



# Anatomy

## HAYAT BATCH

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lecture no : 3

# Bones of Upper Limb

يعني دائرة

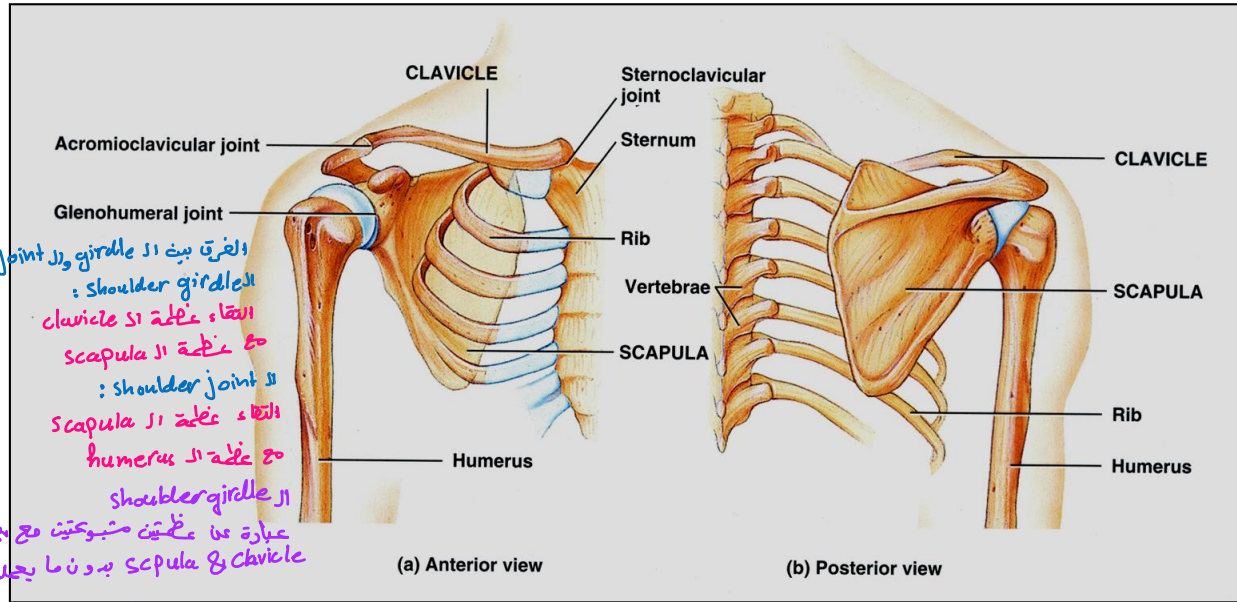
# The Shoulder (Pectoral) Girdle

articulation : مفصل

joint → مفصل

\* It is formed by the bones that connect the axial skeleton (i.e. sternum) with the appendicular skeleton (i.e. Humerus or bone of arm).

\* It is formed of 2 bones: clavicle & scapula.



الفرق بين الـ girdle والـ joint  
 : الـ shoulder girdle  
 الـ clavicle عظمة الـ  
 scapula عظمة الـ  
 : الـ shoulder joint  
 الـ scapula عظمة الـ  
 humerus عظمة الـ  
 الـ shoulder girdle  
 عبارة عن عظمتين متباعدتين مع بعضهن  
 بدون ما يجلو مفصل  
 الـ scapula & clavicle

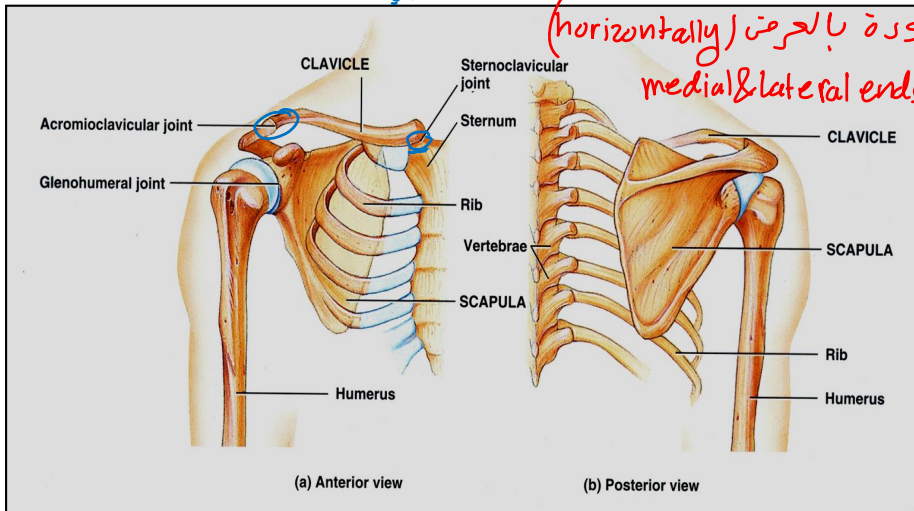
لكن الـ clavicle الـ scapula ر 2 يجل joint

# 1. The Clavicle

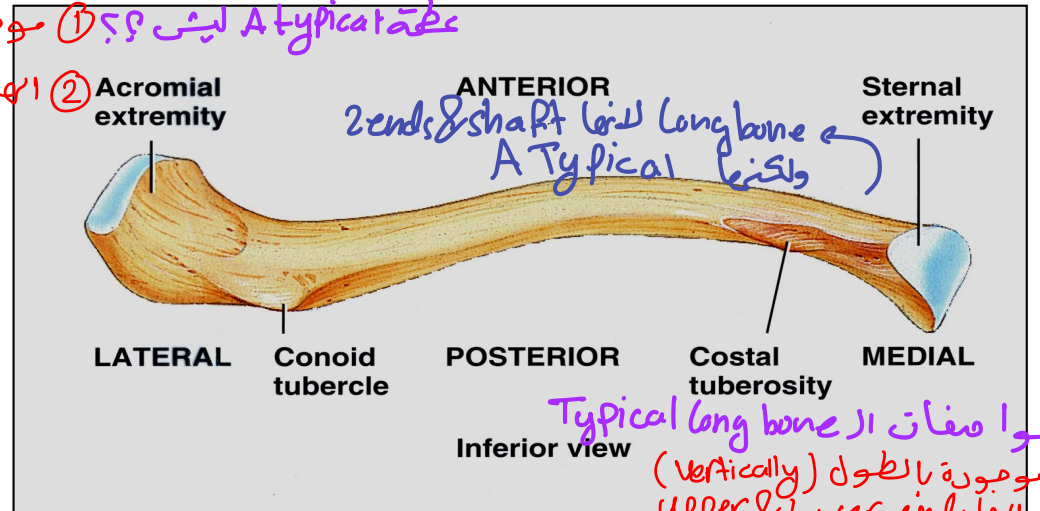
- \* The clavicle is the anterior bone of pectoral girdle.
- \* It has two ends → medial and lateral.
- \* The medial end: is called the sternal end, it is rounded & articulates with manubrium part of sternum to form **sterno-clavicular joint**.
- \* The lateral end: is called acromial end, is broad and flat & articulates with the acromion process of scapula to form **acromio-clavicular joint**.

→ Sterno-clavicular joint  
 Triple S → synovial نوحه  
 → saddle شكله زي السرج  
 Triple S joint  
 → saddle شكله زي السرج

له عظمة من الحافة الخارجية من الـ scapula وطالعة من اهل الجانب  
 اكتلفي من

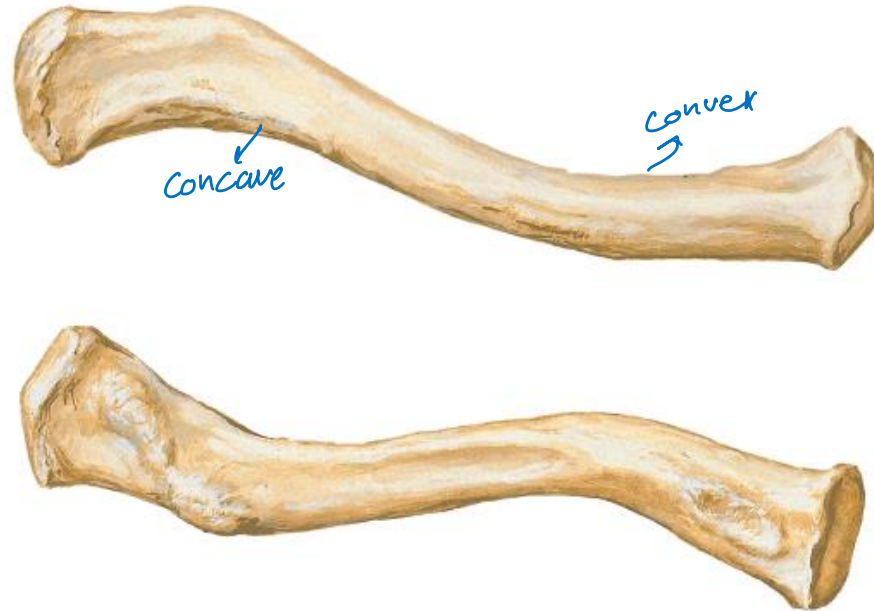


عظمة A typical ليس ؟؟ ① موجودة بالحرف (horizontally)  
 ② لها medial & lateral ends



