

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# Anatomy

## Lecture I

المحاضر : د. هادي الطائي

# Basic terminology

**Anatomy** is the branch of [biology](#) concerned with the study of the structure of organisms & their parts

Most terms used are of Latin origin, some terms are Greek.

Recommended books are Snell textbook of anatomy & Grants atlas of anatomy.

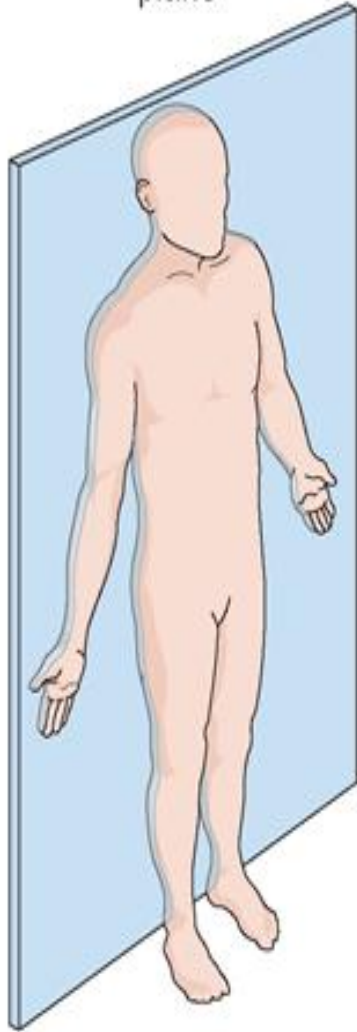
planes of the human body :

1: Sagittal plane : dividing the body into Rt.& Lt. parts

2: Coronal plane : dividing the body into anterior & posterior parts.

3: Axial plane : dividing the body into superior & inferior parts its also called transverse or horizontal plane.

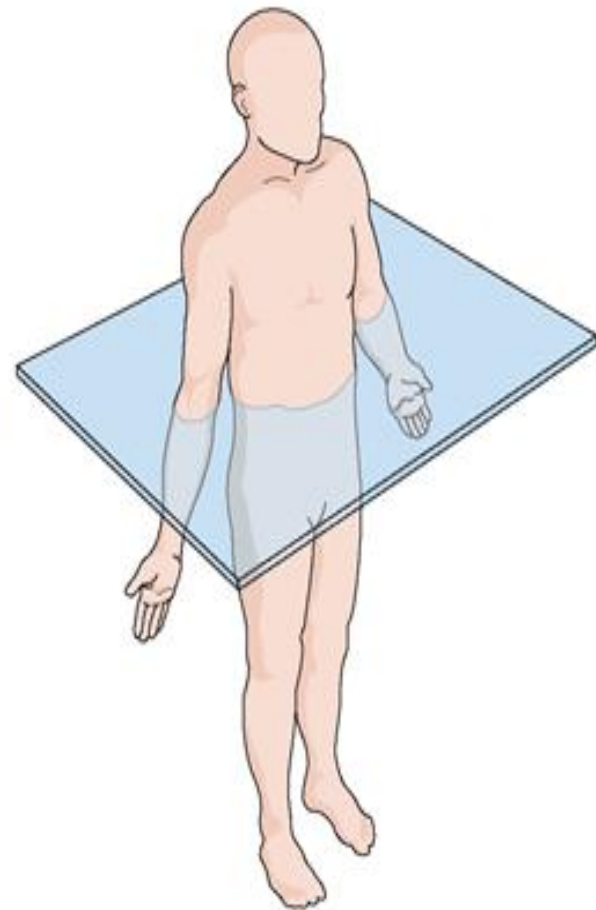
Frontal  
(coronal)  
plane



Sagittal  
plane



Transverse  
(horizontal)  
plane



## Directions & movements

- 1: superior : to the up side
- 2: inferior : to the down side
- 3: cephalic : nearer to the head or vertex
- 4: caudal: nearer to tail “in animals”, “buttock in humans”
- 5: anterior or ventral: to the front side
- 6: posterior or dorsal : to the backside
- 7: medial : nearer to the middle of body
- 8: lateral : nearer to the sides or away from midline
- 9: volar : to the palmar side in the hand
- 10: planter : to the sole side in the foot
- 11: radial : nearer to the lateral or radius bone side in the forearm & hand
- 12: ulnar : nearer to the medial or ulna bone side in the forearm & hand
- 13 : tibial : nearer to the medial or tibia bone side in the leg
- 14: peroneal : nearer to lateral or fibula bone side in the leg
- 15: proximal : near the origin
- 16 : distal : near the end

