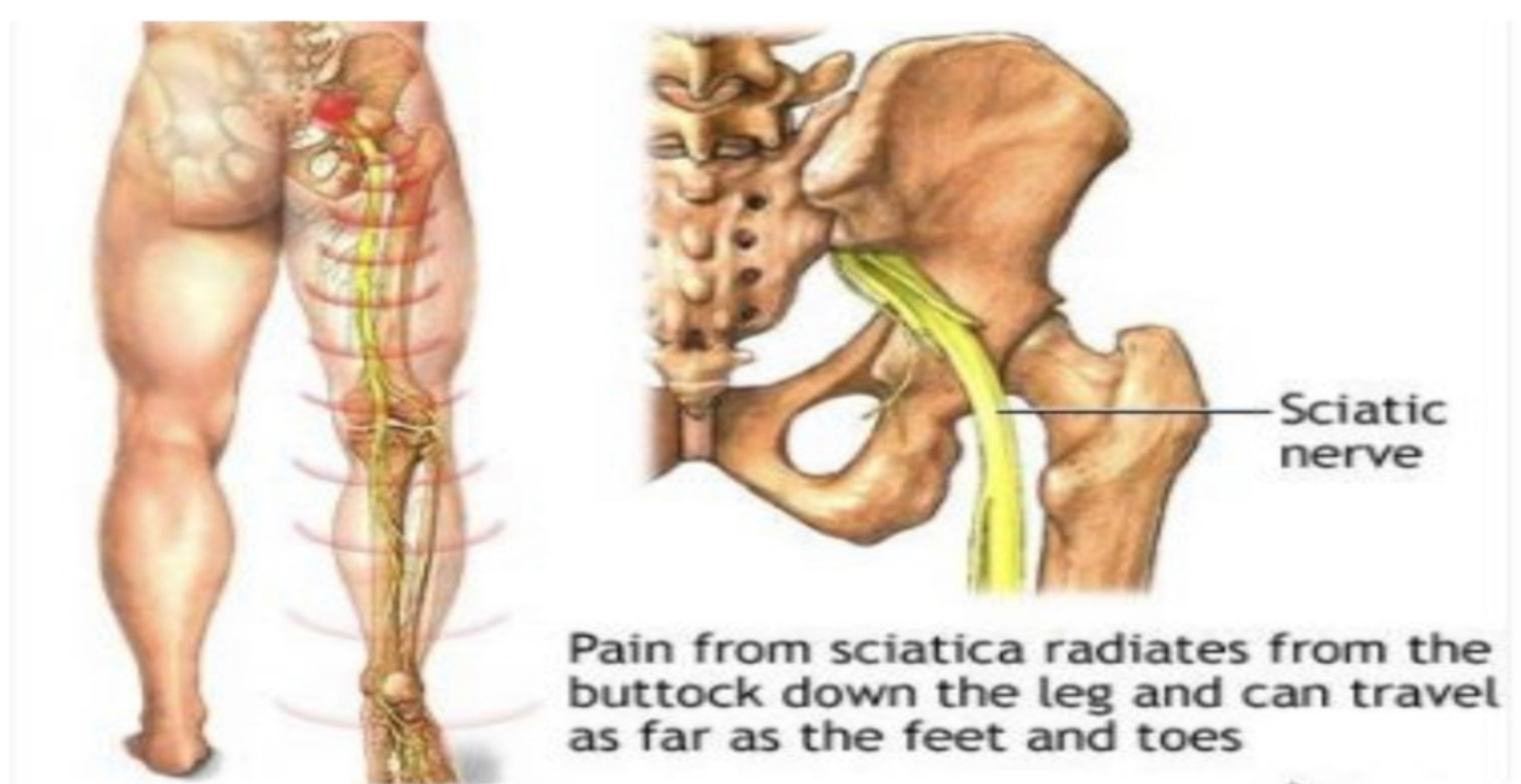
Causes	Effects
<p>1- Badly placed intramuscular injection in the gluteal region. (most <u>common</u> sciatic nerve injury)</p> <p>To avoid this, injections should be done into the gluteal maximus or medius .(into the upper outer quadrant of the buttock).</p> <p>Most nerve lesions are incomplete, and in 90% of injuries, the common peroneal (part of nerve) is most affected. Why? Because the common peroneal nerve fibers lies superficial in the sciatic nerve.</p>	<p>Motor effect:</p> <ol style="list-style-type: none"> 1. Marked wasting of the muscles below the knee. 2. Weak flexion of the knee (sartorius & gracilis are intact) because they have different nerve supply. 3. Weak extension of hip (gluteus Maximus is intact) 4. All muscles below the knee are paralyzed, the weight of the foot causes it to assume the plantar-flexed position or foot drop (due to gravity). 5. (Stamping gait) or (high stamping gait)
<p>2- posterior dislocation of hip joint.</p>	<p>Sensory effect:</p> <p>Sensation is lost below the knee, except for narrow area down the medial side of the lower part of the leg, and along the medial border of the foot as far as the ball of the big toe, which is supplied by saphenous nerve (femoral nerve)</p>
<p>1-</p>  <p>2-</p> 	