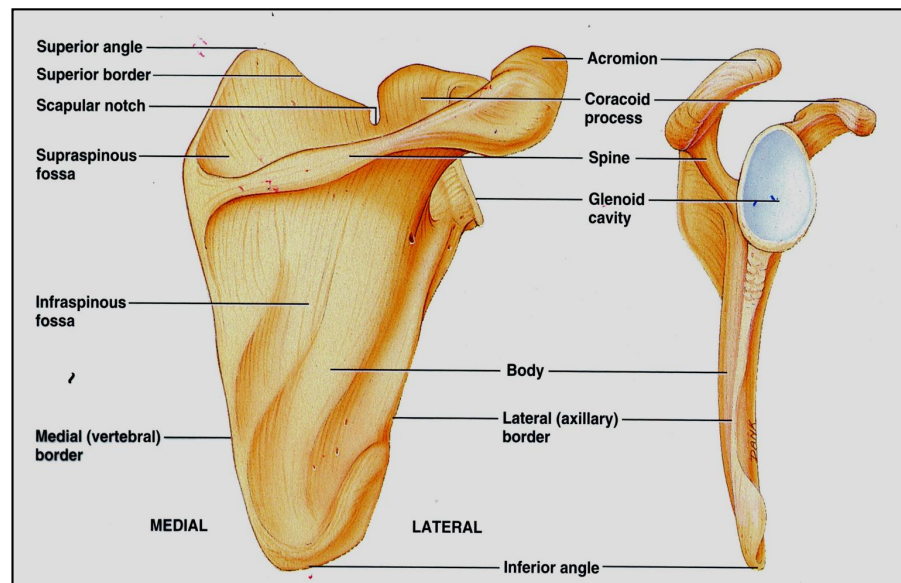
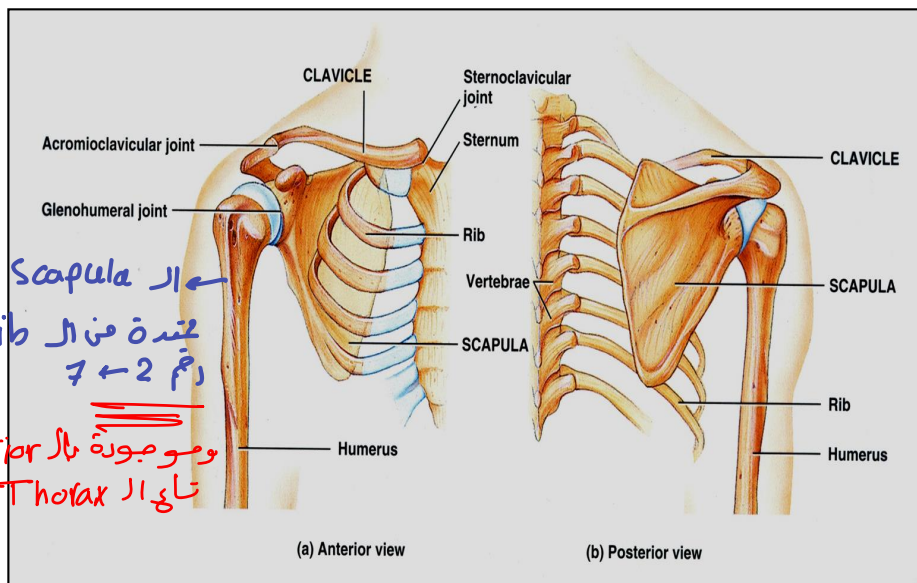
\* The medial two-thirds of the clavicle is **convex anteriorly**, whereas the lateral one-third is **concave anteriorly**. → Convex posteriorly

\* The **superior surface** of the clavicle is **smooth**, whereas the **inferior surface** is **rough**.



# 2. The Scapula

- \* The scapula is the posterior bone of pectoral girdle.
- \* It is a large, flattened, triangular bone.
- \* It lies on the posterior wall of thorax, overlapping the 2<sup>nd</sup> – 7th ribs.
- \* It has two surfaces: anterior (costal) and posterior.



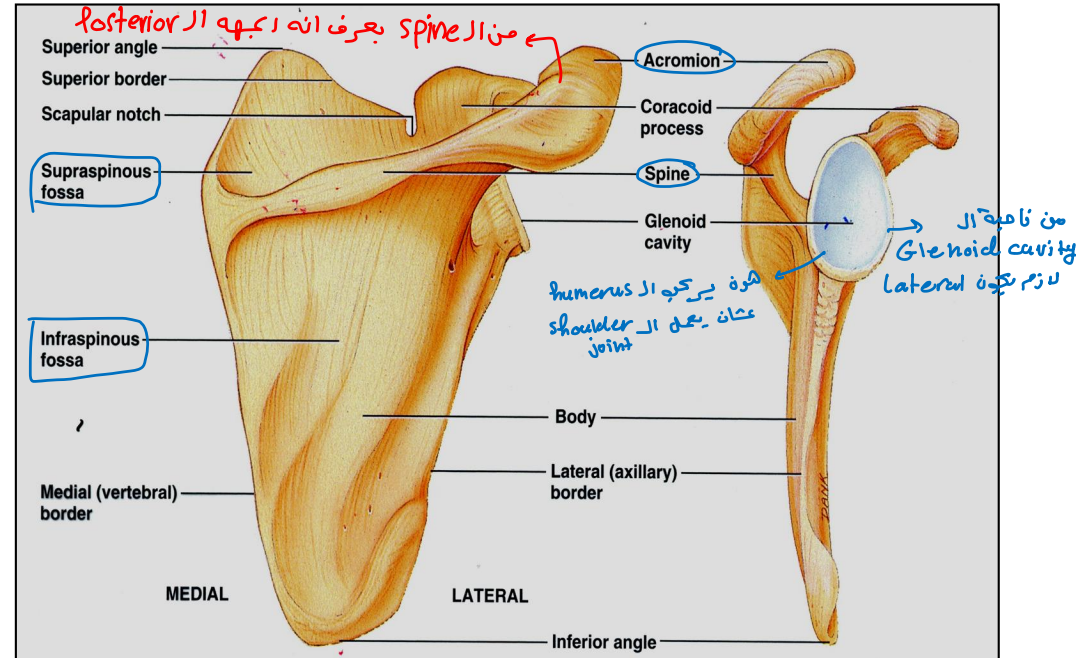
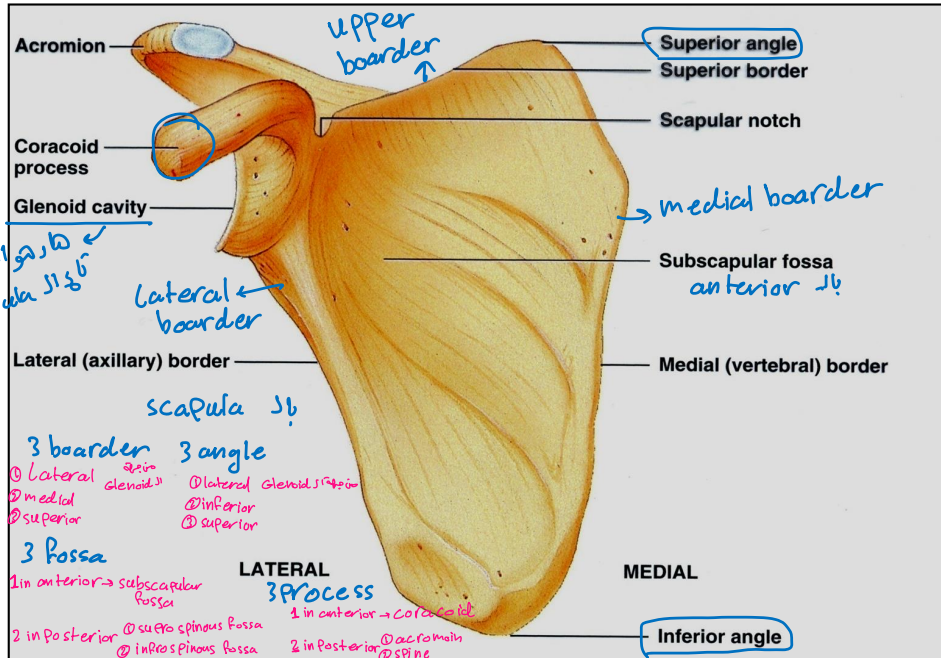
\* It has three angles: **superior, inferior & lateral.**

