Anatomy Of Lumbosacral Plexus

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Origin of lumbosacral plexus
Formation of lumbosacral plexus
Branches of lumbosacral plexuse
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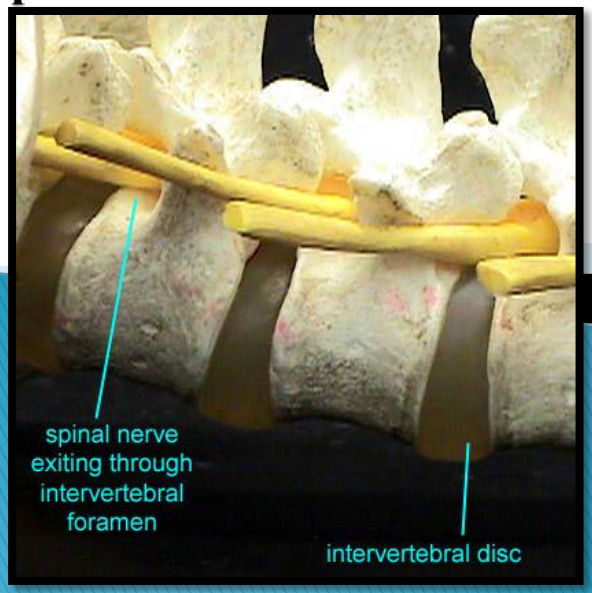
Spinal nerves

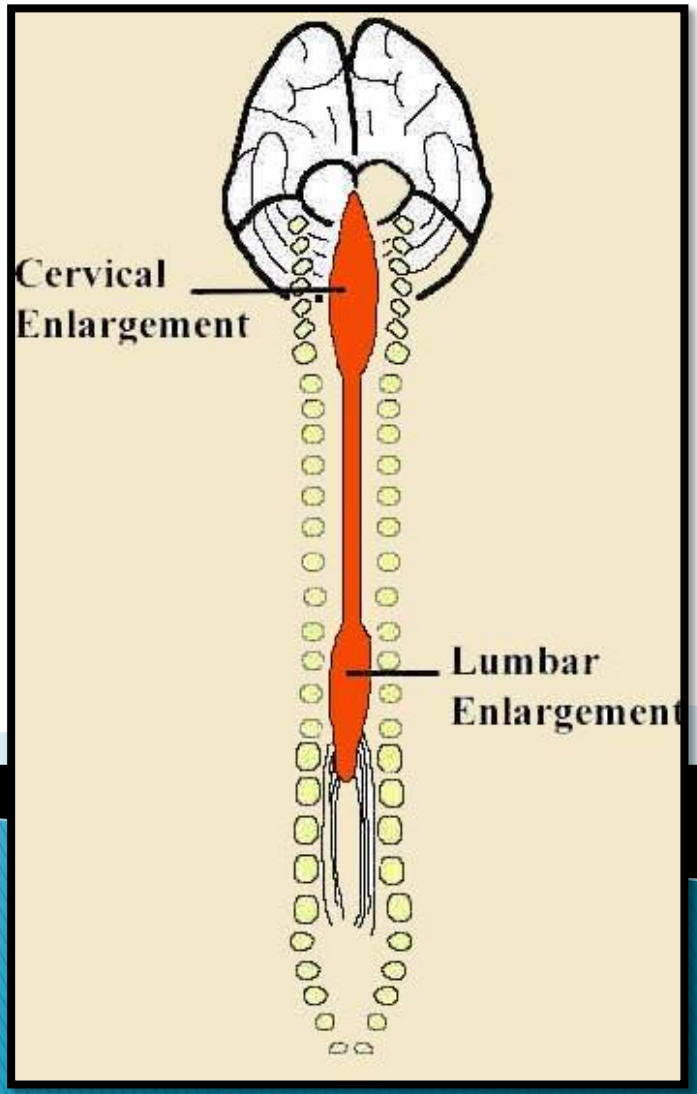
Spinal nerve 42pairs

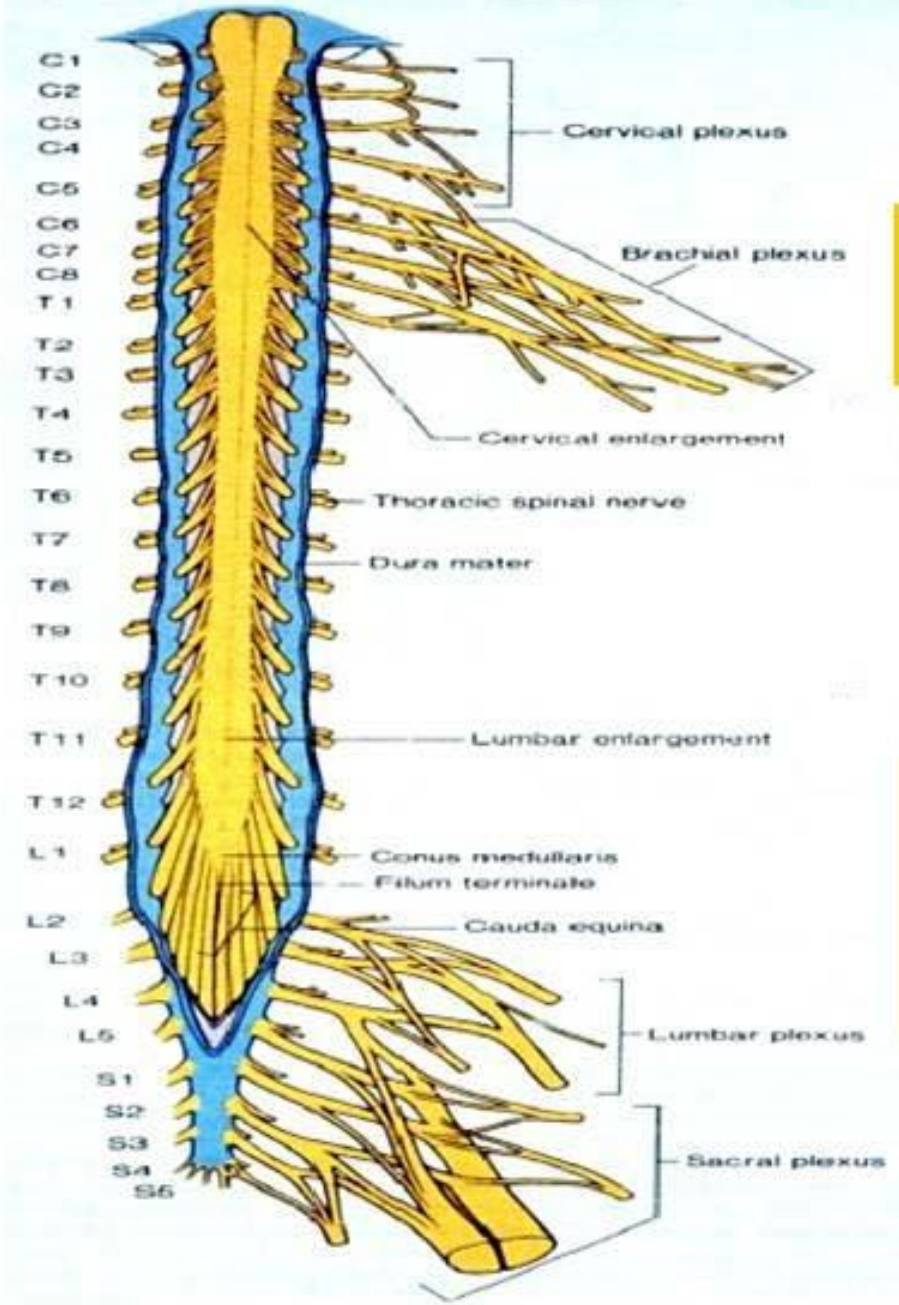
This nerves emerges through intervertebral foramen of vertebra.

All spinal nerves are mixed nerve(sensory &motor).

