



MED439

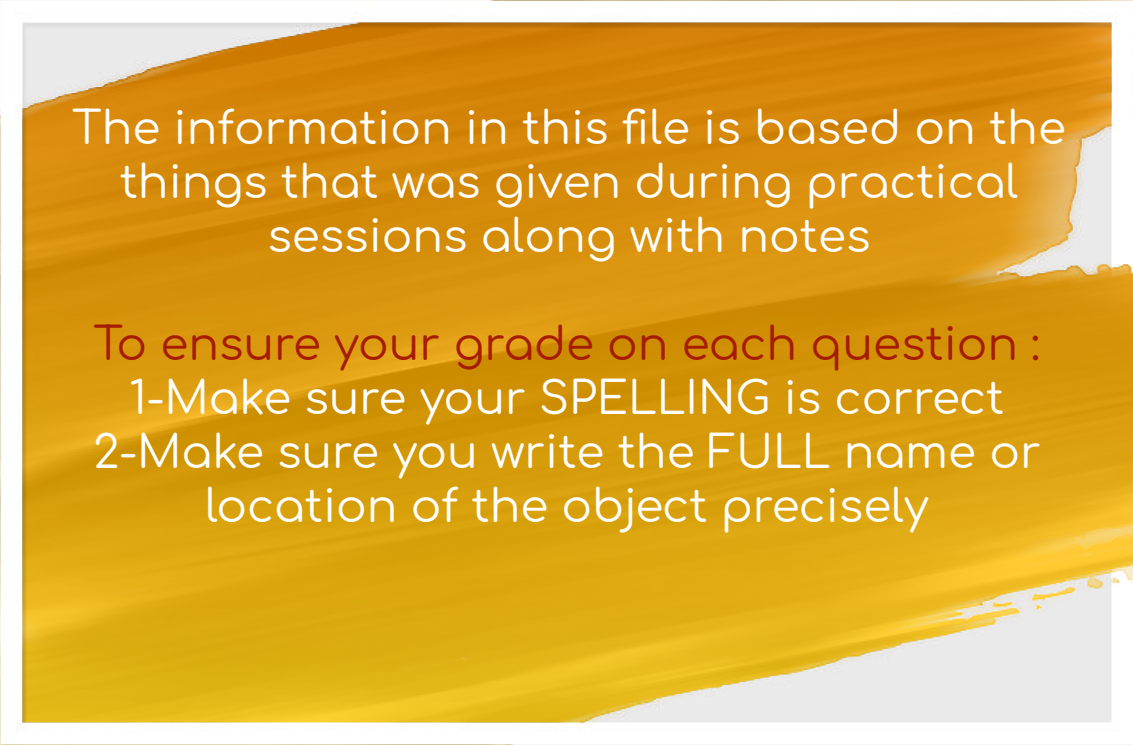


# Anatomy revision

Musculoskeletal Block

Anatomy Practical team - Med 439





The information in this file is based on the things that was given during practical sessions along with notes

To ensure your grade on each question :

- 1-Make sure your SPELLING is correct
- 2-Make sure you write the FULL name or location of the object precisely

# Examples:

## The bones

- \* What is the bone? (Ex. Tibia or fibula)
- \* What is the site? (right or left)
- \* What is the marked area and what is the muscle attached to and (maybe the nerve supply)? (ex. Subscapular fossa, The muscle attached:Subscapularis)

## The vertebrae

- \* Identify (Ex. Atypical cervical vertebra -Atlas C1-)
- \* What are the features? (any special or common features)
- \* If it's Atlas C1: what are the joints and their actions? (-Atlanto-occipital joint (Flexion, extension, lateral rotation)  
-Atlanto-axial joint (rotation))
- \* what are The structures that attach the vertebral bodies or vertebrae together?
- \* What does pass through transverse foramen? (the vertebral artery and vein and a sympathetic nerve plexus)

## The muscles

- \* Identify the muscles?
- \* What is the nerve supply?

## The nerves and arteries

- \* Identify



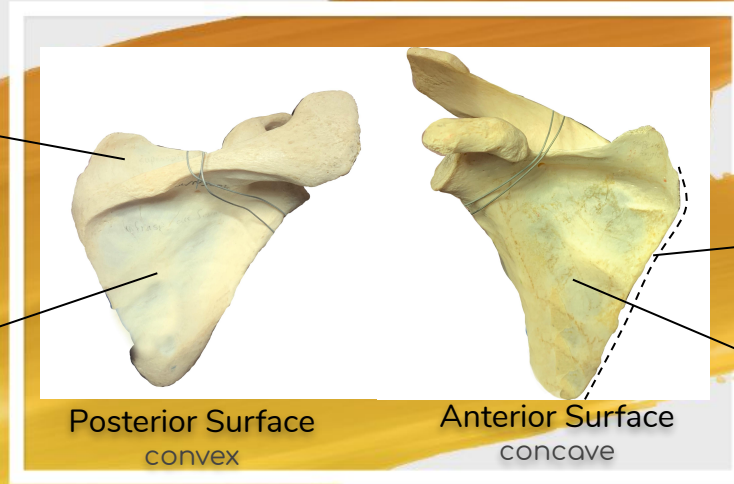
# THE BONES



# Scapula

**Supraspinous fossa**  
The muscle attached:  
**Supraspinatus**

**Infraspinous fossa**  
The muscle attached:  
**infraspinatus**



**Medial border**  
The muscle attached:  
**Serratus Anterior**  
"Anteriorly"

**Subscapular fossa**  
The muscle attached:  
**Subscapularis**

**Site determination by:**

- Spine process (posterior)
- Glenoid cavity (lateral)
- Subscapular fossa (toward the ribs)

## Bones of upper limb (Arm)

# Humerus

### Site determination by :

- Head (proximal, medial)
- Olecranon fossa (posterior)
- Tubercles (anterior)

### Medial epicondyle

### "Common flexor origin"

The muscles attached:

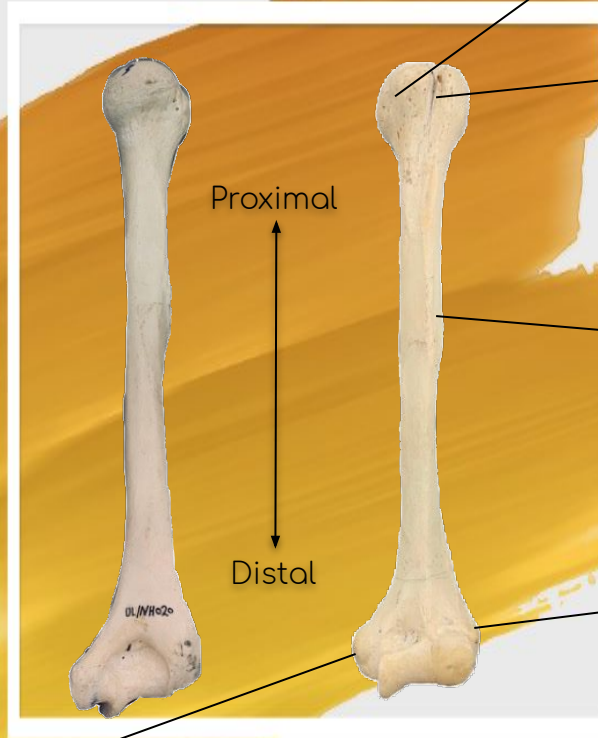
Pronator teres muscle, Flexor carpi radialis muscle, Flexor carpi ulnaris muscle, Palmaris longus muscle, Flexor digitorum superficialis muscle

The structure that passes behind it:

Ulnar nerve

Posterior

Anterior



### Lesser tubercle

The muscle attached:  
**Subscapularis**

### Intertubercular groove

The muscles attached:

- Medially "Teres major"
- Laterally "Pectoralis Major"
- in the middle "Latissimus Dorsi"

### Deltoid tuberosity

The muscle attached:  
**deltoid**

### Lateral epicondyle

### "Common extensor origin"

The muscles attached:

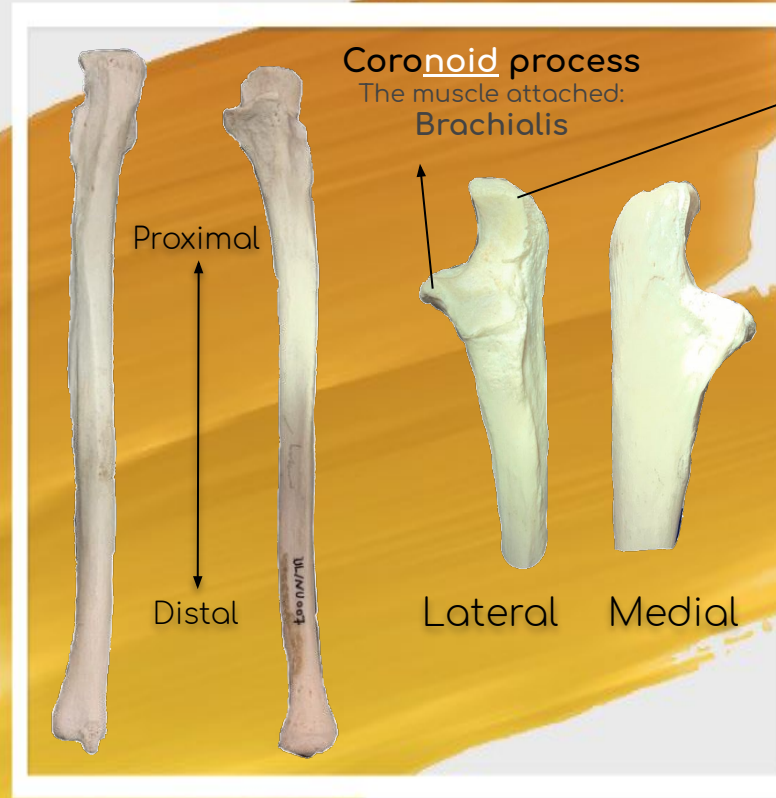
extensor digitorum, extensor digiti minimi, extensor carpi ulnaris, The extensor carpi radialis brevis

The structure that passes in front:

Radial nerve

## Bones of Upper Limb

# Ulna



### Coronoid process

The muscle attached:  
Brachialis

### Olecranon Process

The muscle attached:  
Triceps

Proximal

Distal

Lateral

Medial

Posterior Anterior

### Site determination by :

- Trochlear notch (anterior,proximal)
- Interosseous border (lateral)
- Styloid process (medial,distal)

## Bones of Upper Limb

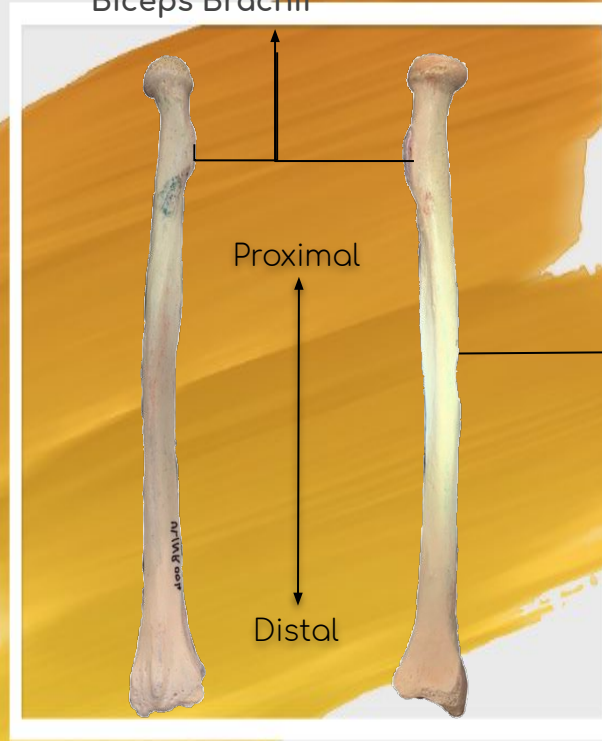
### Side determination by:

- Radial tuberosity (anterior)
- Interosseous border (medial)
- Styloid process (lateral, distal)

# Radius

## Radial Tuberosity

The muscle attached:  
Biceps Brachii



Posterior  
convex

Anterior  
smooth concave

## Lateral border

The muscle attached:  
Pronator Teres

## Bones of Lower Limb

# Femur

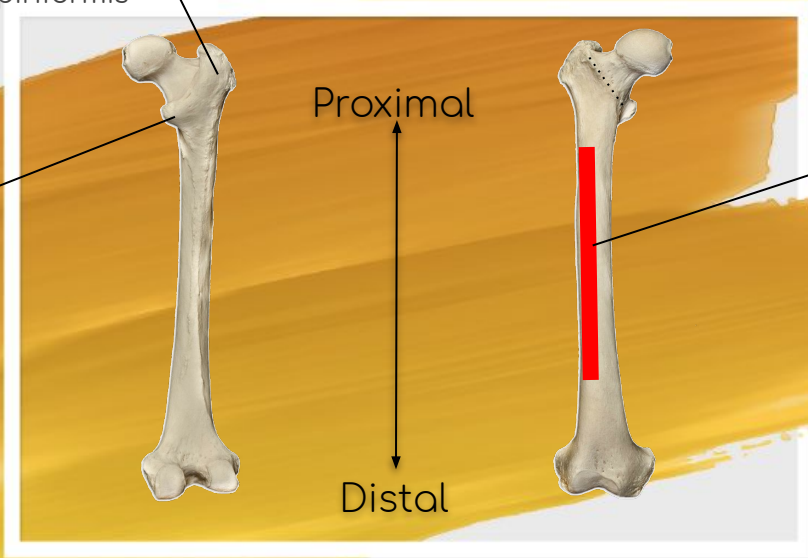
### Greater trochanter

The muscles attached:

- Anterior "gluteus minimus"
- Lateral "gluteus medius"
- Medial "obturator internus"
- On the top "piriformis"

### Lesser trochanter

The muscle attached:  
Iliopsoas muscle



Proximal

Distal

Posterior  
"Rough"

Anterior  
"Smooth"

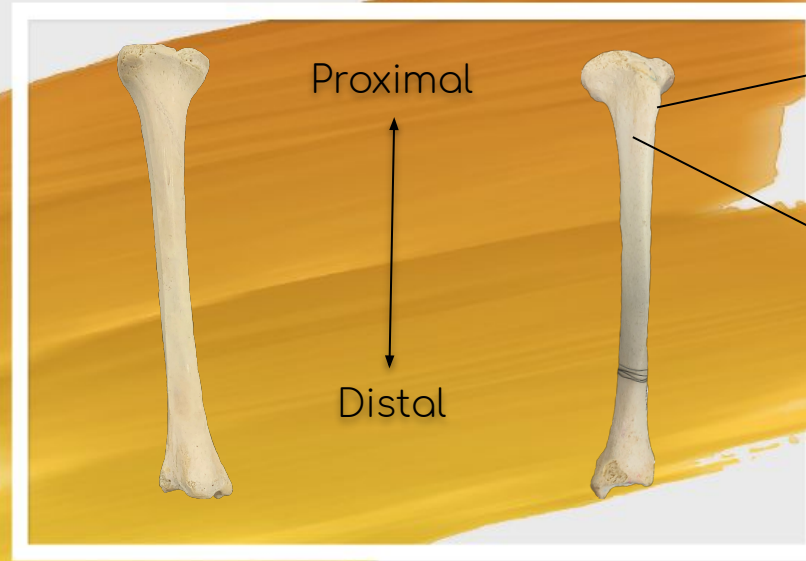
### Lateral Anterior Surface

The muscle attached:  
Vastus intermedius of  
Quadriceps Femoris  
muscle

- Site determination by:
- Head (proximal, medial)
  - Epicondyles (anterior)
  - Condyles (posterior)