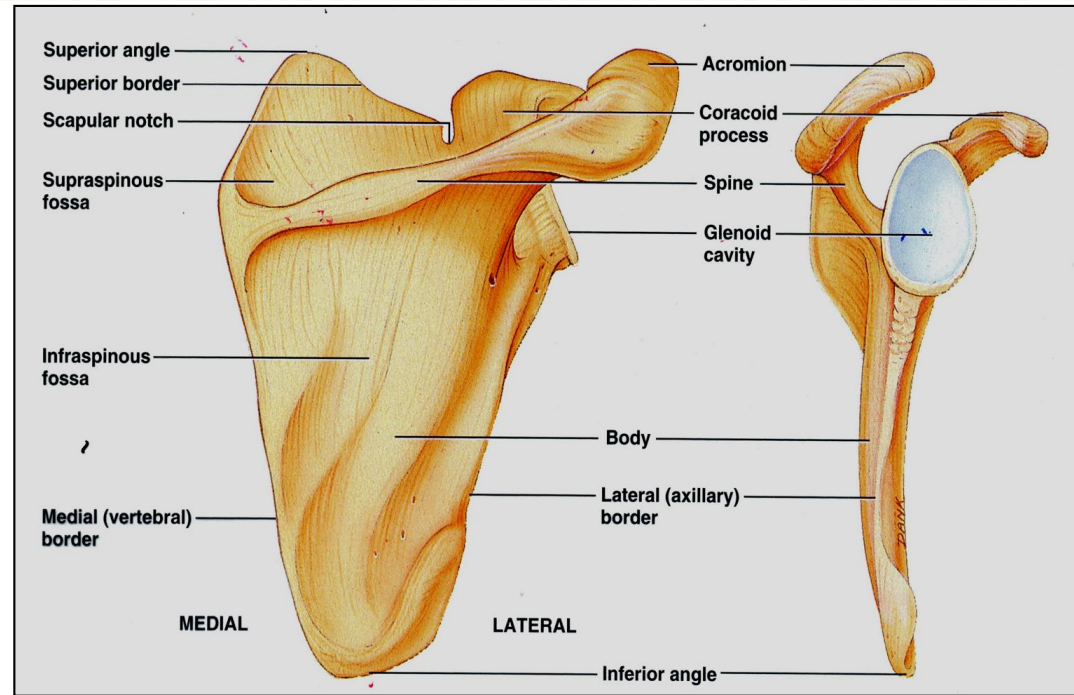
\* It has three processes: **spine, acromion process & coracoid process.**

\* **The costal (anterior) surface forms the subscapular fossa.**

Process: بروز

Glennoid: Shoulder

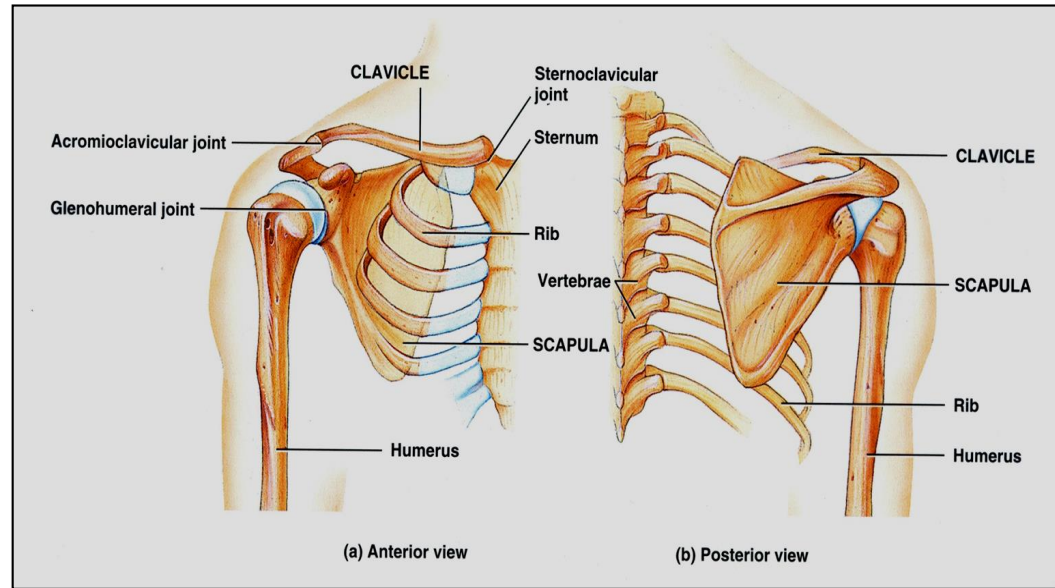
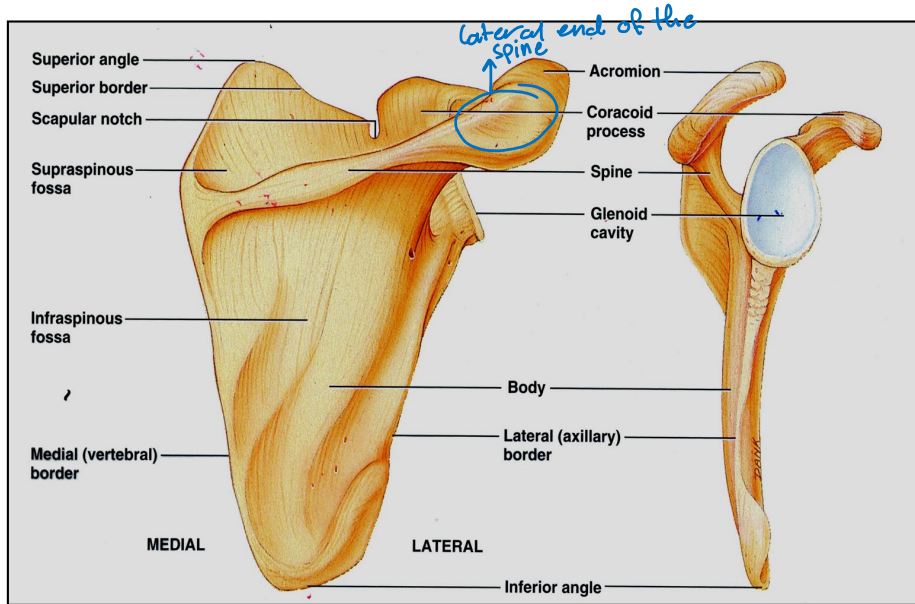




\* The posterior surface is divided into a smaller upper area → the **supraspinous fossa** & a larger lower area → the **infraspinous fossa**, by a shelf-like projection, called the **spine of the scapula**.

\* The lateral end of the spine projects as a flattened, expanded process called the **acromion process**.





\* **The coracoid process** arises from lateral end of superior border.

\* The lateral angle of the scapula presents the **glenoid cavity** for articulation with head of the humerus (in shoulder joint). *2 → Acromioclavicular joint*

# 3. The Humerus

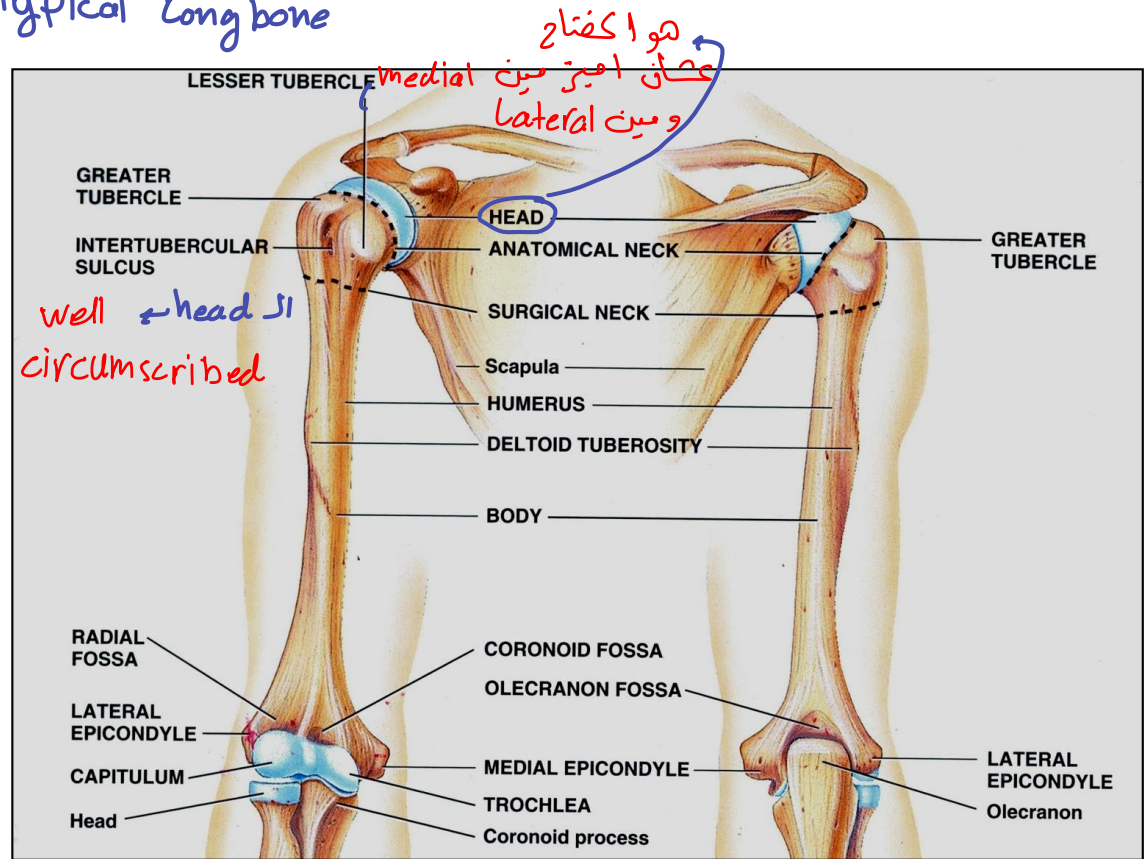
↳ Typical Long bone

\* This is the bone of the arm.