***Anterior (Ventral) view***

**superior**

***Proximal***

**inferior**



***Distal***

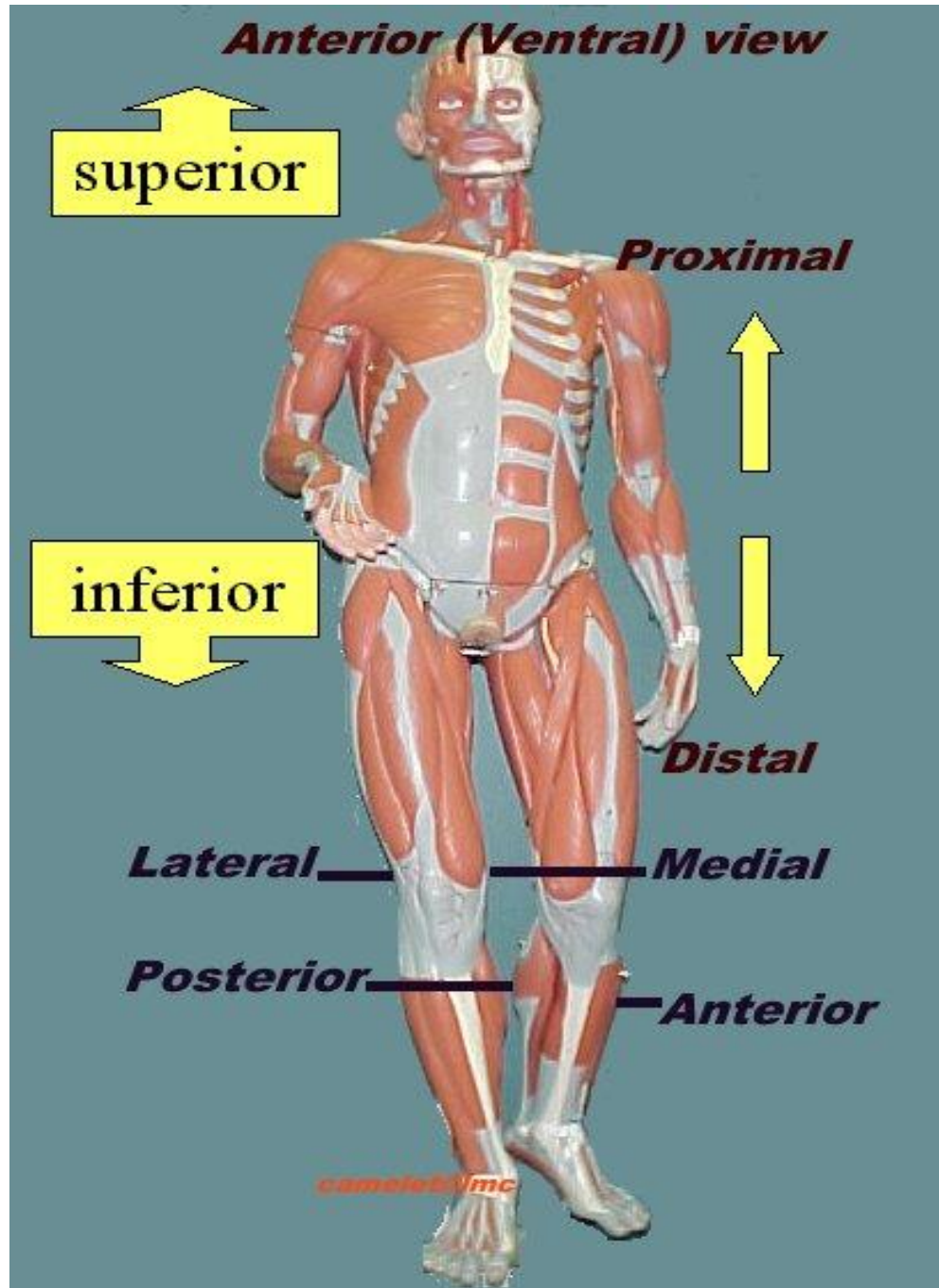
***Lateral***

***Medial***

***Posterior***

***Anterior***

*camelet Vmc*



# Movements

Flexion:Enfolding the limb

Extension :Straightening the limb or part

Abduction:Moving away from midline

Adduction:Moving in the direction of midline

Internal rotation:Inward rotation

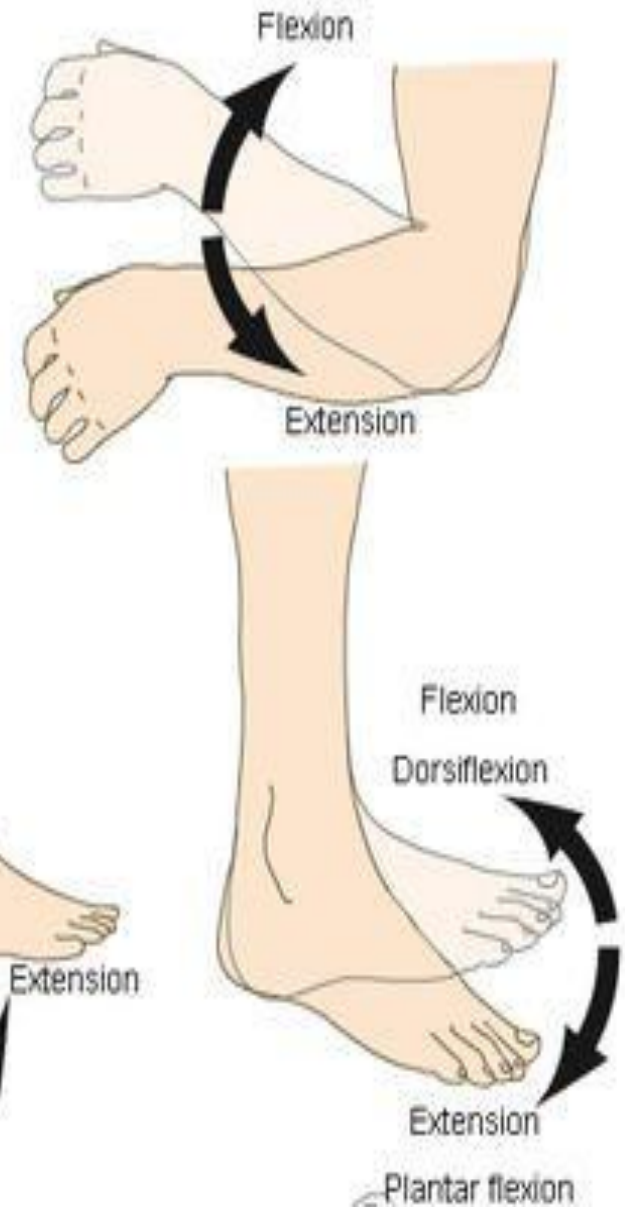
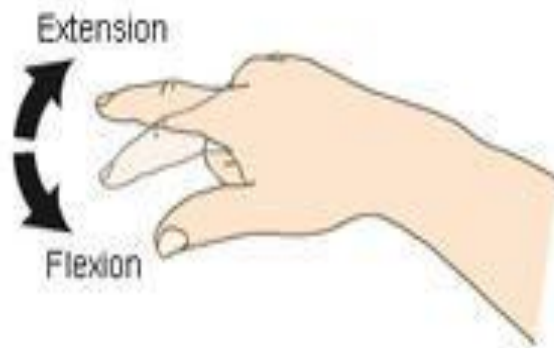
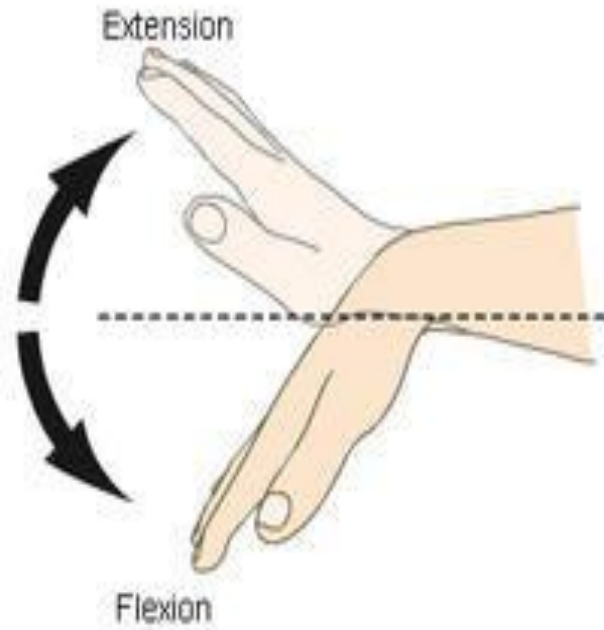
External rotation:Outward rotation

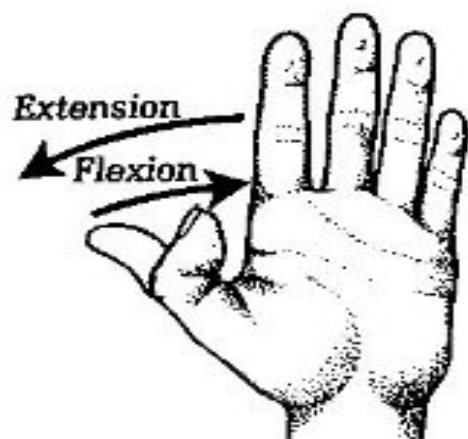
Circumduction “shoulder”

Planter flexion & dorsiflexion “ foot”

Pronation & supination “ forearm –foot rotation”

Opposition “ hand –thumb & finger together”

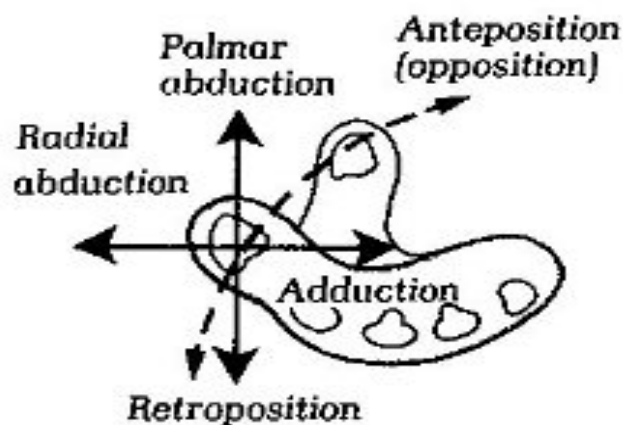
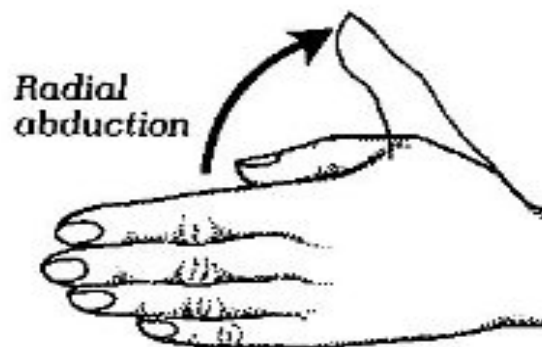
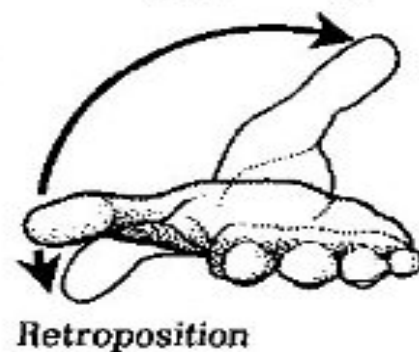