## Bones of Lower Limb

# Tibia



### Tibial Tuberosity

The structure attached:  
**Patellar ligament**  
Continuation of  
Quadriceps tendon

### SGS

- Sartorius
- Gracilis
- Semitendinosus

### Site determination by:

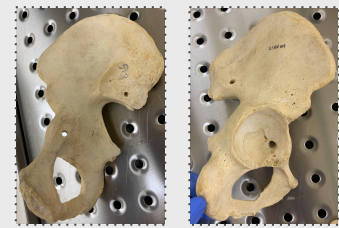
- Tibial tuberosity (**anterior**)
- Shin border (**anterior**)
- Malleolus (**medial, distal**)

Posterior

Anterior



# Hip bone



This is our college's hip bone

Medial

Lateral



Gluteal surface of ilium

- Gluteus Maximus
- **Gluteus medius "middle"**
- Gluteus minimus

Ischium

The muscles attached:

- Semitendinosus
- Semimembranosus
- Long head of Biceps femoris
- Quadratus Femoris



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# Vertebrae

Musculoskeletal Block



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## Atypical Cervical Vertebrae

# Atlas C1

Ring shaped vertebrae



### Special features:

- No body
- No spinous process
- Transverse foramen
- Kidney shaped articular facet (superior surface)
- Circular or oval shaped facet (inferior surface)
- Two lateral masses.

### Common features:

- vertebral foramen
- Transverse process

### Joint:

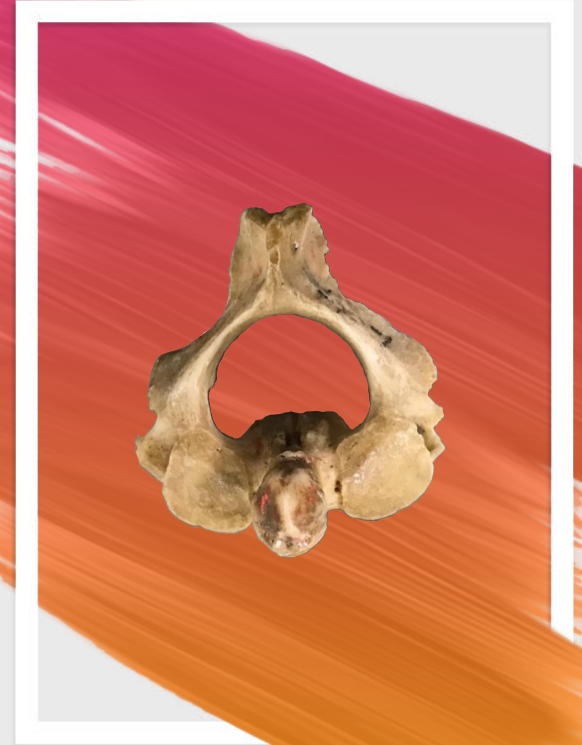
- Atlanto-occipital joint (Flexion, extension, lateral rotation)
- Atlanto-axial joint (rotation)

## Atypical Cervical Vertebrae

# Axis C2

Special features:	Common features:	Joint:
<ul style="list-style-type: none"><li>● <b>Odontoid process or dens</b> "it's the body of axis"</li><li>● Transverse foramen</li></ul>	<ul style="list-style-type: none"><li>● Superior &amp; inferior articular facet</li><li>● Vertebral foramen</li><li>● Spinous process</li><li>● Transverse process.</li></ul>	<ul style="list-style-type: none"><li>● -Atlanto-axial joint (rotation)</li></ul>

It has all the features of typical cervical except the body replaced by odontoid process



# Atypical Cervical Vertebrae C7

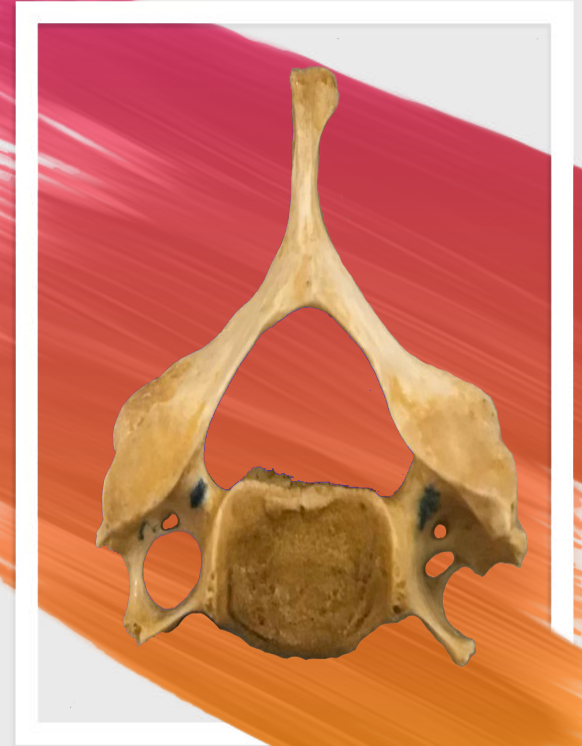
## Prominens

### Special features:

- Spinous process (Long, Not bifid, not downward)
- Veins and nerves pass through transverse foramen

### Common features:

- Superior & Inferior articular facet
- Vertebral foramen (triangular, large)
- Transverse process





# Typical Cervical Vertebrae C3-C6

## Special features:

- Vessels pass through **transverse foramen**
- Small body
- Spinous process is bifid, short and fork-like

## Common features:

- Transverse process
- Vertebral foramen



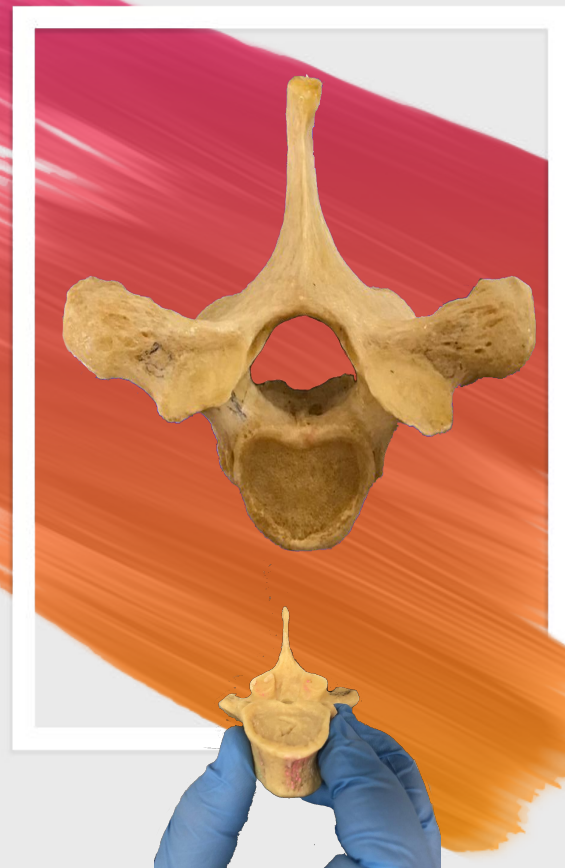


# Thoracic vertebrae

## thoracic vertebrae (T2 To T9)

- The **inferior articular surfaces** are facing **anteriorly** towards the inferior part of the spinous process
- The body is medium sized, somewhat **heart-shaped** and has two **costal Vertebrae demifacets** on each sides (**superior, inferior**) which receive the heads of the ribs.
- also the **transverse processes** have facets that articulate with the tubercles of the ribs.
- spinous process (long **hooks sharply downward**)

Vertebral foramen (**circular**), pedicle, lamina.