\* It has an upper end, a shaft & a lower end.

A. The upper end: shows:

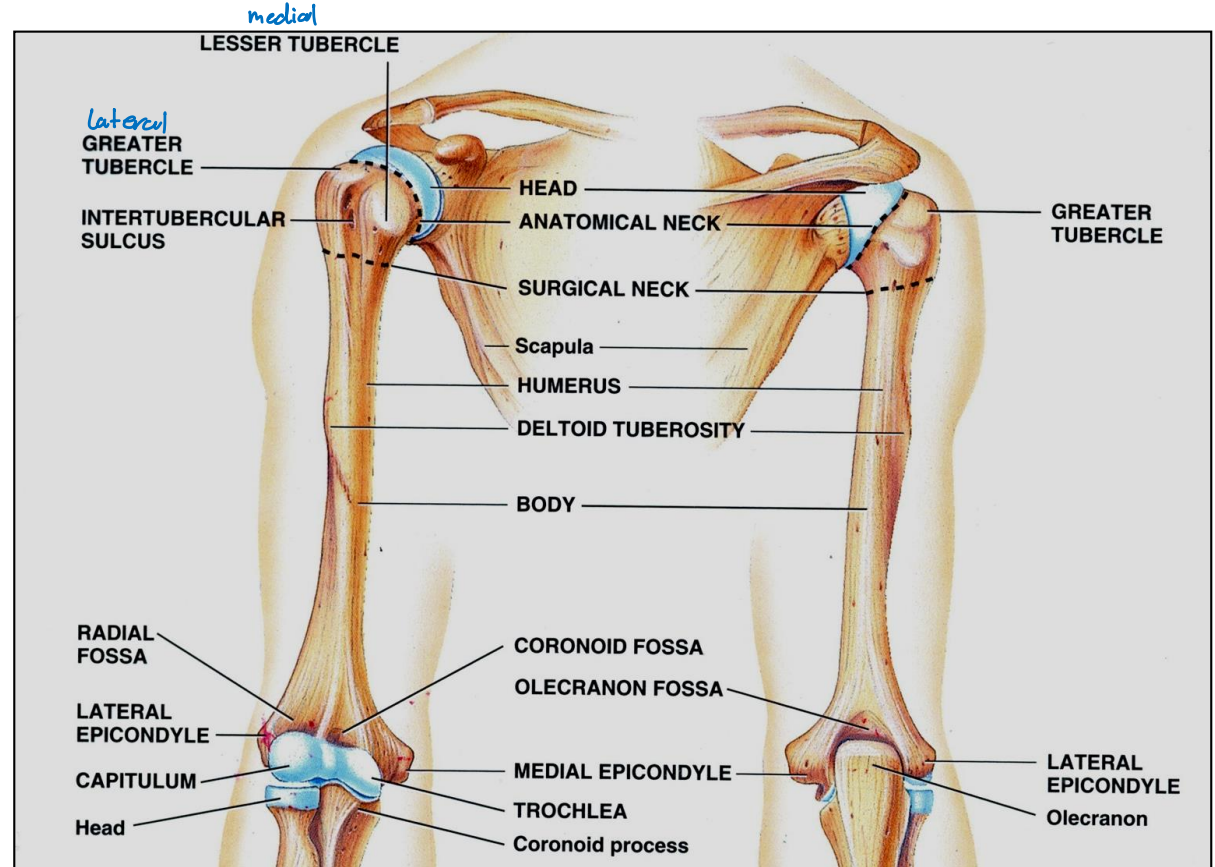
1. **The head**: which is less than half of a sphere. It articulates with the glenoid cavity of scapula to form shoulder (glenohumeral) joint.



**2. The greater tuberosity (tubercle)**  
→ which is a lateral projection.

**3. The lesser tuberosity (tubercle)**  
→ which is an anterior projection.

**4. The bicipital groove (inter-tubercular sulcus)** → separates the 2 tuberosities.

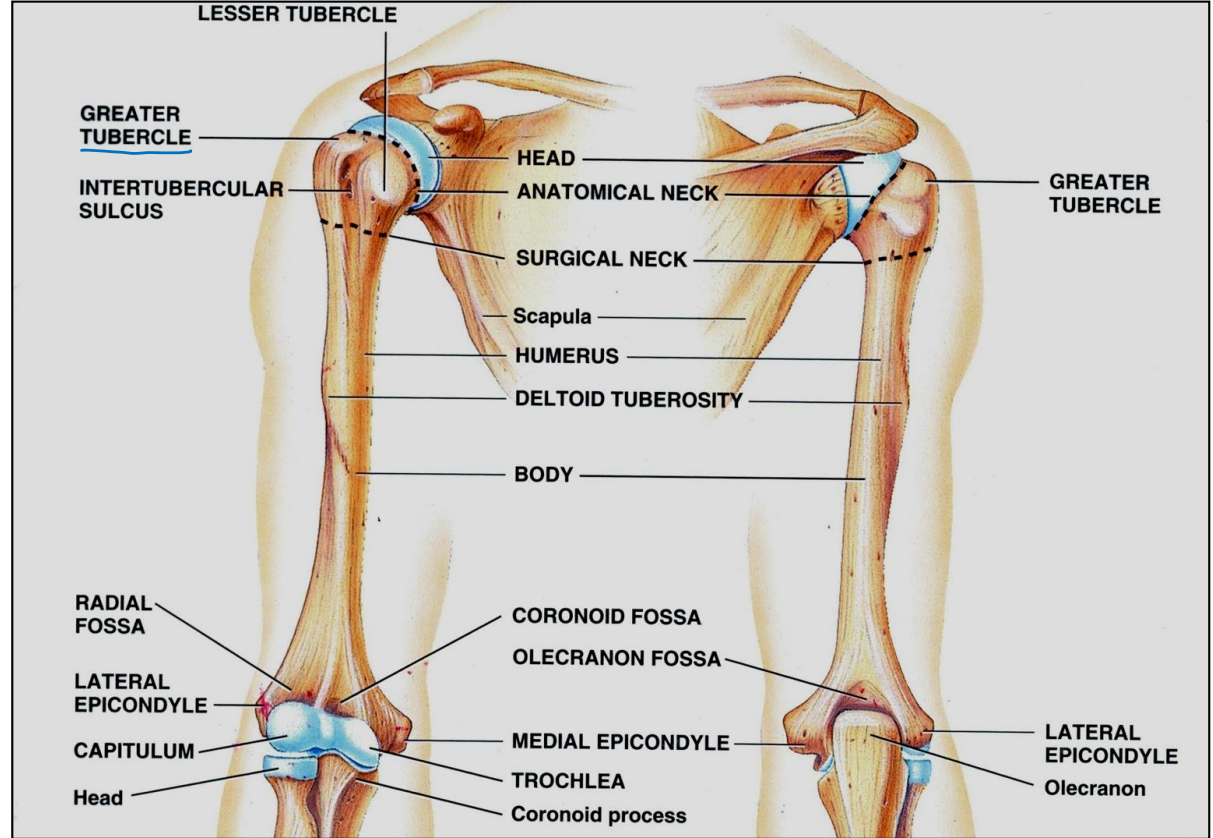


## 5. The anatomical neck → is the

margin of the head that separates it from the tuberosities.

