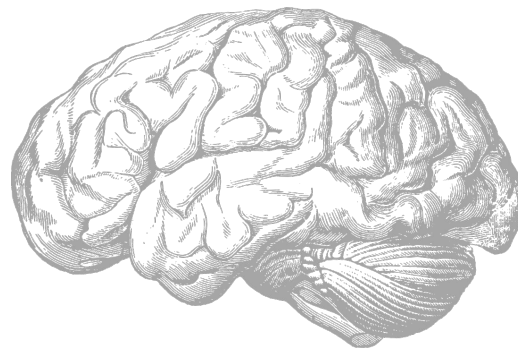




Brachial Plexus and Lumbosacral Plexus

CNS Block



Color Index

- ◆ Main Text
- ◆ Female Slides
- ◆ Male Slides
- ◆ Drs' Notes
- ◆ Important
- ◆ Extra info

[The Editing File](#)



Objectives



Describe the formation of brachial plexus (site, roots)



List the main branches of brachial plexus



Describe the formation of lumbosacral plexus (site, roots)



List the main branches of lumbosacral plexus



Describe the important Applied Anatomy related to the brachial & lumbosacral plexuses



You can find helpful video by [Clicking HERE!](#)



You can find Atlas by [Clicking HERE!](#)

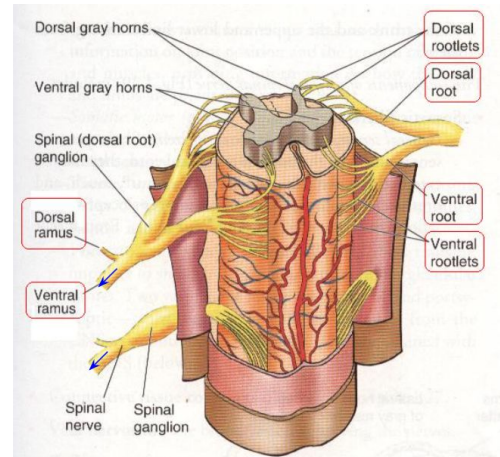
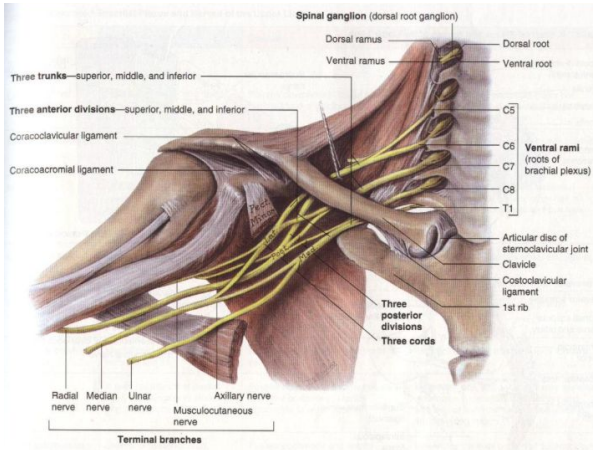
Formation of brachial plexus

Site

It is formed in the **posterior triangle** of neck

Roots

It is the union of **anterior rami** of the 5th, 6th, 7th, 8th cervical and the 1st thoracic spinal nerves



Divisions (stages)

✦ The plexus is divided into:

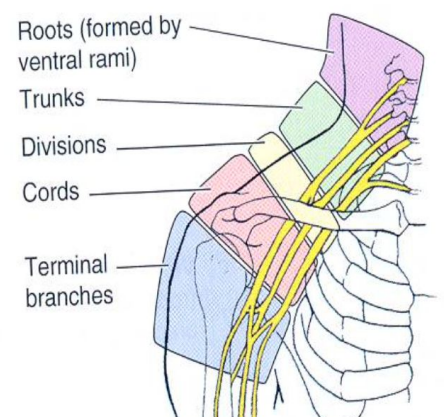
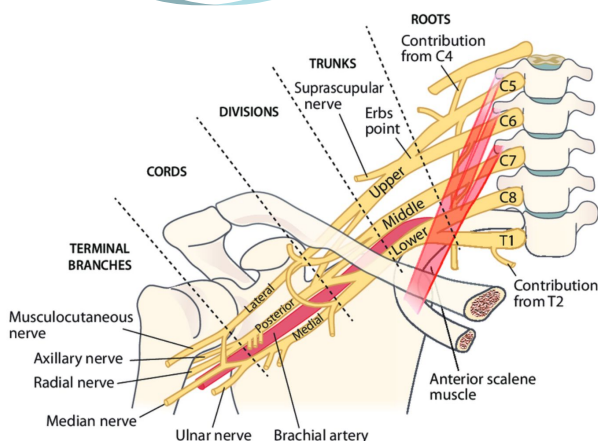
Roots
located in the posterior triangle