Effect of sciatic nerve injury Cont...

muscles affected	movement affected
hamstrings (paralysis)	flexion of the knee and extension of the hip
all muscles of the leg and foot (paralysis)	all the movements of the <u>leg and foot</u>
in terms of sensory effect: loss of sensation in the areas supplied by the sciatic nerve (below the knee) EXCEPT areas supplied by the saphenous nerve (which is a branch of the femoral nerve)	

Sciatica عرق النسا

- ◆ Sciatica describes the condition in which patients have pain along the sensory distribution of the sciatic nerve. (motor work effectively)
- ◆ Thus, pain is experienced in the posterior aspect of the thigh, the posterior and lateral sides of the leg, and the lateral part of the foot.



Causes of Sciatica

➤ **Prolapse of an intervertebral disc**, with pressure on one or roots of the lower lumbar and sacral spinal nerves

Pressure on the nerve by herniated disc

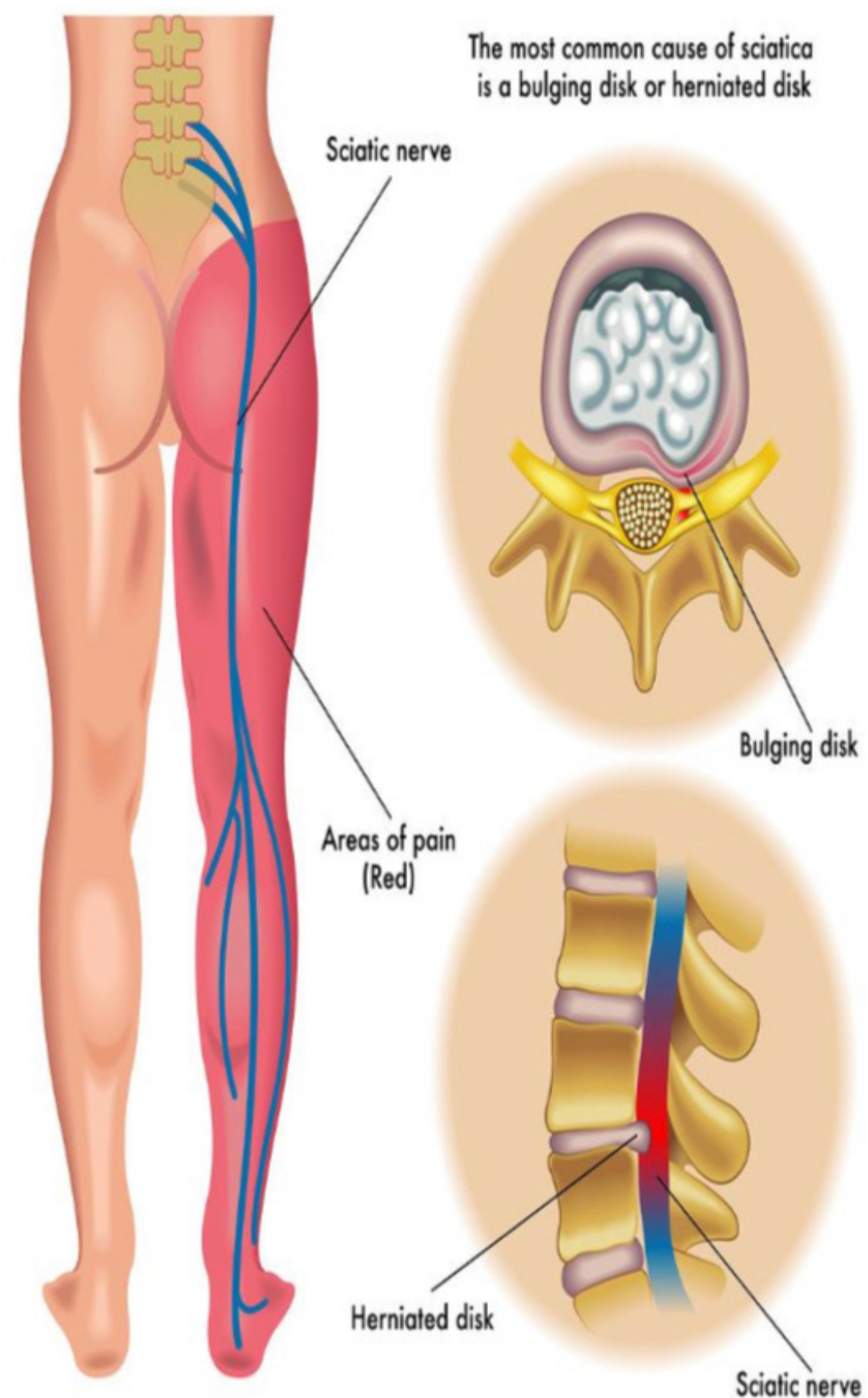
➤ **Pressure** on the sacral plexus or sciatic nerve by an intrapelvic tumor