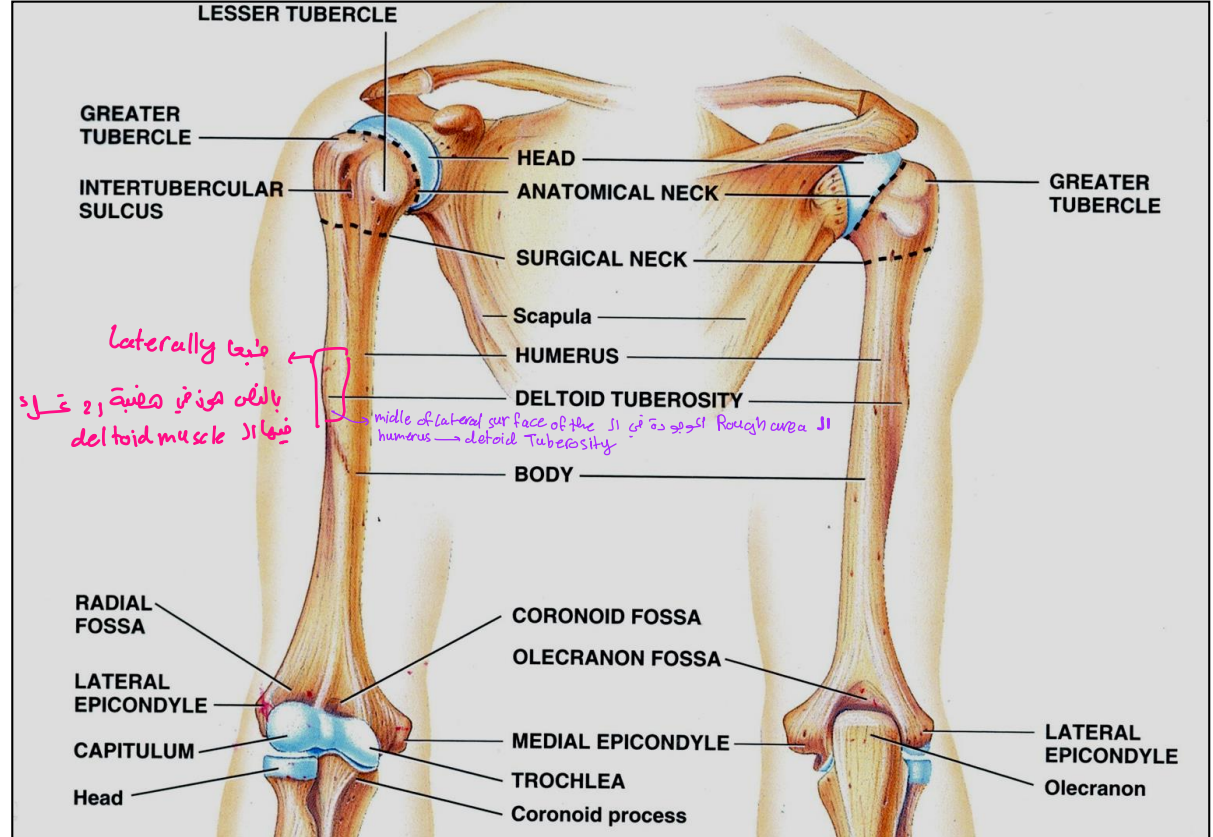
## 6. The surgical neck → is the

constriction that separates the upper end from the shaft.



ليست اسمها surgical neck لأنها اسمها منطقة يمكن تنكس باء humerus ولا يوجد فيها vessels و nerves  
 لها تنكس 21 تعال Tear بال vessels و nerves فلازم يكون فيه تدفق جبرامي من تلكه دجاجة ① دكتور عظام  
 ② دكتور ج و اعصاب  
 ③ دكتور اوبية دموية  
 التي وضع الـ surgical neck مما تسمى الـ surgical neck وليس الـ Anatomical  
 Dr Ashraf Ramzy

**B. Shaft (body):**  
**Laterally** → it  
**presents about its**  
**middle a rough**  
**area** called the  
**deltoid tuberosity.**



Condyle ←

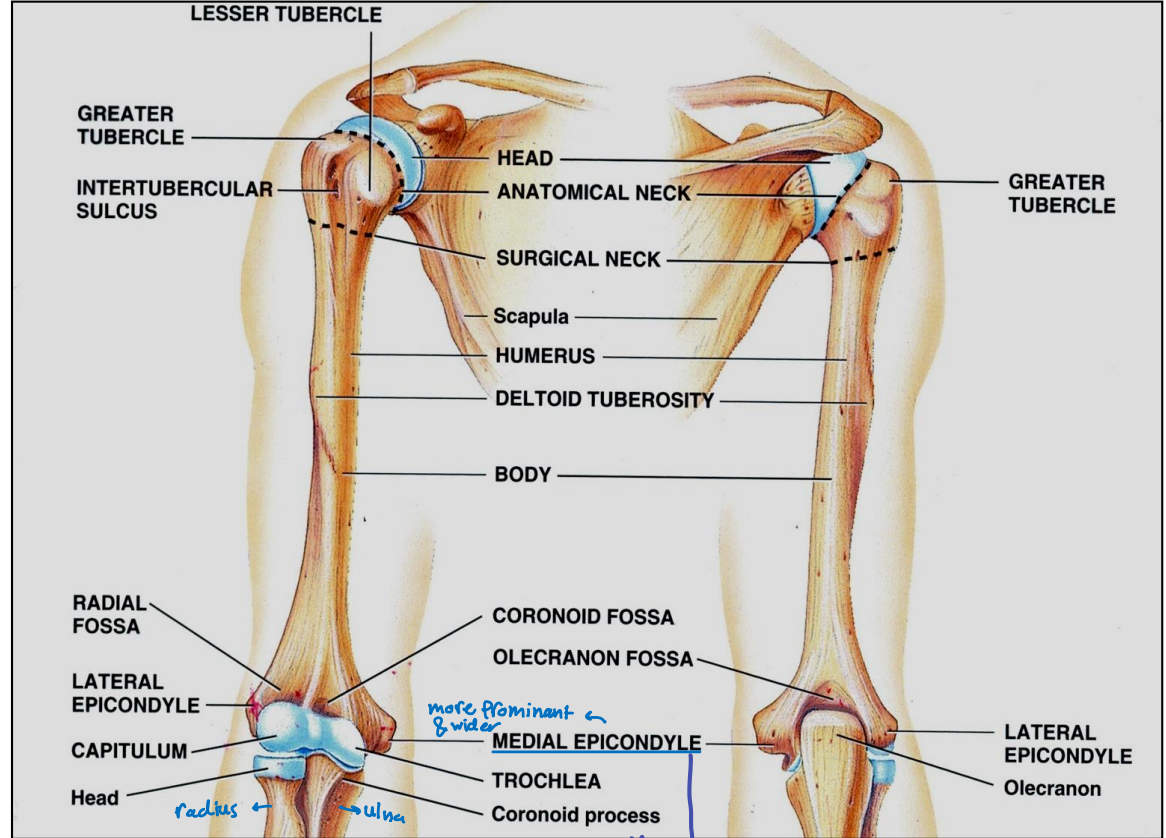
## C. The Lower end: shows:

### 1. Two articular surfaces:

a. The capitulum → a convex surface laterally. It articulates with the radius in humero-radial articulation.

b. The trochlea → a pulley-shaped surface medially. It articulates with the ulna in humero-ulnar articulation.

\* Both the humero-radial & humero-ulnar articulations form the elbow joint.



Ulnar Nerve ← dangerous Area of medial epicondyle of humerus

الغير متفصلين

## 2. Two non-articular side projections → the medial & lateral epicondyles.

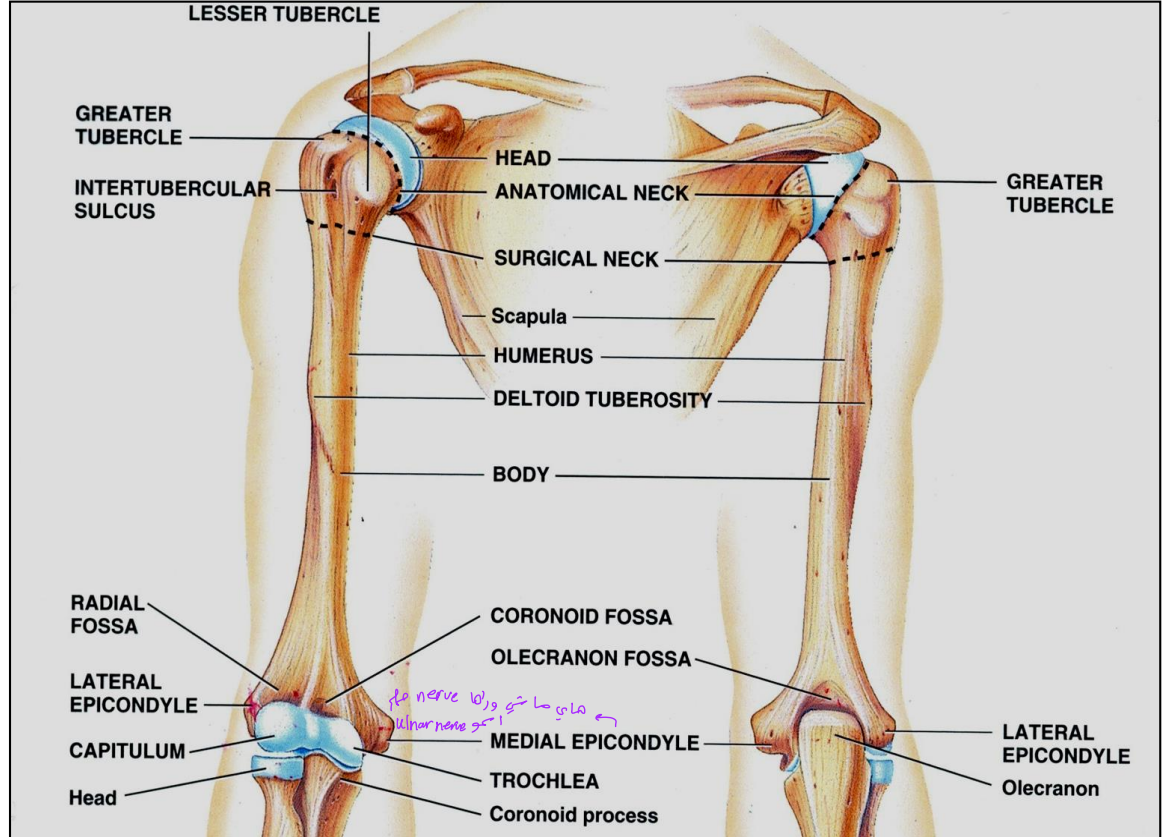
\* The medial epicondyle is more prominent and wider than the lateral, and is crossed on its posterior surface by ulnar nerve.