Trunks
located in the posterior triangle

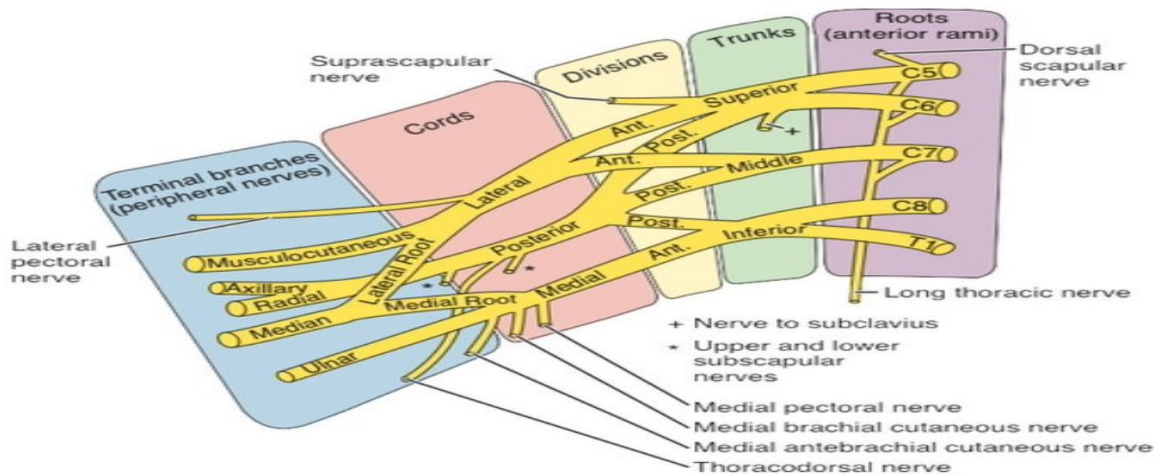
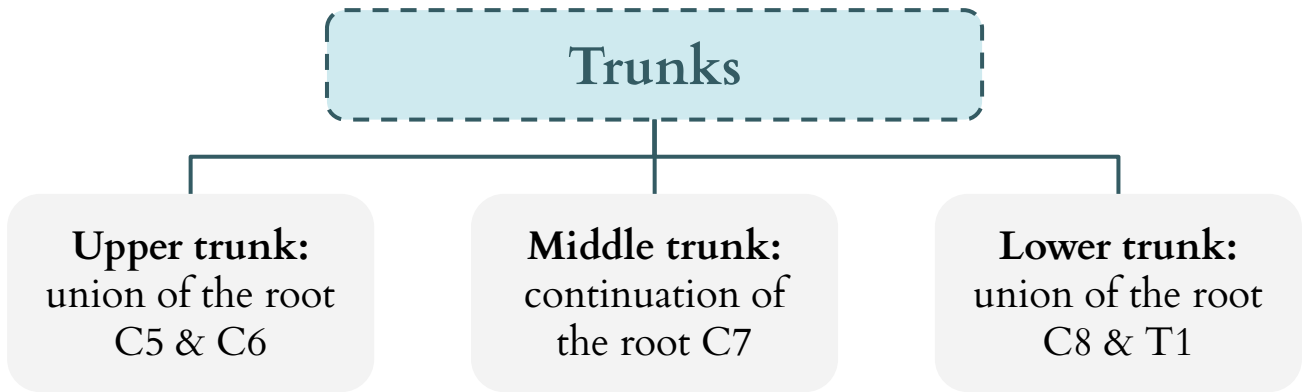
Divisions
located behind *clavicle*

Cords
located in the *axilla*

Branches
located in the *axilla*



Trunks



Divisions & cords

★ Each trunk divides into **anterior and posterior divisions**

Posterior cord :

- From the **3 posterior divisions** of the 3 trunks.

