

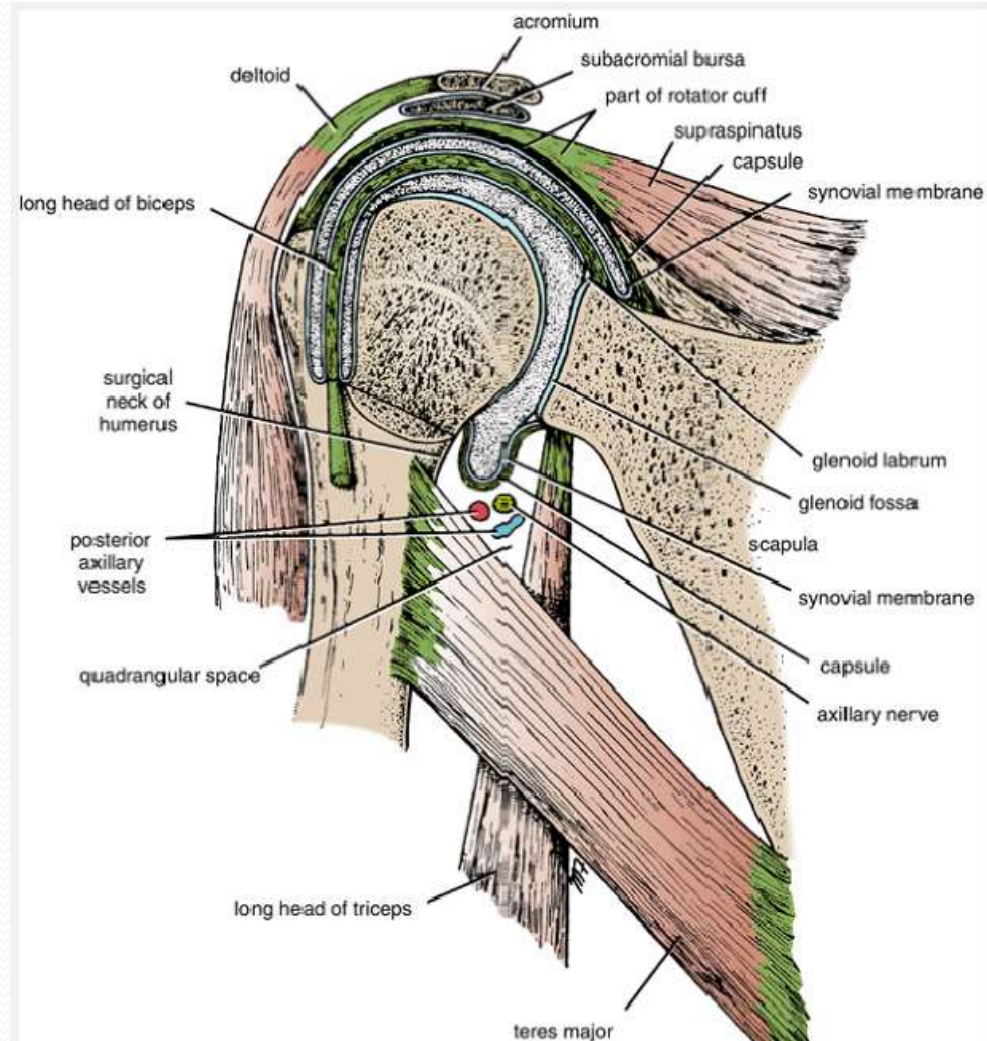


Functional & surgical anatomy of shoulder region

M.N. Naderi, MD

Shoulder Joint

- Greatest ROM
- No inherent bony stability
- Relies on soft tissues for stability
- Little glenoid bone stock