Cervical nerves	8 pairs
Thoracic nerves	18pairs
Lumbar nerves	6 pairs
Sacral nerves	5 pairs
Coccygeal nerves	5pairs

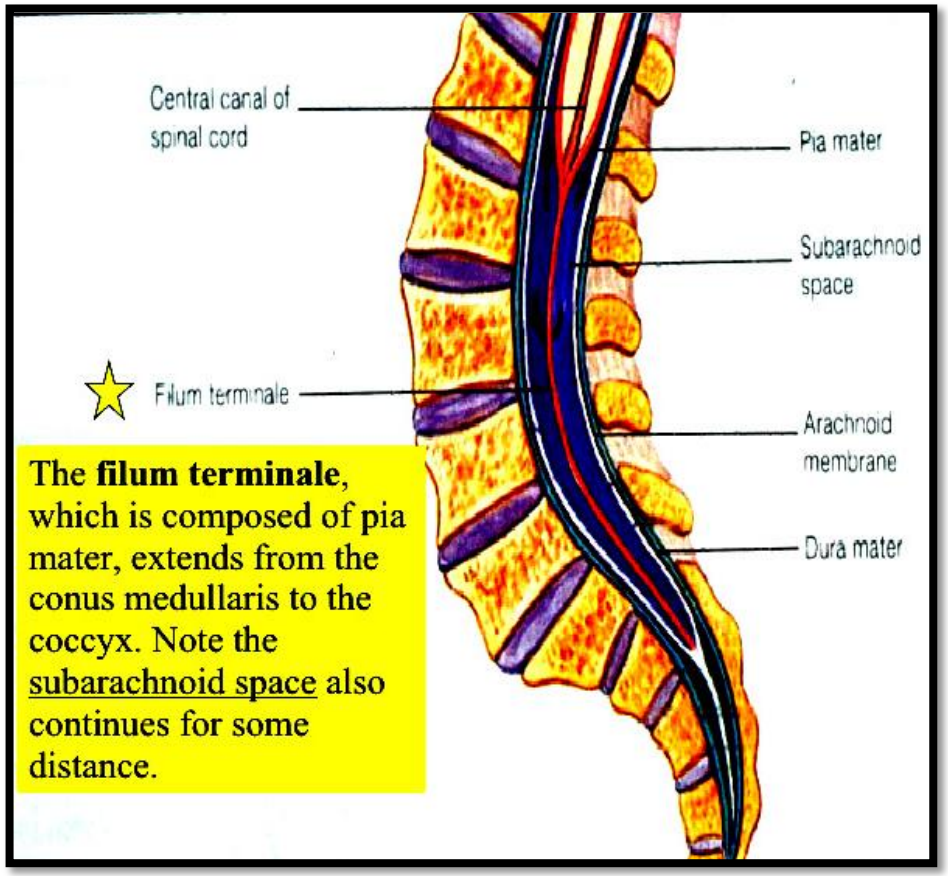




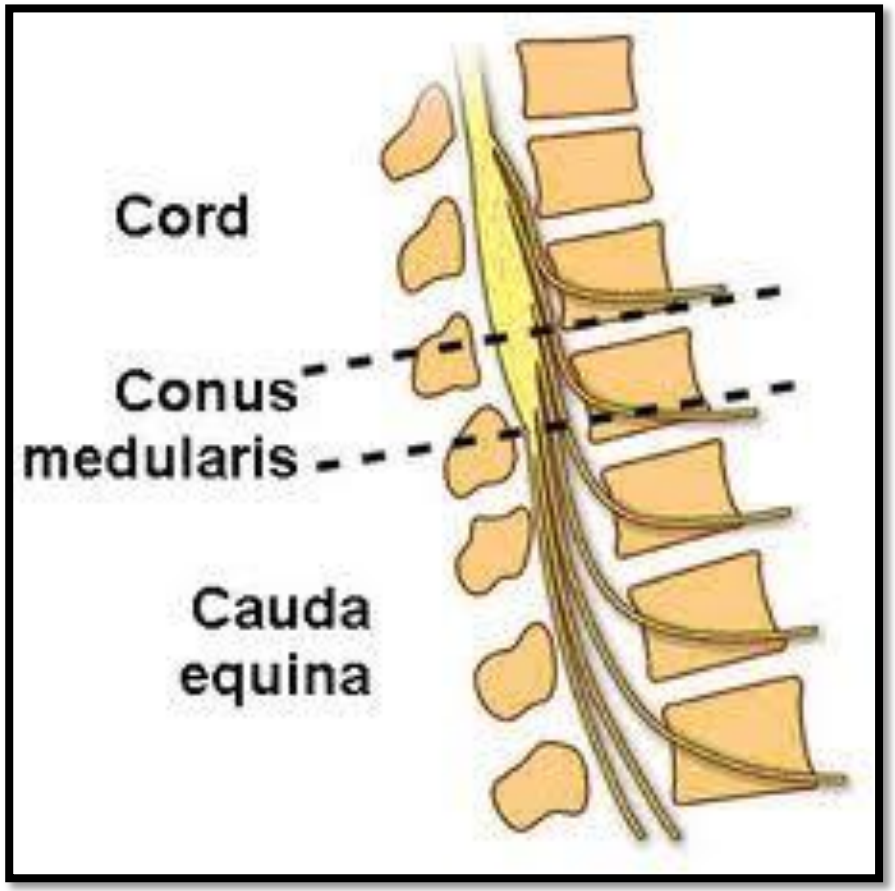


The cervical enlargement contains the neuron that innervate thoracic limb

The lumbar enlargement contain the neuron that innervate the pelvic limb



The **filum terminale**, which is composed of pia mater, extends from the conus medullaris to the coccyx. Note the subarachnoid space also continues for some distance.



General Components of a Spinal Reflex

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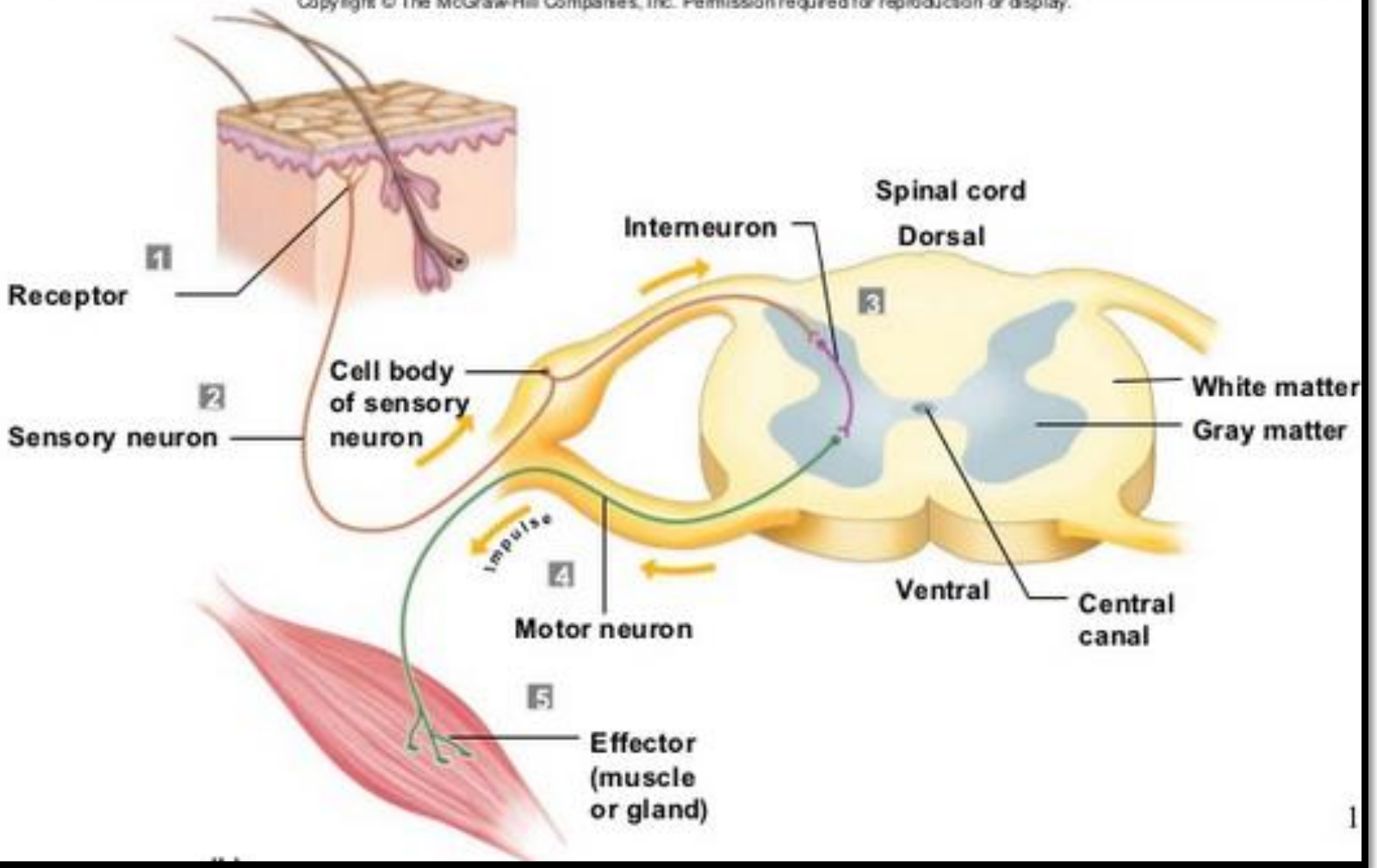

ANATOMY

- The lumbosacral plexus is responsible for cutaneous and muscular innervation of the entire hind (pelvic) limb.