Lateral cord :

- Form the **anterior division** of upper and middle trunks.

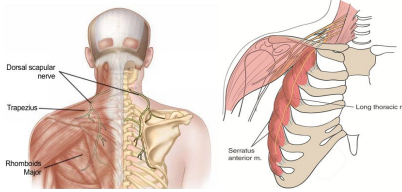

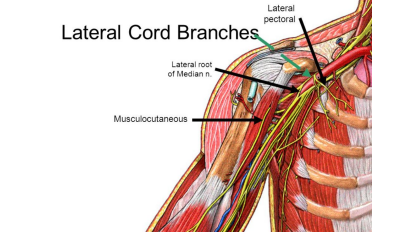
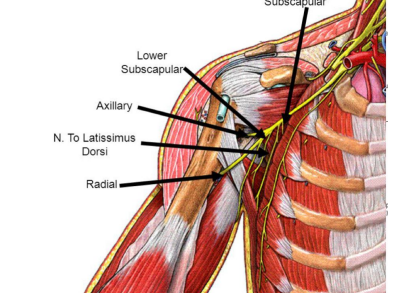
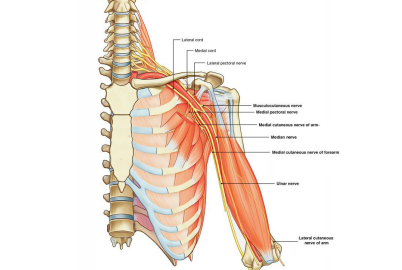
Medial trunk :

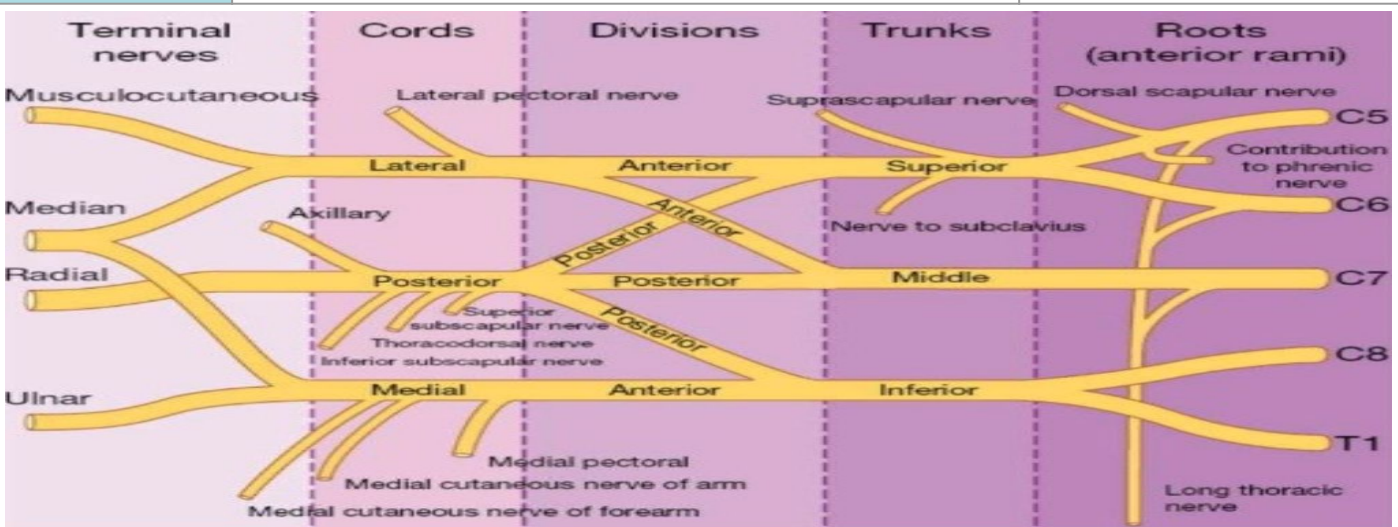
- It is the continuation of the **anterior** division of the lower trunk.