بارزة

يعبر من السطح الخلفي تبع

ال medial epicondyle ← nerve مهم اسمه ulnar nerve

وعناها بارزة بتكون معرفة للكر اكثر وحسرها خطير لانو  
نر يجعل ال nerve



### 3. Three depressed fossae:

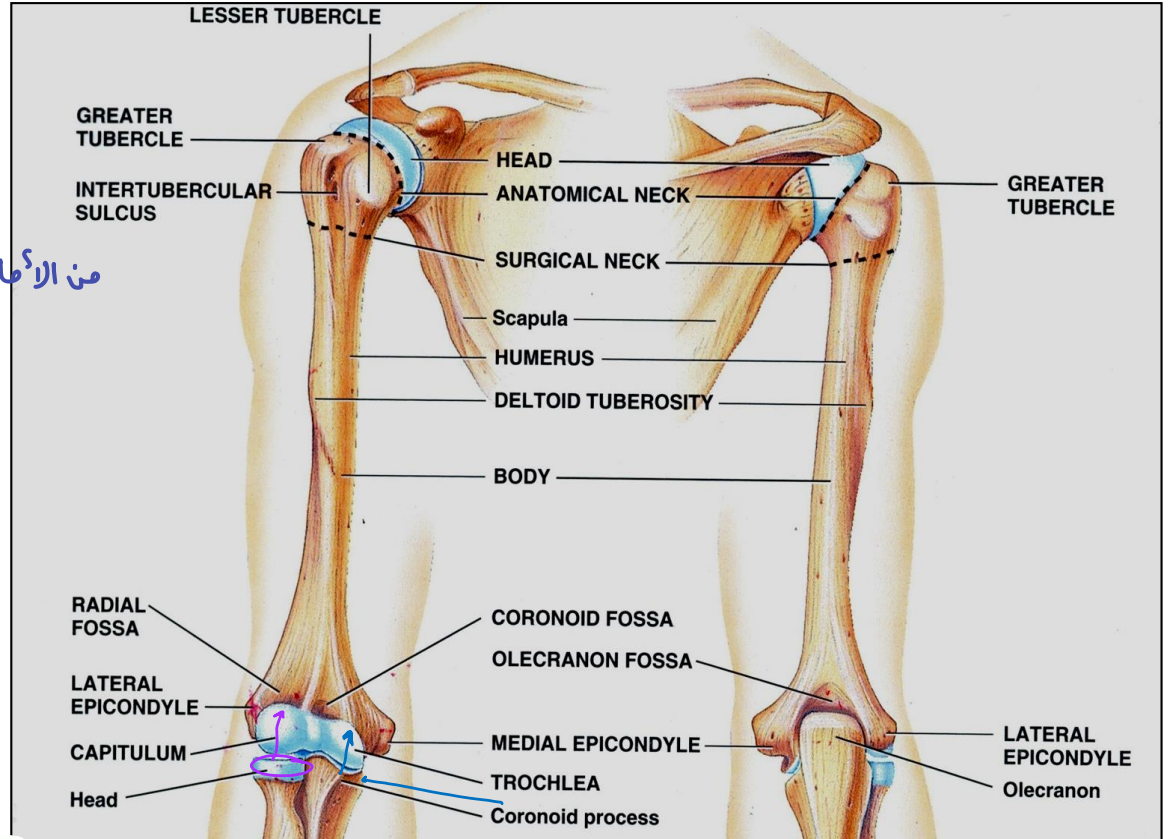
a. Radial fossa →  
above capitulum  
anteriorly.

b. Coronoid fossa →  
above trochlea  
anteriorly.

c. Olecranon fossa →  
above trochlea  
posteriorly.

من الأمام

من وراء





بى اعلى Flexion ① ال Coronoid Process تاي علة ال humerus رى يفوت لىفوت

بعلة ال humerus فوف ال Trochlea شوف هاد اللون على رمة ( • )  
بنطقة ال coronoid fossa

② ال head تاي علة ال radius رى يطلع لىفوت ويفوت بعلة ال humerus  
فوف ال capitulum بنطقة ال radial fossa شوف هاد اللون بالرسمة ( • )

③ فب ال Process ال back of the humerus تاي ال olecranon process  
رى تىفل فب fossa ال olecranon fossa  
لـ ال fossa تاي فب ال posterior surface ال humerus

# 4. The Radius

elbow joint ← ال radius وال ulna يبعوا ال  
 wrist joint ← ال radius بين ر2 توحه ال  
 ال joints بين ال radius وال ulna ←  
 Superior radioulnar joint ←  
 middle radioulnar joint ← interosseous ال  
 inferior radioulnar joint ←

\* This is the lateral bone of the forearm.

\* It has an upper end, a shaft & a lower end.

A. The upper end: shows:

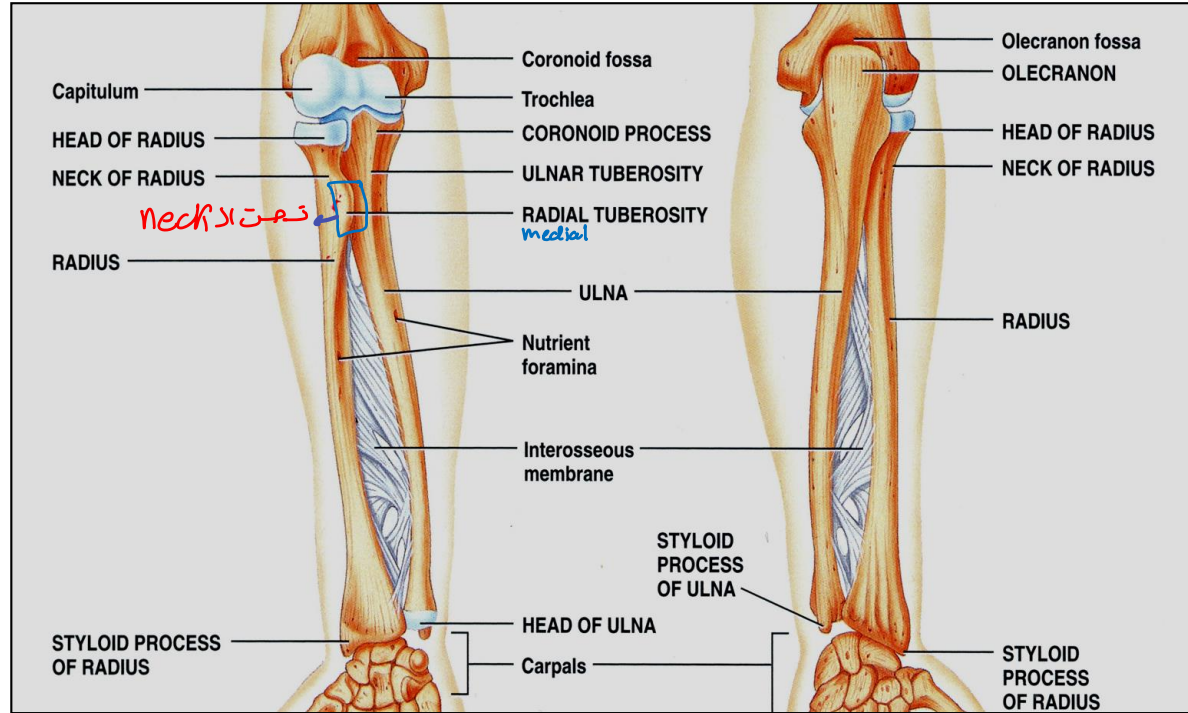
1. The head:

\* Disc-shaped.

\* It articulates superiorly with the capitulum of the humerus.

