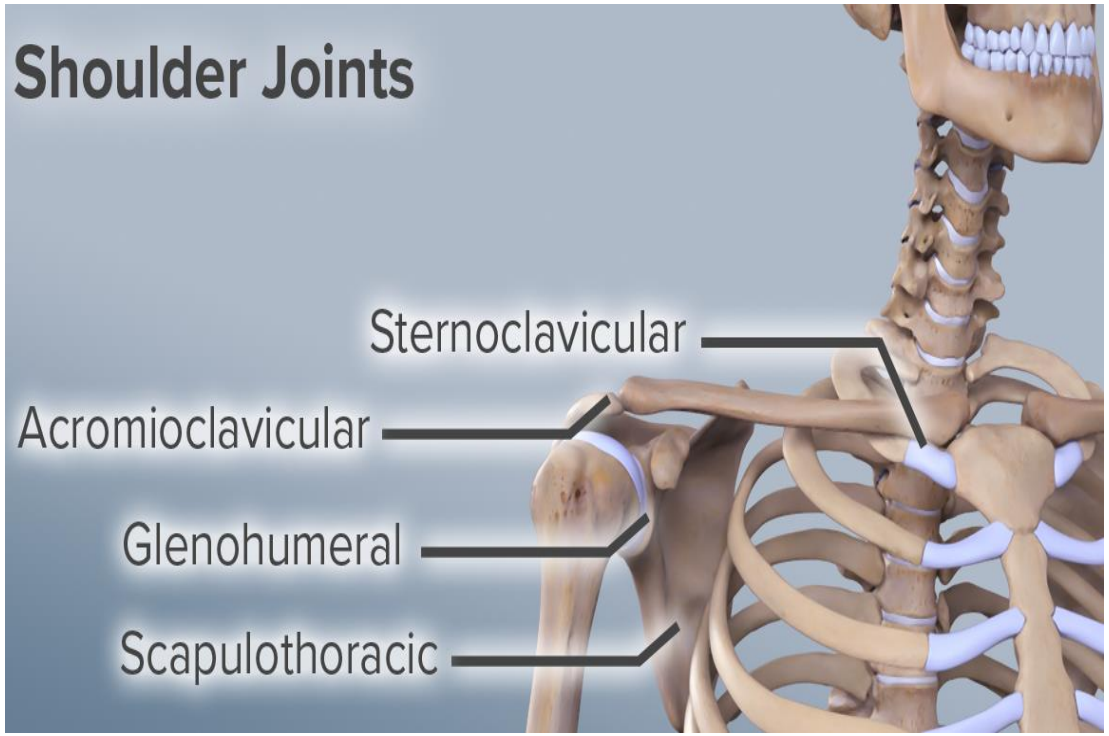
JOINTS OF THE PECTORAL AND SHOULDER REGIONS

DR. SAMER AL-NUSSAIRI

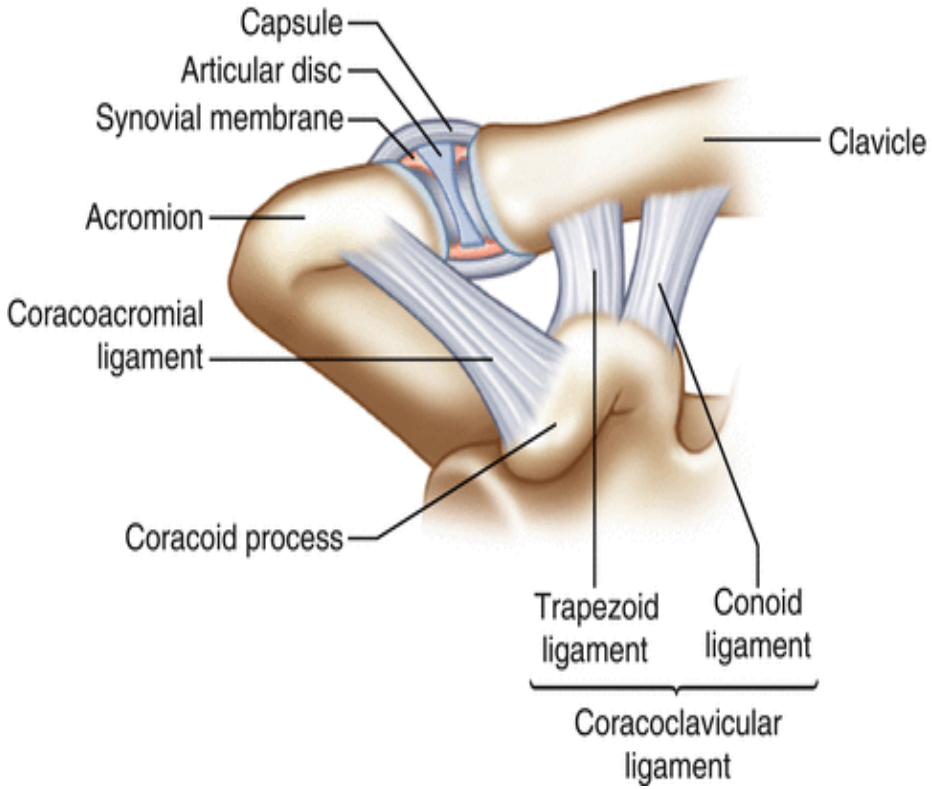
JOINT OF THE PECTORAL REGION AND SHOULDER

1. Acromioclavicular Joint.
2. Sternoclavicular Joint.
3. Glenohumeral Joint.
4. Scapulothoracic Association.



ACROMIOCLAVICULAR JOINT

- It's articulation between acromion process of scapula & lateral end of clavicle.
- It's synovial plane joint.
- There is capsule surrounds the joint & is attached to the margins of articular surface.
- From the capsule, a wedge-shaped fibrocartilaginous disc which projected into the joint cavity from above.
- The capsule lined by Synovial Membrane.