Formation Of The Lumbosacral Plexus

Roots

The **ventral branches** of last three lumbar nerves (L4, L5, L6) and first two sacral nerves (S1, S2).

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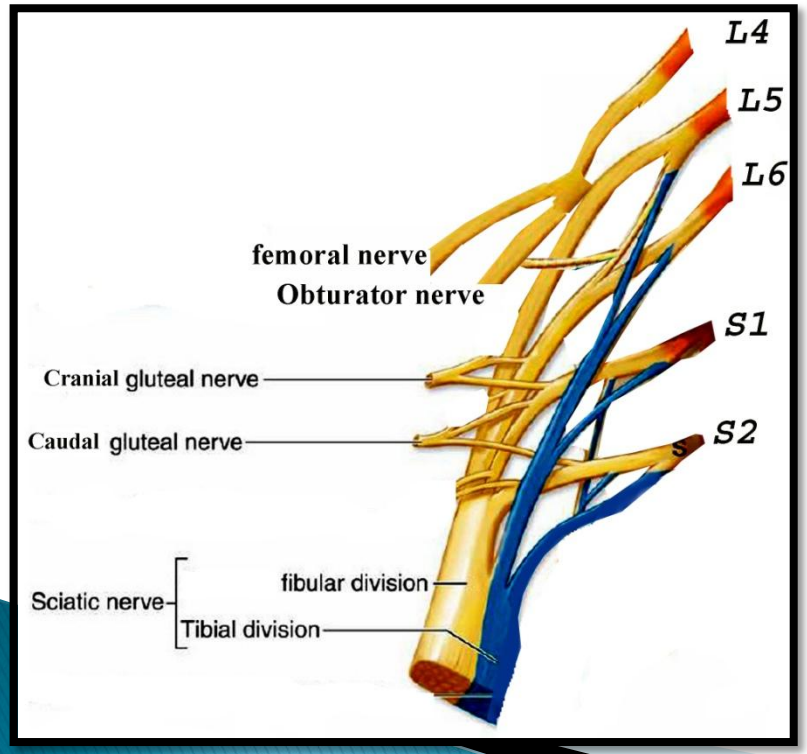

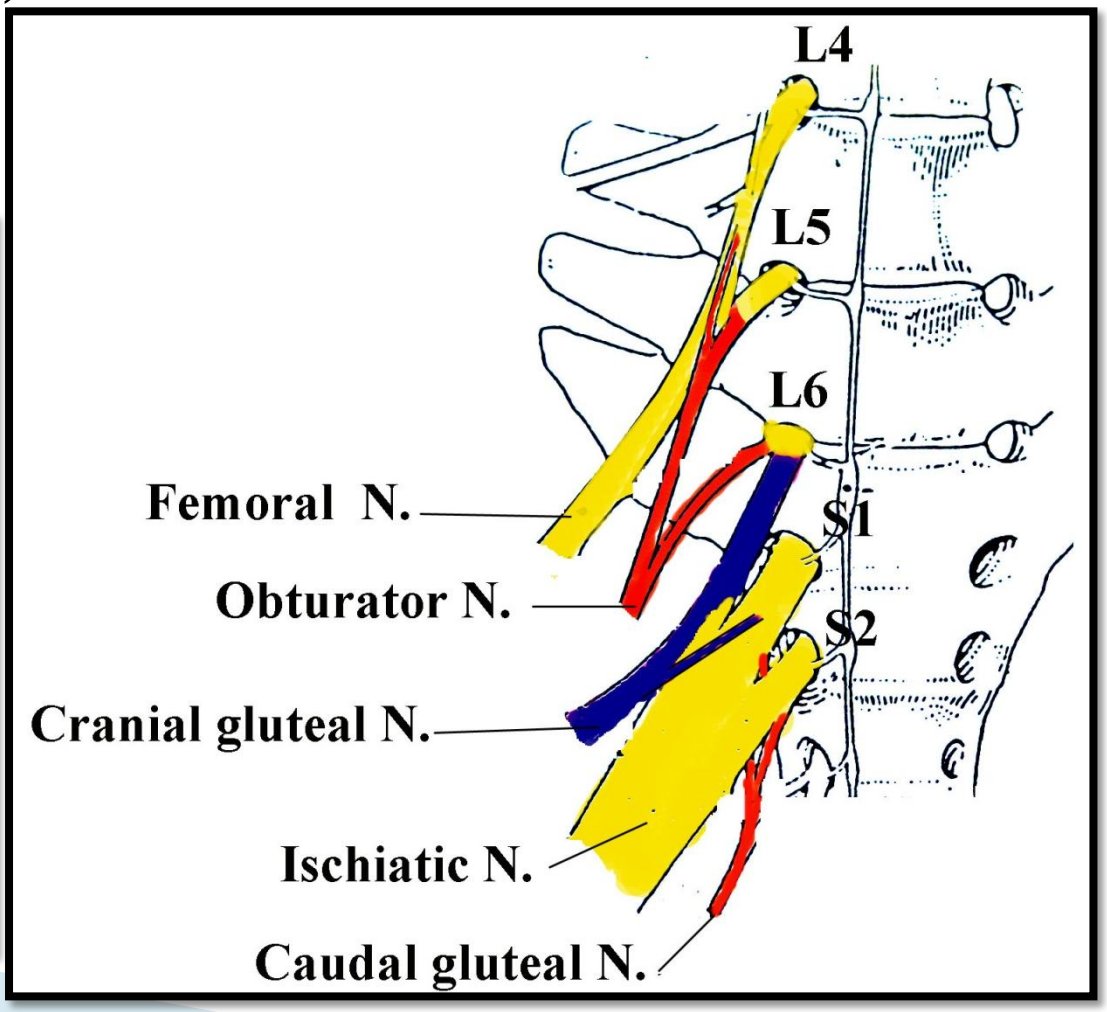

The Lumbosacral Plexus

Lateral cutaneous femoral N.(L3,L4)supply skin on lateral aspect of thigh

Major branches:

1. Femoral nerve
2. Obturator nerve
3. Cranial gluteal nerve
4. Caudal gluteal nerve
5. Ischiatic nerve

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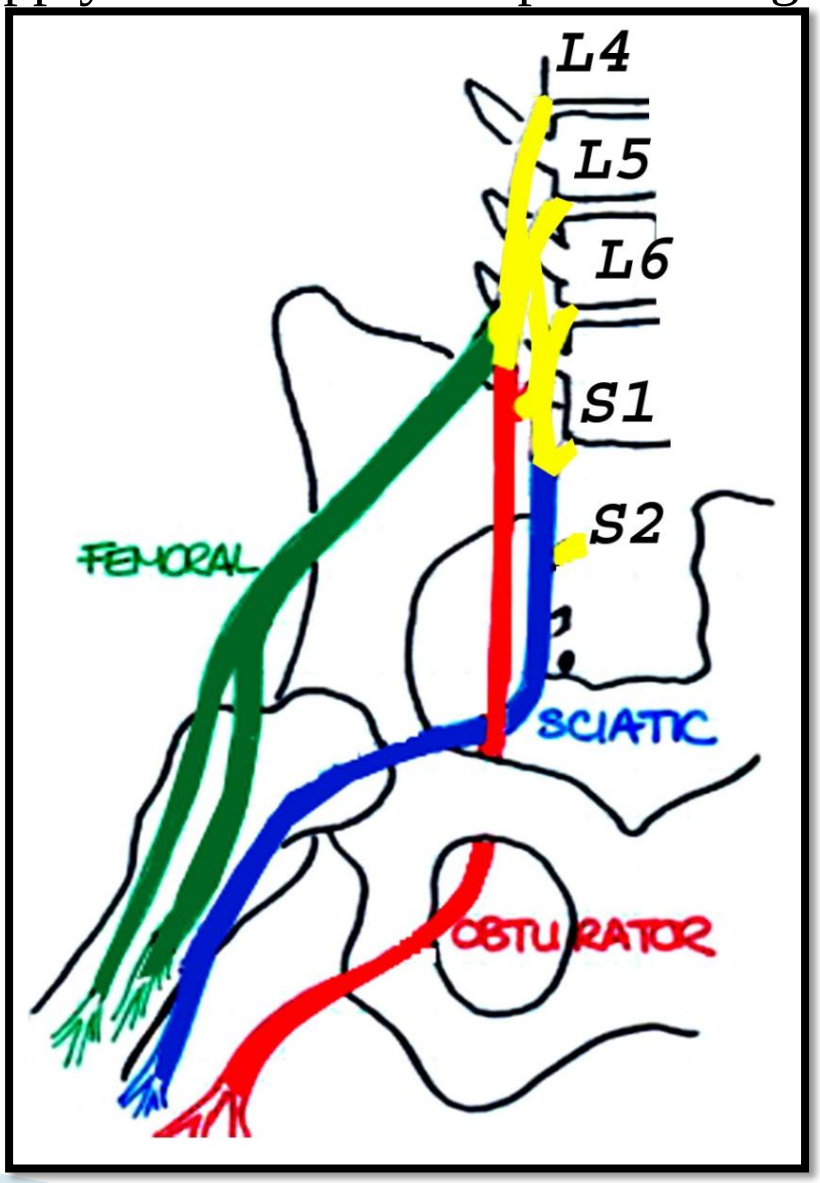