Cords

Branches

All three cords give branches to axilla, those will supply their respective regions

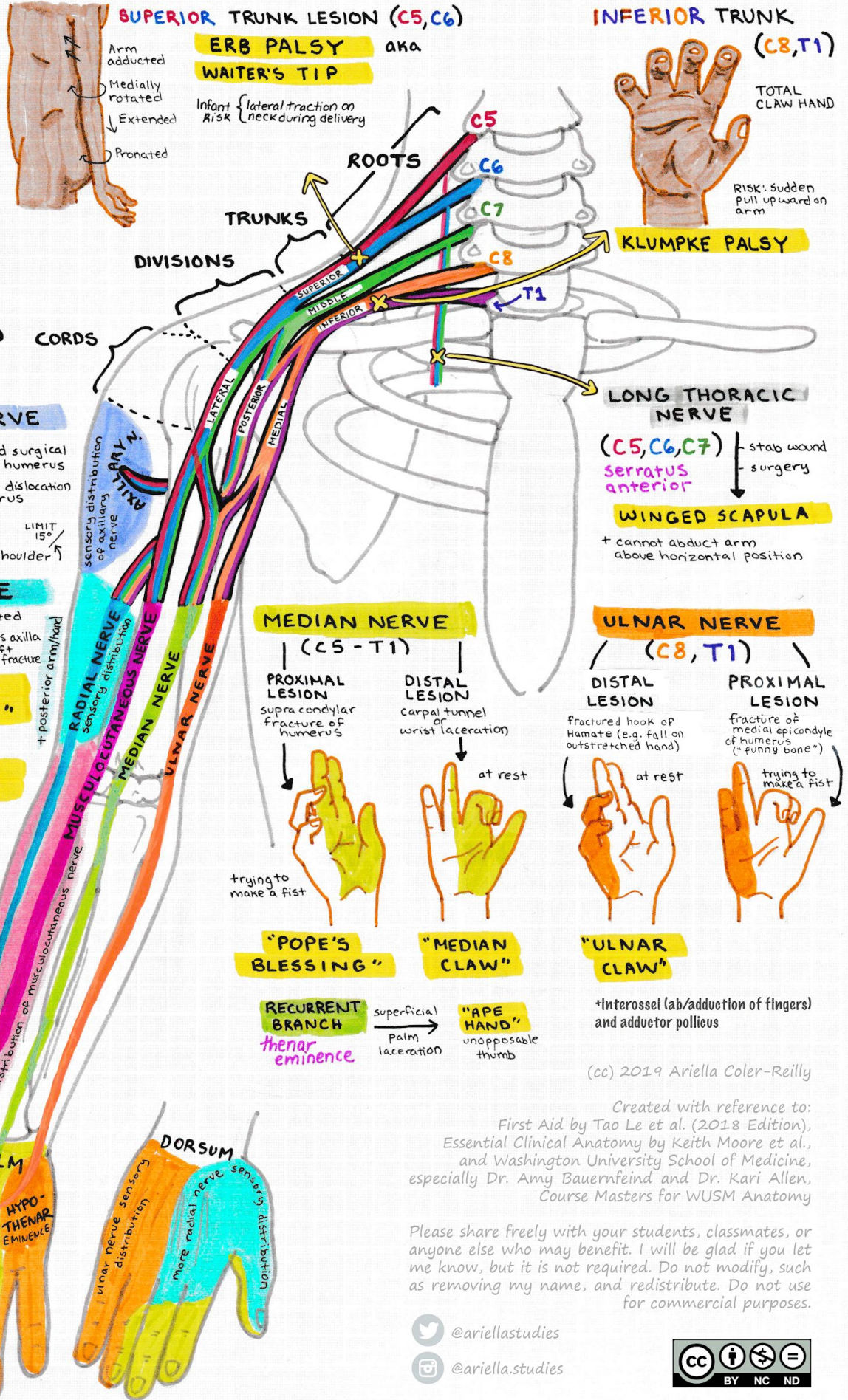
<p>From roots</p>	<ul style="list-style-type: none"> - C5: Nerve to rhomboids (dorsal scapular nerve). - C5 : contribution to phrenic N.(3-5). - C5,6,7: Long thoracic nerve (Supplies serratus anterior) (injury of this nerve will cause winging of scapula) 	
<p>From upper trunk</p>	<ul style="list-style-type: none"> - Nerve to subclavius - Suprascapular nerve (supplies supraspinatus & infraspinatus) 	
<p>From Lateral cord</p>	<p style="text-align: center;">(2LM)</p> <ul style="list-style-type: none"> - Lateral pectoral nerve (innervates the pectoralis major) - Lateral root of median nerve. - Musculocutaneous nerve. (supplies biceps (strong flexor and supinator)) 	
<p>From Posterior cord</p>	<p style="text-align: center;">(ULTRA)</p> <ul style="list-style-type: none"> - Upper subscapular nerve. - Lower subscapular nerve. - Thoracodorsal nerve (for LD (latissimus dorsi) muscle) - Radial nerve. - Axillary nerve. 	
<p>From Medial cord</p>	<p style="text-align: center;">(4MU)</p> <ul style="list-style-type: none"> - Medial pectoral nerve. - Medial root of median nerve. - Medial cutaneous nerve of arm. - Medial cutaneous nerve of forearm. - Ulnar nerve. 	