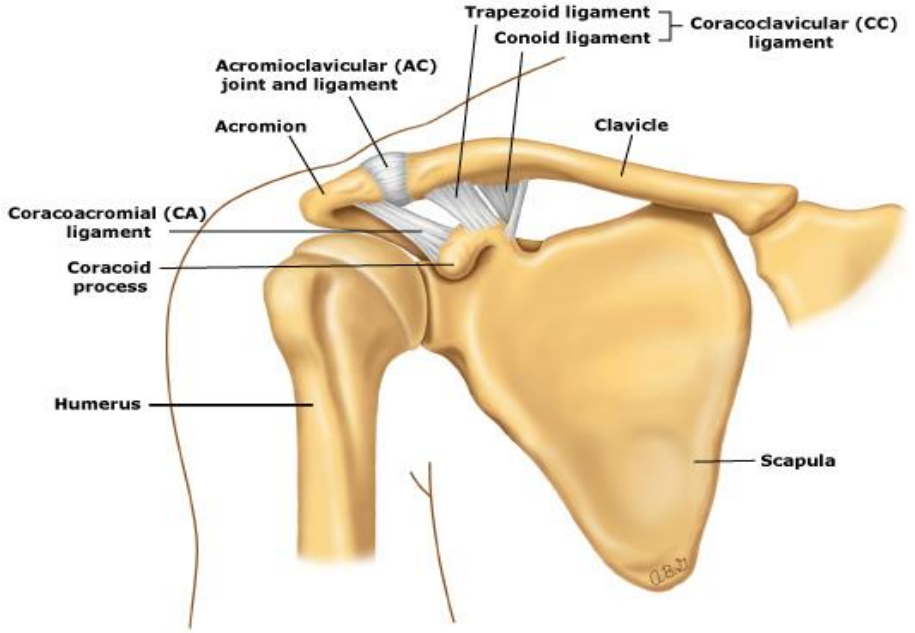
ACROMIOCLAVICULAR JOINT

- The capsule is reinforced by:

1.) Superior and Inferior acromioclavicular ligaments.

2.) Coracoclavicular ligament:

- It's an accessory ligament, it's very strong ligament extends from coracoid process to undersurface of clavicle.
- It's largely responsible for stability of clavicle & AC joint.

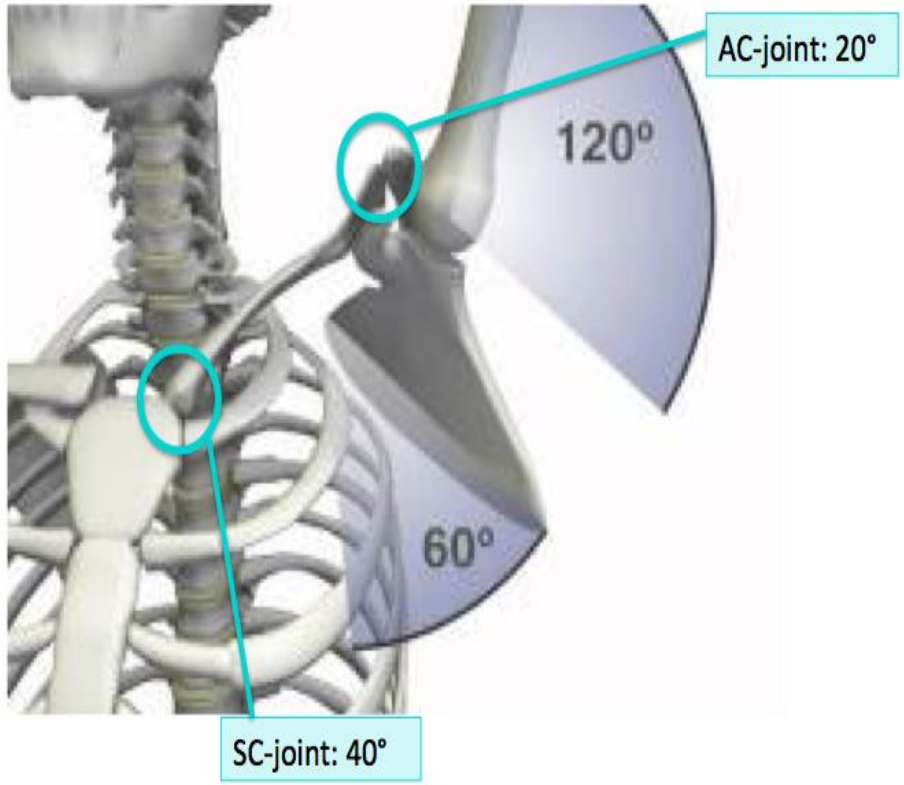


ACROMIOCLAVICULAR JOINT

- Nerve supply: Suprascapular nerve.
- Movement:

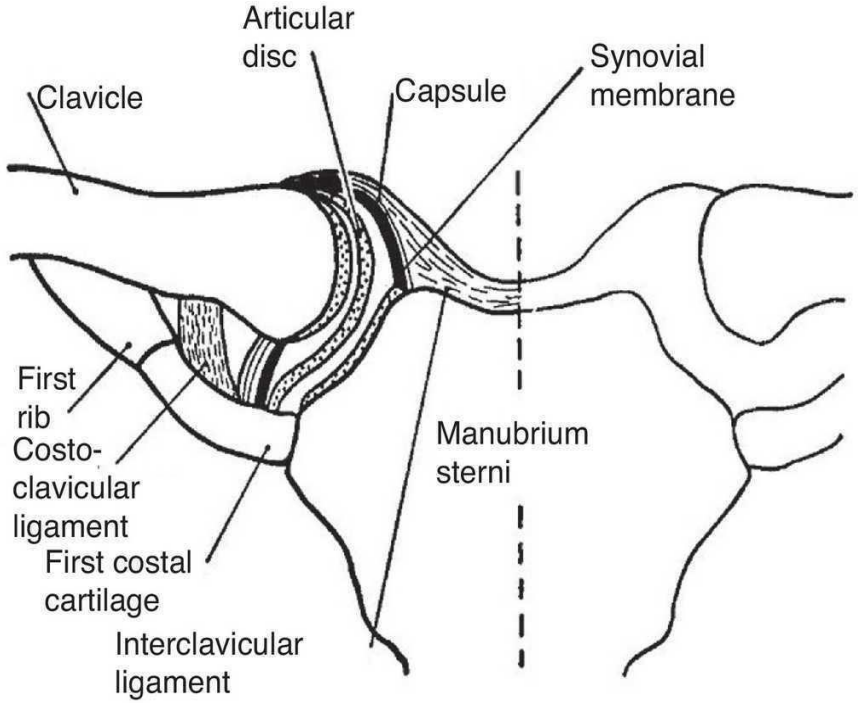
A gliding movement take place when scapula rotate or when clavicle is elevated or depressed.