NERVE SUPPLY

Nerve	Region	Roots	branches	Muscles	Cutaneous
Femoral N. (between psoas major, psoas minor)	Thigh	L4, L5	**Muscular branches**	**Quadriceps femoris** (rectus f. + 3 vastus) **This nerve responsible to extension of the stifle joint.**	
			At femoral canal **Saphenous N.**	–Sartorius	–Sensory branch to **medial** aspect of **thigh, leg ,pes** – to stifle joint capsule
Obturator N.	Thigh	L4, L5, L6	pass through obturator foramen –Gracilis, –pectineus , –adductor –External obturator **4 M.**		

Affection

Femoral nerve injures:

Damage of femoral nerve due to : (pelvic fracture, during anaesthesia)

Signs: paralysis of quadriceps so flexion of stifle joint and this limb unable for supported weight)

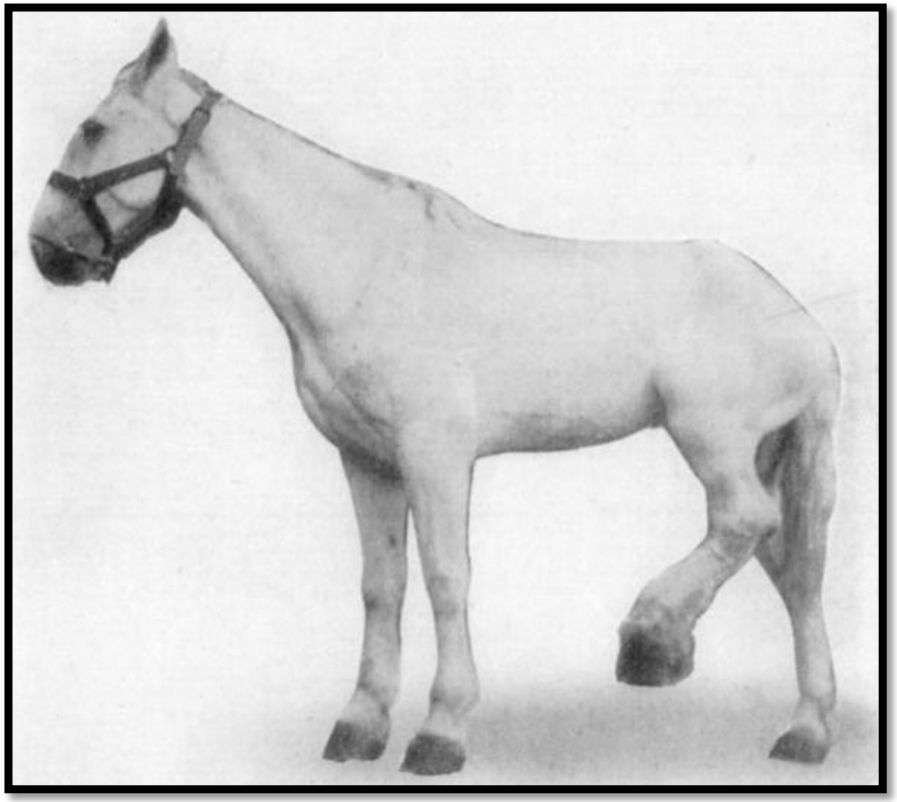
.

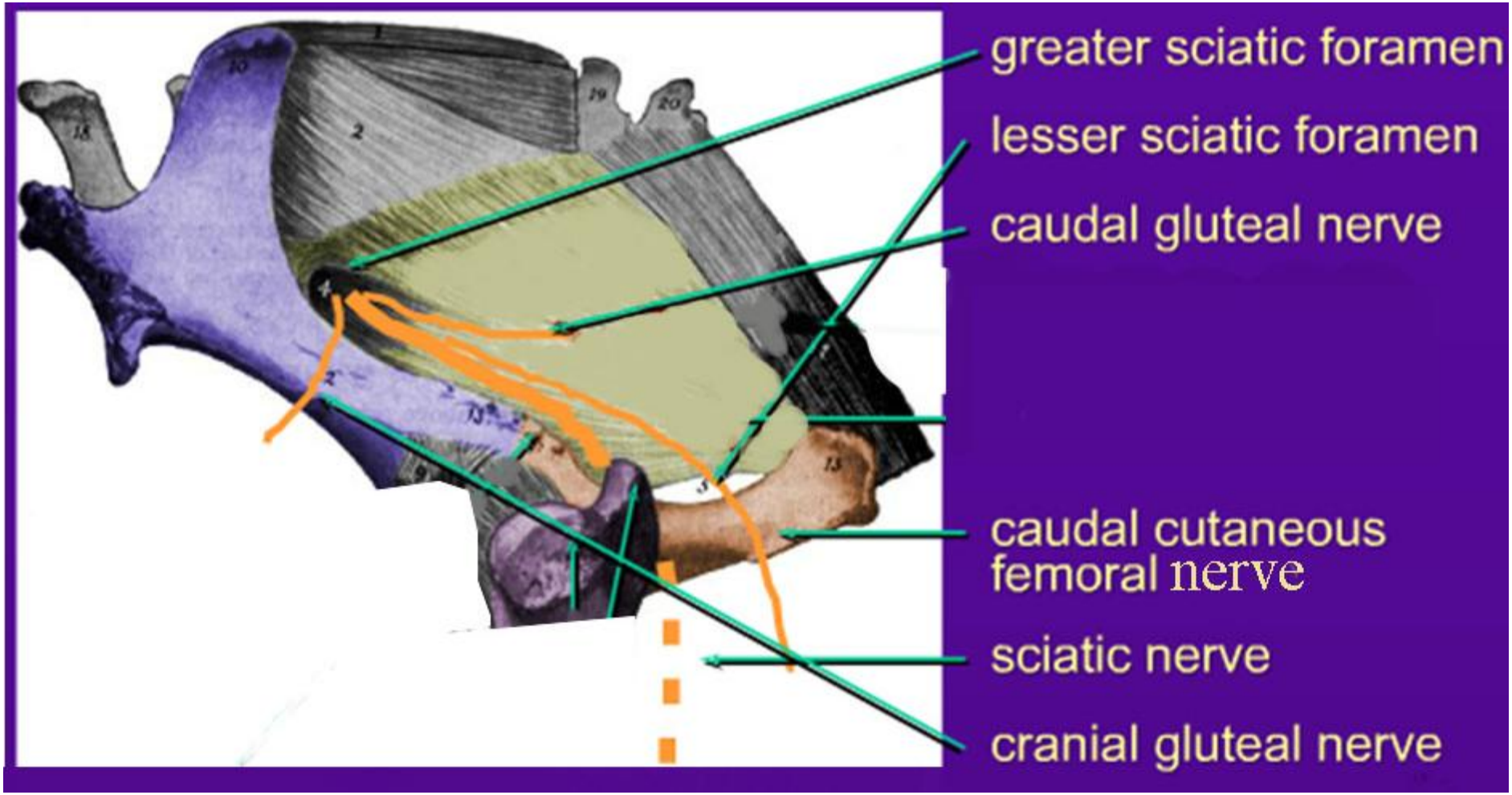
Affection

obturator nerve injures:

Damage of obturator nerve (closely attached to the shaft of ilium as pelvic fracture, during parturition as foaling)

Signs: the animal un able to adduct the limb.

