

وأتعب من ناداك من لا تجيبه... وأغيظ
من عاداك من لا تشاكل

Musculoskeletal Block
ANATOMY
team 435



C O L O R C O D E S

- IMPORTANT NOTES
- EXTRA NOTES
- DEFINITION

Objectives

By the end of the lecture, you should be able to:

- **Describe the anatomy (origin, course & 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.**



Sciatic Nerve

Origin:

- ❖ From Sacral to the Plexus (**L4,5, S1, 2,3**).
- ❖ It is the largest branch of the plexus & **the largest nerve of the body**.

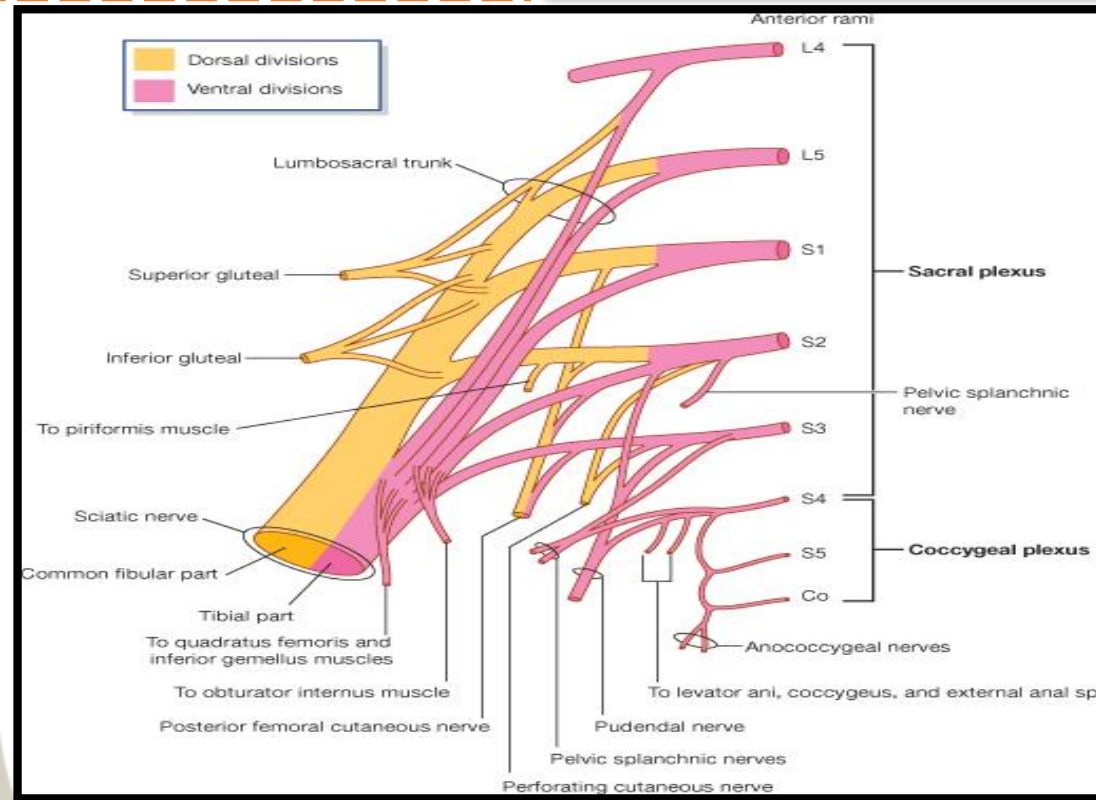
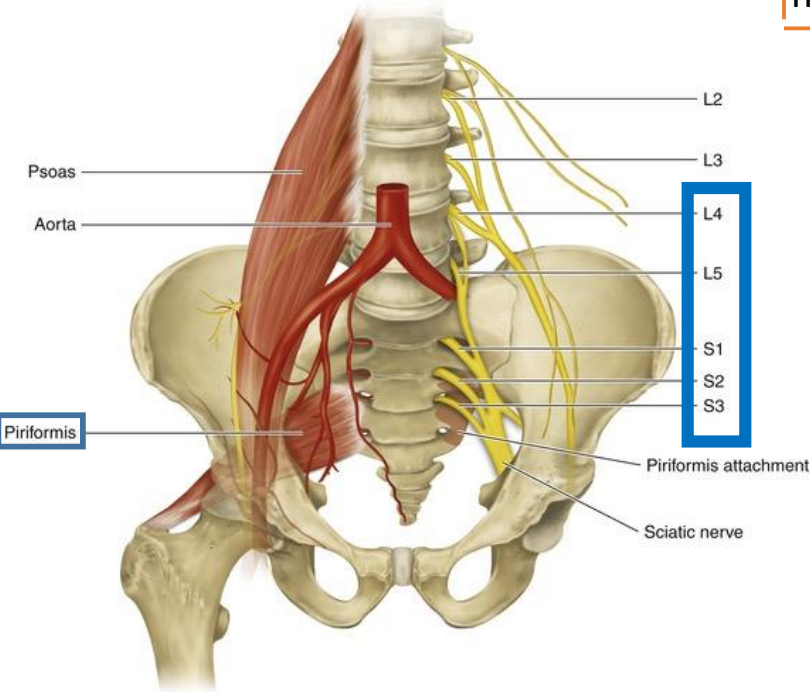
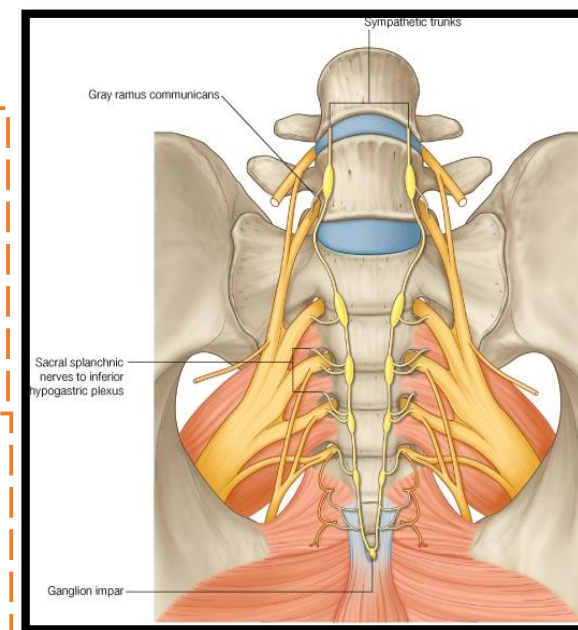
Sacral Plexus