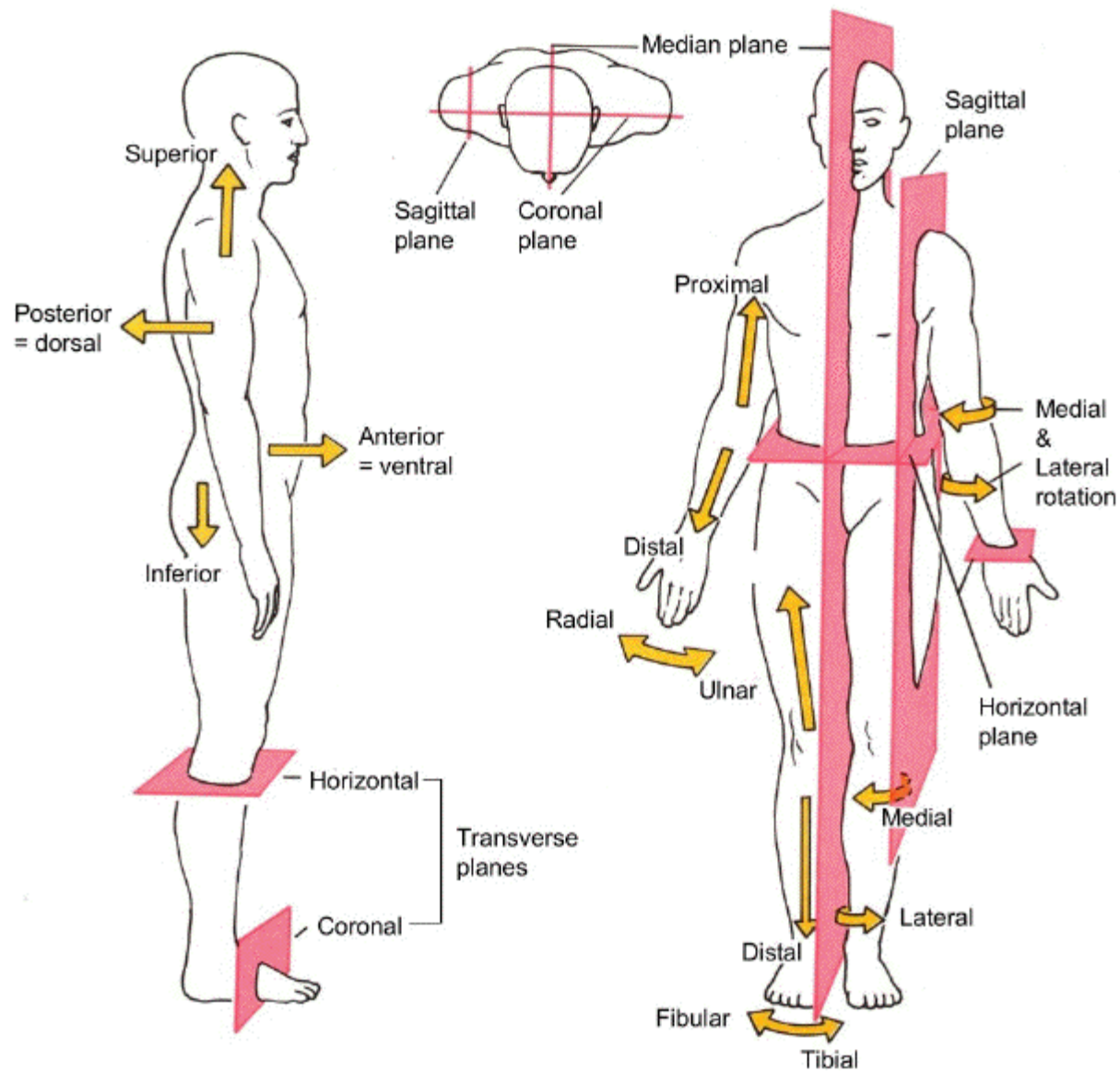
ASSH

Opposing thumb  
to finger

Anteposition  
(opposition)







# Body regions& spaces

Cranial “from cranium “ : related to head region

Cervical from “cervix” : neck

Thoracic from “thorax” : chest

Cardiac :related to the heart

Pulmonary :related to the lungs

Plural : the cavity between the lungs & chest wall lined by the plura

Abdominal from “abdomen”: the belly region

Peritoneal : the cavity between the abdominal organs & abdominal wall lined by peritoneum