Although it's small movement, but it is necessary to movement of shoulder.



STERNOCLAVICULAR JOINT

- It's an articulation between medial end of clavicle, the manubrium sterni and the 1st costal cartilage.
- It's synovial double plane joint.
- This joint is surrounded by Capsule
  which attached to the margins of articular surface,
  the capsule lined by Synovial Membrane,
  which is also attached to the margins of the cartilage covering the articular surface.
- Articular Disc is a flat fibrocartilaginous disc lie within Joint & divided joint into two compartments



Reumatol Clin. 2012;8 Supl 2:13–24

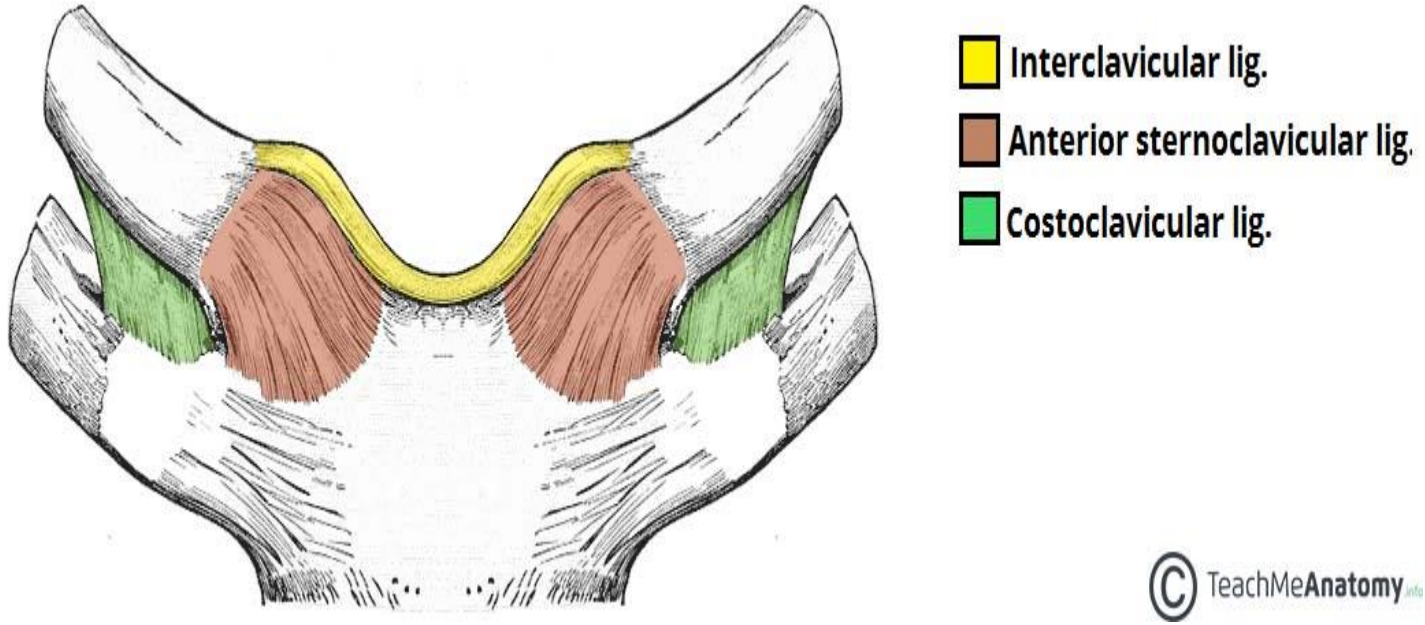
STERNOCLAVICULAR JOINT

- The capsule is reinforcement by:

1.) Anterior & Posterior sternoclavicular ligaments.

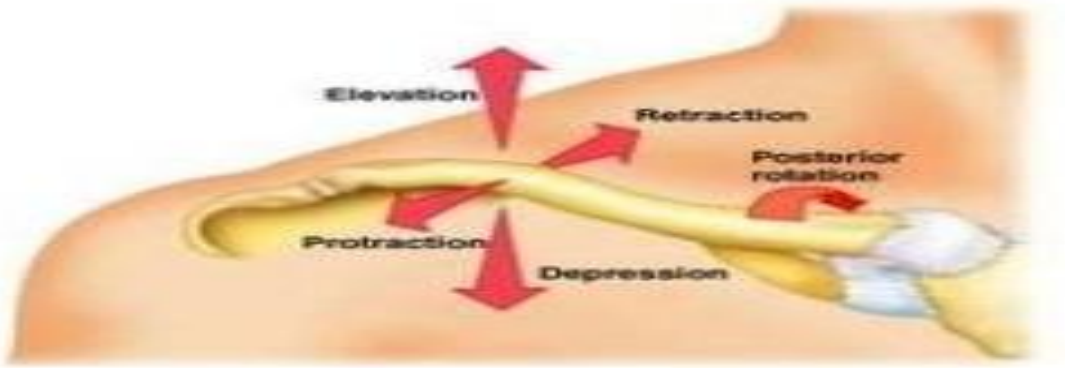
2.) Costoclavicular ligament, which attached between 1st & end of clavicle.