Extra slide

BRACHIAL PLEXUS AND BEYOND

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Created with reference to:
 First Aid by Tao Le et al. (2018 Edition),
 Essential Clinical Anatomy by Keith Moore et al.,
 and Washington University School of Medicine,
 especially Dr. Amy Bauernfeind and Dr. Kari Allen,
 Course Masters for WUSM Anatomy






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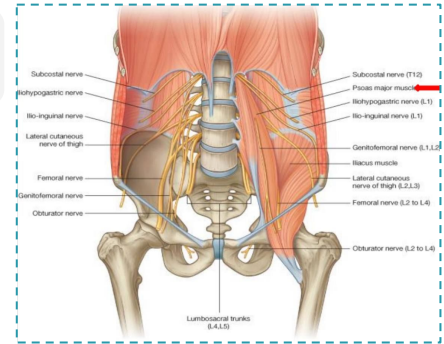


Brachial plexus injury

Deformity	Damage	Result	Appearance
<p>Erb-Duchenne palsy or (waiter's tip position)</p>	<p>Upper trunk (C5 & C6) Resulting from excessive displacement of head to the opposite side and depression of shoulder on the same side (a blow or fall on shoulder)</p> 	<p>The position of the upper limb in this condition has been linked to that of a porter or waiter's tip position or policeman's tip hand</p>	<p>The arm hangs by the side and is rotated medially. The forearm is extended and pronated</p>  <p>WAITER'S TIP DEFORMITY</p>
<p>Klumpke's palsy or Claw hand</p>	<p>Lower Trunk (C8, T1) Lesion Lower lesions of the brachial plexus are usually traction injuries caused by a person falling from a height clutching at an object to save himself. The first thoracic nerve is usually torn.</p> 	<p>The nerve fibers from this segment run in the ulnar and median nerves to supply all the small muscles of the hand.</p> <p>The hand has a clawed appearance due to ulnar nerve injury.</p>	<p>claw hand</p>  <p>Klumpke's total claw hand Lower trunk (C8, T1)</p> <p>Results from Ulnar nerve injury</p> <p>Ape Hand</p>  <p>Results from Median nerve injury</p>

Lumbar plexus

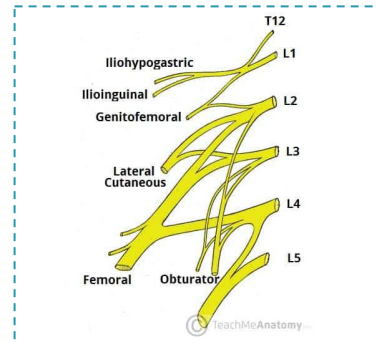
1 Formed By: ventral rami of L1,2,3 and most of L4 .