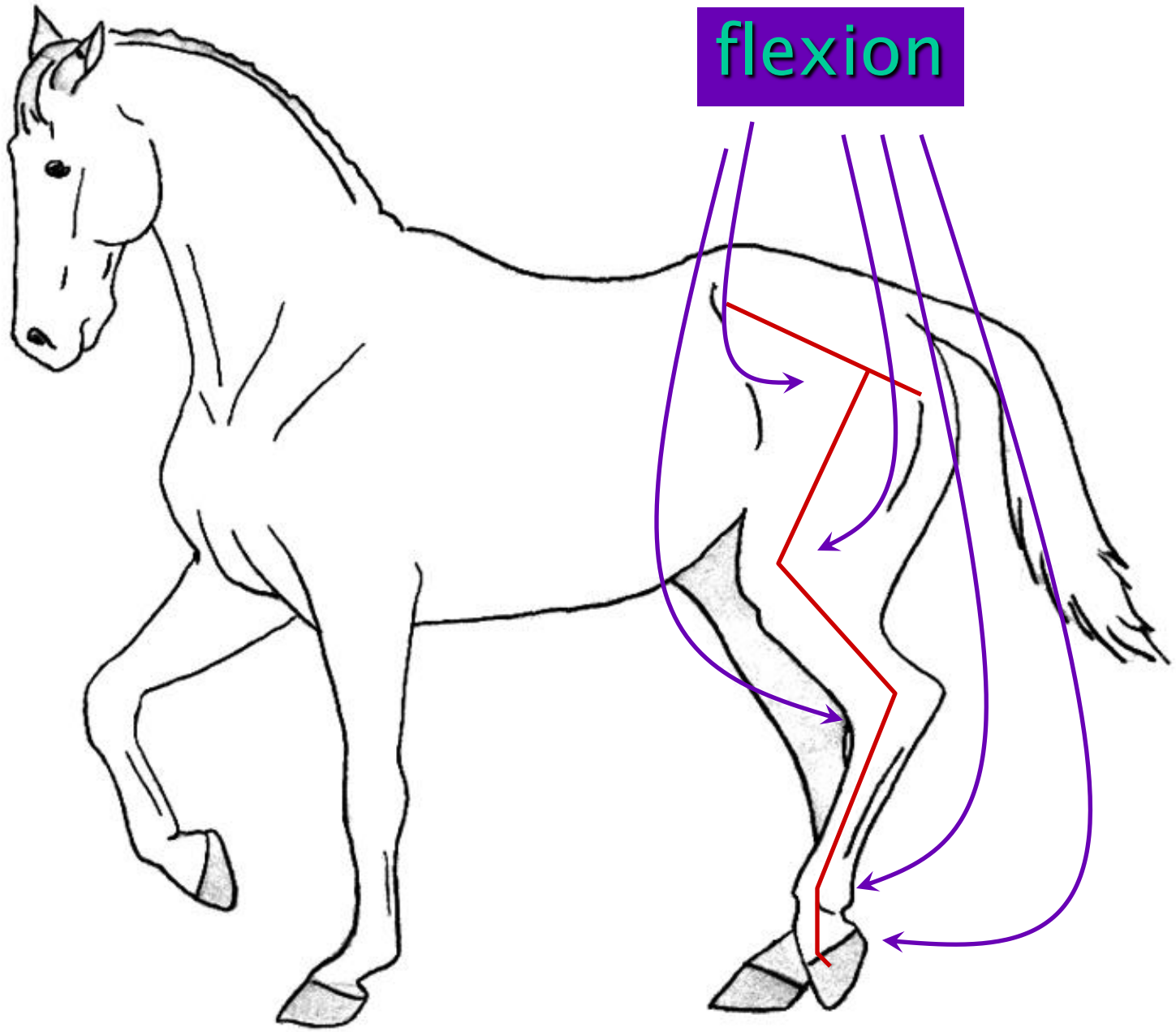



greater sciatic foramen
lesser sciatic foramen
caudal gluteal nerve
caudal cutaneous femoral nerve
sciatic nerve
cranial gluteal nerve

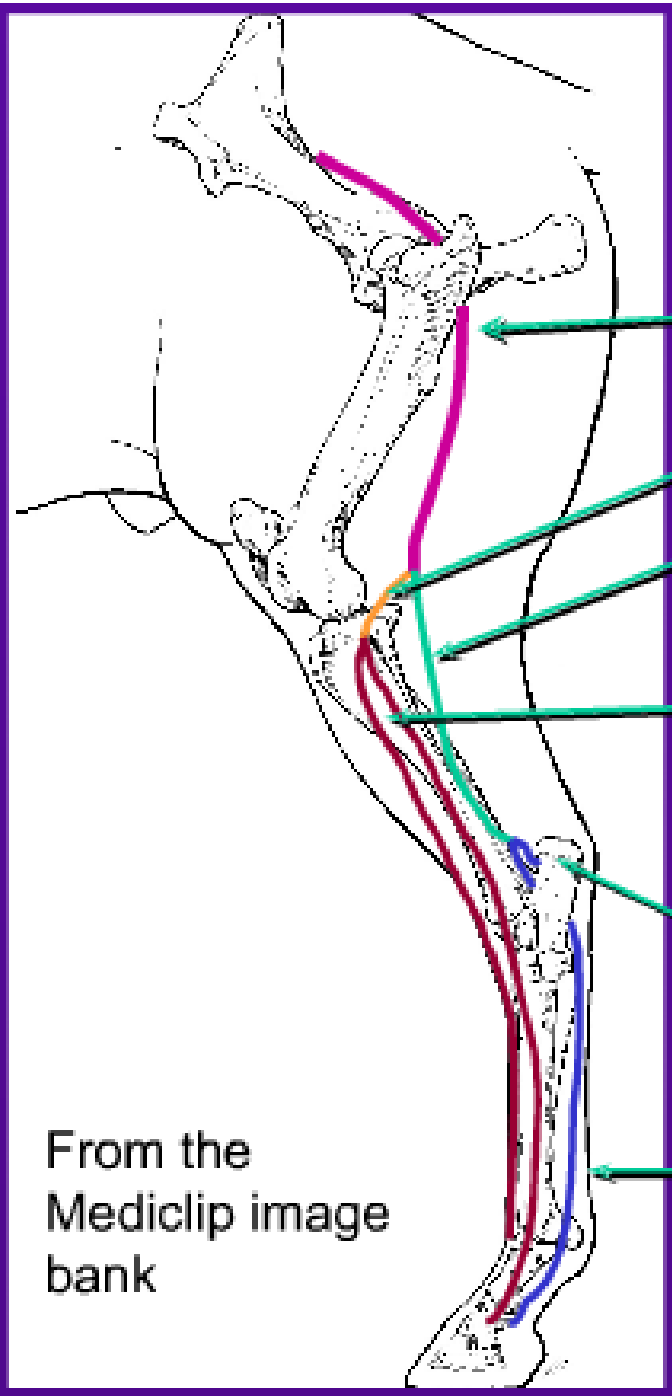
NERVE SUPPLY

Nerve	Region	Roots	Branches	Muscles	Cutaneous
Cranial gluteal N.	Hip	L6, S1	pass through great ischiatic foramen -Gluteal m. (Superfacial, Middle, deep) -Tensor fascia latae		
Caudal gluteal N.	Hip	S1, S2	Through greater ischiatic foramen -Dorsal branch - ventral branch -Motor -Sensory	-Superfacial gluteal (caudal head) -Middle gluteal m. -Biceps femoris -Semitendinosus m.	Skin of the caudolateral aspect of hip and thigh (caudal cutaneous femoral N.)

Nerve	Region	Roots	Branches	Muscles
Ischiatic N.	Hip (pelvis) Thigh	L5, L6, S1, S2	Pass through great ischiatic foramen as board flat band between greater trochanter (femur) and ischiatic tubercle (os coxae) Muscular branches (Ramus proximalis)	-Internal obturator -Quadratus femoris -Bicepes femoris - semi tendeniosus -semi membranosus
	Leg Pes		Fibular nerve (common peroneal N.)	Flexion to tarsus & Extension of digit
			Tibial nerve	Extensor to tarsus & Flexion of digit