Pressure on the nerve by a Tumor

➤ **Inflammation** of the sciatic nerve or its terminal branches

Inflammation of the nerve

SCIATICA

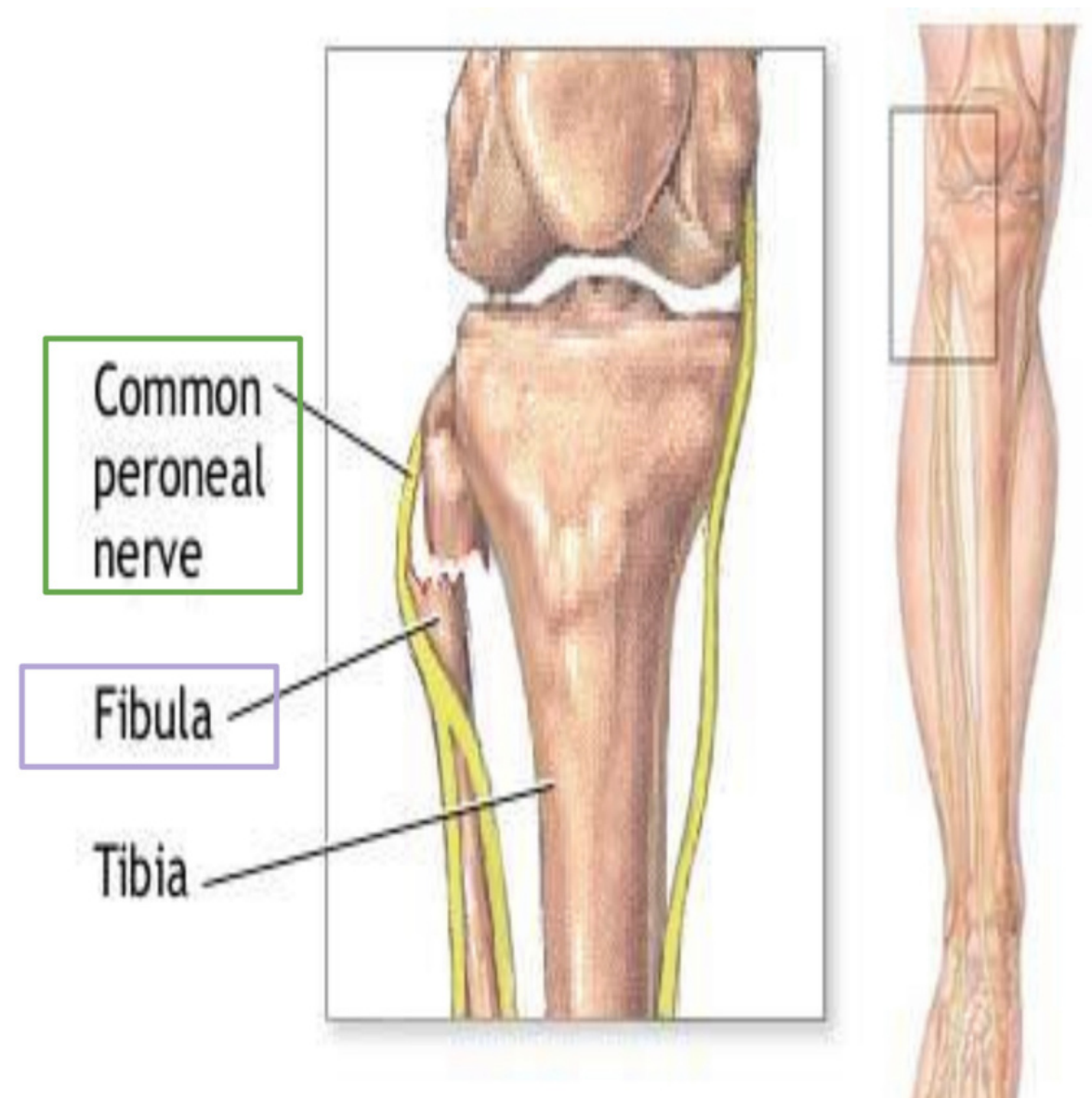


Common Peroneal (Fibular) Nerve Injury