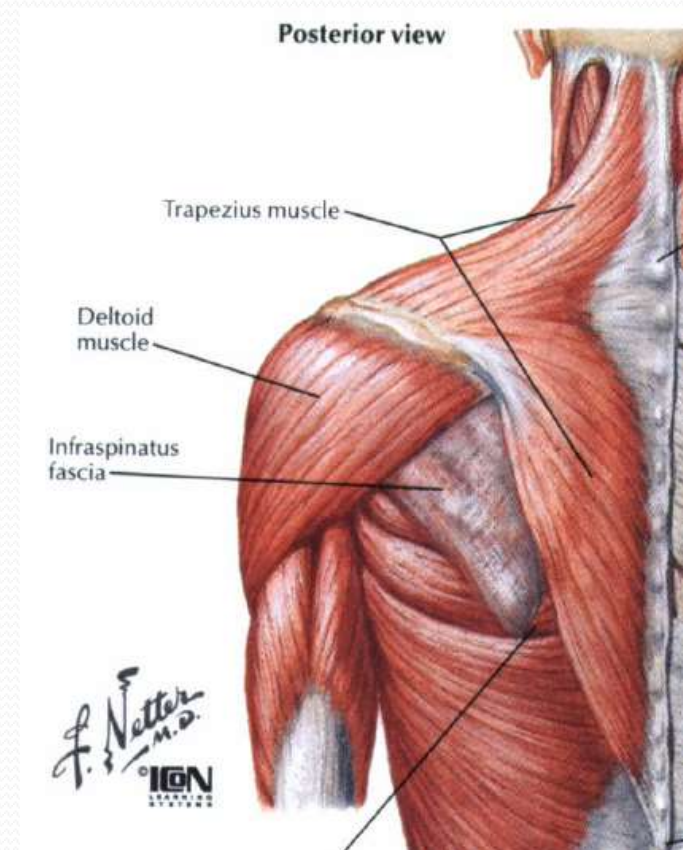
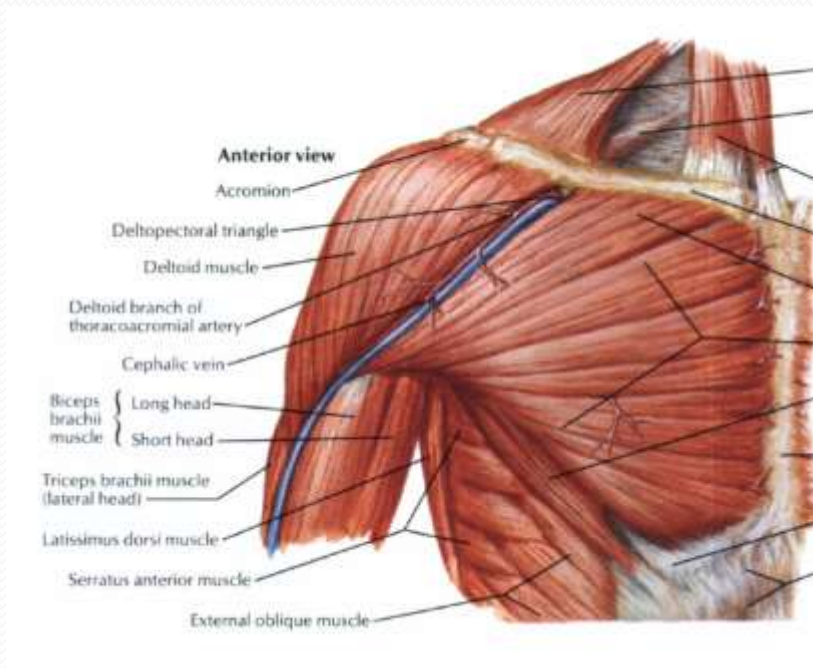
Shoulder Joint