Formation:

- ❖ Ventral (anterior) rami of a part of L4 & whole L5 (**lumbosacral trunk**).
- ❖ S1,2,3 and most of S4.

Site:

On the **posterior wall** of the pelvis, in front of **piriformis** muscle.



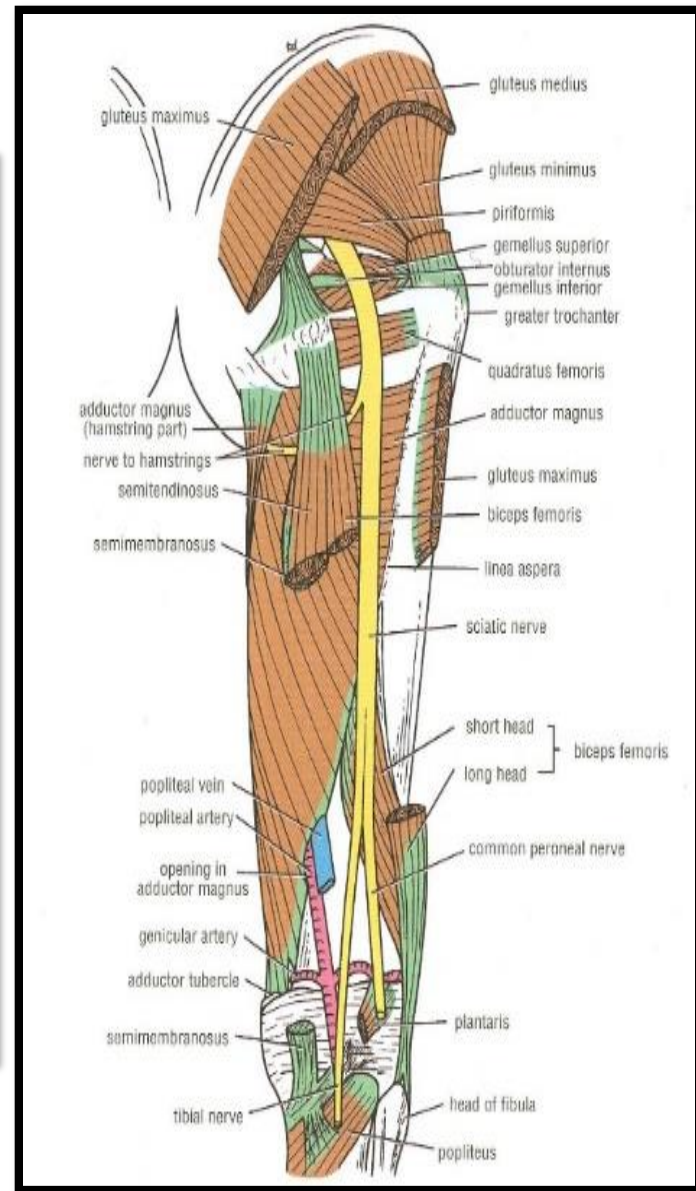
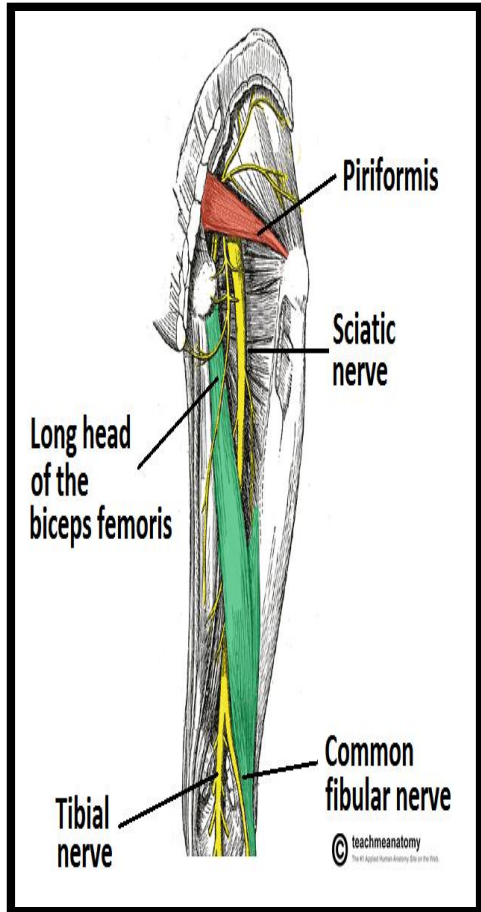
Course and Distribution

- 1) First it leaves the pelvis through **greater sciatic foramen** (below the **piriformis**).
- 2) Then it passes in the **gluteal region** (between **ischial tuberosity** and **greater trochanter**).
- 3) After that it enters the **posterior compartment of the thigh**.

Termination:

In the middle of the back of the thigh it divides into 2 terminal branches:

- Tibial (**medial popliteal**).
- Common Peroneal or **lateral popliteal** or fibular.