The common peroneal nerve is in an **exposed position** as it leaves the popliteal fossa through its lateral angle.

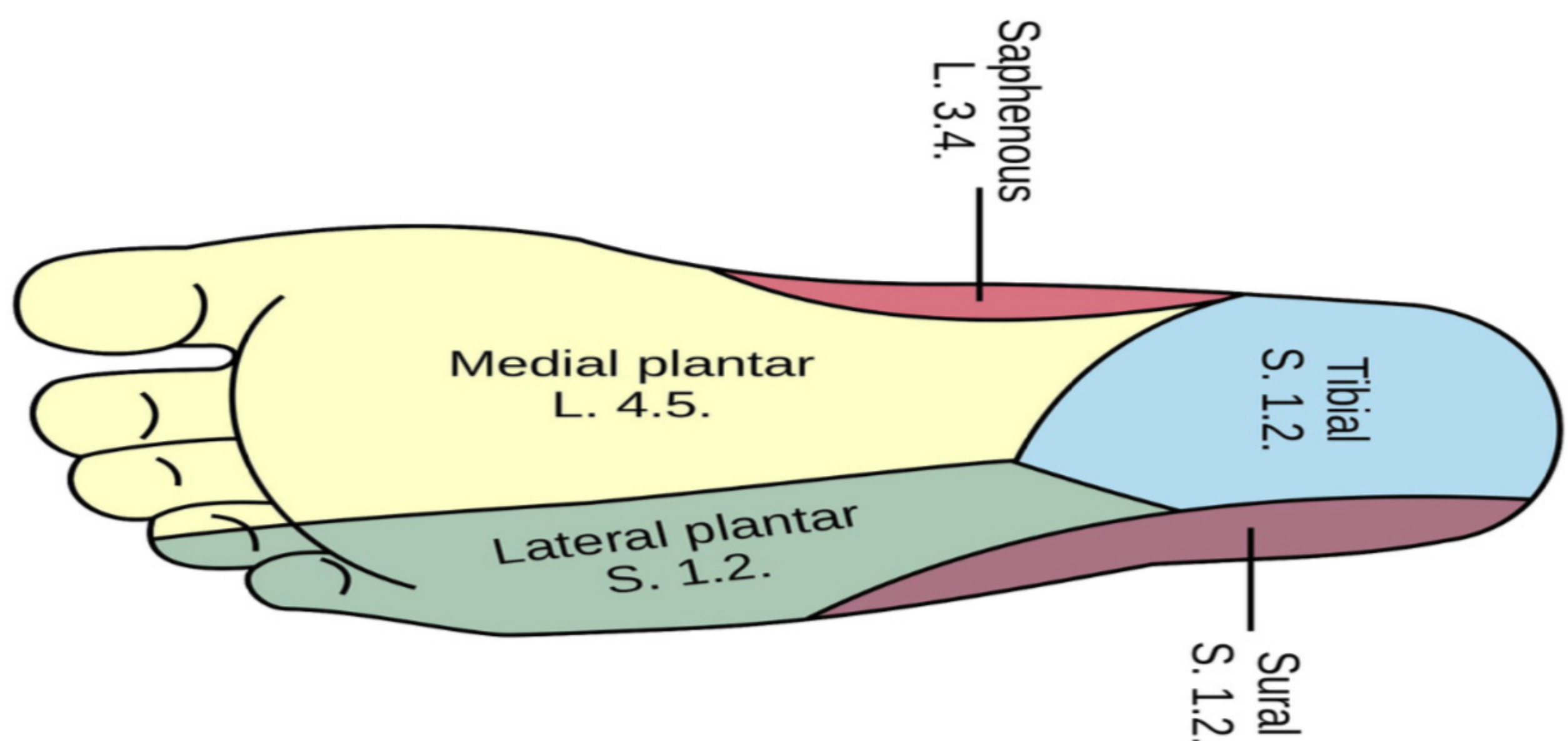
Then it **winds around neck** of the fibula to enter the peroneus longus muscle, (**Dangerous Position**)