flexion

Schematic of Common Peroneal and Tibial Nerves

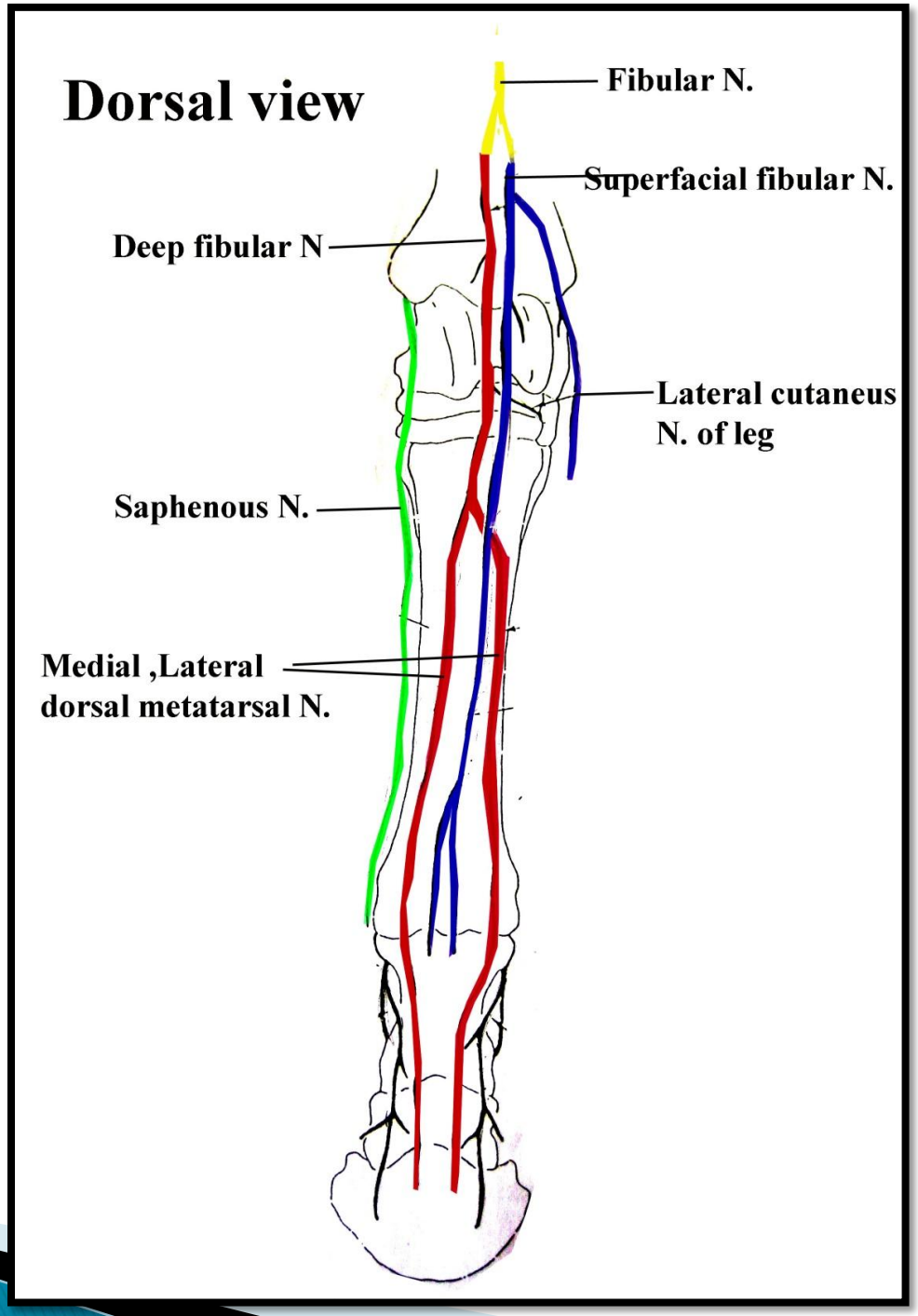


From the Mediclip image bank

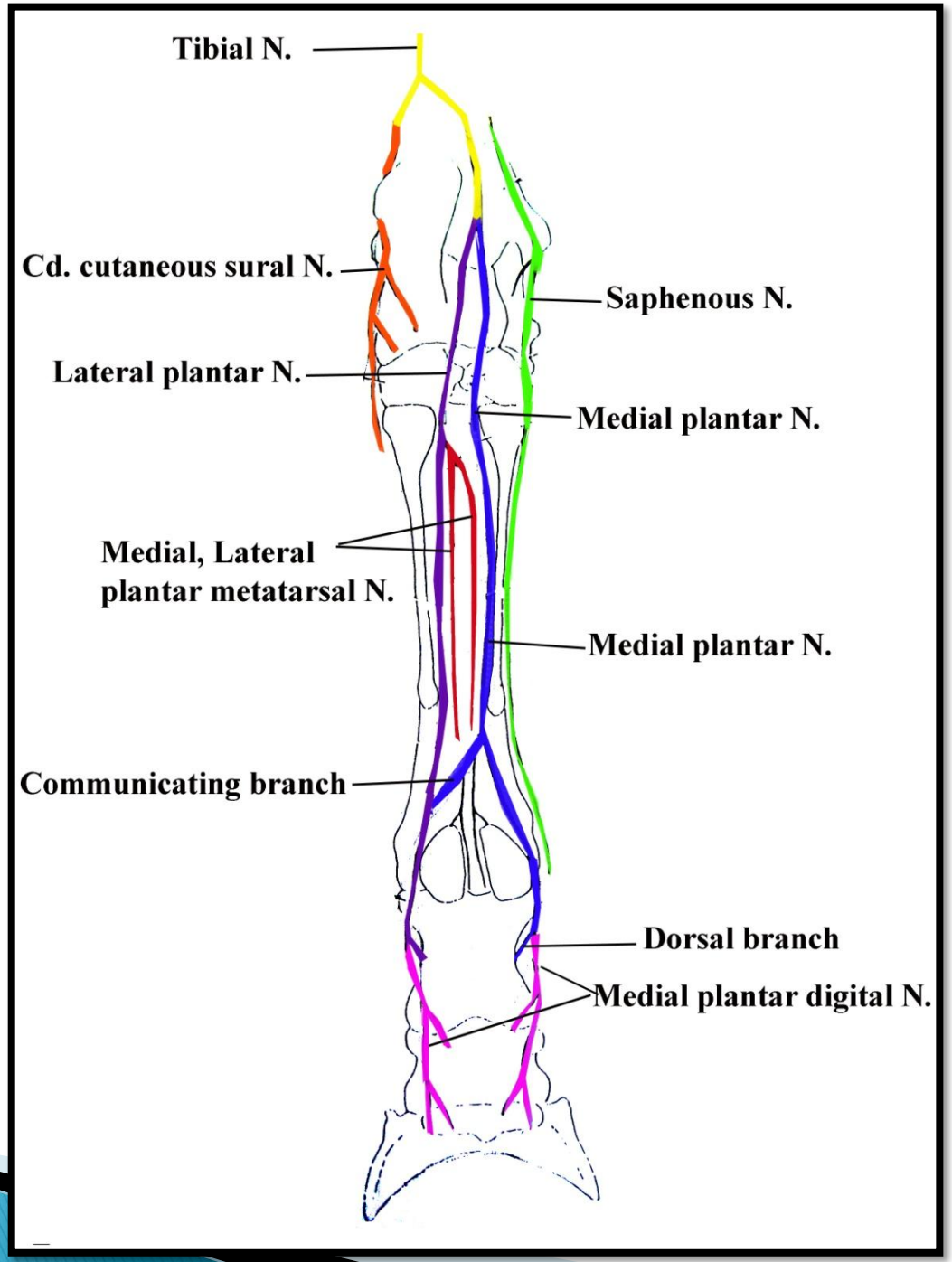
- Sciatic divides:
  - Common peroneal
  - Tibial
- Common peroneal divides:
  - Superficial branch
  - Deep branch
    - stays with cranial tibial artery
- Tibial divides:
  - Medial plantar
  - Lateral plantar

Note that the rear digit has both plantar and dorsal nerves.

nerves	muscle	Cutaneous
Fibular N. On (lateral surface gastrocnemieus m.)	a. Motor branch (biceps femois) At level of stifle joint b. Superfacial fibular Motor br. : Lateral digital extensor m. c. Deep fibular motor br. : to extensor muscle of digit = flexor m. Of hock	d. Sensory branch (lateral cutaneous nerve of leg. Skin on lateral aspect of leg Sensory br.: -Dorsolateral to leg -Dorsal to pes Sensory br. : At Dorsal aspect of hock a. Medial , b. lateral dorsal metatarsal nerves


Dorsal view
Fibular N.
Superfacial fibular N.
Deep fibular N
Lateral cutaneus N. of leg
Saphenous N.
Medial ,Lateral dorsal metatarsal N.

nerve	Branches	Cutaneous
Tibial N. (Continuation of sciatic N.) Between 2 head gastrocnemius M.	a. Muscular branch (ramus distalis) (popliteus, soleus, all flexor m. of digit) At the calcaneal tuber , it divided into : b. Medial plantar N. c. Lateral plantar N.	d. Sensory branch (caudal cutaneous sural N. Skin on caudal aspect of leg Sensory br.: Medial aspect of tarsus& metatarsus. Sensory br. : At plantar aspect of hock a. Medial , lateral plantar metatarsal n. Innervate flexor aspect of pes and digit.
Above fetlock joint, medial and lateral plantar N. , Divided into medial, lateral plantar digital N. Each one gives dorsal branch to the skin of dorsal surface of digit.		


Tibial N.
Cd. cutaneous sural N.
Saphenous N.
Lateral plantar N.
Medial plantar N.
Medial, Lateral
plantar metatarsal N.
Medial plantar N.
Communicating branch
Dorsal branch
Medial plantar digital N.