2 Site: In the substance of psoas major muscle.

3 Main Branches:

- 1- Iliohypogastric (dangerous in transverse incisions of the lower abdomen, during a hysterectomy) & ilioinguinal (L1): to anterior abdominal wall.
- 2- Obturator (L2,3,4) : to medial compartment of thigh (injury of this nerve will result in loss of abduction of thigh).
- 3- Femoral (L2,3,4) : to anterior compartment of thigh (injury of this nerve will result in loss of flexion of hip joint and extension of knee joint).
- 4- Genitofemoral (L1,2).
- 5- Lateral cut.n.of thigh (L2,3).
(Lateral cutaneous nerve of thigh).

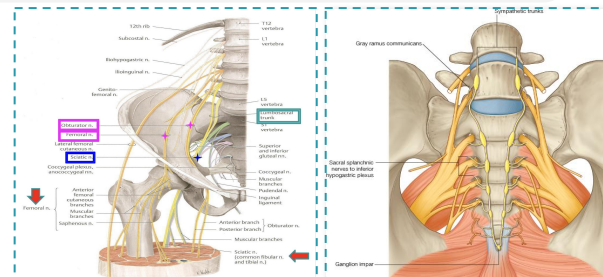


Sacral plexus or lumbosacral plexus

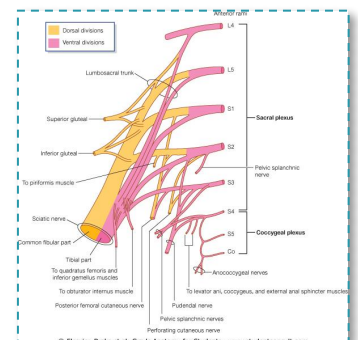
1 Formed By: Formation: By **ventral** rami of a part of L4 & **whole** L5 (lumbosacral trunk) + S1, S2, S3 and most of the S4.

2 Site: In front of piriformis muscle.


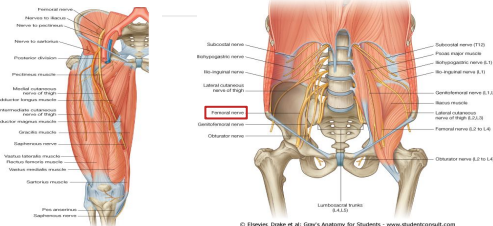
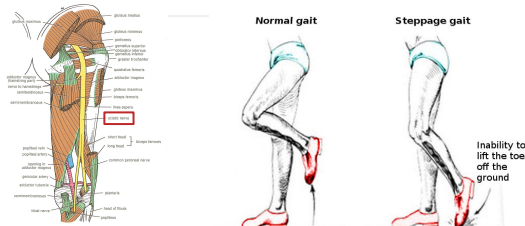
3 Main Branches:



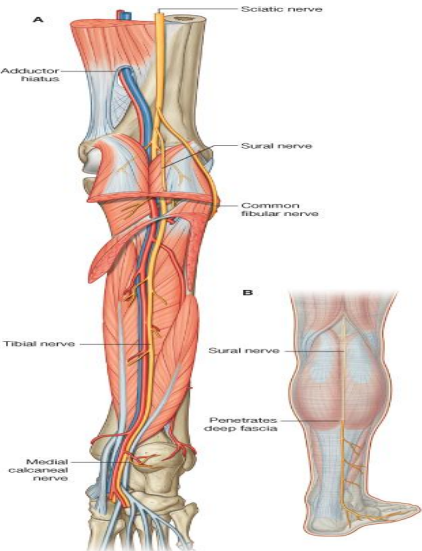
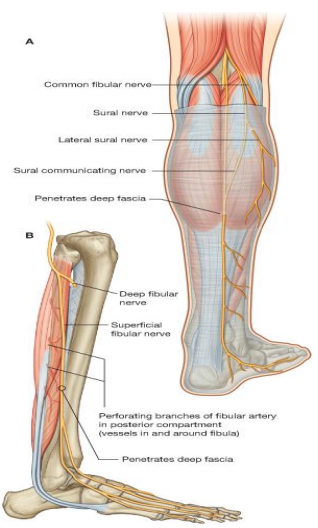
- 1- Pelvic splanchnic nerve: (from sacral S2,S3,S4): preganglionic parasympathetic to pelvic viscera & hindgut.
- 2- Pudendal nerve: (from sacral plexus (S1,S2,S3,S4): to perineum. **Female Dr: S2,3,4 is more accurate**)
- 3- Sciatic nerve: The **largest nerve** of the body. Terminal branch of Lumbosacral Plexus (L4&L5+S1,S2,S3) : to lower limbs (injury of this nerve will result in paralysis of hamstrings).