- Four articulation (GH, AC, SC, ST)
- Four tissue layer



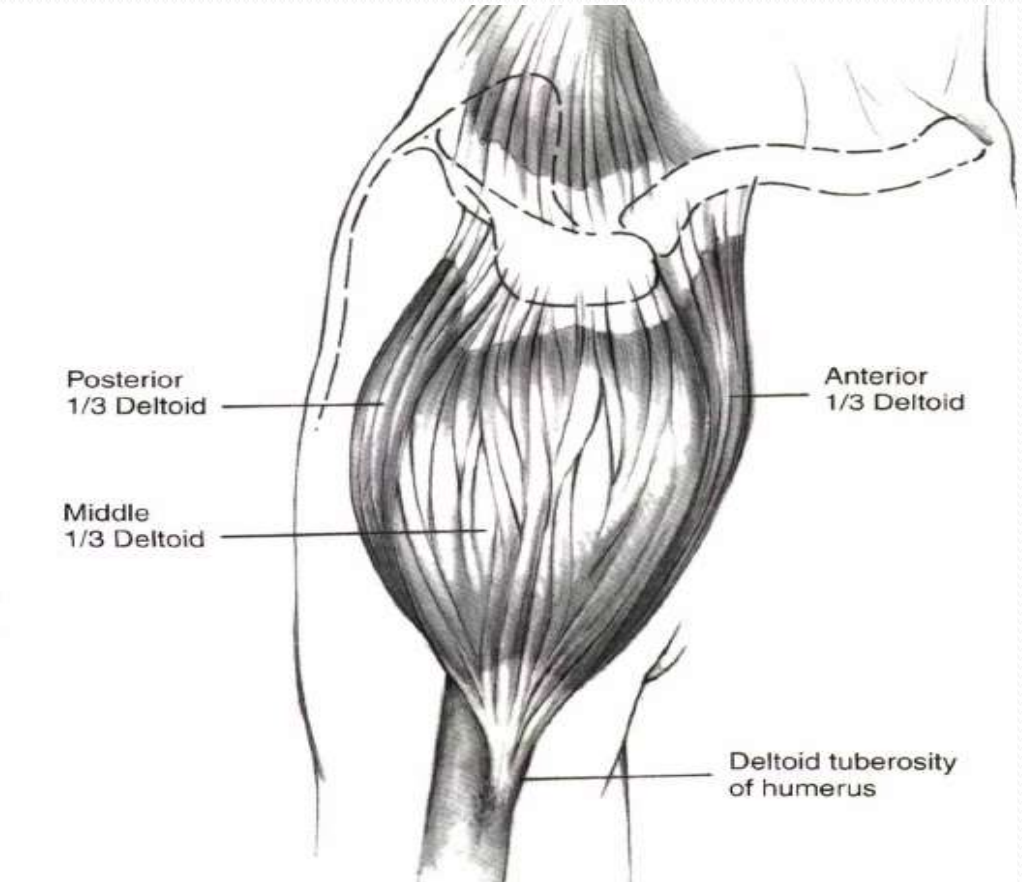
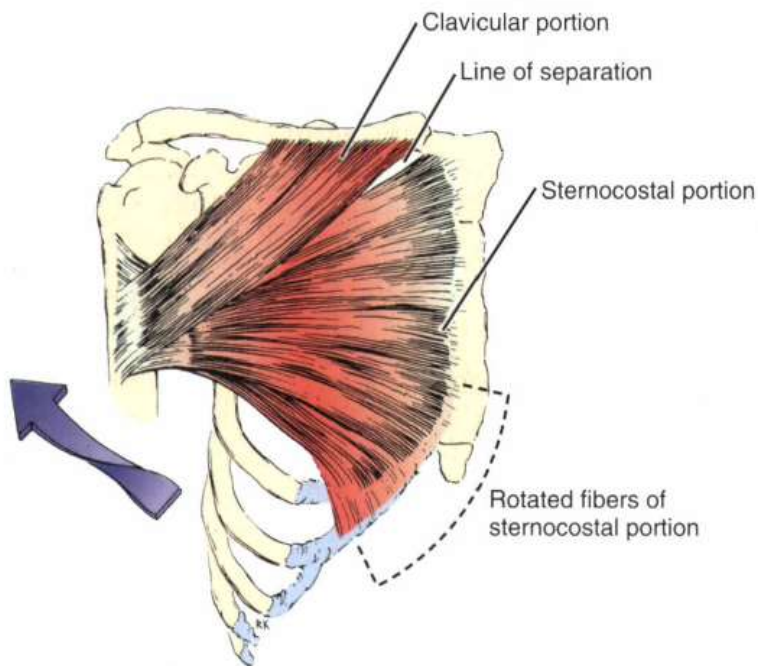
Shoulder Joint