3.) Interclavicular ligament.



STERNOCLAVICULAR JOINT

- **Nerve supply**: supraclavicular nerve & nerve to the subclavius muscle.
- **Movements:** Forward and backward movement of clavicle in the medial compartment.
  Elevation & depression in the lateral compartment.



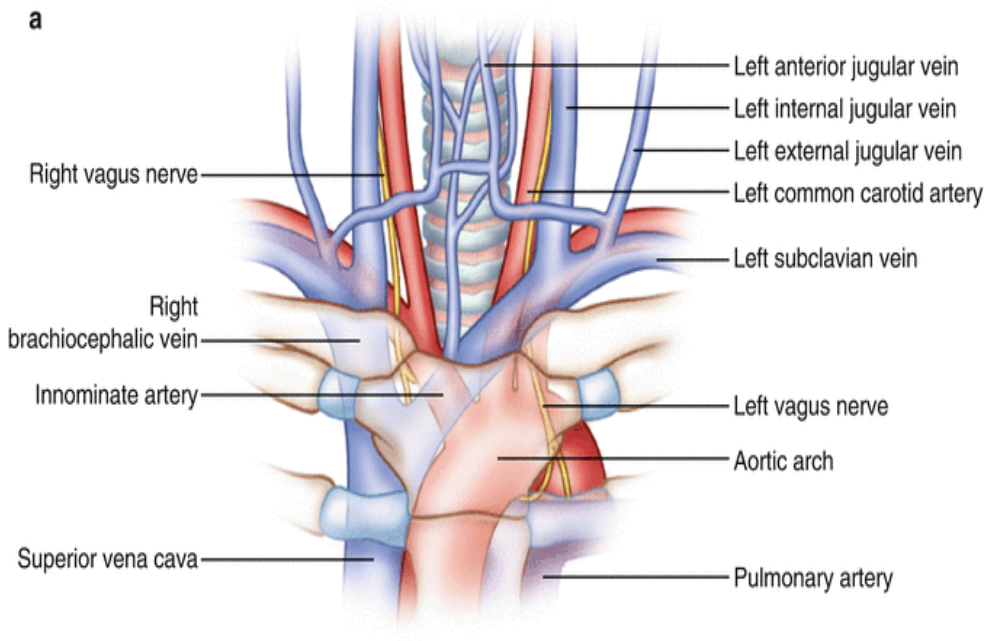
STERNOCLAVICULAR JOINT

- **Important Anatomical Relations**:

Anteriorly: skin & some fibers of sternocleidomastoid & pectoralis major muscles.

Posteriorly: on the left, left brachiocephalic vein & left common carotid artery.

on the right, brachiocephalic artery.



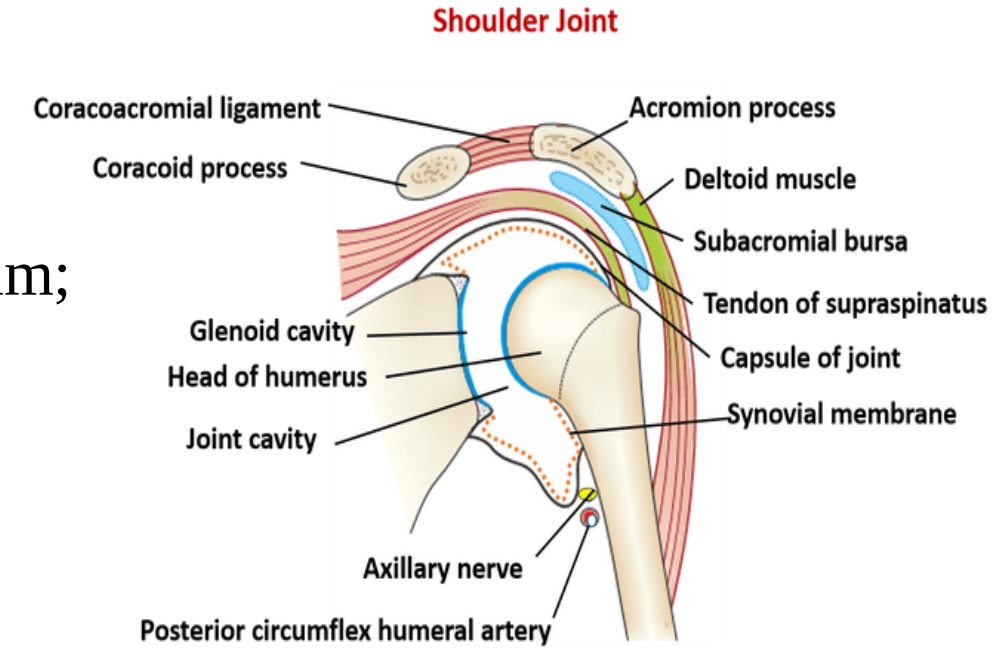
GLENOHUMERAL JOINT

- **Articulation:** Between large round head of humerus & smaller shallow, pear-shaped glenoid cavity of scapula.
- **Type**: Synovial ball & socket joint.
- **Capsule:** It's surrounds the joint & attached

medially to margion of glenoid cavity outside the labrum; laterally, attached to anatomical neck of humerus.

It's strength by fibrous slips from tendons of subscapularis, supraspinatus & teres minor muscles.

The inferior part of capsule is weakest area of capsule.