# Typical & atypical lumbar

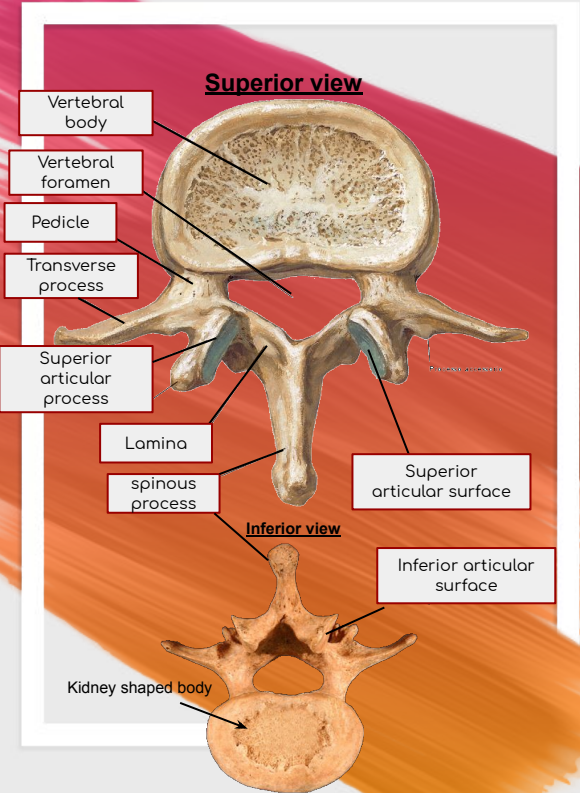
## Typical lumbar L1,L2,L3,L4

- The **inferior articular surfaces** are facing **laterally** towards the transverse processes.

- Massive block like body (**kidney shaped**)
- spinous process (Short **hatchet shaped**)
- In all lumbar vertebrae the **superior articular surfaces** are facing **medially** towards the spinous process.



Vertebral foramen (triangular), pedicle, transverse process, lamina.



Special features

common features

# Ligaments of the spine

The structures that attach the vertebral bodies:

- The anterior and posterior longitudinal ligaments
- Intervertebral disc

The structures that attach the vertebrae together:

- anterior and posterior longitudinal ligaments
- Supraspinous ligament
- Interspinous ligament
- ligamentum flavum
- Intertransverse ligament
- Intervertebral disc

The structures that attach the vertebrae together: (cervical)

- Ligamentum Nuchae
- anterior and posterior longitudinal ligaments

# SUMMARY

- When you see the transverse foramen in a vertebra, that would mean it is from the Cervical vertebrae. Then check if :
  - There is no body then it is "Atlas C1"
  - There is an odontoid process it is "Axis C2".
  - There is a long non-bifid spinous process it is "Prominens C7", otherwise it is typical (C3-C6).
- \* vessels and nerves pass through the transverse foramen of cervical vertebrae except at C7 where only veins and nerves pass\*.
- When you see a long downward pointing non-bifid spinous with no transverse foramen, it is "thoracic".
- If the body big and the spinous process is short hatchet-shaped, it is "lumbar".



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# Muscles of the back

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## Superficial group



Levator scapulae

Rhomboid major

Rhomboid minor

**Nerve supply:**  
Dorsal scapular  
nerve.





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# Muscles and bones of the upper limb

Musculoskeletal Block

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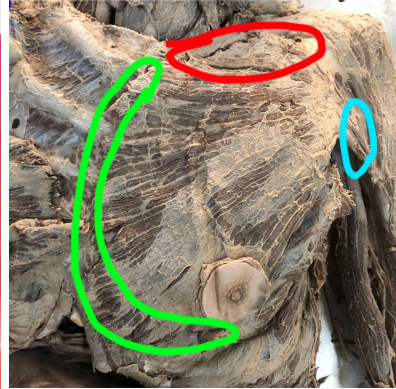




## Deltoid

Nerve supply

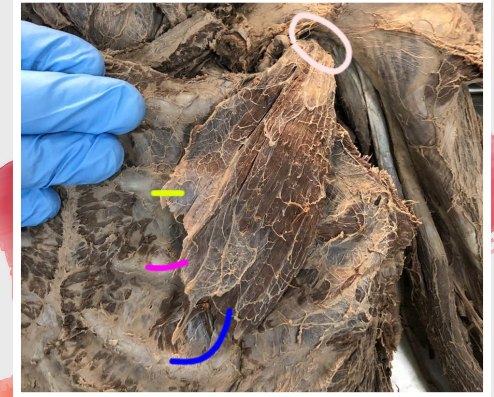
**Axillary nerve**



## Pectoralis Major

Nerve supply

Lateral & Medial  
pectoral nerves



## Pectoralis Minor

Nerve supply

Medial pectoral nerves



Muscles of  
the arm



Biceps Brachii

Nerve supply

Musculocutaneous nerve

Laterally

Anterior of Arm

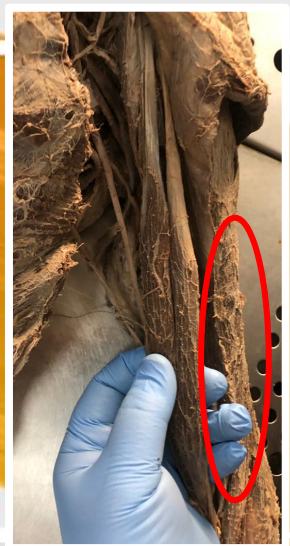


Coracobrachialis

Nerve supply

musculocutaneous  
nerve

مميّزة لأن النيرف راح  
يمر من خلالها



Brachialis

Nerve supply

Musculocutaneous &  
Radial nerves

نايمة على العظم



Posterior of Arm

# Triceps Brachii

Nerve  
supply

Radial nerve





# Muscles of the forearm



نبدأ نعد من بعد الراديال آرتري  
From Lateral to Medial

## Muscles of the Forearm (flexors)

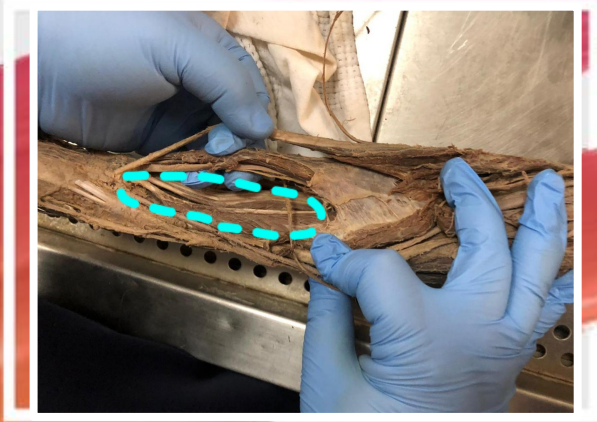
ما راح توصل للهاند عشان تقدر تسوي  
ال  
pronation

	<b>Pronator Teres</b>	<b>Flexor carpi radialis</b>	<b>Palmaris longus</b>	<b>Flexor carpi ulnaris</b>
Nerve supply	Median nerve			<u>Ulnar nerve</u>