The common peroneal nerve is commonly injured In Fractures of the neck of the fibula and By pressure from low casts or splints.



Manifestations of Common Peroneal (Fibular) Nerve Injury

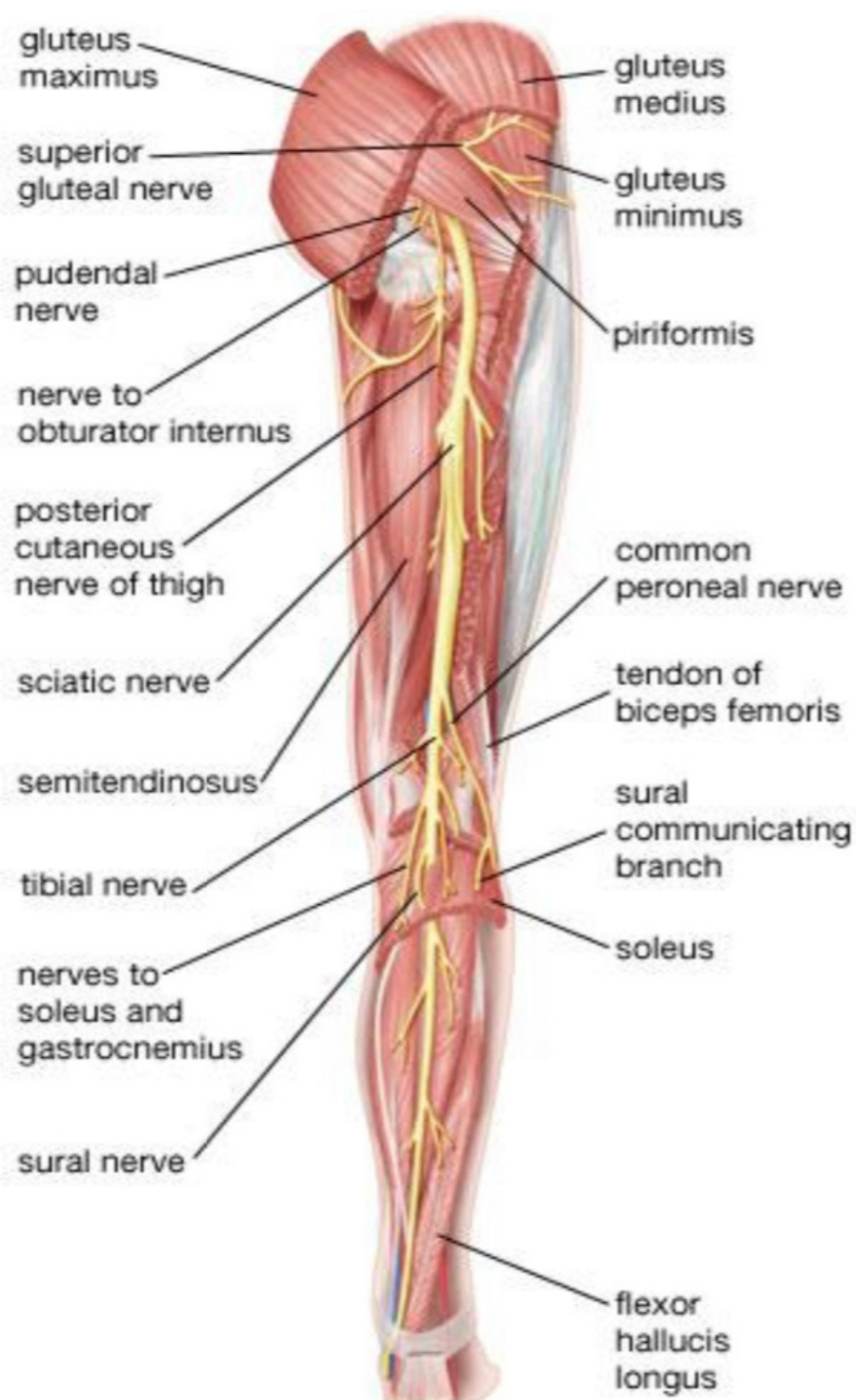
Motor	Sensory
<p>The muscles of the <u>anterior</u> and <u>lateral</u> compartments of the leg are paralyzed.</p> <p>As a result, the opposing muscles, the plantar flexors of the ankle joint and the invertors of the subtalar joints, cause the foot to be Plantar Flexed (Foot Drop) and Inverted, an attitude referred to as Talipes Equinovarus.</p>	<p>Sensation is lost:</p> <ul style="list-style-type: none"> • Between the first and second toes. • Dorsum of the foot and toes. • Medial side of the big toe. • Anterior and Lateral side of the leg.