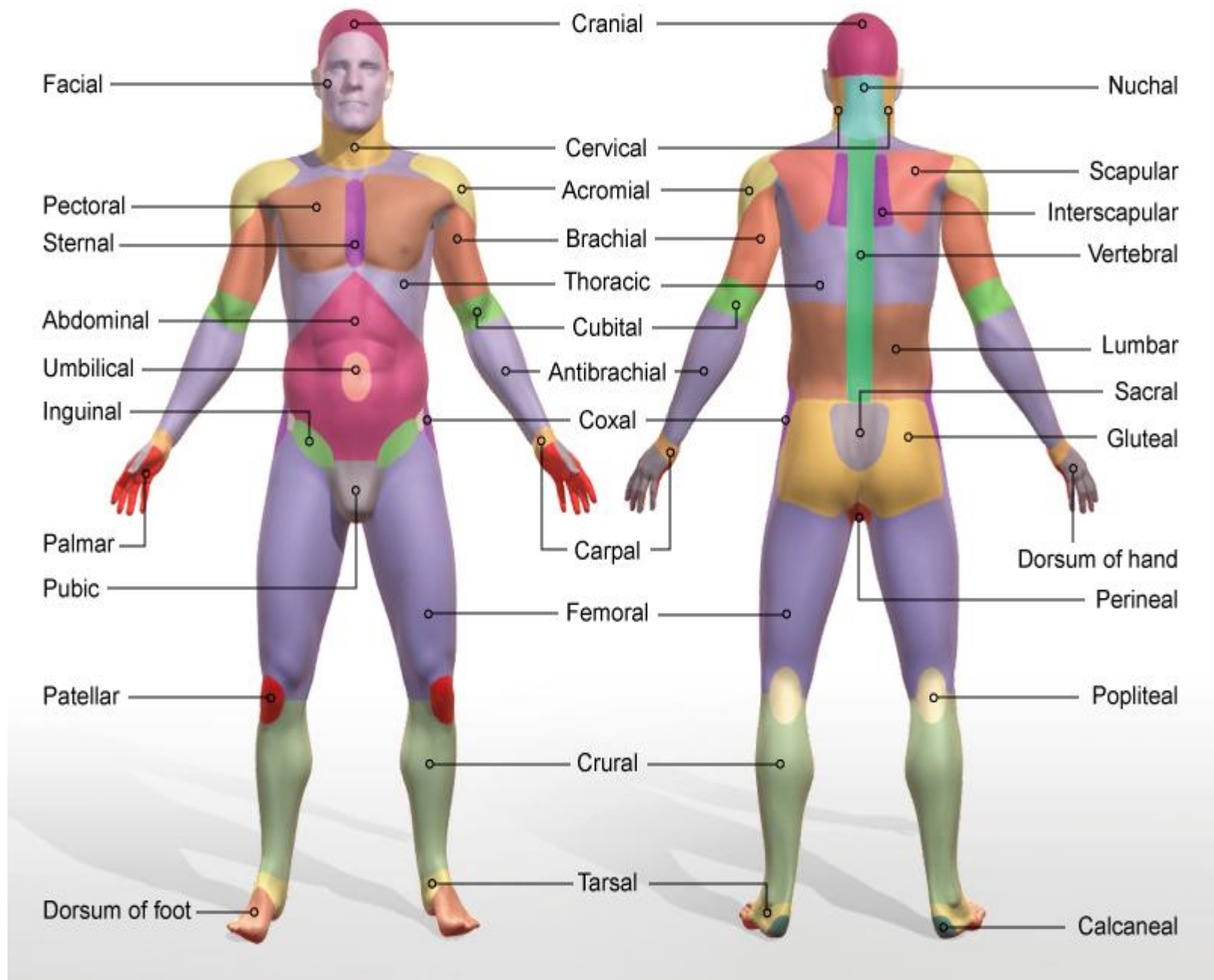
Gastric :related to the stomach

Hepatic :related to the liver

Renal :related to the kidneys

Hypogastric : related to pelvis “pelvic”

Spinal :related to vertebral column &spinal cord.



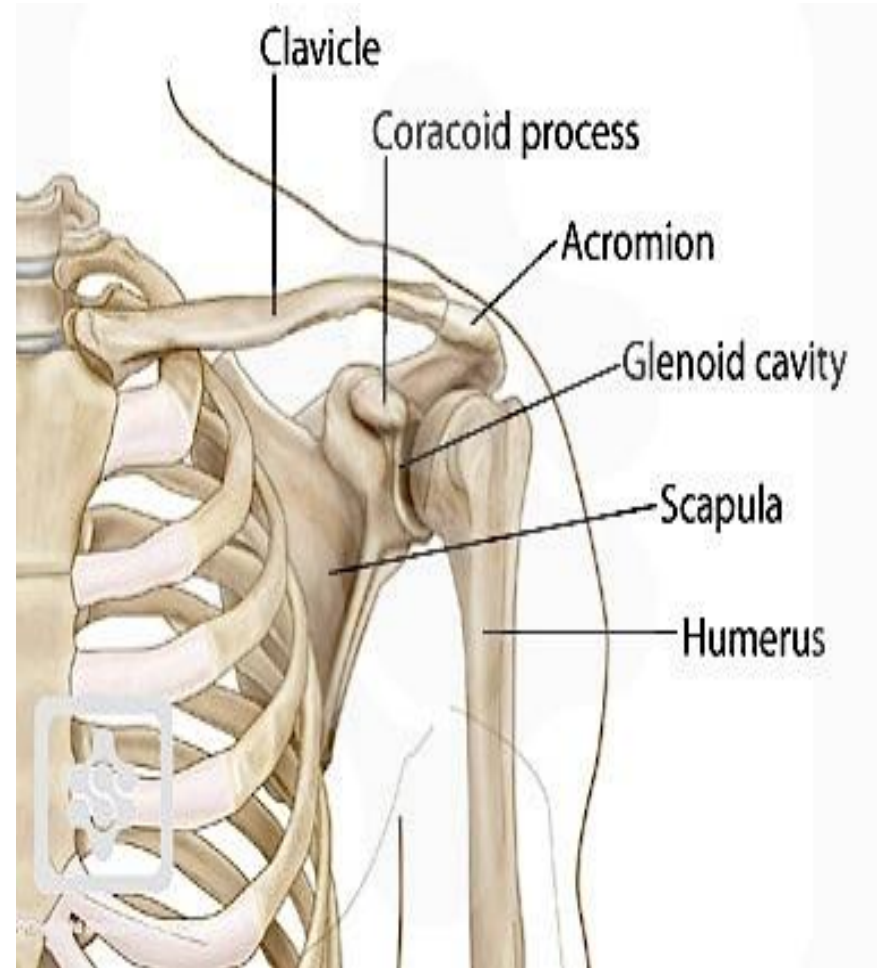
# The upper limb

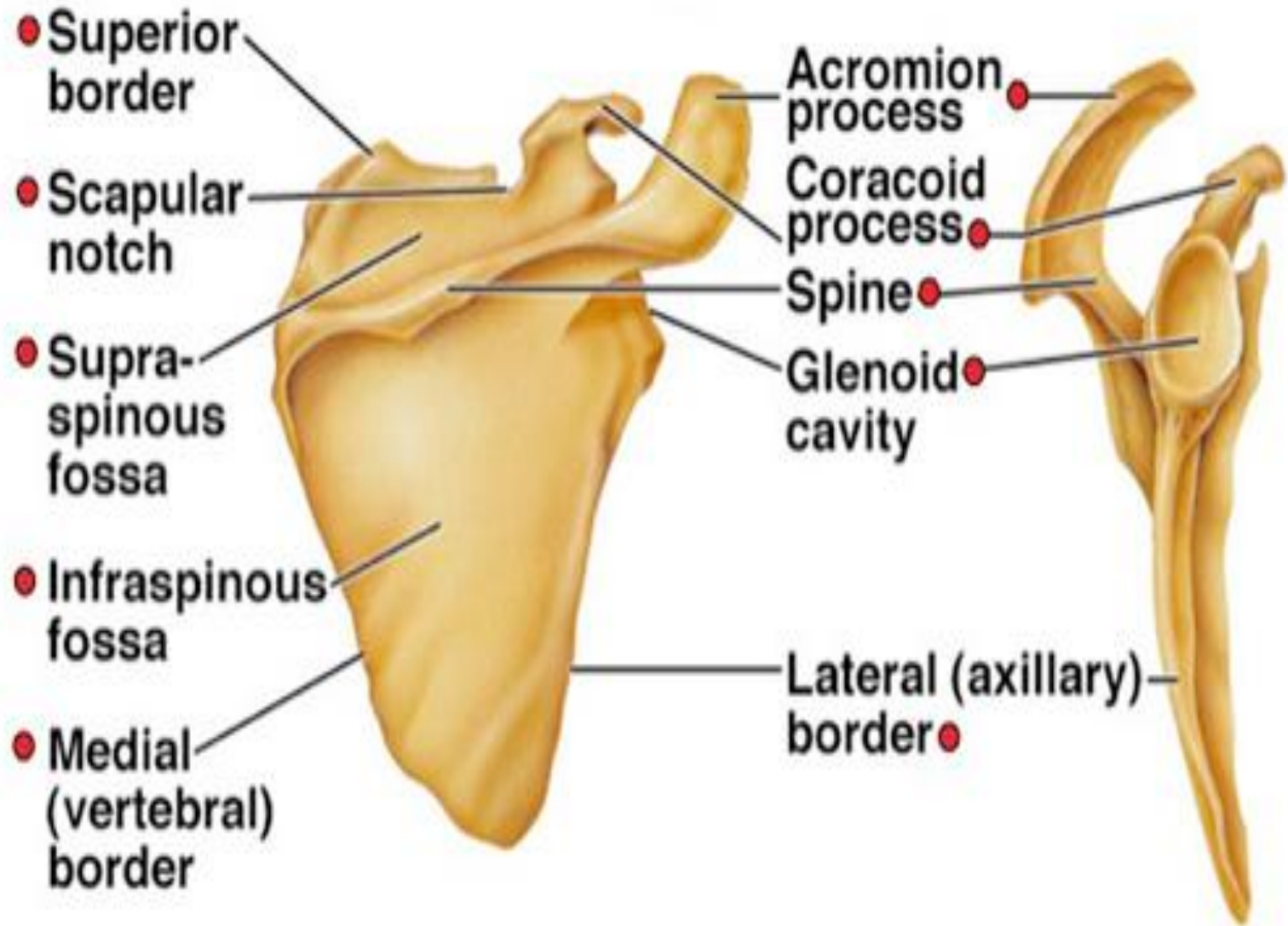
Bony structure of the shoulder region:

1: the clavicle : articulates medially with the sternum & laterally with the scapula through the acromioclavicular & coracoclavicular joints

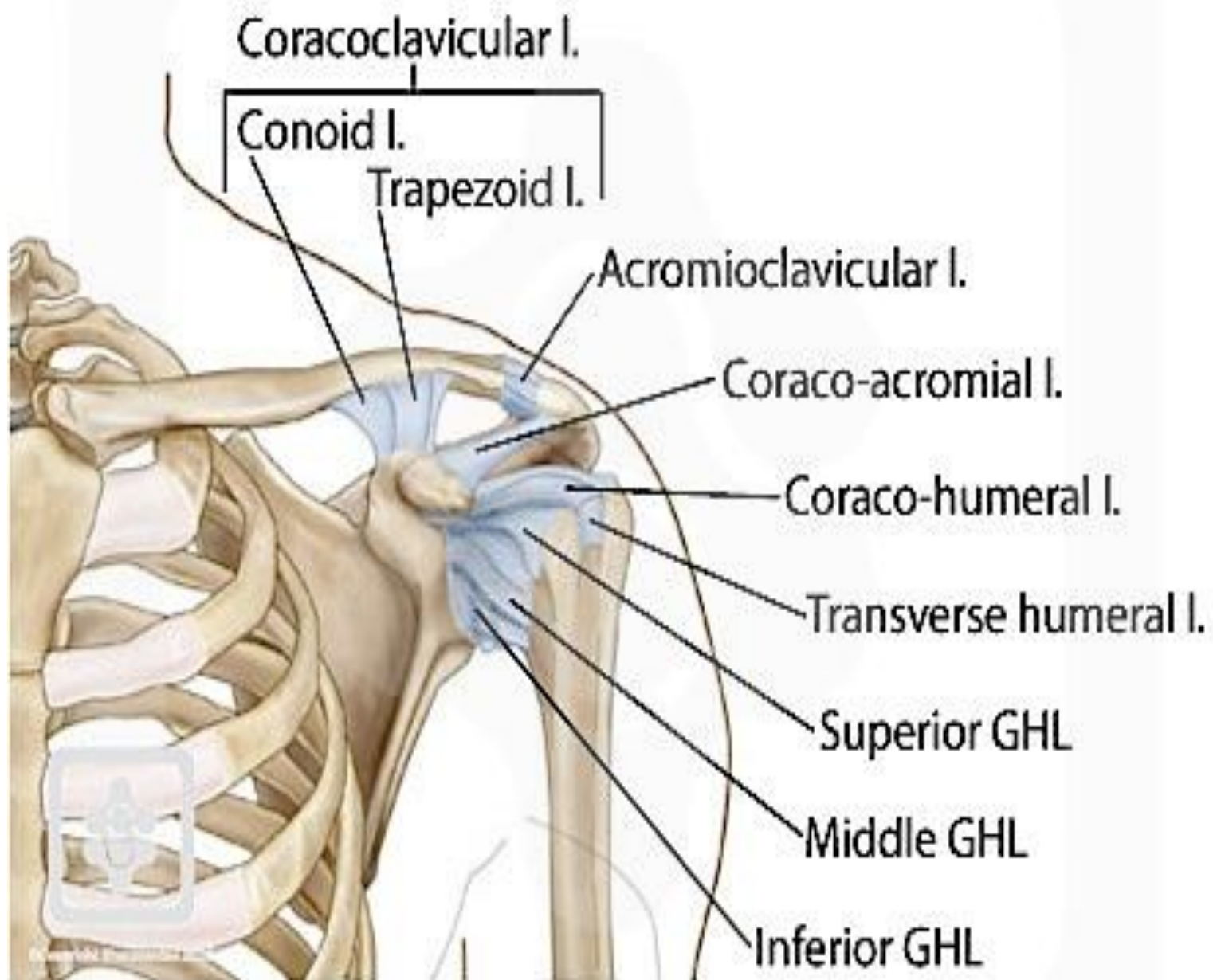
2: the scapula : a relatively flat bone that articulates with the post. Chest wall at the level from 2<sup>nd</sup> to 7<sup>th</sup> ribs, in addition to the joints with clavicle & the humerus that articulates with the glenoid cavity of the scapula.

3: the humerus : the arm bone the articulates with the scapula through the glenohumeral joint.