GLENOHUMERAL JOINT

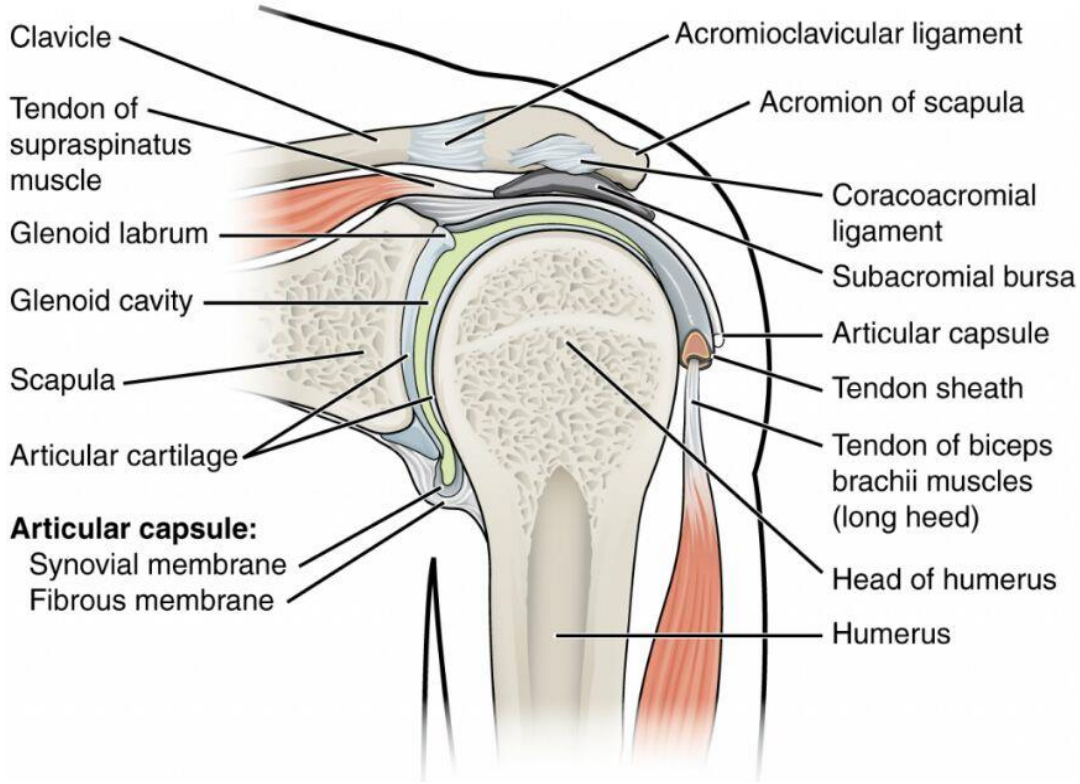
➢The articular surface are covered by ***Hyaline Articular Cartilage*** and glenoid cavity is deepen by presence of a fibrocartilaginous rim called ***Glenoid Labrum***.

➢ ***Synovial Membrane:***

It's lines capsule & attached to margins of cartilage covering articular surface.

It's extend through the anterior wall of scapula to form subscapular bursa, beneath subscapular m.

Then the synovial membrane extend down to forms a tubular sheath around the tendon of long head of biceps brachii muscle.



GLENOHUMERAL JOINT

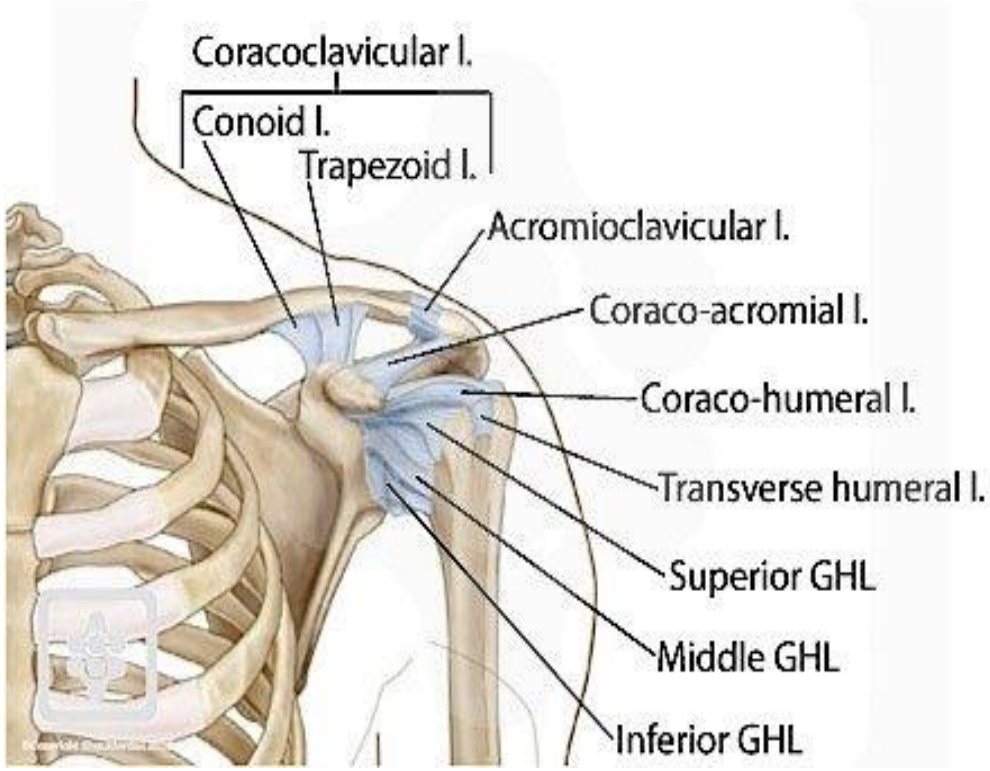
➢ Ligaments

1.) *Glenohumeral Ligaments* are 3 weak bands of fibrous tissue that strengthen front of capsule.

2.) *Transverse Humeral Ligament* strengthen capsule & bridges the gap between two tuberosities.

3.) *Coracohumeral Ligament* strengthen capsule above & stretches from the root of coracoid process to the greater tuberosity of humerus.