Femoral & Sciatic nerves

Nerve	Femoral nerve	Sciatic nerve
Origin	A branch from lumbar plexus (L2,L3,L4)	Sacral plexus (L4, L5, S1, S2, & S3) It is one of the terminal branch of sacral plexus
Course	Descends lateral to psoas major & enters the thigh behind the inguinal ligament , Passes lateral to femoral artery & divides into terminal branches.	Leaves the pelvis through greater sciatic foramen , below piriformis & passes in the gluteal region (between ischial tuberosity & greater trochanter) then to supply posterior compartment of thigh. Divides into tibial & common peroneal (fibular) nerves
Nerve injury	<p>Motor effect:</p> <ul style="list-style-type: none"> - Wasting of quadriceps femoris. - Loss of extension of knee. - Weak flexion of hip (psoas major is intact; because it takes supply from other fibers of the lumbar plexus.) <p>Sensory effect: loss of sensation over areas supplied antero-medial aspect of thigh & medial side of knee, leg & foot (injury of Saphenous branch of femoral).</p> 	<p>Motor effect:</p> <ul style="list-style-type: none"> - Will affect the hamstring muscles and cause : - effect of weak flexion of knee -weak extension of hip -affect all movements of leg and foot - foot. Foot drop (injury of common peroneal N.) is the common manifestation of sciatic nerve injury. - high steppage gait <p>Sensory effect: loss of sensation of skin of back of leg ,lateral side and dorsum of foot (except areas supplied by saphenous branch of femoral nerve).</p>
Pictures		

Tibial nerve and common peroneal nerve

Nerve	Tibial nerve	Common peroneal nerve
<p>Course</p>	<p>→ Descends through popliteal fossa to posterior compartment of leg, accompanied with posterior tibial vessels</p> <p>→ Passes deep to flexor retinaculum to reach the sole of foot where it divides into 2 terminal branches</p> <p>→ Divides into: Medial and lateral plantar nerves</p>	<p>→ Leaves popliteal fossa & turns around the lateral aspect of neck of fibula. Then divides into:</p> <ol style="list-style-type: none"> 1. Superficial peroneal: descends into lateral compartment of leg 2. Deep peroneal: descends into anterior compartment of leg.
<p>Supply (Extra)</p>	<p>Muscles of posterior compartment of leg & intrinsic muscles of sole Plantar Flexors of ankle, flexors of toes & invertors of foot.</p>	<p>Muscles of anterior & lateral compartments of leg (Dorsiflexors of ankle, Extensors of toes & evertors of foot.</p>
<p>Pictures</p>		

Summary

- The lumbar plexus is formed by ventral rami of L1,2,3 and most of L4, in substance of psoas major muscle
- The sacral plexus is formed by ventral rami of a part of L4 & whole L5 (lumbosacral trunk) plus the S1,2,3 and most of S4, in front of piriformis muscle.
- The femoral nerve, a branch of lumbar plexus (L2,3,4).
 - Its injury will affect the flexion of hip & extension of knee as well as loss of sensation of skin of anteromedial aspects of the thigh, medial side of knee, leg and foot (Saphenous br.of femoral).
- The sciatic nerve is a branch of sacral plexus (L4,5, S1,2,3)
 - Its injury will affect the hamstring muscles ;so weak flexion of knee ; weak extension of hip, and affect also all movements of leg & foot.
 - Foot drop (injury of common peroneal N.) is the common manifestation of sciatic nerve injury.
 - As well as loss of sensation of skin of back of leg ; lateral side and dorsum of foot (except areas supplied by saphenous branch of femoral nerve).



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◆ **Special Thanks to Aleen Alkulyah for the Wonderful Design!**



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