Branches of Sciatic Nerve

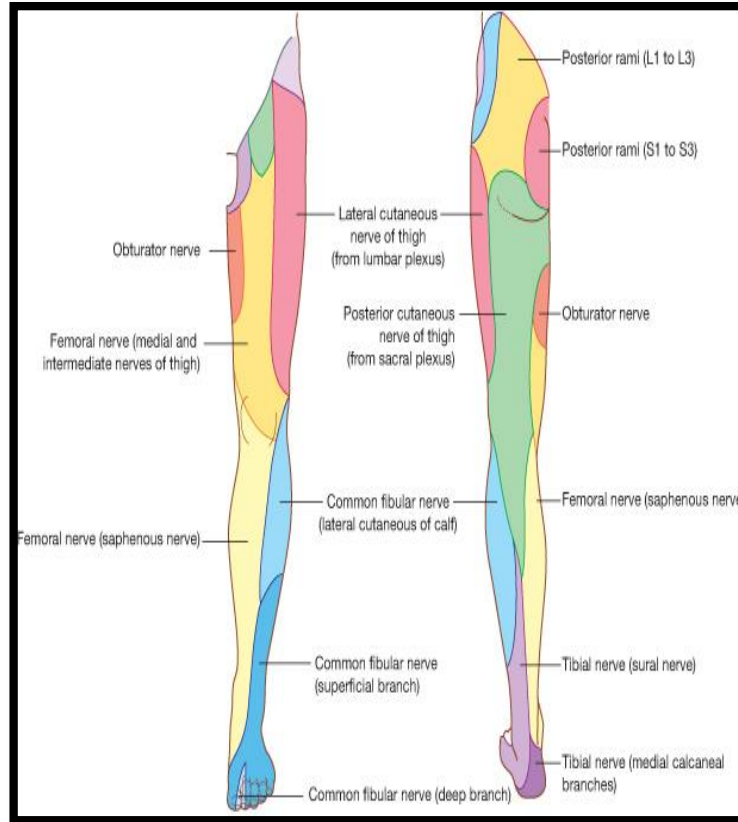
1. Cutaneous:

To all leg and foot **except:**
 Areas supplied by the **saphenous nerve** (a branch of femoral nerve)

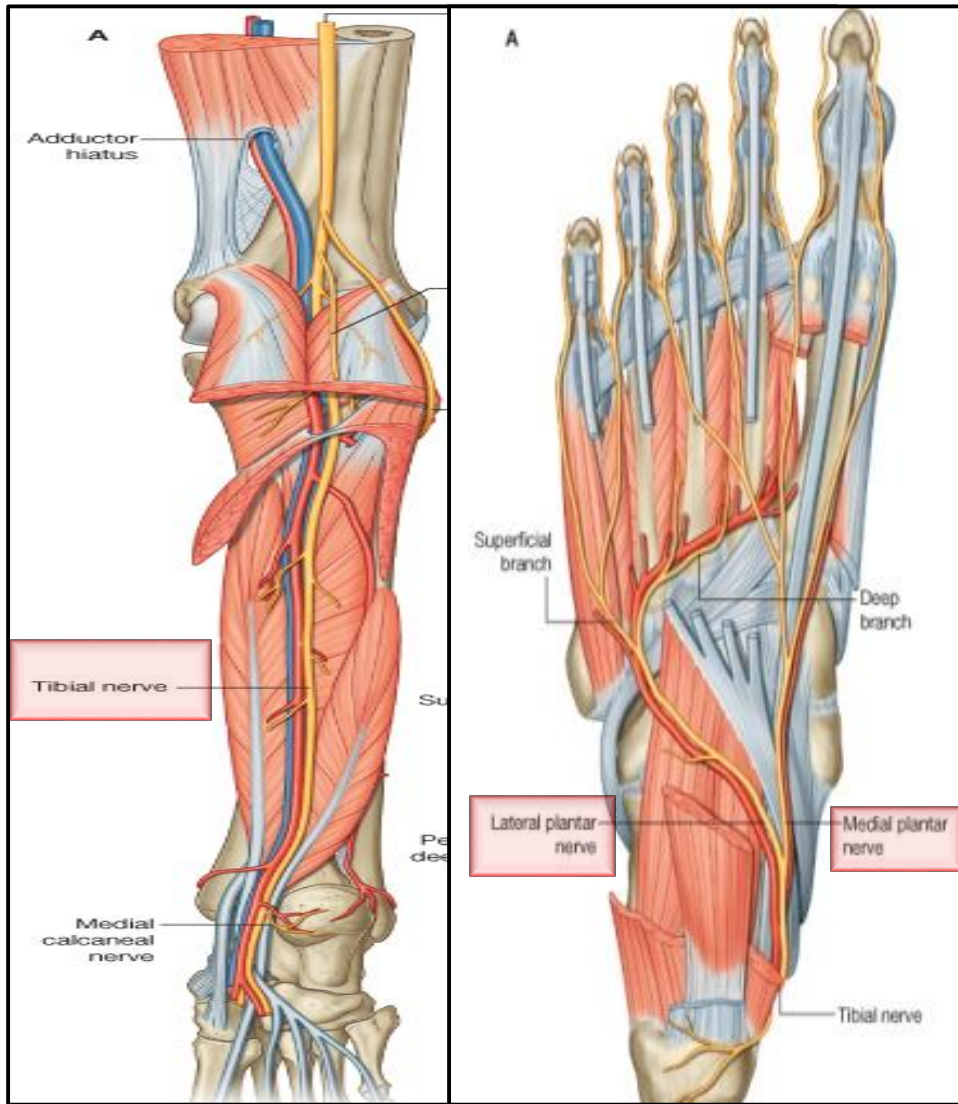
2. Muscular:

- To hamstrings: (flexors of knee and extensors of the hip)
- Through Tibial part to:
 1. Hamstring part of Adductor Magnus.
 2. Long head of biceps femoris.
 3. Semitendinosus.
 4. Semimembranosus.