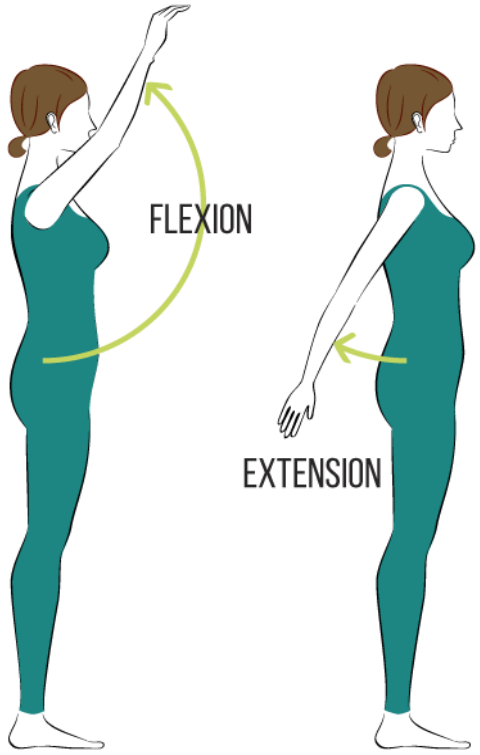
4.) *Coracoacromial Ligment* extend between coracoid process & acromion process.



GLENOHUMERAL JOINT

Movements of Shoulder Joint

- The shoulder joint has wide range of movement.
- The strength of joint depend mainly on the tone of rotator cuff muscles that cross in front, above & behind the joint.



❑ **Movements:**

1.) *Flexion:* normal flexion about 90 degree & performed by anterior fibers of deltoid, pectoris major, biceps & coracobrachialis M.

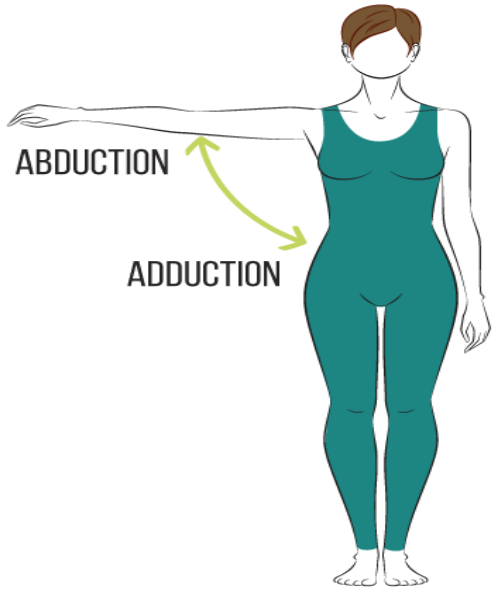
2.) *Extensions:* normal extension about 45 degree & performed by the posterior fibers of deltoid, latissimus dorsi & teres major muscles.

GLENOHUMERAL JOINT

3.) *Abduction:* normal abduction about 180 degree.

It's occur both at shoulder joint & between scapula with thoracic wall, performed by middle fibers of deltoid & assisted by supraspinatus muscles.

4.) *Adduction:* normal adduction about 45 degree, performed by pectoralis major, latissimus dorsi, teres major & teres minor muscle.

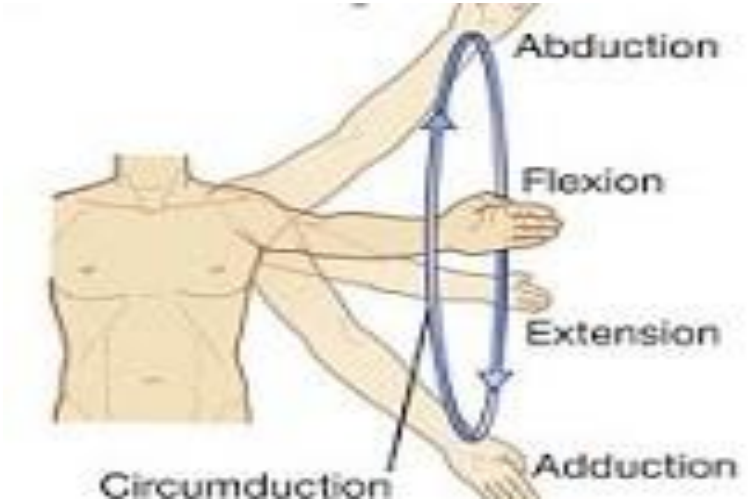


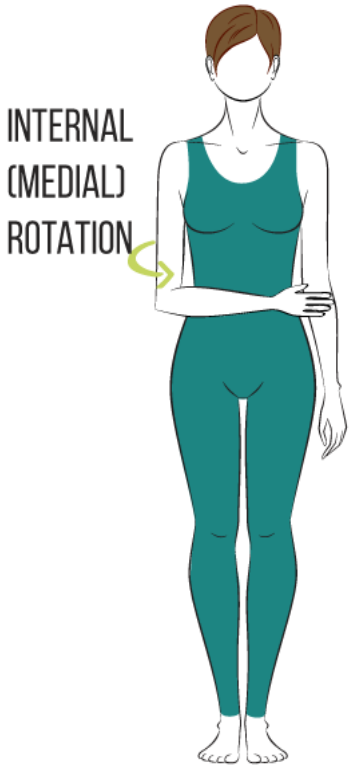
GLENOHUMERAL JOINT

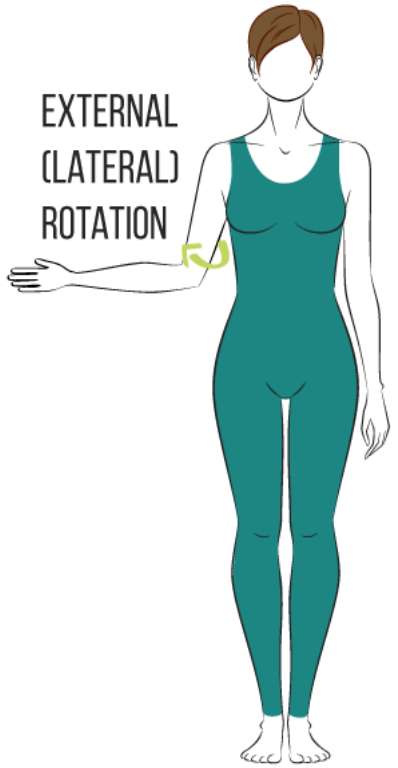
5.) *Medial Rotation*: normally about 55 degree, performed by anterior fibers of deltoid & subscapularis muscles.