From Lateral to Medial



# Muscles of the Forearm (flexors)



**Flexor digitorum superficialis**

Nerve supply	Median nerve
--------------	--------------

Between Flexor carpi radialis and Palmaris longus



**Flexor digitorum profundus (deep)**

Nerve supply	Anterior interosseous Nerve (branch of the median nerve), <u>medial half is supplied by the ulnar nerve</u>
--------------	---

Below flexor digitorum superficialis

# Muscles of the Forearm (Extensors)

Laterally to Radial  
artery

## Brachioradialis

Nerve supply

radial nerve

## Extensor carbi radialis longus

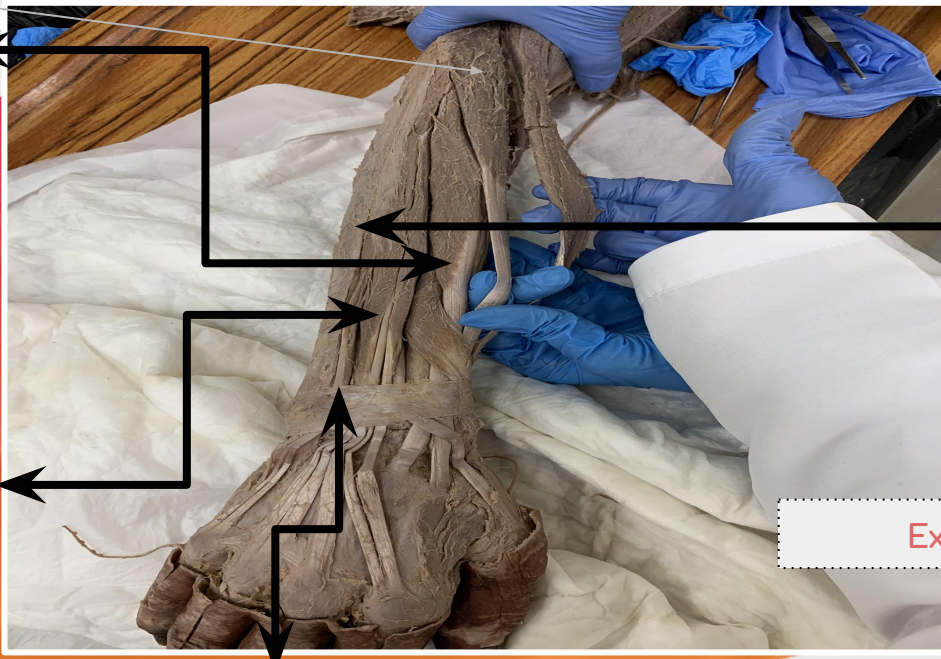
Nerve supply

radial nerve



## Muscles of the Forearm (Extensors)

Below ECRL  
Extensor carpi radialis  
brevis:



Extensor digitorum

Extensor carpi ulnaris

Extensor digiti minimi

All innervated by deep branch of  
radial nerve  
(Posterior interosseous)





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# Vessels and Nerves of the upper limb

Musculoskeletal Block



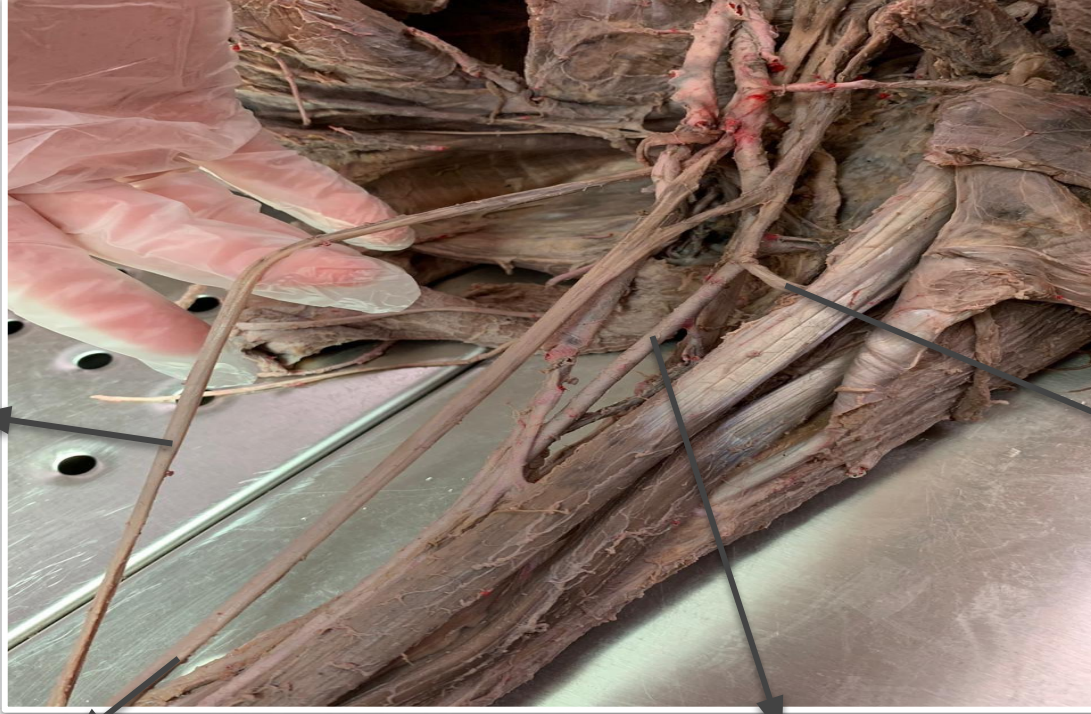
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Nerves



هنا كل النيرفز في صورة وحدة على شكل حرف M



Ulnar Nerve  
"Medial"

Musculocutaneous  
Nerve

قصير وراح يدخل مباشرة في  
coracobrachialis

Median Nerve

في الوسط وجاي من فرعين على شكل حرف  
Y

Radial Nerve "Lateral"

راح يدخل مباشرة على  
Posterior muscles

# Median nerve

- roots: C5, 6, 7, 8, T1

Innervation :

No branches in the arm

In the forearm ; all the flexors except Flexor Carpi Ulnaris ,medial half of the Flexor Digitorum Profundus

In the hand ;Three thenar eminence muscles associated with the thumb

Lateral two lumbrical muscles associated with movement of the index and middle finger.

Y  
shaped



Between Flexor digitorum superficialis and Flexor digitorum profundus

# Ulnar nerve

- roots: C8,T1

Innervation:

- Medial ½ Flexor Digitorum profundus
- Flexor Carpi Ulnaris



You can see it under medial epicondyle, long, medial



# Musculocutaneous nerve

- roots: C5,C6,C7

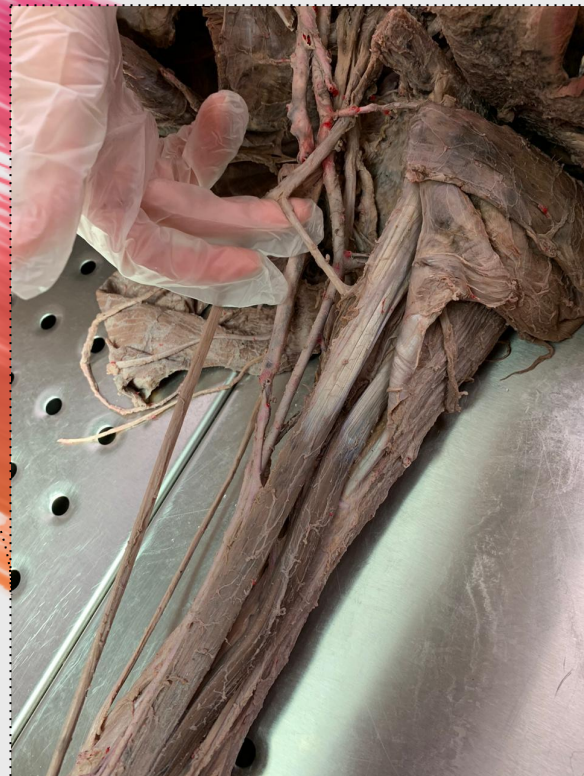
Innervation :

biceps brachii

coracobrachialis

brachialis

مميز لانه الوحيد  
اللي مجرد ما  
يطلع من الكورد  
اللي كونته يصير  
deep للمسلسز