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



Tibial Nerve



■ Course:

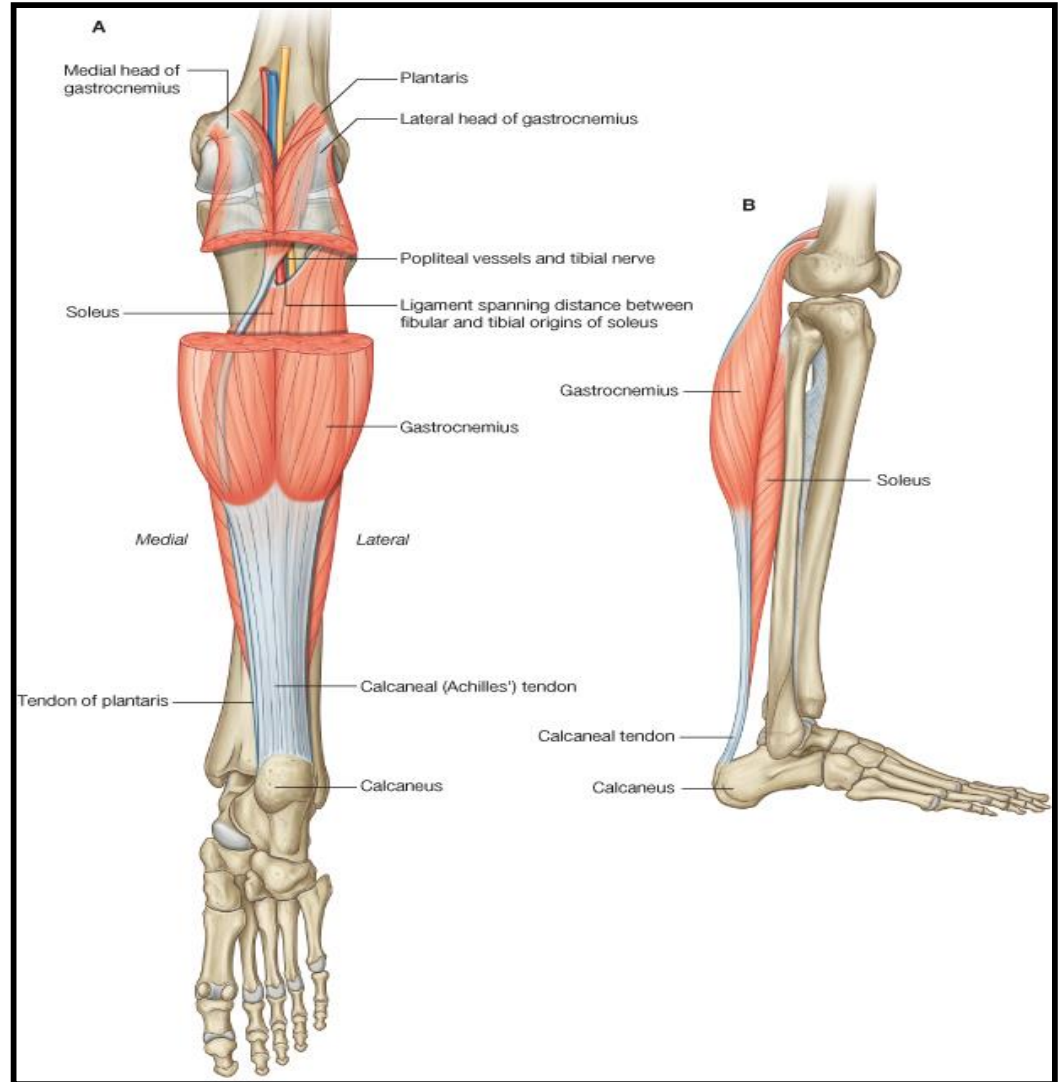
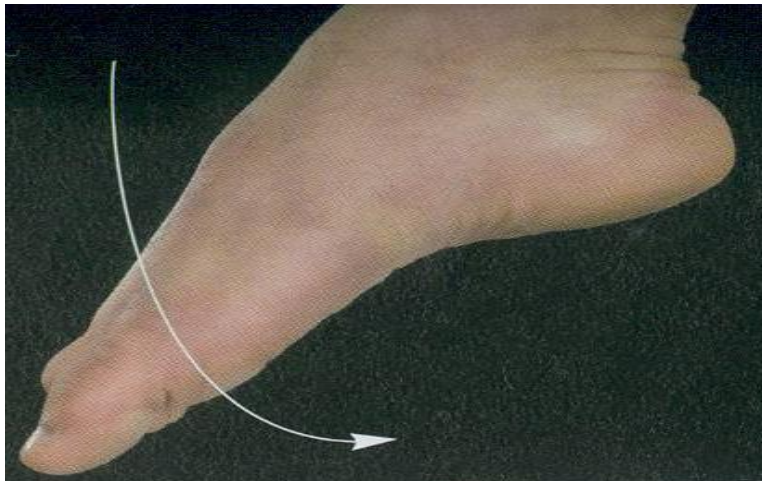
- Descends through popliteal fossa to posterior compartment of leg, accompanied with posterior tibial vessels.
- Passes deep to flexor retinaculum (through the tarsal tunnel, behind medial malleolus) to reach the sole of foot where it divides into 2 terminal branches (Medial & Lateral planter nerves).