Tibial Nerve Injury

- ✦ Because of its deep and protected position, the tibial nerve is **rarely** injured.

Complete division results in the following clinical features:	
Motor	Sensory
<p>All the muscles in the back of the leg and the sole of the foot are paralyzed. The opposing muscles Dorsiflex the foot at the ankle joint and Evert the foot at the subtalar joint, an attitude referred to as Talipes Calcaneovalgus</p>	<p>Sensory loss on the Lateral side of the leg and foot & trophic ulcers in the sole. (Also seen in case of sciatic nerve injury)</p>



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MCQs

1

The sciatic nerve leaves the pelvis through

A.ischial tuberosity

B.piriformis muscle

C.greater sciatic foramen

D.greater trochanter

2

The action of the muscular branch of the sciatic nerve

A.extensor of knee, flexor of hip

B.flexor of knee, extensor of hip

C.flexor of knee, adductor of hip

D.flexor of knee, lateral rotation of hip

3

What muscles are affected by a sciatic nerve injury?

A)hamstrings

B)muscles of the leg and foot

C)quadriceps femoris and dorsum of the foot

D) A+B

4

the Motor effect in a tibial nerve injury

A)dorsiflex at the foot

B)plantarflex at the foot

C) Eversion at the subtalar

D) A+C

5

The sensory loss of Peroneal nerve injury is in

A)dorsum of the foot and toes

B)between the second and third toes

C)Plantar side of the foot and toes

D)medial side of the leg



1-C 2-B 3-D 4-D 5-A

SAQs

1

What are the 2 terminal branches of the back of the thigh?

 Tibial (medial popliteal) ,Common Peroneal, or lateral popliteal(Fibular)


2

What are the 2 terminal branches of the sole?

 medial planter nerve and lateral planter nerve


3

Mention Three Causes of Sciatica

 1-pressure by a prolapsed disc
2-pressure by a tumor
3-inflammation of the sciatic nerve

4

Why is the peroneal nerve susceptible to Injuries?

 Because of it's Exposed position, it goes laterally after leaving the popliteal fossa and winds around the neck of the fibula



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