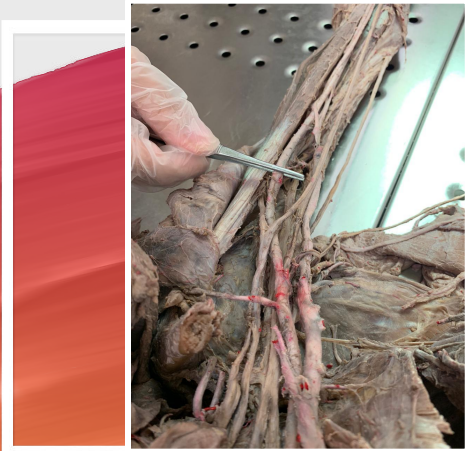


The Nerve	Roots	Innervation
Median N.	C5, C6,C7,C8,T1	<ul style="list-style-type: none"> <li>• No branches in the arm</li> <li>• In the forearm ; all the flexors <b>except</b> FCU,medial half of the FDP</li> <li>• In the hand ;Three thenar eminence muscles associated with the thumb</li> <li>• Lateral two lumbrical muscles associated with movement of the index and middle finger.</li> </ul>
Ulnar N.	C8,T1	<ul style="list-style-type: none"> <li>• Medial ½ Flexor Digitorum profundus</li> <li>• Flexor Carpi Ulnaris</li> </ul>
Musculocutaneous N.	C5,C6,C7	<ul style="list-style-type: none"> <li>• biceps brachii</li> <li>• coracobrachialis</li> <li>• brachialis</li> </ul>

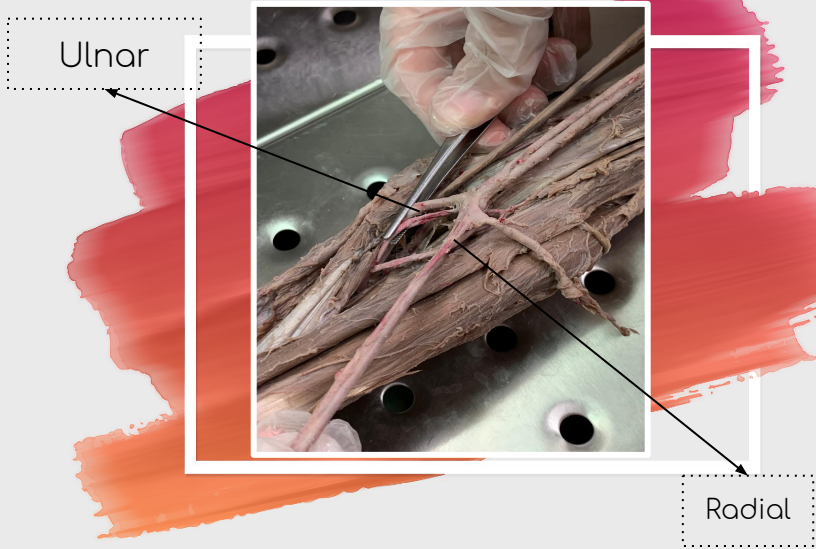


The word "Arteries" is centered in a white, sans-serif font within a white rectangular frame. The frame is set against a background of three horizontal, overlapping brushstrokes in shades of red, orange, and yellow, creating a vibrant, artistic effect.

# Arteries



Brachial artery



Radial & Ulnar arteries

- when you see any artery in the arm that is **Brachial artery**
- In the forearm there are two arteries:  
Medially is **Ulnar artery** , but laterally is **Radial artery**



# Muscles and bones of the lower limb

Musculoskeletal Block



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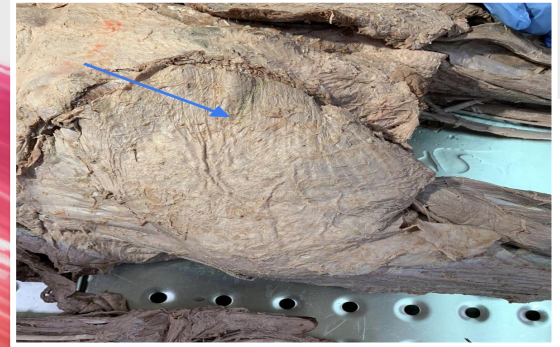


A graphic featuring three horizontal brush strokes in shades of red, orange, and yellow. A white rectangular border is centered over the strokes, containing the text "Gluteal region" in white. The background is a light gray gradient.

Gluteal  
region



	Nerve supply
Gluteus Maximus	Inferior gluteal nerve.
Gluteus medius	Superior gluteal nerve.
Gluteus minimus	
<b>Piriformis</b> "lateral" يمر من تحتها Sciatic nerve	Anterior rami of S1,2

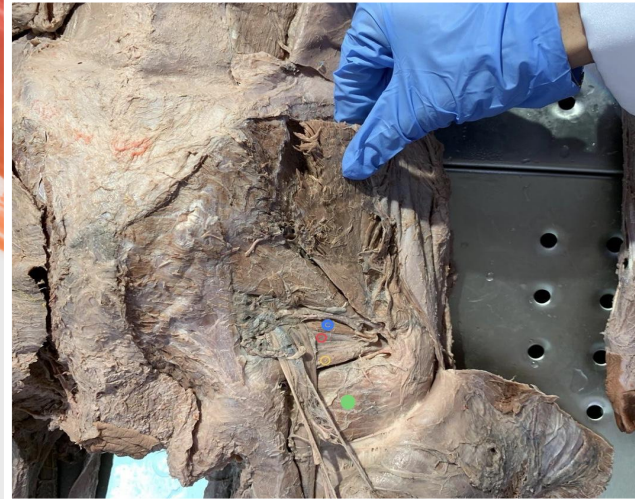




## Quadratus Femoris

يمر من فوقها  
Sciatic nerve

Nerve to Quadratus femoris



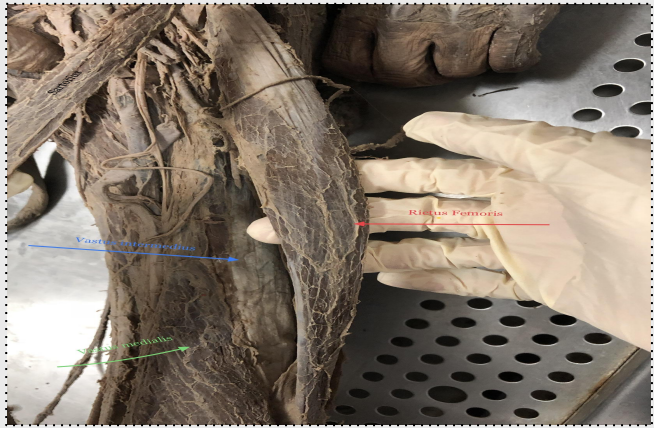
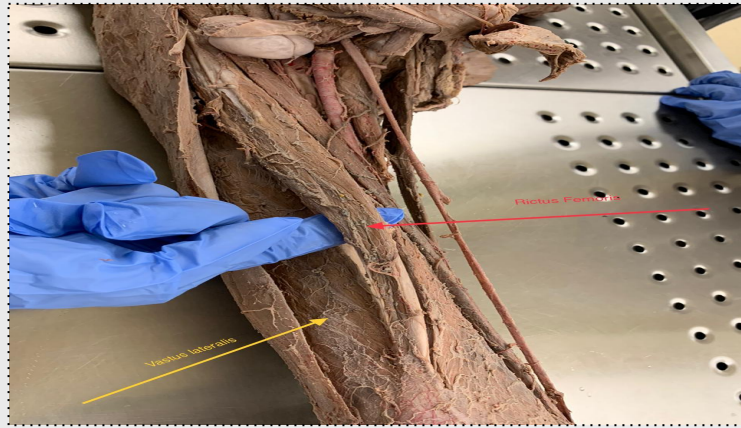
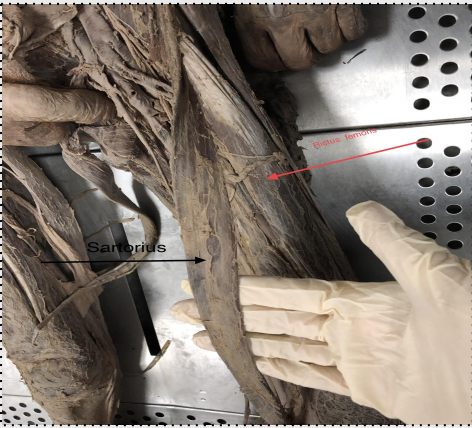