Muscular Branches

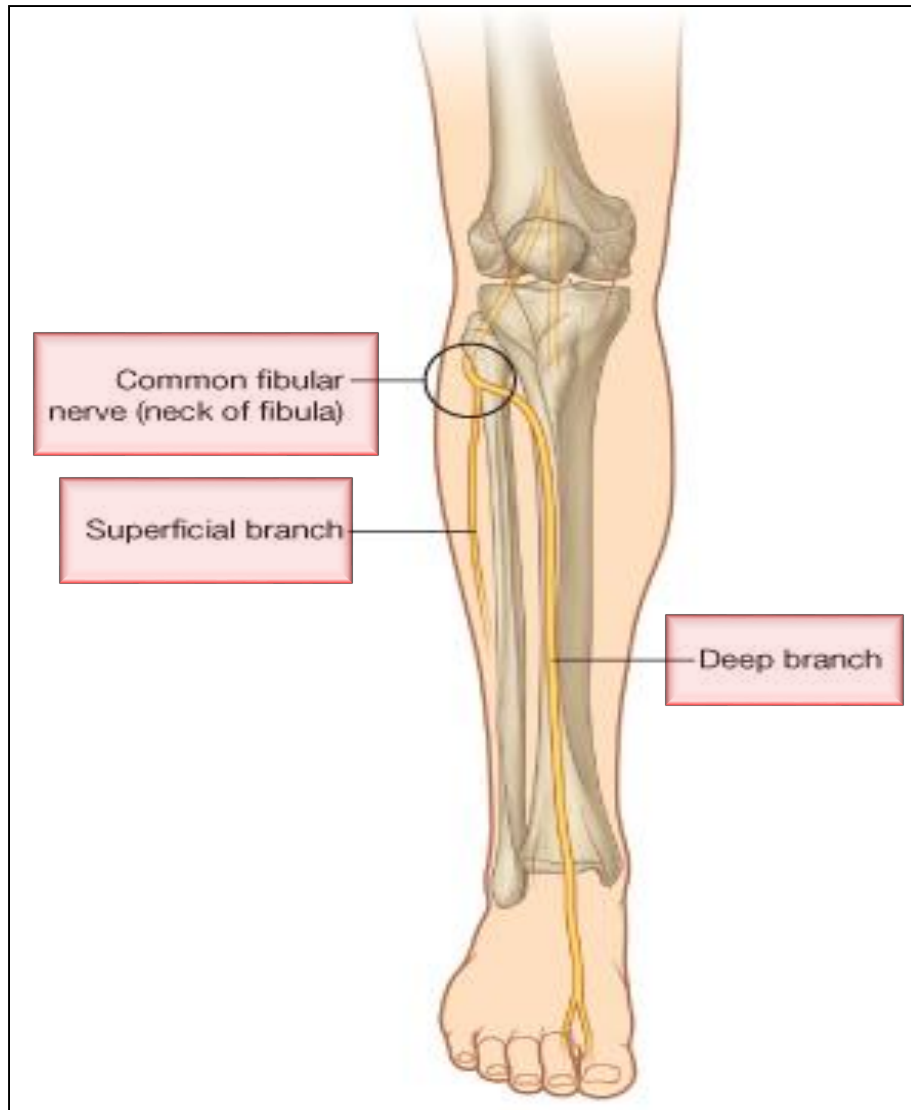
1) Muscles of posterior compartment of leg:

- Planter flexors of ankle.
- Flexors of toes.
- One Invertor of foot (tibialis posterior).

2) Intrinsic muscles of sole.



Common Peroneal (Fibular) Nerve



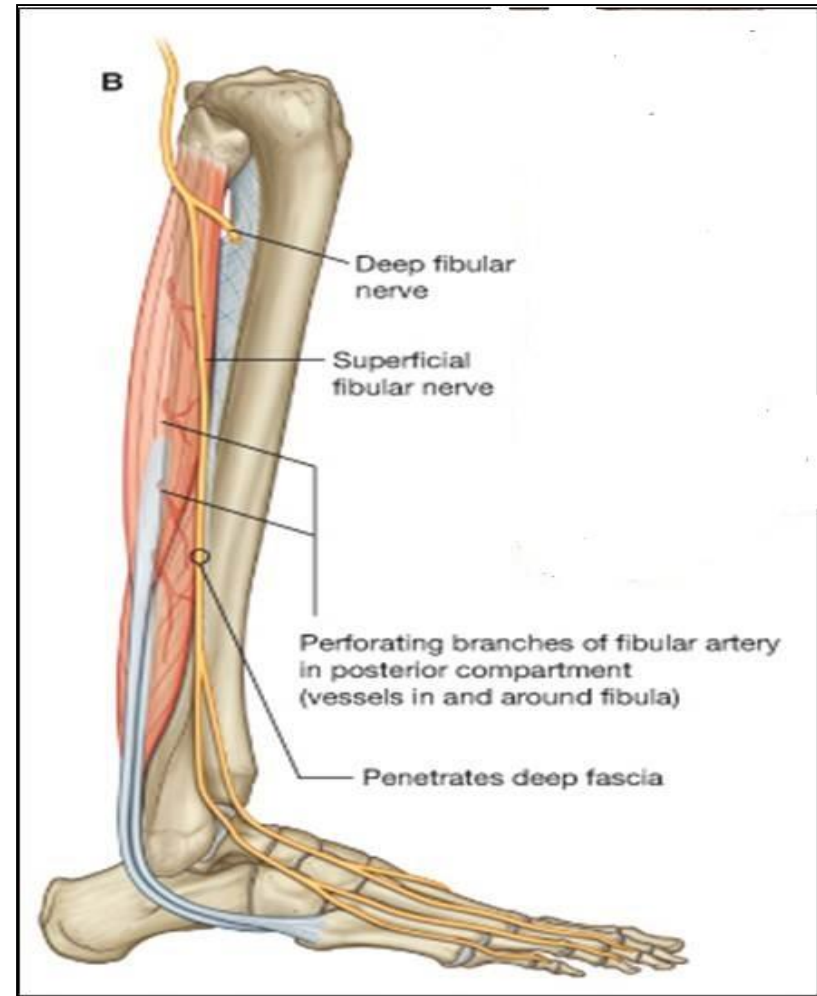
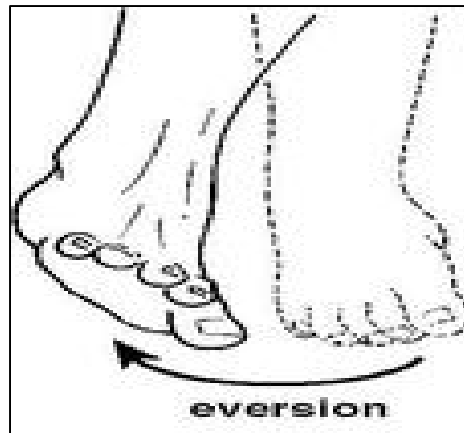
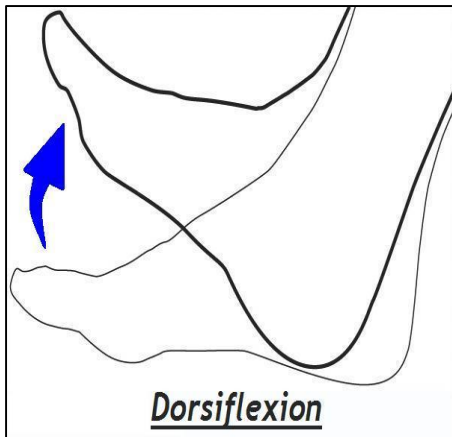
■ Course:

- Leaves popliteal fossa (lateral angle) & turns around the **lateral aspect of neck of fibula, (Dangerous Position)**.
- Then divides into:
 1. **Superficial peroneal (Musculocutaneous)**: to supply the **Lateral compartment of the leg**.
 2. **Deep peroneal (Anterior Tibial)**: to supply the **anterior compartment of the leg**.

Muscular Branches

■ Muscles of anterior & lateral compartments of leg:

1. Dorsi flexors of ankle.
2. Extensors of toes.
3. Evertors of foot.



CAUSES OF SCIATIC NERVE INJURY

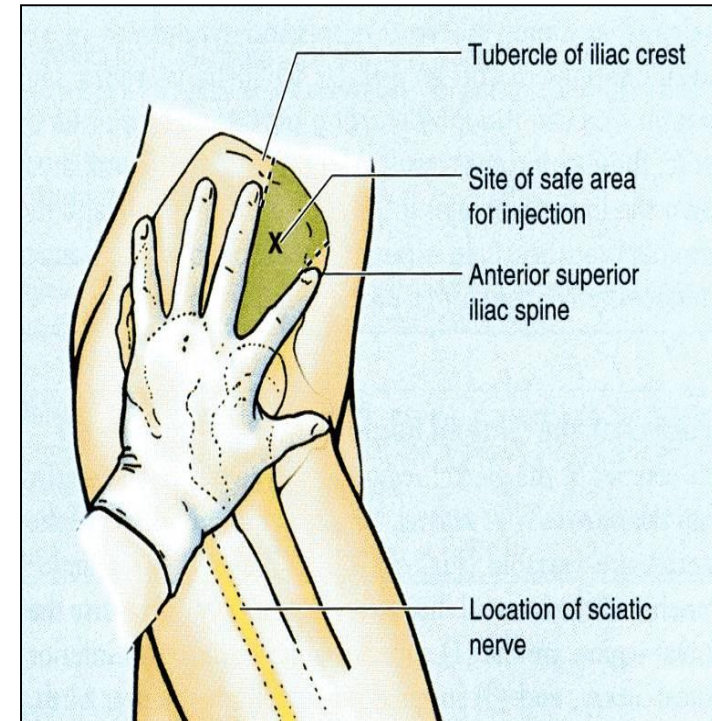
The sciatic nerve is **most frequently injured** by :

1. **Badly placed intramuscular injections in the gluteal region.**

To avoid this injections should be done into the gluteus maximus or medius into the **upper outer quadrant of buttock**

2. **Posterior dislocation of the hip joint**

Most nerve lesions are incomplete , and in **90%** of injuries the **common peroneal nerve is the mostly affected**. (Because the common peroneal nerve fibers lie **superficial** in the sciatic nerve.)