6.) *Lateral Rotation*: normally about (40-45) degree performed by infraspinatus, teres minor & posterior fibers of deltoid muscles.

7.) *Circumduction:* it's a combination of above movements.



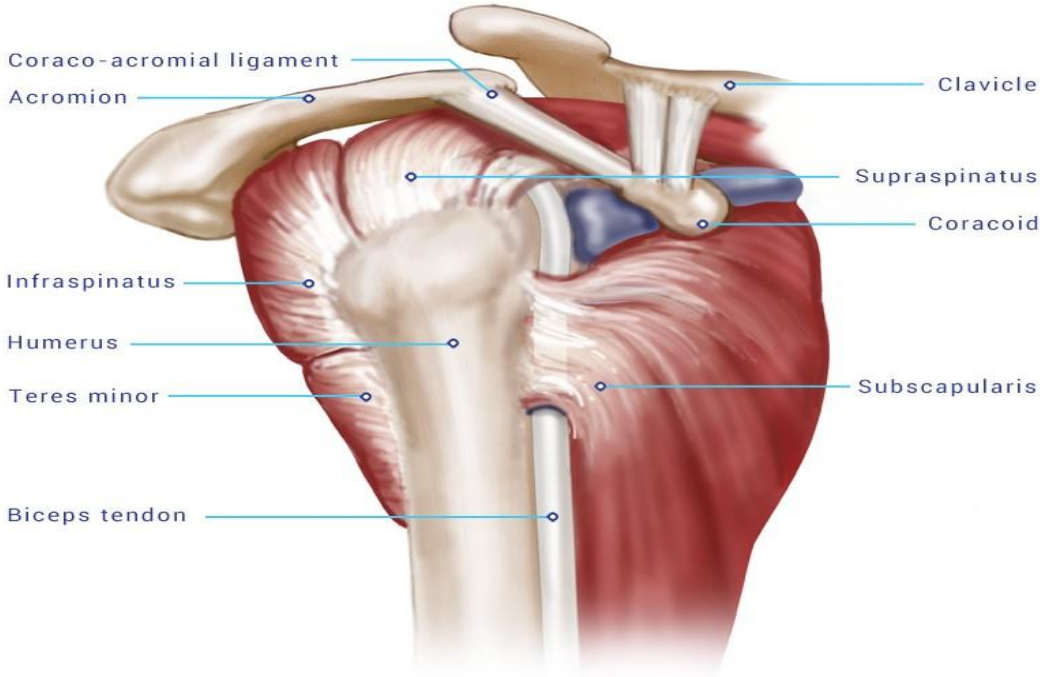




GLENOHUMERAL JOINT

❑ Important Anatomical Relations

- **Anteriorly:** subscapularis, axillary vessels & brachial plexus.
- **Posteriorly:** infraspinatus & teres minor muscles.
- **Superiorly:** supraspinatus, deltoid muscle, Subacromion bursa & coracoacromial ligment.
- **Inferiorly:** long head of triceps muscle, axillary nerve & posterior circumflex humeral vessels.



GLENOHUMERAL JOINT

- **Bursa Around Shoulder Joint**

Bursa is a sac that is filled with liquid that can be found between tissues (bone, skin, tendons and muscle).

- Function: because of that fluid the bursa can be used as a cushion that has the function to decrease the friction and the irritation between the tissues that move between each other.
- Inflammation of bursa called Bursitis, it becomes inflamed and swollen, so will experience pain during physical activity.

GLENOHUMERAL JOINT

- **In The Shoulder Region, there are 6 bursae**

1.) *Subscapular Bursa:*

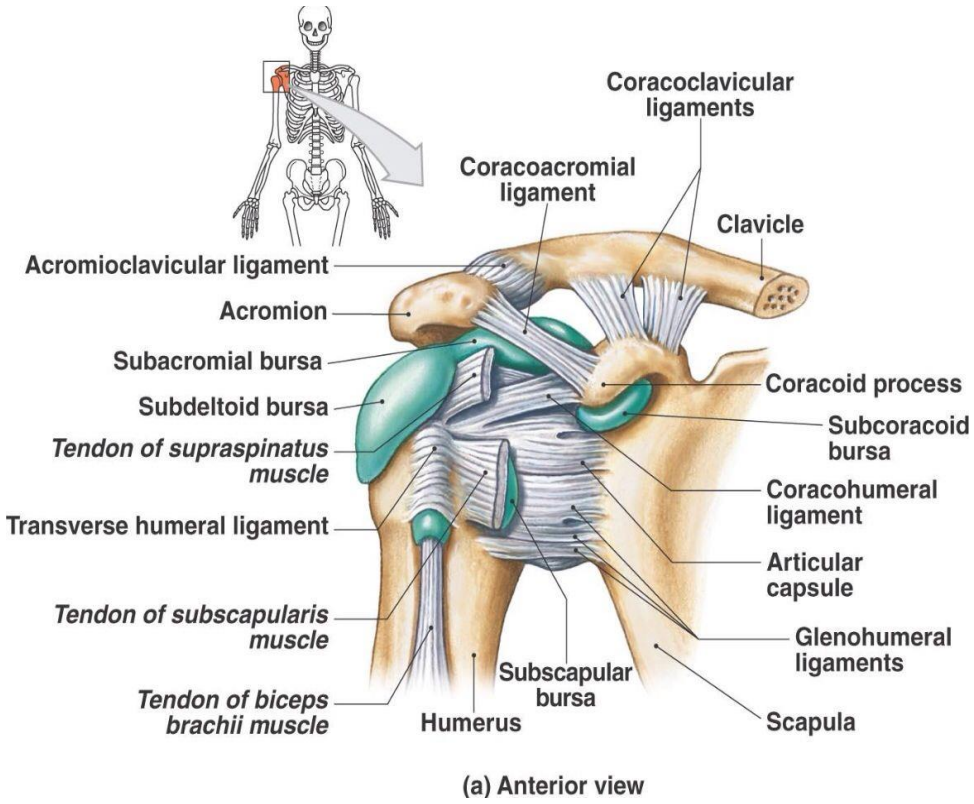
between tendon of Subscapularis muscle & joint capsule.