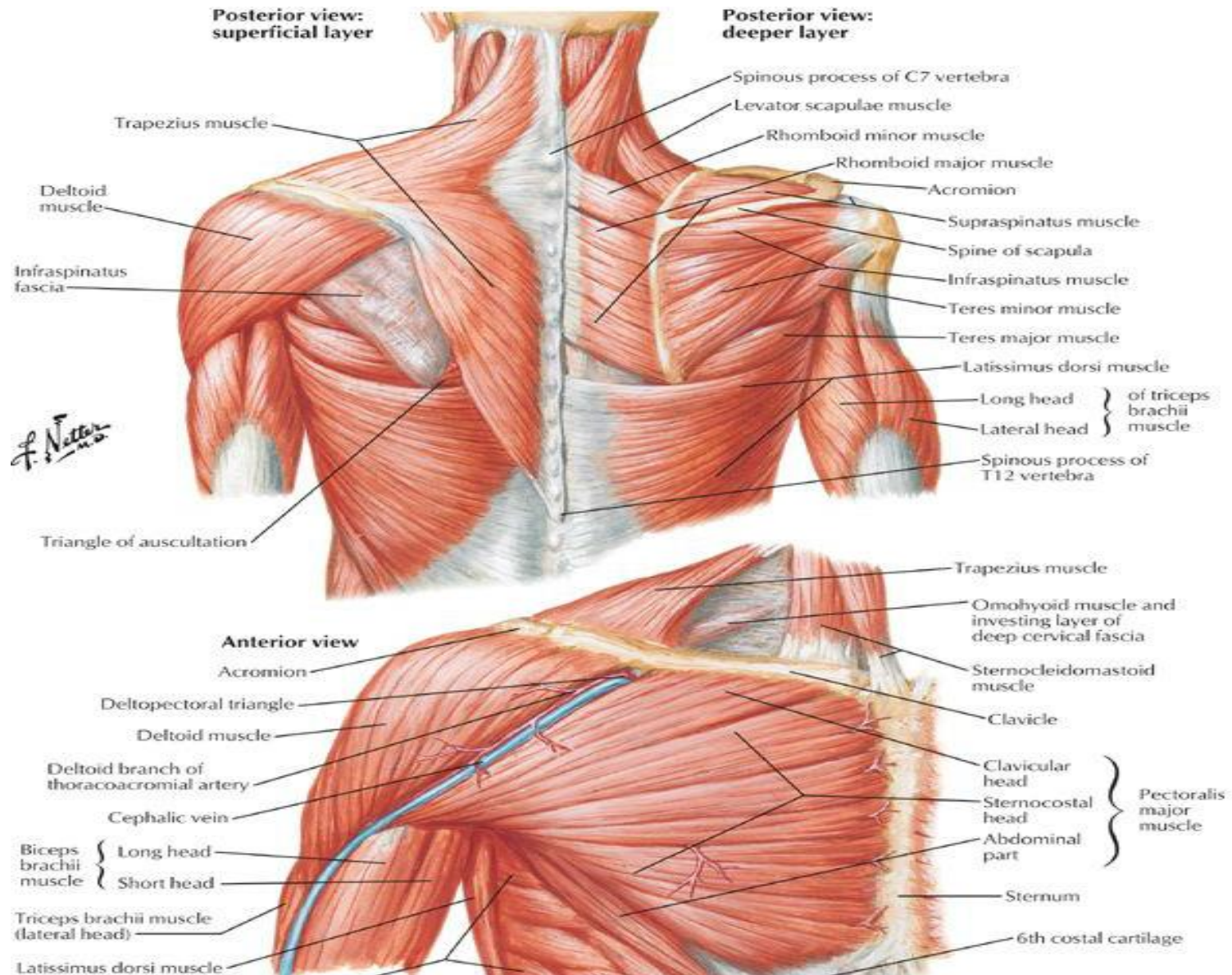








# Muscular Anatomy



# Muscles of the Shoulder

Name	Origin	Insertion	Innervation	Function
<b>Pectoralis Major</b>	- <i>clavicular part</i> - medial anterior clavicle - <i>sternal part</i> - sternal and costal cartilages II-VI	crest of the greater tubercle (lat. ridge of the bicipital groove)	lateral + medial pectorals (C5-T1)	- adducts the arm - medially rotates the arm - can contribute to inspiration
<b>Pectoralis Minor</b>	3rd - 5th ribs	coracoid process	medial pectoral (C8-T1)	- lowers and rotates the scapula
<b>Deltoid</b>	- <i>clavicular head</i> - lateral 1/3 of the clavicle - <i>acromial head</i> - acromion - <i>spinal head</i> - lower border of the scapular spine	deltoid tuberosity of the humerus	axillary nerve (C5-C6)	- abducts the arm - clavicular head + 1/2 acromial fibres flex the arm - spinal head + 1/2 acromial fibres extend the arm - SWINGS the arm
<b>Trapezius</b>	- <i>descending part</i> - superior nuchal line, occipital protuberance, nuchal ligament - <i>transverse part</i> - C7-T3 (spinous processes, supraspinous ligaments) - <i>ascending part</i> - T3-T12	- <i>descending part</i> - lateral 1/3 of clavicle - <i>transverse part</i> - acromial end of scapula, acromion, scapular spine - <i>ascending part</i> - triangular portion of scapular spine	- accessory nerve (CN XI) - trapezius branch (C2-C4)	- stabilizes the scapula and shoulder girdle - when active, pulls scapula towards vertebral column - contributes to arm elevation (shrug)
<b>Sternocleidomastoid</b>	- sternal head - clavicular head	- mastoid process - superior nuchal line	- accessory nerve (CN IX) - cervical plexus (C1-C2)	insignificant role in shoulder girdle
<b>Latissimus Dorsi</b>	- <i>vertebral part</i> - T7-T12 - <i>costal part</i> - 10th-12th ribs - <i>scapular part</i> - inferior angle - thoracolumbar fascia	lesser tubercle	thoracodorsal nerve (C6-C8)	- lowers and abducts the raised arm - medial rotation - forced expiration and coughing - pull shoulders backwards and downwards
<b>Rhomboid Minor</b>	C6-C7 spines	medial margin of the scapula (major caudal to minor)	dorsal scapular nerve (C4-C5)	- presses the scapula on the thoracic wall - can retract scapula towards vertebral column
<b>Rhomboid Major</b>	T1-T4 spines			- elevates the scapula - rotates the inferior angle medially
<b>Levator Scapulae</b>	C1-C4 (dorsal tubercles of transverse processes)	superior angle of the scapula	suprascapular nerve (C4-C6)	- holds humerus in socket - tenses the capsule - abducts the arm
<b>Supraspinatus</b>	supraspinatus fossa	upper facet of greater tubercle		- reinforces the capsule of the shoulder joint - external rotation of the arm
<b>Infraspinatus</b>	- infraspinatus fossa - scapular spine	middle fossa of greater tubercle		- weak lateral rotator
<b>Teres Minor</b>	lateral border of the scapula (minor superior to major)	lower facet of greater tubercle	axillary nerve (C5-C6)	- extension of the arm toward midline - helps in adduction
<b>Teres Major</b>		crest of lesser tubercle	lower subscapular nerve (C6-C7)	- pulls the scapula forwards - allows lateral rotation + elevation of the arm
<b>Serratus Anterior</b>	1st-8th ribs	entire medial margin of scapula	long thoracic nerve (C5-C7)	- strong medial rotator of the arm
<b>Subscapularis</b>	subscapular fossa	- lesser tubercle - proximal crest	subscapular nerve (C5-C8)	

(rotator cuff muscles)