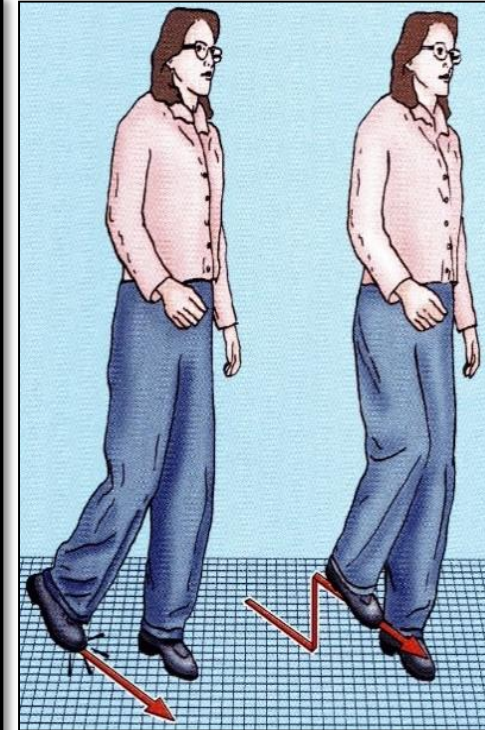
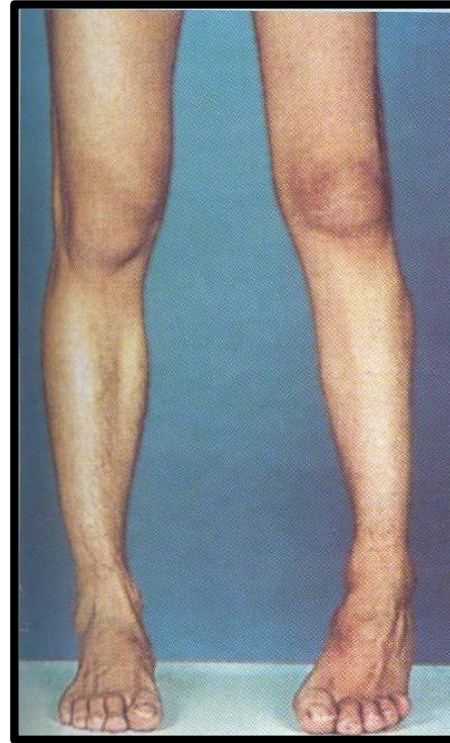
SCIATIC NERVE INJURY

MOTOR EFFECT

- 1- Marked wasting of the muscles below the knee.
- 2- Weak flexion of the knee (**sartorius & gracilis are intact**).
- 3- Weak extension of hip (**gluteus maximus is intact**).

All the muscles below the knee are paralyzed, and the **weight of the foot** causes it to assume the **plantar-flexed position** or **Foot Drop**.

(**High steppage gait**).



Sensory Loss

Sensation is lost **below the knee** **except for** a narrow area down the medial side of the lower part of the leg (**blue**), and along the medial border of the foot as far as the ball of the big toe, which is supplied by the **saphenous nerve** (femoral nerve).



EFFECT OF SCIATIC NERVE INJURY

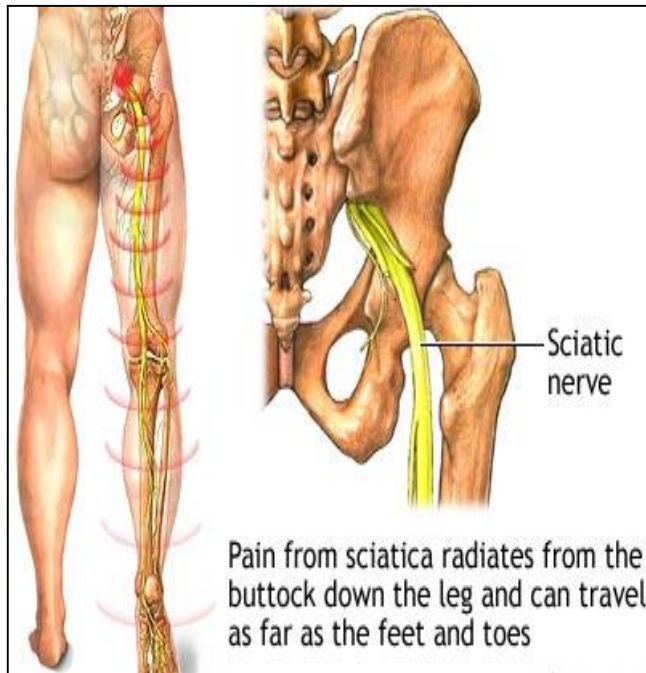
MOTOR EFFECT	Paralysis of	Movements affected
	Hamstrings	Flexion of knee &
	All muscles of Leg & Foot	Extension of hip
All movements of the leg & Foot		

SENSORY EFFECT	Loss of sensation of the areas supplied by sciatic nerve (below knee). EXCEPT area supplied by the (Saphenous nerve).
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Sciatica

Sciatica: the condition in which patients have pain along the **sensory distribution** of the **sciatic nerve**

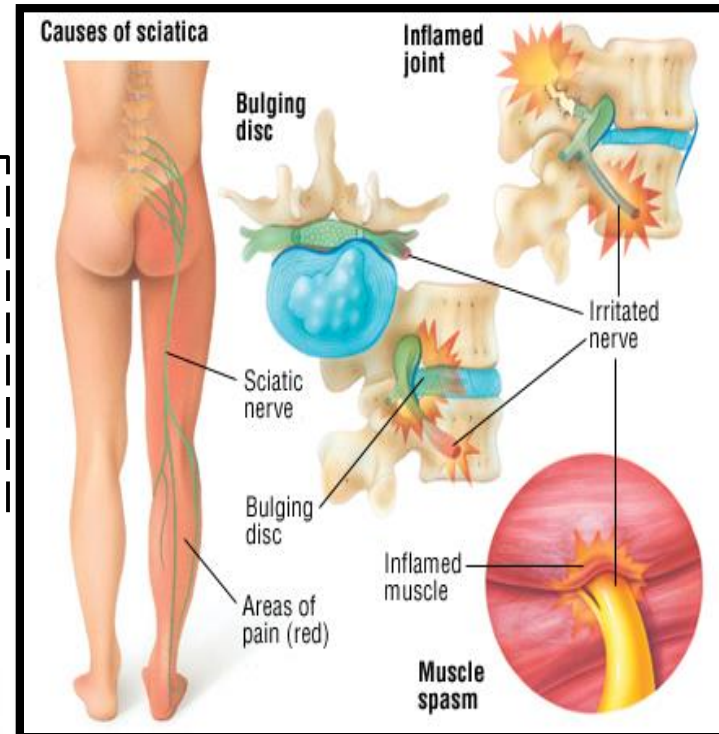


Causes of Sciatica

- Prolapse of an **intervertebral disc**, with **pressure on** one of roots of the **lower lumbar and sacral spinal nerves**
- Pressure on the **sacral plexus or sciatic nerve** by an **intrapelvic tumor**
- Inflammation of the **sciatic nerve** or its terminal branches