2.) *Subdeltoid Bursa:*

between the Deltoid muscle and the shoulder joint cavity.

3.) *Subacromial Bursa:*

below the acromion process and above the greater tubercle of the humerus.



(a) Anterior view

GLENOHUMERAL JOINT

4.) *Subcoracoid Bursa:*

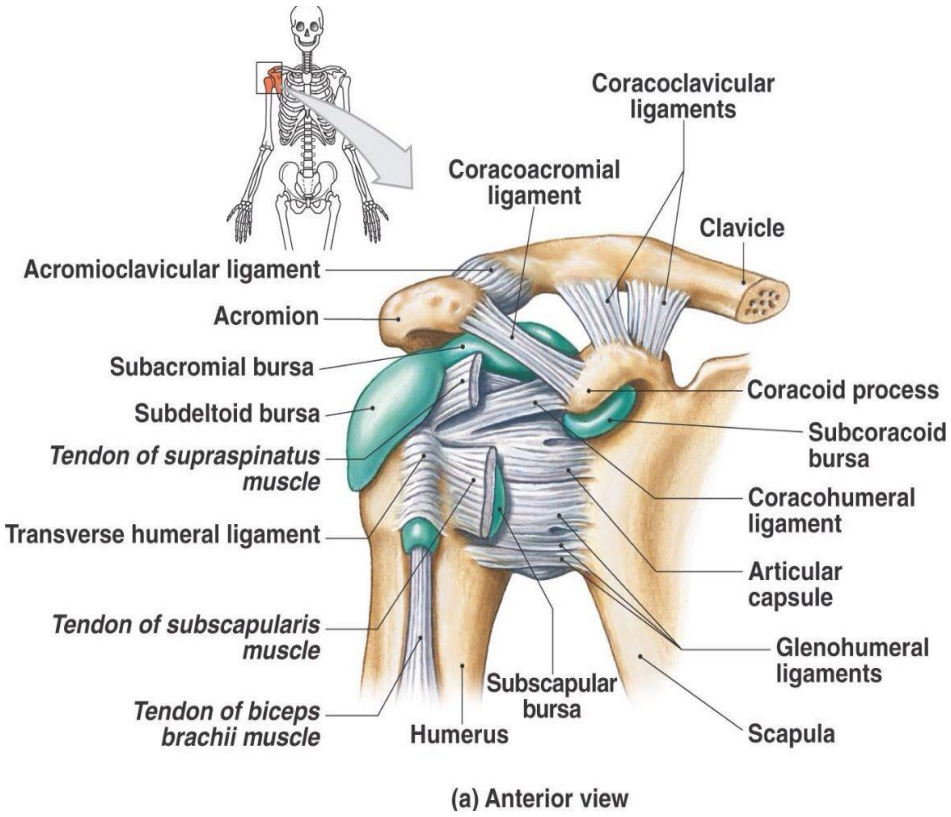
Between coracoid process of scapula and joint capsule.

5.) *Infraspinatus Bursa:*

Between the infraspinatus tendon and capsule of the joint.

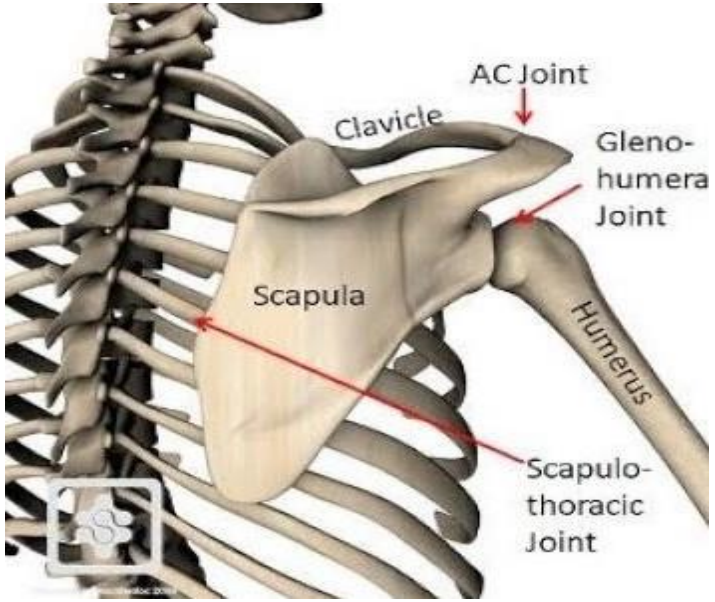
6.) *Subcutaneous Acromial Bursa:*

It's located above the acromion just beneath the skin.



SCAPULOTHORACIC ARTICULATION (ASSOCIATION)

- Anatomically it’s not a true joint because it hasn't the usual joint characteristic (cartilage, capsule, ect).
- It’s an articulation of scapula with posterior thoracic wall.



SCAPULOTHORACIC ARTICULATION

❑ Function

- The movement of articulation are very important element of shoulder movement and thus it's important in wide range of motion of shoulder is due to large available of movement at the scapulothoracic articulation.
- It's function depend on integrity of acromioclavicular & sternoclavicular joints.


Thank
you