- Layer One:
 - Deltoid, Pectoralis



Shoulder Joint

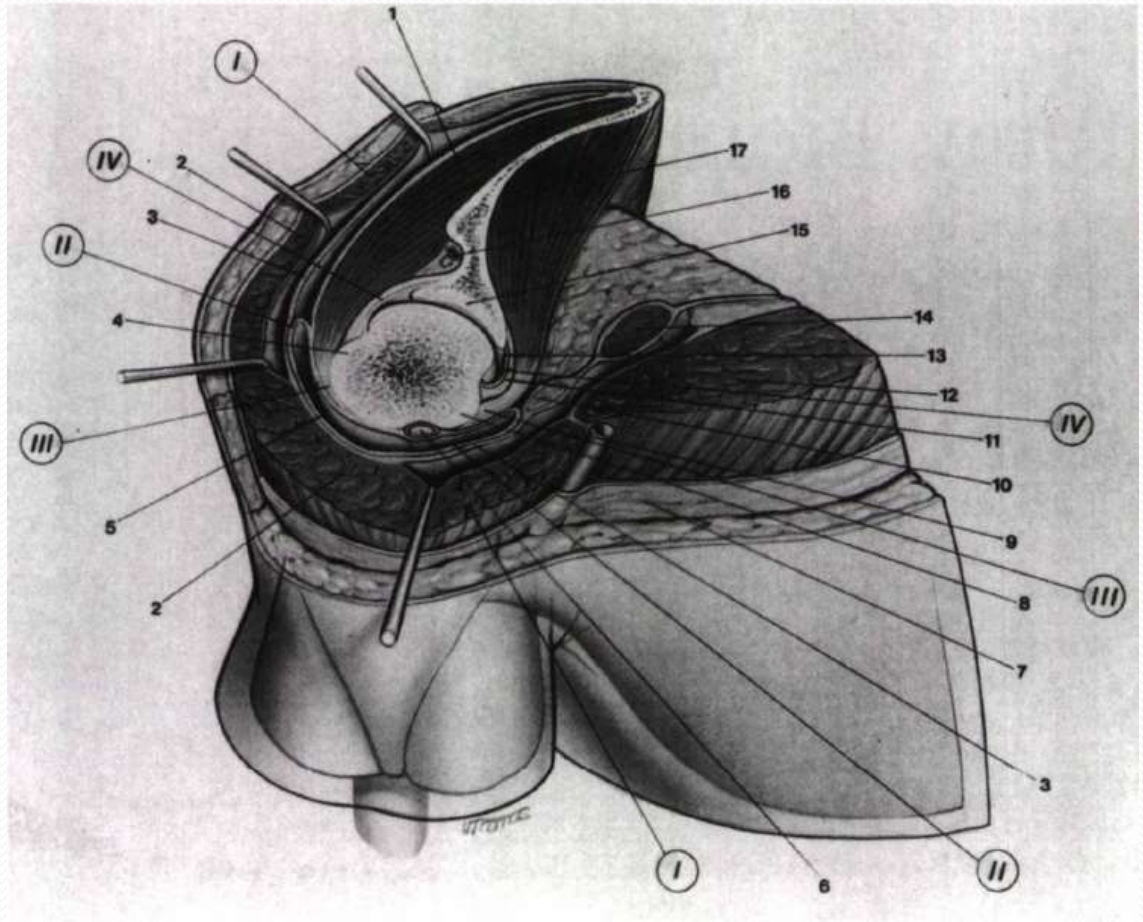
- Layer One:
 - Deltoid, Pectoralis



- three heads
- extensive origin
- insert on the deltoid tuberosity humerus

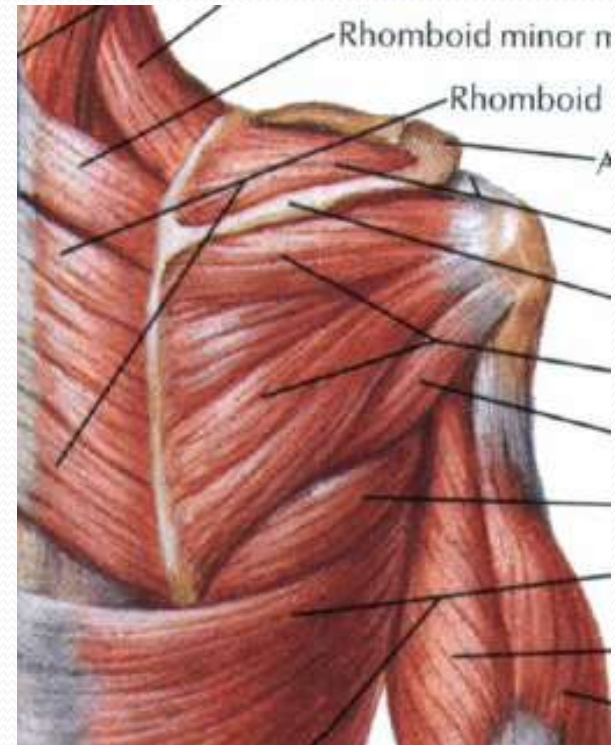
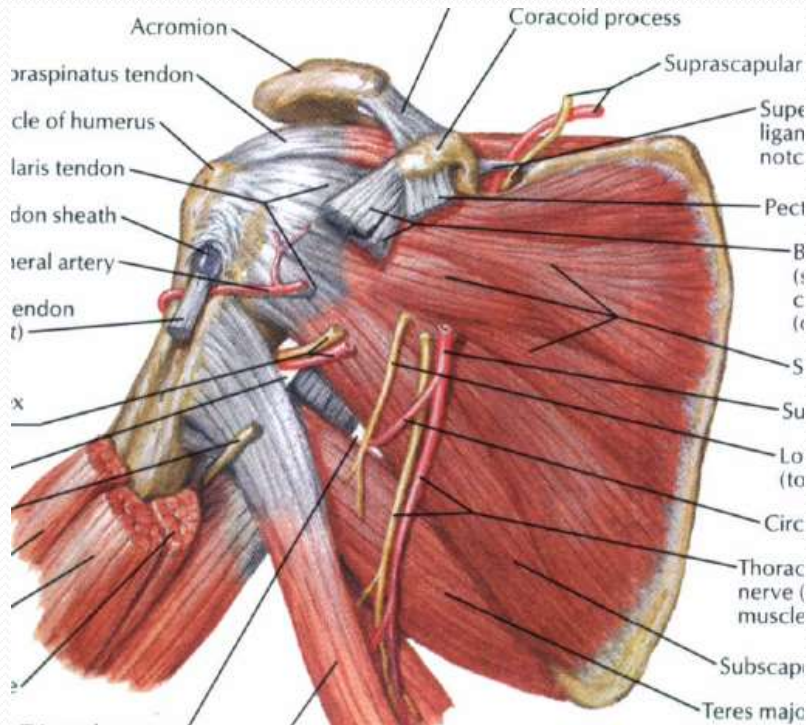
Shoulder Joint