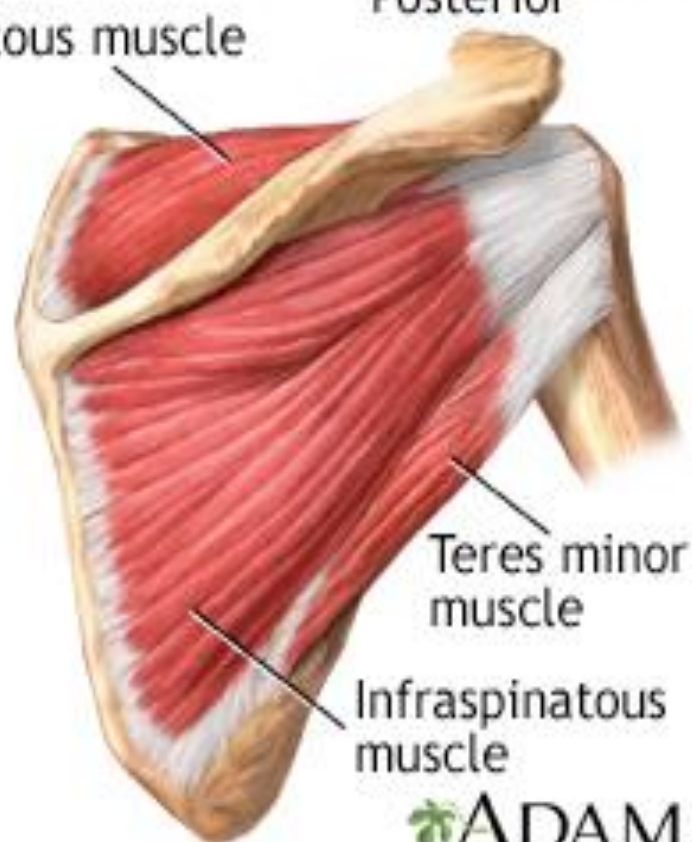


Anterior

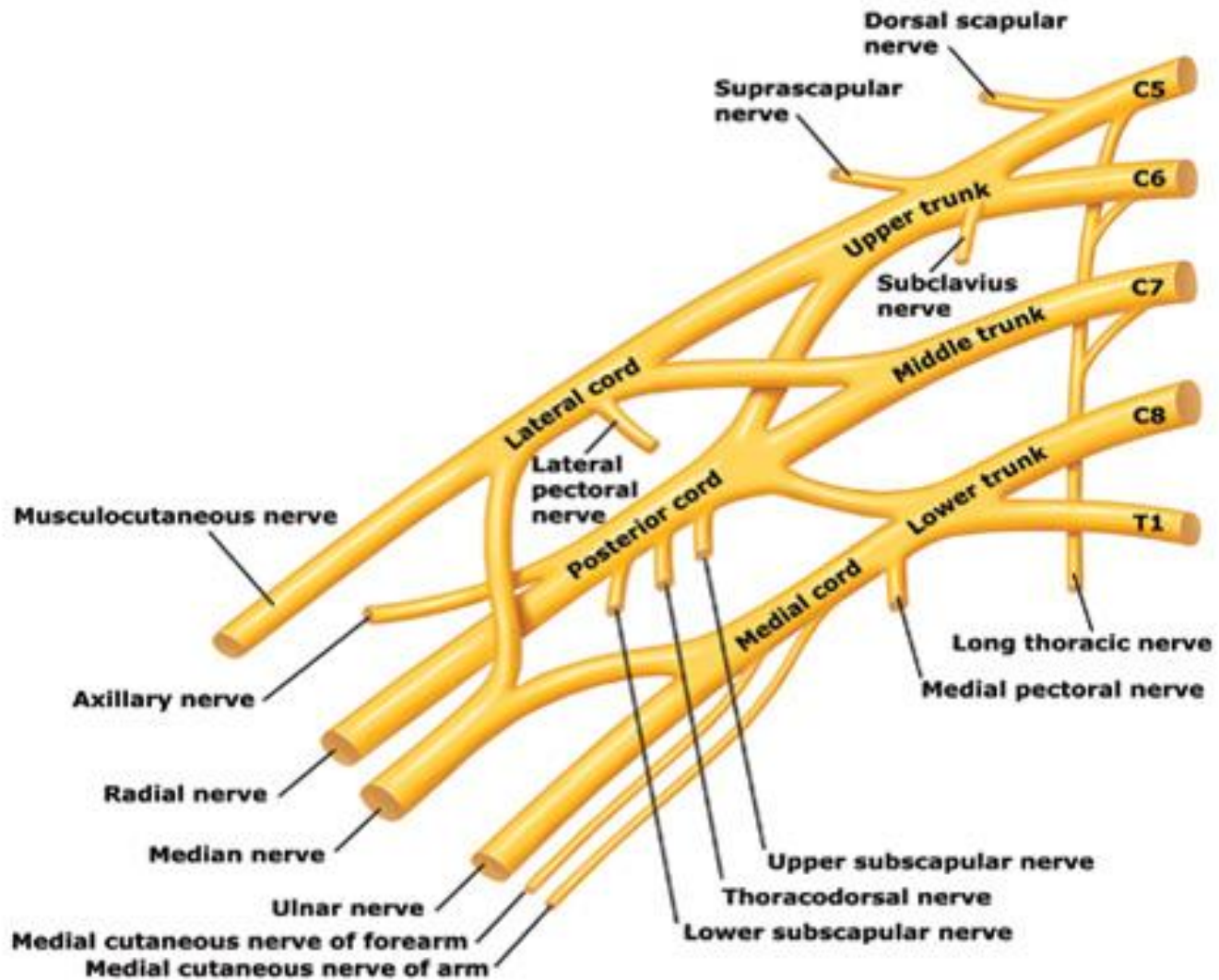
## Rotator cuff muscles

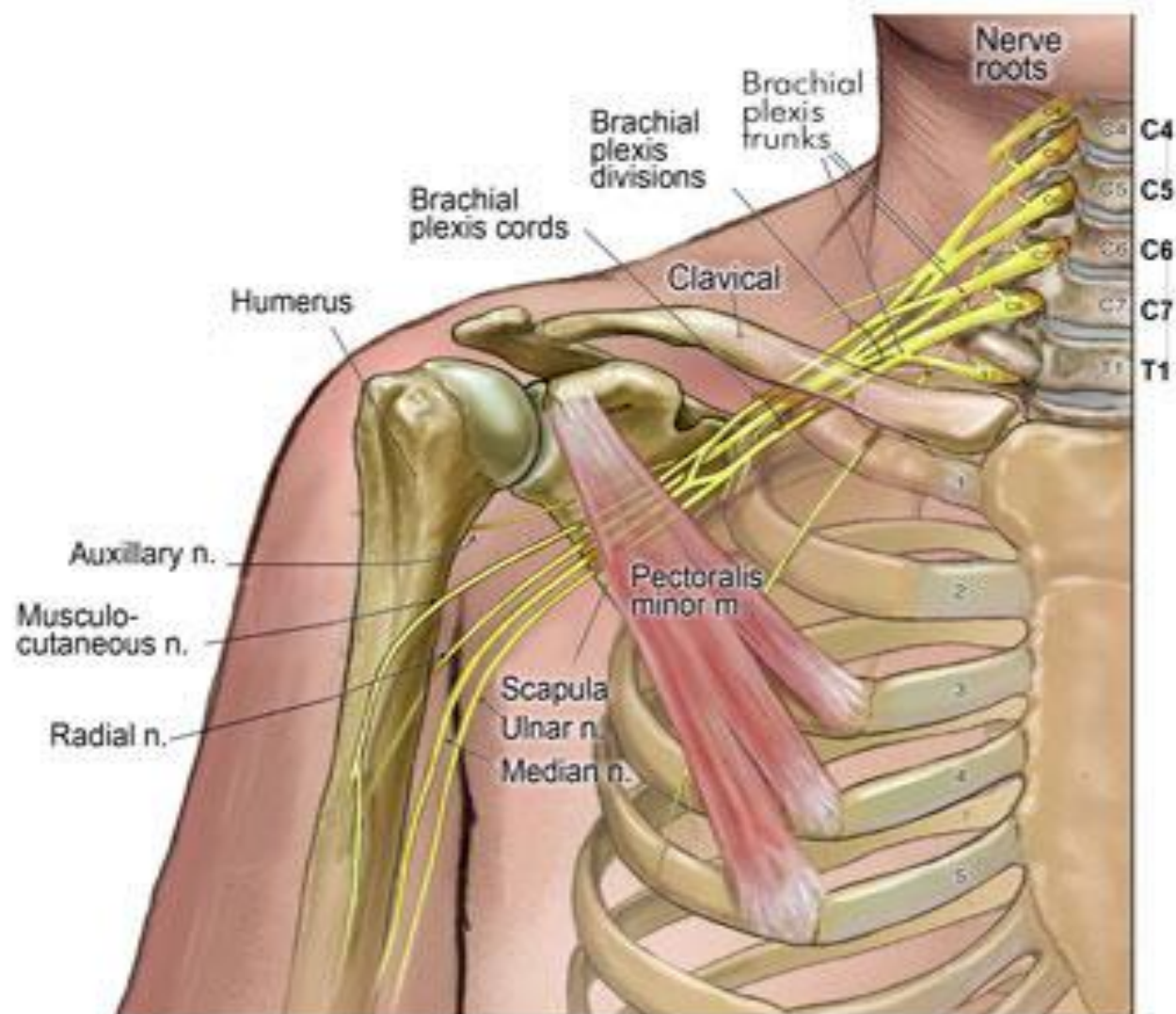