# Muscles of the thigh

The image features three horizontal brush strokes of varying colors: a dark red stroke at the top, a medium red stroke in the middle, and an orange stroke at the bottom. The strokes have a textured, painterly appearance with visible brush bristles. A white rectangular frame is superimposed over the center of these strokes, containing the word "Anterior" in a clean, white, sans-serif font.

Anterior

<b>Sartorius</b> Move from lateral to medial	<b>Quadriceps Femoris</b>				Nerve supply
	<b>Vastus lateralis</b>	<b>Vastus medialis</b>	<b>Vastus intermedius</b>	<b>Rectus Femoris</b>	
Femoral nerve					
			(Deep) نائمة على العظم	Superficially	







Medial



<b>Adductor Magnus</b> Large "Medial to posterior"	<b>Adductor Brevis</b>	<b>Adductor Longus</b> موازية لـ Sartorius	<b>Gracilis</b> Medial	
Obturator nerve				<b>Nerve supply</b>



Adductor longus is clearly and biggest one and medially to it there is adductor Magnus, the adductor brevis located between them and behind adductor Longus

Gracilis is further and in clear position

The image features three horizontal brush strokes of varying lengths and colors, ranging from a deep magenta at the top to a bright orange at the bottom. A white rectangular frame is superimposed over the middle stroke, containing the word "Posterior" in a clean, white, sans-serif font.

Posterior

## Hamstring muscles

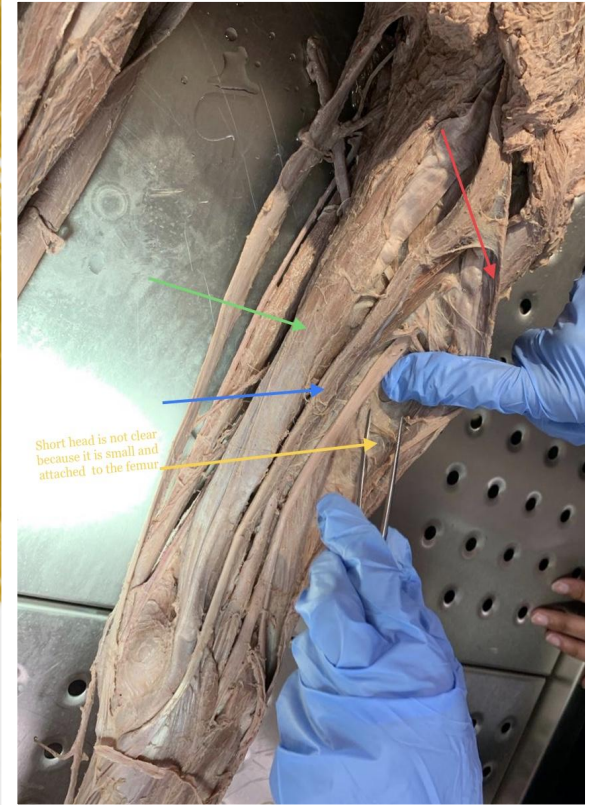
Biceps femoris  
Lateral

**Semitendinosus**  
Long tendon at the  
distal part  
فوق

**Semimembranosus**  
Membrane at the  
proximal part  
تحت

Nerve  
supply

sciatic nerve





# Muscles of the leg

The image features three horizontal brush strokes of varying lengths and colors, ranging from a deep red at the top to a bright orange at the bottom. A white rectangular frame is superimposed over the middle stroke, containing the word "Anterior" in a clean, white, sans-serif font.

Anterior



	<b>Tibialis anterior</b> نايمة على الـ Tibia	<b>Extensor digitorum longus</b>	<b>Extensor hallucis longus</b>	<b>Peroneus tertius</b>
<b>Nerve supply</b>	Anterior tibial or (deep peroneal) nerve			



The image features three horizontal brush strokes of varying lengths and colors, ranging from deep red to bright orange. A white rectangular frame is superimposed over the middle stroke, containing the word "Lateral" in a clean, white, sans-serif font. The background is a light, neutral gray.

Lateral

	<b>Peroneus longus</b> Superficially	<b>Peroneus brevis</b> Deep "Below peroneus longus"
Nerve supply	Superficial peroneal	



اللي محددة بالصورة هي  
Peroneus longus  
واللي تحتها بالضبط هي  
Peroneus brevis

The image features three horizontal brush strokes of varying lengths and colors, ranging from a deep magenta at the top to a bright orange at the bottom. A white rectangular frame is superimposed over the middle stroke, containing the word "Posterior" in a clean, white, sans-serif font.

Posterior

Gastrocnemius



Soleus

## Superficial group

Superficial group		
	Gastrocnemius	Soleus
Nerve supply	Tibial nerve	



# Deep Group

Flexor digitorum  
longus  
Medial

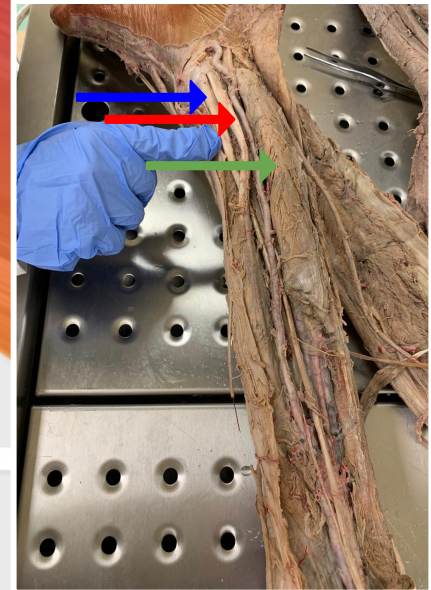
Flexor hallucis  
longus  
Lateral

Tibialis posterior  
In the middle

Nerve  
supply

Tibial nerve

## Popliteus





Revised & Approved  
By  
Suzanne Alshelhi, M.D.