Affection

Sciatic nerve injures:

عرق النسا

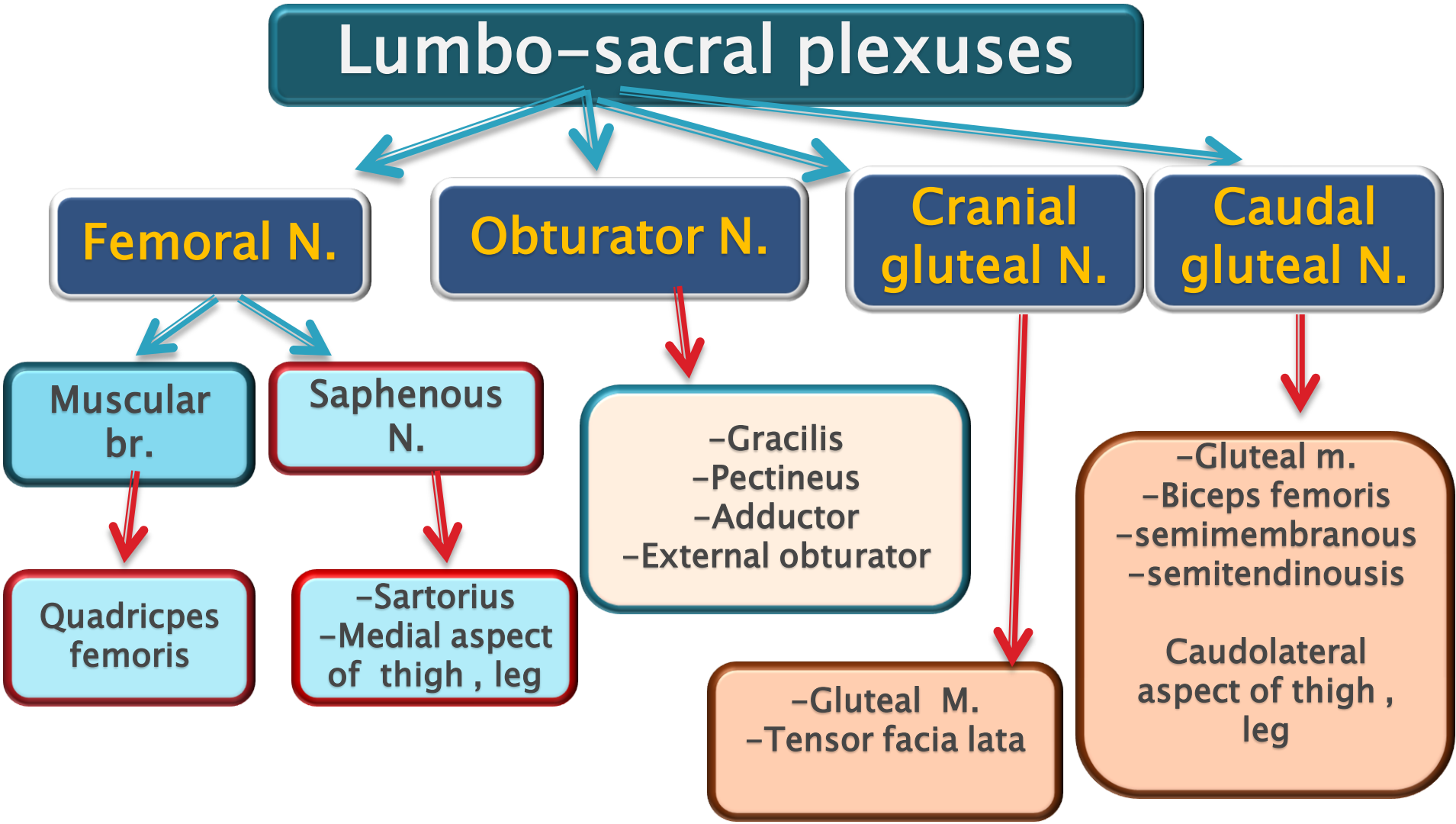
•The hind leg seem to **interfere with each other**.
•Horse **drags his feet** and stumbles at time

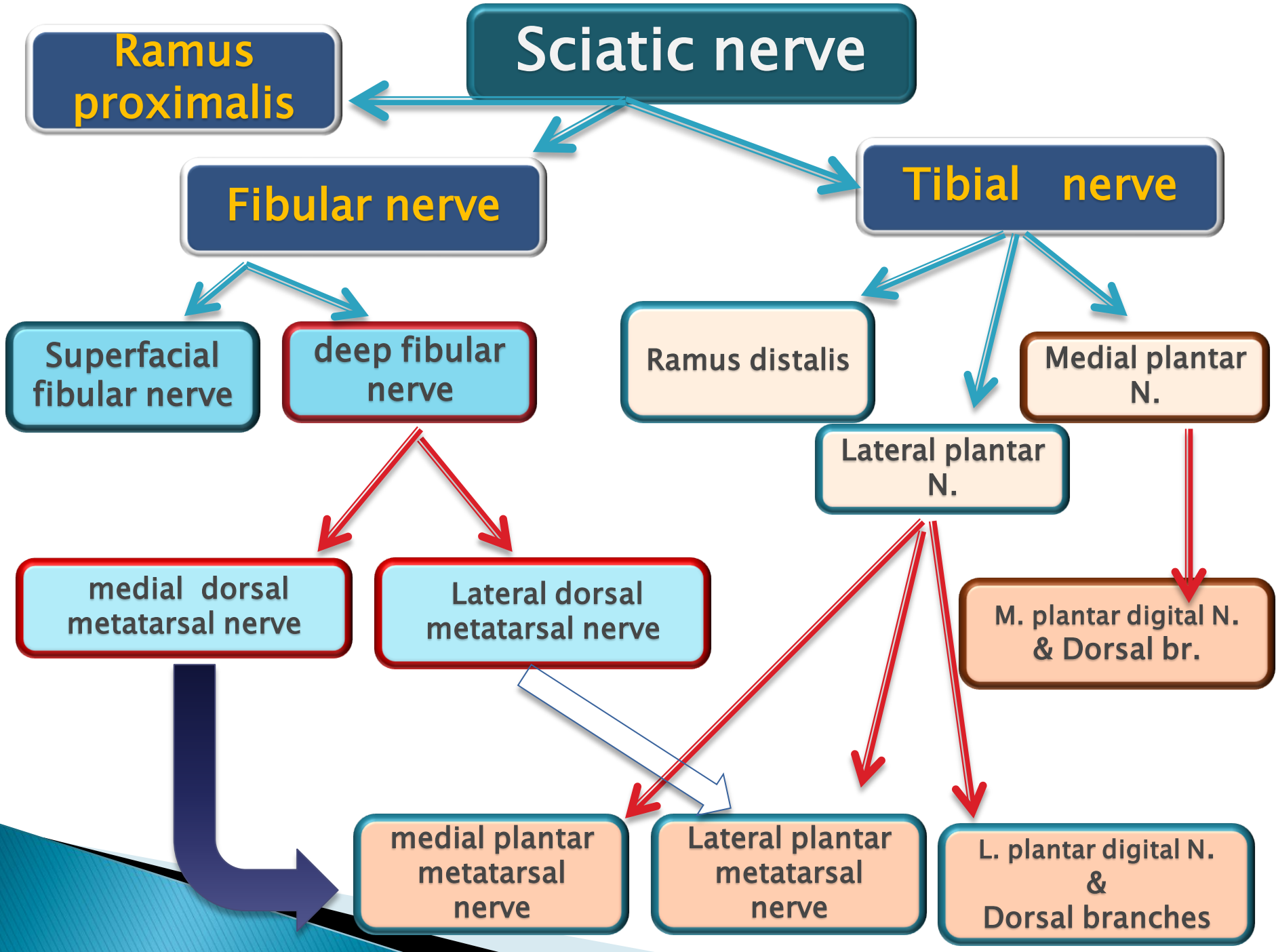
• Horse with sciatica may find it difficult to stand still(refuse to stand or raise his legs for due to pain.