2. Neck.

3. Radial tuberosity: a projection on ulnar side of shaft below the neck.



**B. Shaft (body):** في الجسم لا سميت الحافة الحادة في السطح الداخلي لل radius وال ulna

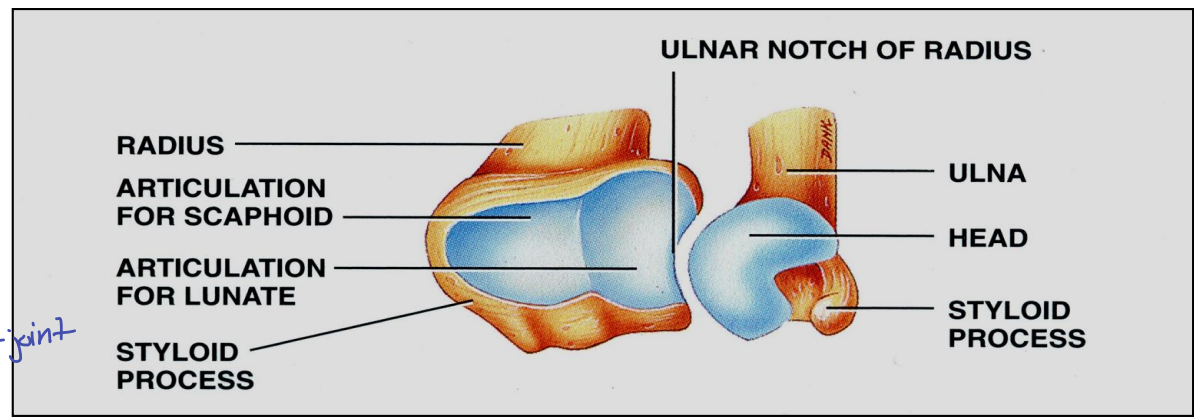
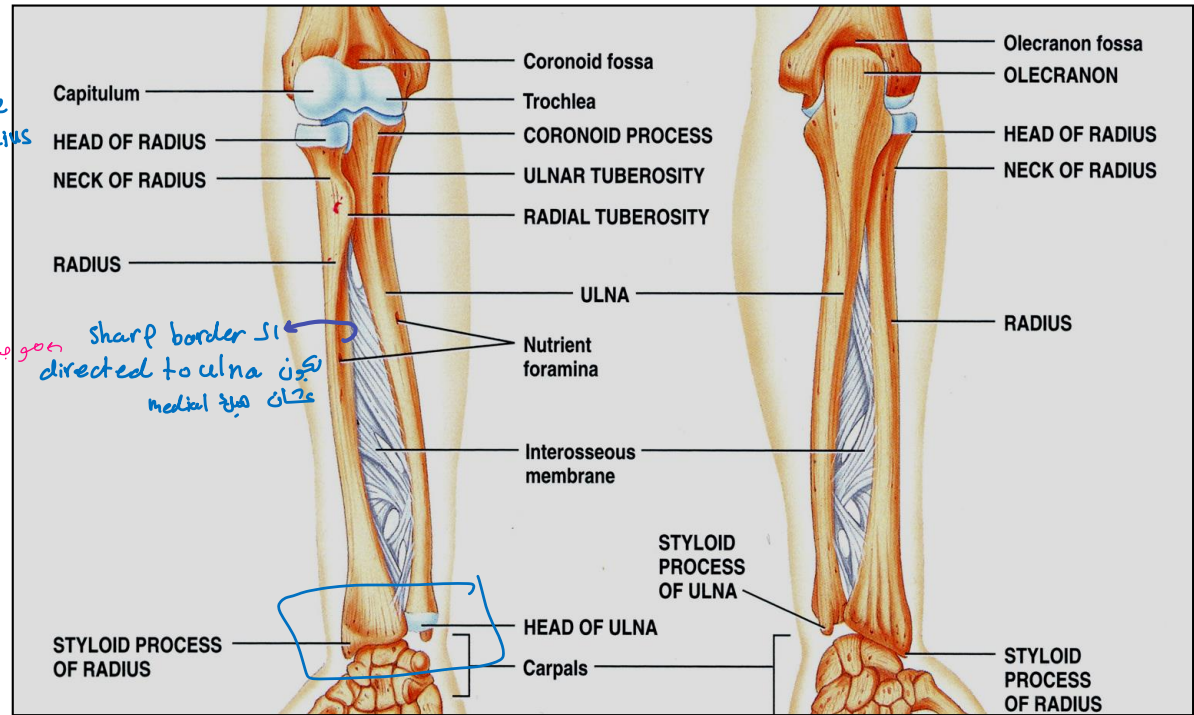
\* Has a sharp medial border, the interosseous border, to which the interosseous membrane is attached.

**C. Lower end:** shows:

1. The medial surface of lower end presents the ulnar notch, for articulation with head of ulna to form inferior radio-ulnar joint.

2. Styloid process. → lateral

3. The inferior surface of the lower end articulates with scaphoid bone (laterally) and the lunate bone (medially). → wrist joint



# 5. The Ulna

\* This is the medial bone of the forearm.

\* It has an upper end, a shaft & a lower end.

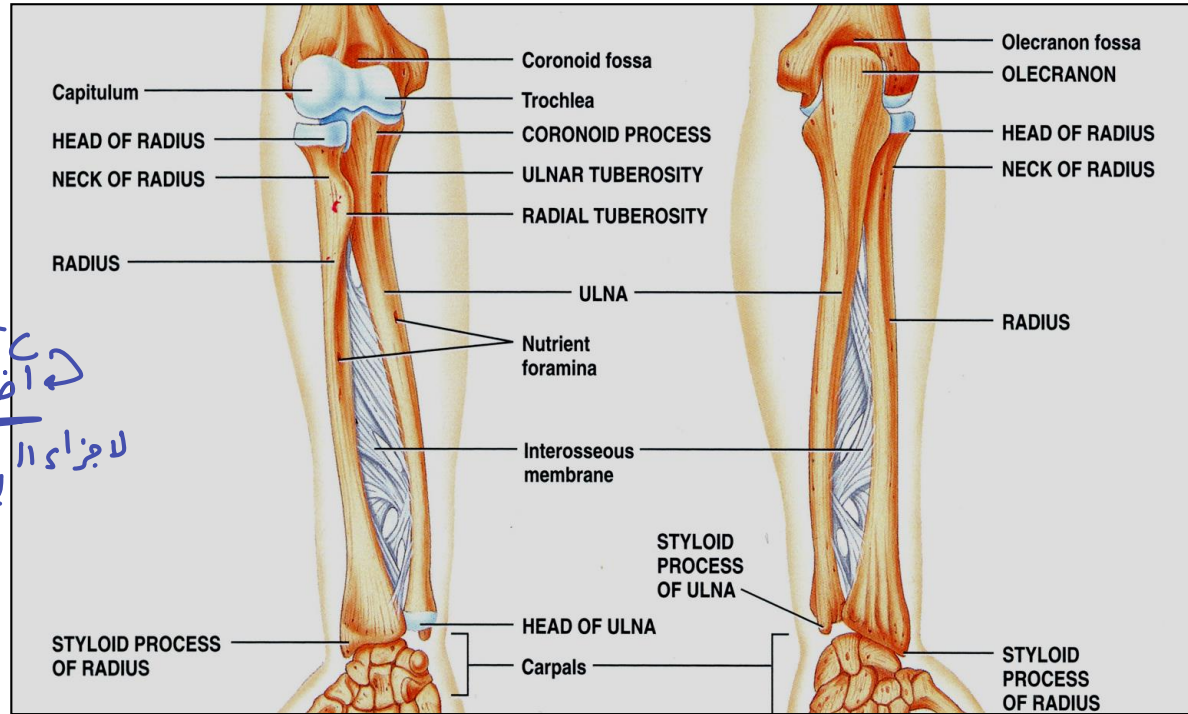
A. The upper end: shows:

**1. The trochlear notch:**

\* A semilunar concavity that lies in the anterior aspect of the upper end of the bone.

\* Articulates with the trochlea of the humerus.

OTC  
↓  
الخصار  
↑  
لاجزاء  
↑  
Upper  
end

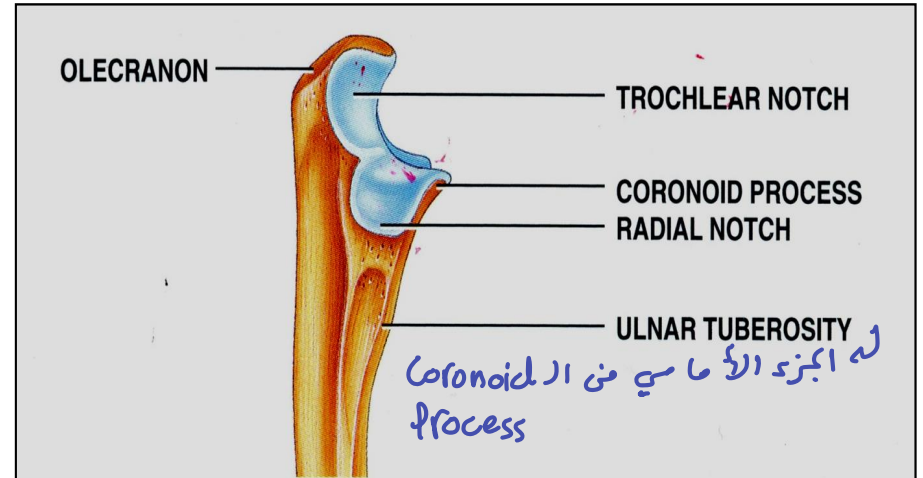


## 2. The olecranon process

→ which forms the prominence of elbow.