The pain is experienced in:

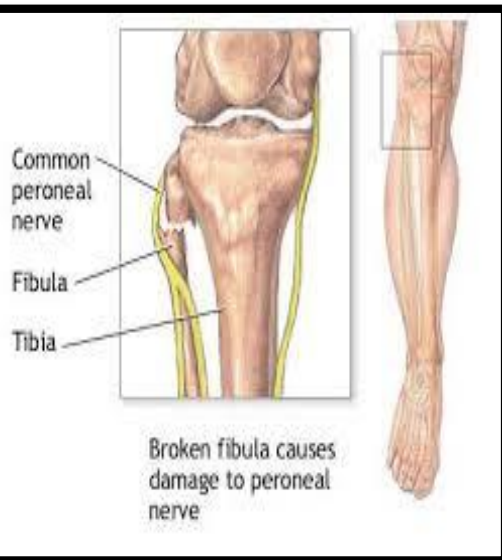
- the **posterior** part of the **thigh**
- the **posterior and lateral** sides of the **leg**
- the **lateral** part of the **foot**



Common Peroneal 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 **peroneus longus muscle**,
(Dangerous Position)!!



The **common peroneal nerve is commonly injured** In:

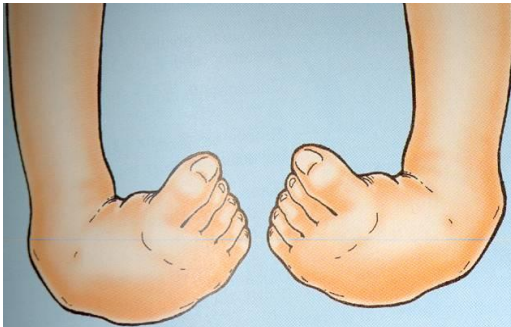
- 1) **Fractures** of the neck of the fibula and
- 2) **pressure** from “casts” or “splints”.



Manifestations of Common Peroneal Nerve Injury:

Motor

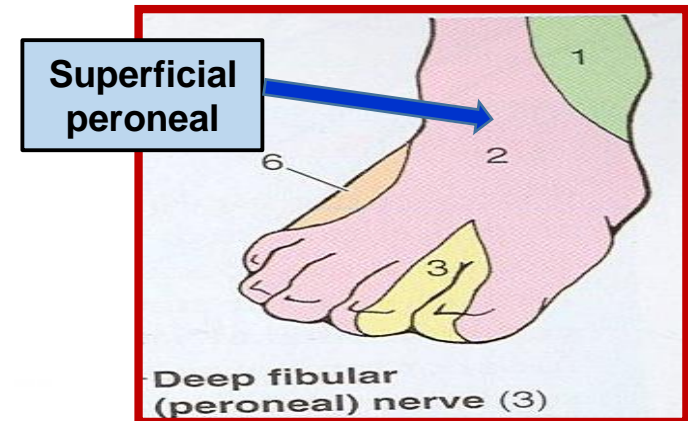
- ❖ The muscles of the **anterior and lateral compartments of the leg** are paralyzed
- ❖ As a result, the opposing muscles, the plantar flexors of the ankle joint and the invertors of the subtalar joints cause the foot to be **Plantar Flexed (Foot Drop) and Inverted**, an attitude referred to as **“Talipes Equinovarus”**.



Sensory

Sensation is lost

- between the first and second toes.
- Dorsum of the foot and toes.
- Medial side of the big toe.
- Lateral side of the leg.



Tibial Nerve Injury

The tibial nerve is **rarely injured** because of its **deep and protected position**.

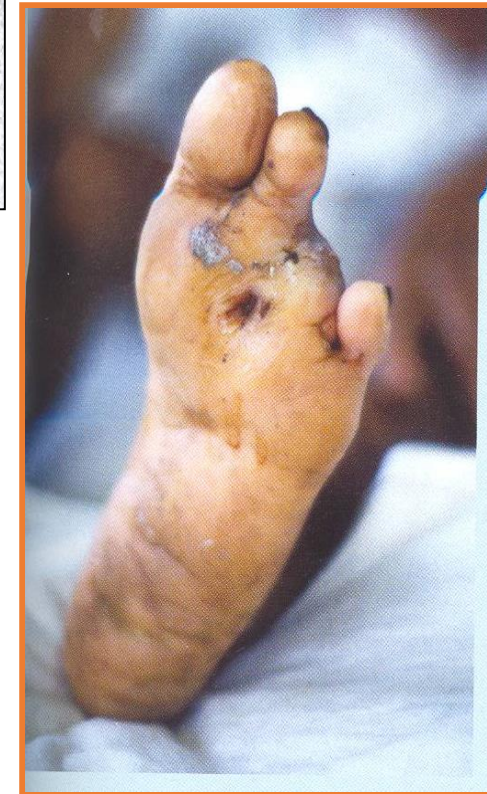
Complete division results in the following clinical features:

➤ **Motor**

- 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** (directed laterally) at the **subtalar joint**, an attitude referred to as **Taleps Calcaneovalgus**.

➤ **Sensory loss on:**

- a) **Lateral** side of the **leg** and **foot**
- b) **Trophic ulcers** in the **sole**
(also seen in case of **Sciatic nerve injury**)





Application: Essential anatomy 5
you can have it for free, ask
https://twitter.com/Med_435



Quiz: <https://www.onlineexambuilder.com/sciatic-nerve/exam-52998>

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