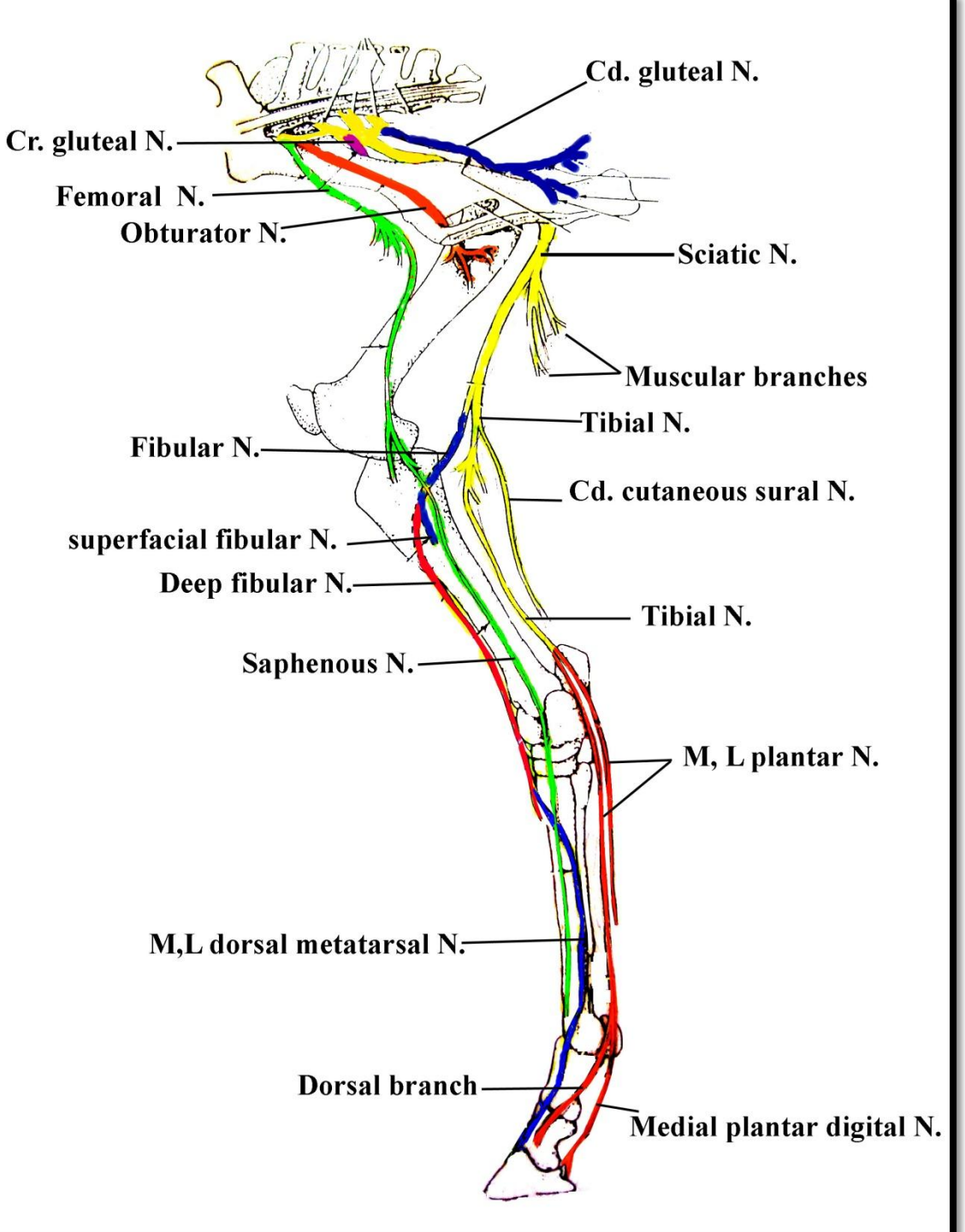
If your horse has started to exhibit signs of pain in the neck or back, or perhaps has begun to buck under saddle for no discernible reason,

Peroneal nerve (fibular) injury;
Inability to extend digit, "knuckled hoof

Nerve supply of hind limb




Sciatic nerve
Ramus proximalis
Fibular nerve
Tibial nerve
Superfacial fibular nerve
deep fibular nerve
Ramus distalis
Medial plantar N.
Lateral plantar N.
medial dorsal metatarsal nerve
Lateral dorsal metatarsal nerve
M. plantar digital N. & Dorsal br.
medial plantar metatarsal nerve
Lateral plantar metatarsal nerve
L. plantar digital N. & Dorsal branches

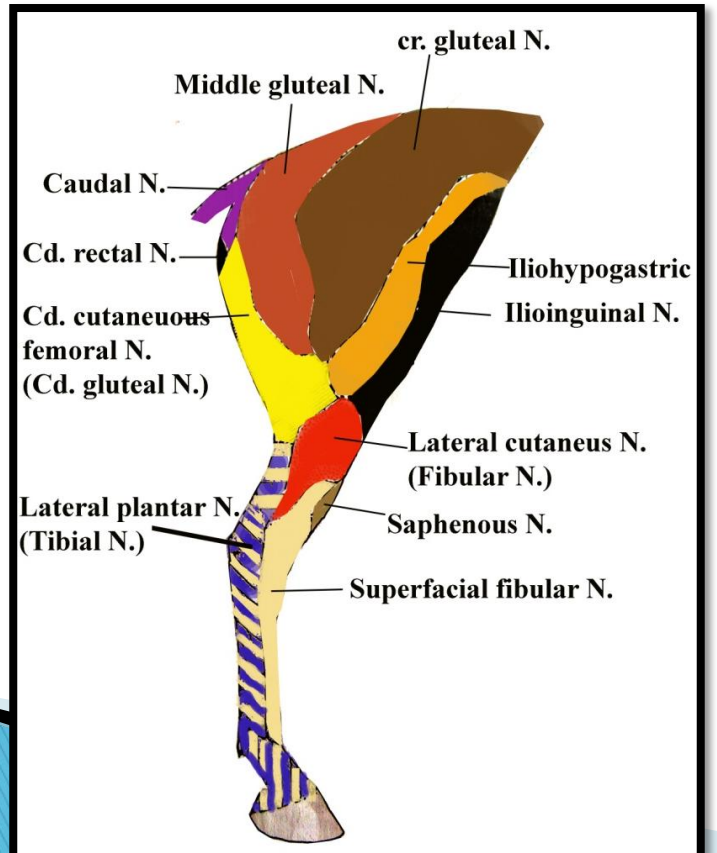

Cd. gluteal N.
Cr. gluteal N.
Femoral N.
Obturator N.
Sciatic N.
Muscular branches
Tibial N.
Fibular N.
Cd. cutaneous sural N.
superfacial fibular N.
Deep fibular N.
Tibial N.
Saphenous N.
M, L plantar N.
M,L dorsal metatarsal N.
Dorsal branch
Medial plantar digital N.

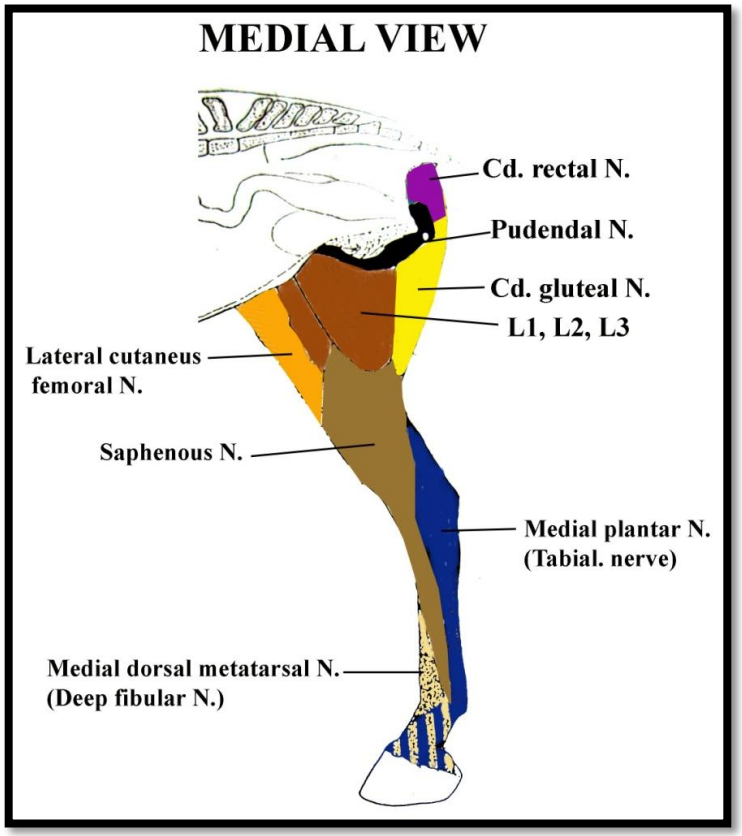
Motor innervation of hind limb

Nerve	Muscle supplied
Femoral –saphenous nerve	Qadricpes femoris, sartorius
Obturator	External obturator, gracilis, adductor, pectineus
Cr. Gluteal N.	Gluteal muscles, tensor fascia lata
Cd. Gluteal N.	Superfacial, middle gluteal , biceps femoris, semitendiniosus, semimembranosus
Sciatic N. (Ramus proximalis)	biceps femoris, semitendiniosus, semimembranosus
Fibular N.	extensor of digit=Flexor M. of hock
Tibial N.	flexor of digit= Extensor M. of hock

Cutaneous innervation of hind limb

Caudal gluteal nerve	Skin of caudo- lateral aspect (hip, thigh)
Saphenous nerve	Skin of medial aspect (thigh, leg ,pes)
Tibial nerve & plantar metatarsal N.	Skin of caudal aspect (leg ,pes, digit)
Fibular nerve & Dorsal metatarsal N.	Skin of dorsolateral aspect (leg , dorsal of pes)





Thank You!
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