## 3. The coronoid process.

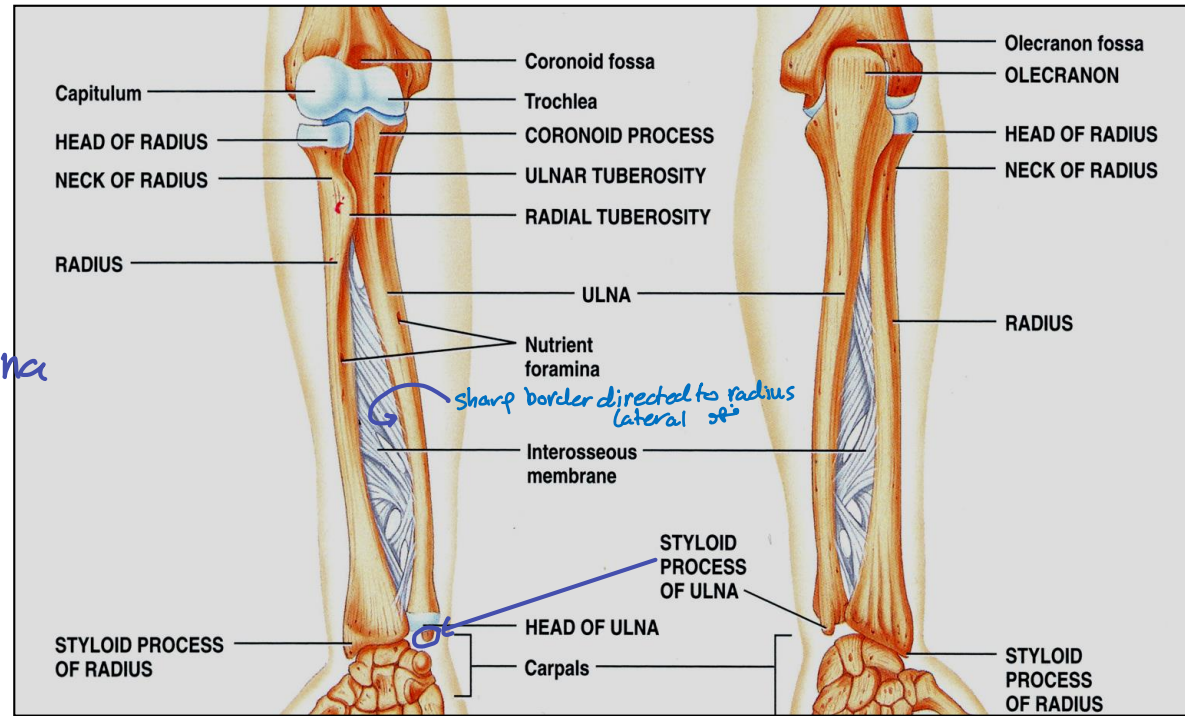
4. The lateral surface of coronoid process presents the shallow radial notch, for articulation with head of radius to form superior radio-ulnar joint.



## B. Shaft (body):

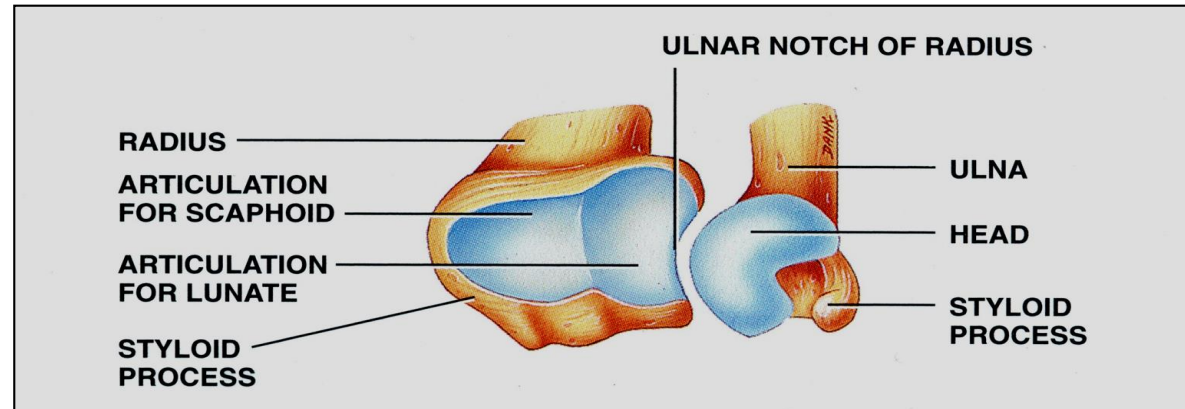
\* Has a sharp lateral border, the interosseous border, to which the interosseous membrane is attached.

of ulna



## C. Lower end:

\* shows head and styloid process of ulna.



# 6. Bones of Hand

## A. The Carpal Bones (Carpus): → Carpal joint بين يدي

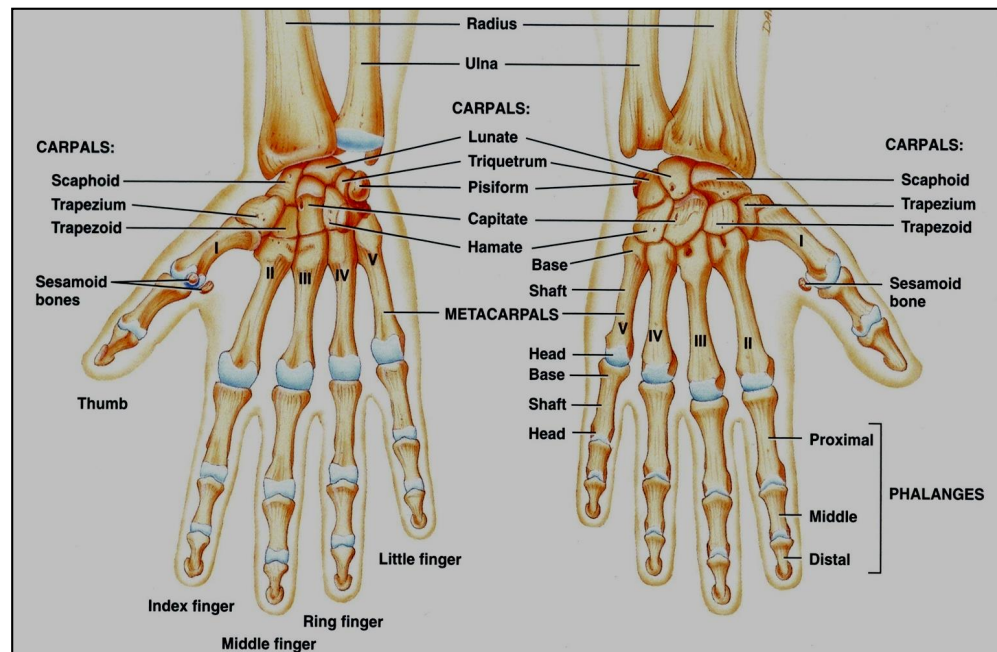
\* The carpal bones are eight bones which are arranged in a proximal and a distal row, and are held firmly together by ligaments.

### A. Proximal row:

\* Is formed by the following bones (from lateral to medial): scaphoid, lunate, triquetrum, and pisiform.

### B. Distal row:

\* Is formed by the following bones (from lateral to medial): trapezium, trapezoid, capitate, and hamate.



## B. The Metacarpal Bones:

→ Carpo-metacarpal joint → *بين ال Carpal و ال Metacarpal*

\* There are five metacarpal bones; the 1<sup>st</sup> one is that of the thumb.

\* Each metacarpal has: a proximal base, a body, and a distal head.

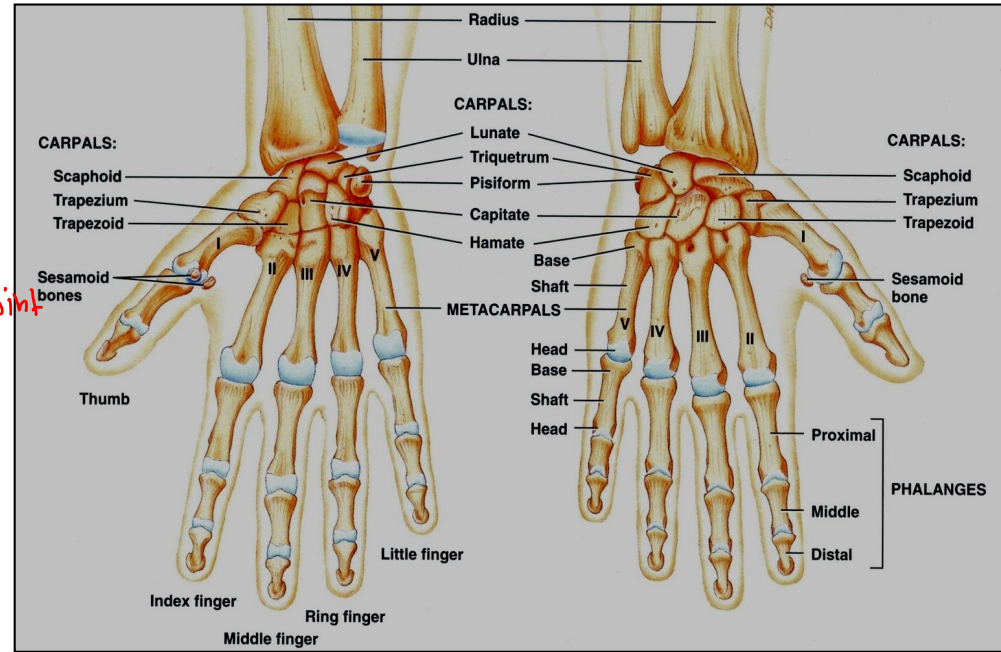
→ *meta carpophalangeal joint*

## C. The Phalanges:

\* There are two phalanges in the thumb and three in each of the medial four digits.

\* Each phalanx has: a proximal base, a body, and a distal head.

*بين ال phalanges و ال interphalangeal joint*





THANK  
YOU