# Vessels and Nerves of the lower limb

Musculoskeletal Block

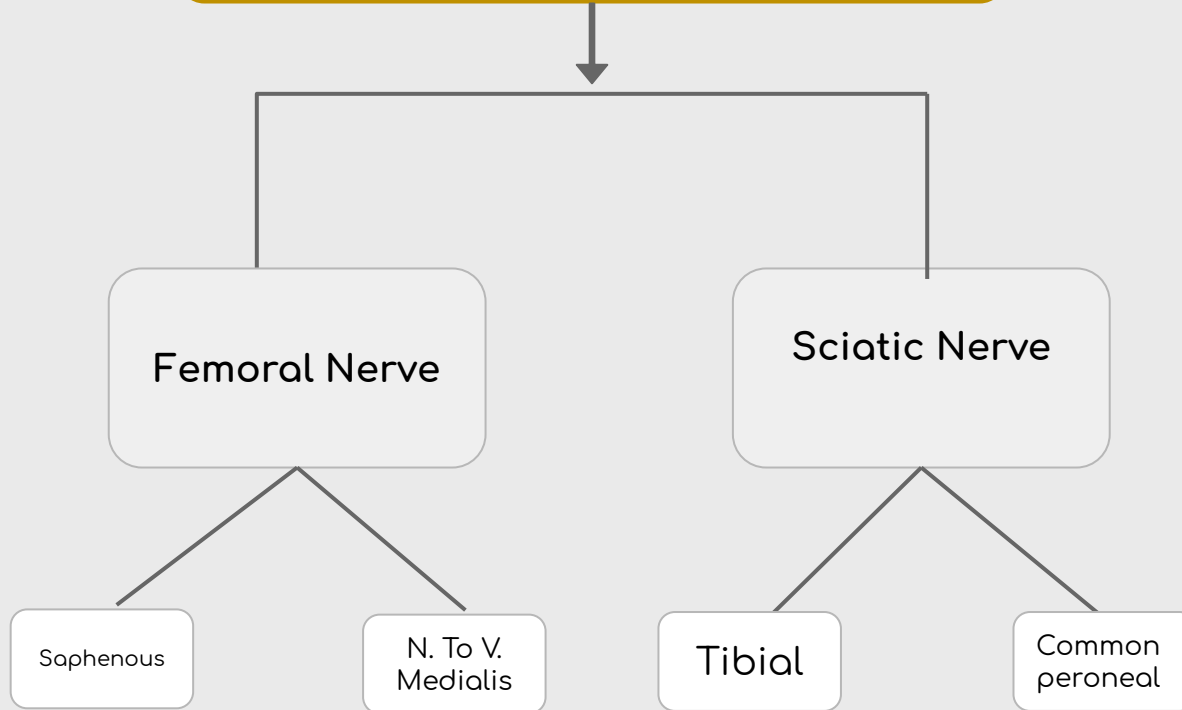


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# Nerves

# Nerves of the lower limbs



# Sciatic Nerve

Roots

L4, L5, S1, S2, S3

It will pass  
below  
piriformis

Innervation

- 1-Posterior Compartment:
  - Hamstring part of Adductor Magnus
  - Biceps Femoris
  - Semitendinosus
  - Semimembranosus
- 2-All muscle below the knee (leg,foot)



\*In general we can say that the posterior compartment and the muscles below the knee are supplied by the sciatic nerve; but they are actually supplied by the tibial, fibular, and sural branches of the sciatic nerve

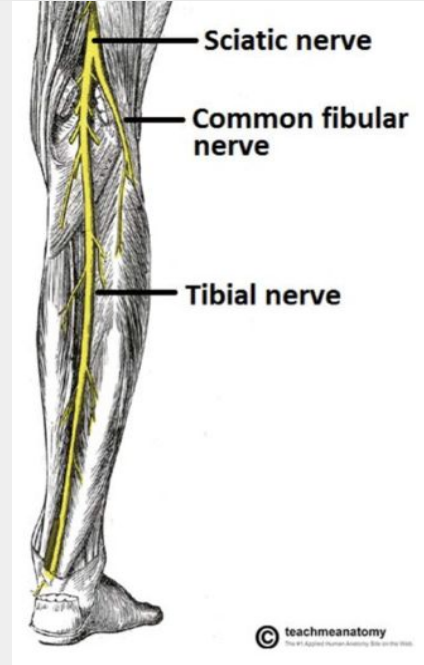


# Tibial Nerve

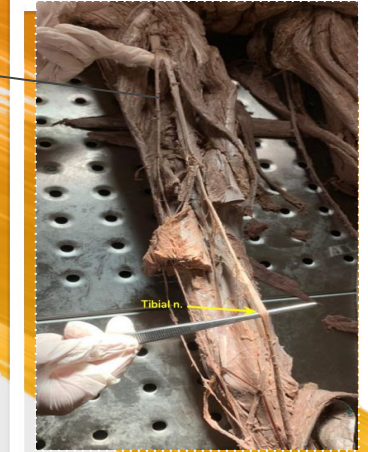
Origin

Is a portion of the sciatic

- Innervation
- muscles of posterior compartment of leg
  - Intrinsic muscles of sole
  - ONE inverter of the foot (tibialis posterior)



Common peroneal nerve



The word "Arteries" is written in a white, sans-serif font, centered within a white rectangular border. The background consists of three horizontal, overlapping brushstrokes in shades of orange and yellow, creating a textured, painterly effect. The top stroke is a dark orange, the middle is a medium orange, and the bottom is a bright yellow. The entire graphic is set against a light gray background.

# Arteries

# Arteris

```
graph TD; A[Arteris] --> B[Femoral Artery]; A --> C[Popliteal Artery]; C --> D[Posterior tibial Artery]; C --> E[Anterior tibial Artery];
```

Femoral Artery

Anteriorly of the thigh

Popliteal Artery

posteriorly of the thigh

Posterior tibial Artery

Anterior tibial Artery

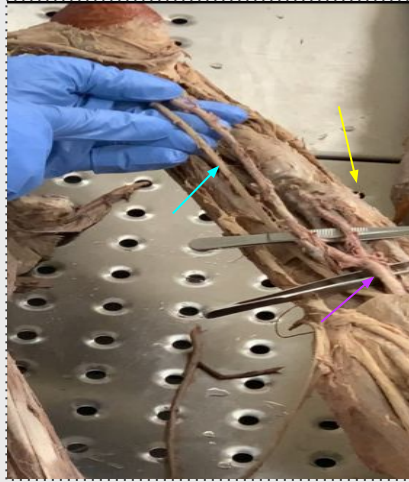
# Femoral Artery

Between femoral nerve  
laterally and femoral vein  
medially



From medial to  
lateral:  
VAN  
(Femoral Vein,  
Artery, and Nerve)

# Popliteal Artery



\* Popliteal Artery  
\* tibial Nerve

When you see any artery in the posterior compartment of the thigh that is POPLITEAL ARTERY





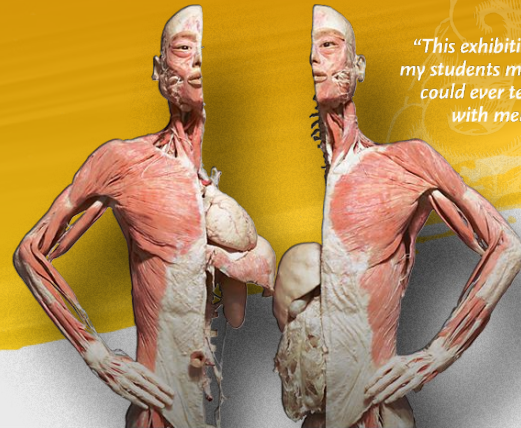
# Don't stop until you are proud.

## Team Members:

- Duaa Alhumoudi
- Mona Alomiriny
- Rania Almutiri
- Taif Almotiri
- Nourah Alklaib
- Arwa Alqahtani
- Norah Alasheikh
- Sara Alharbi
- Najd Alzahrani
- Mishal Althunayan
- Omar alhalabi
- Khalid Alosaimii
- Hadi Alhemi
- Nasser Alohal

## Team Leaders:

- Renad Alhomaidi
- Bassam Alasmari



*"This exhibition taught my students more than I could ever teach them with mere words."*