Posterior

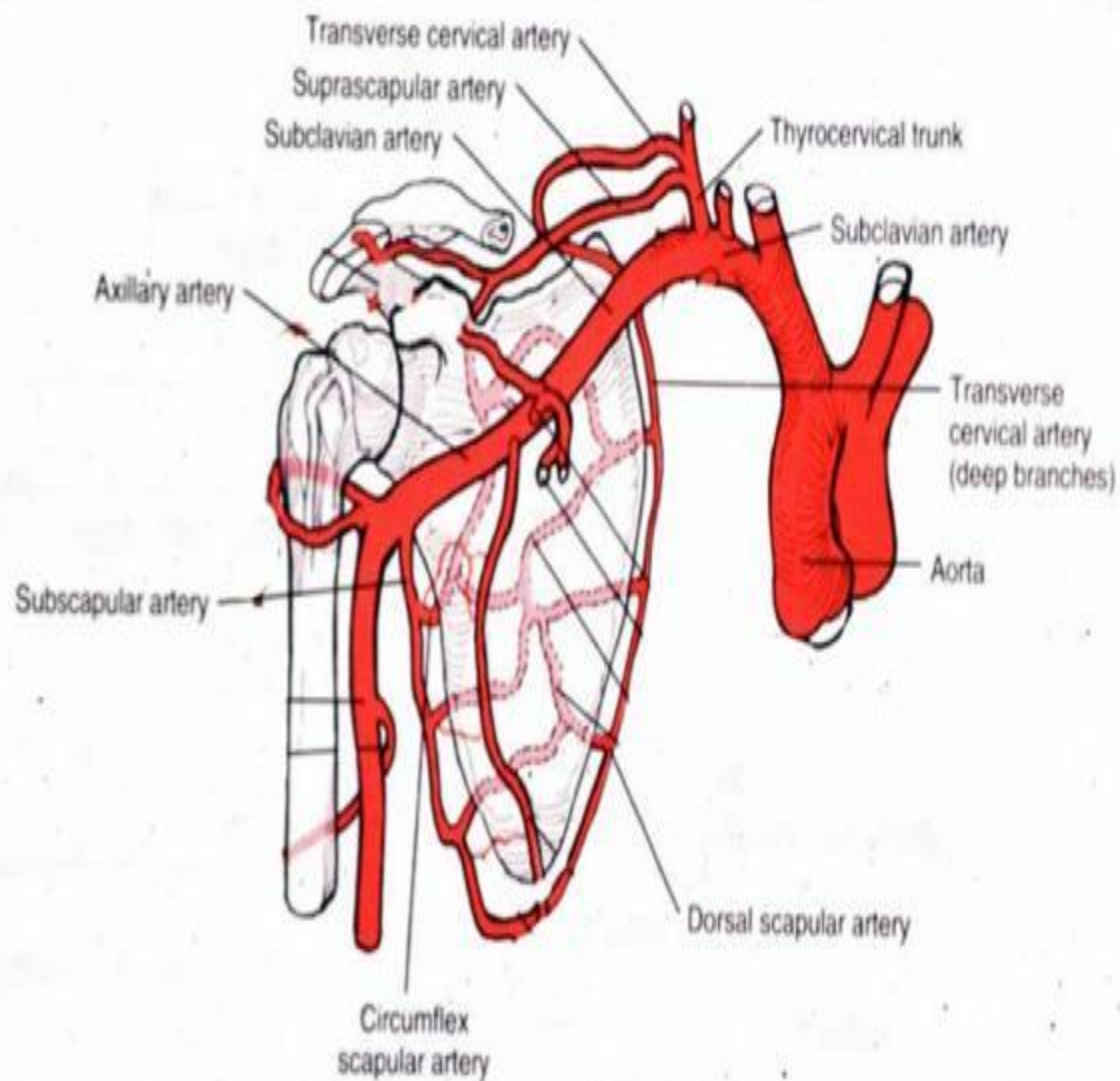


# The brachial plexus



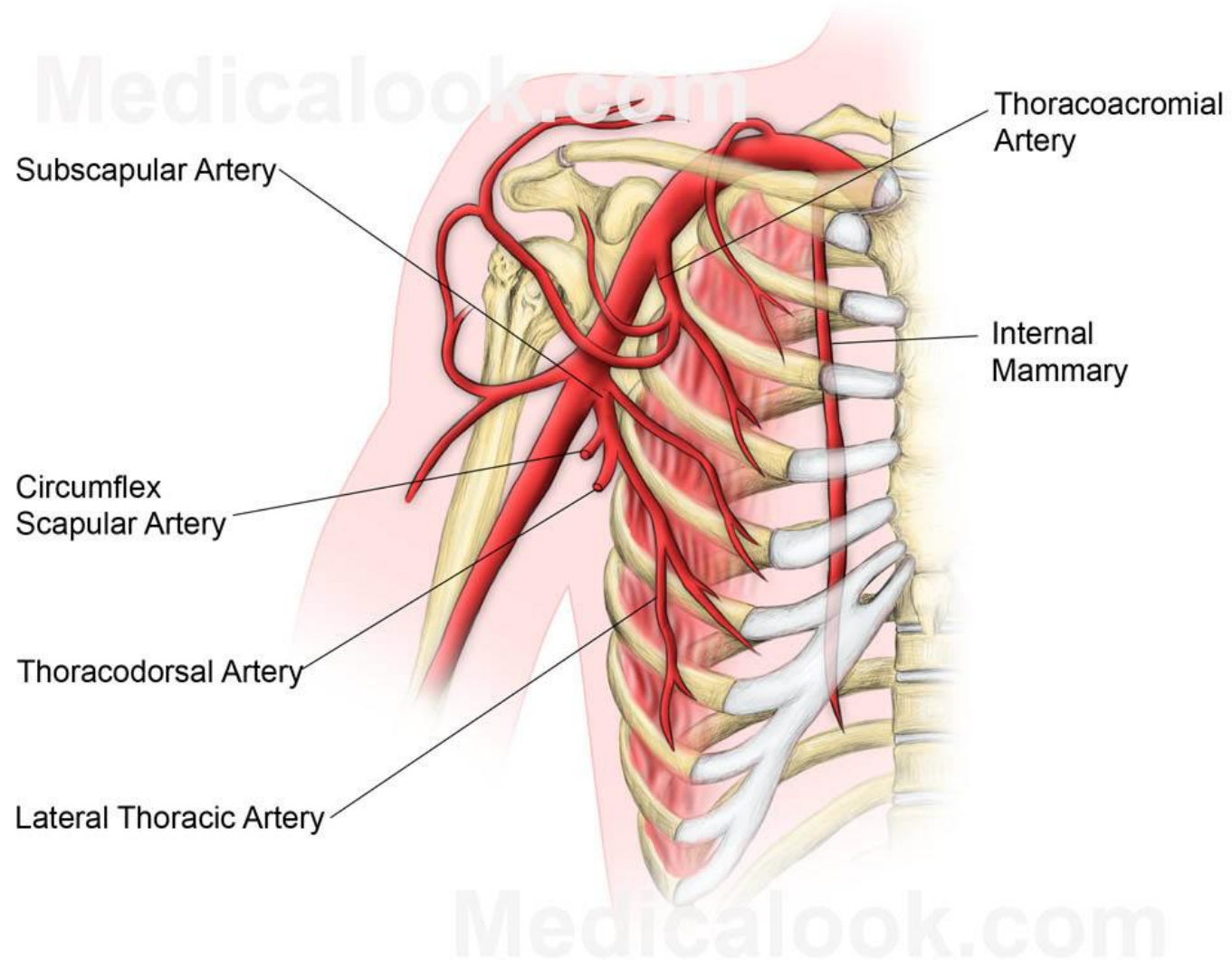


**Fig. 2**





# Vascular supply



شکرا جزیرا