- Layer Two:
 - Facial layer



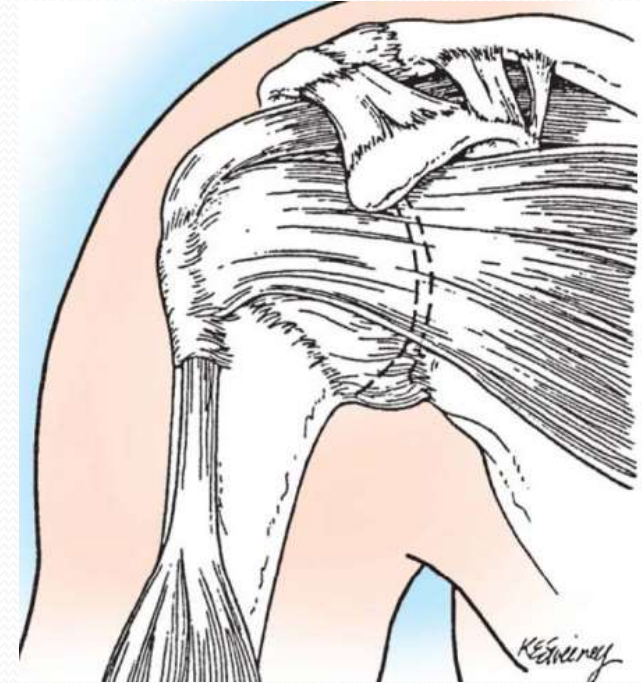
Shoulder Joint

- Layer Three:
 - Rotator cuff



Shoulder Joint

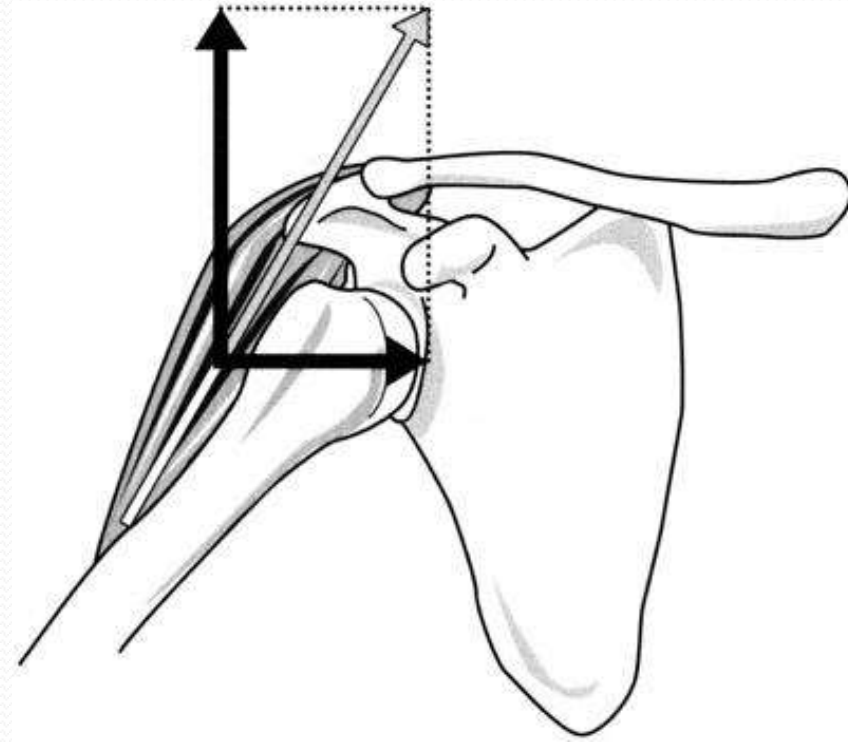
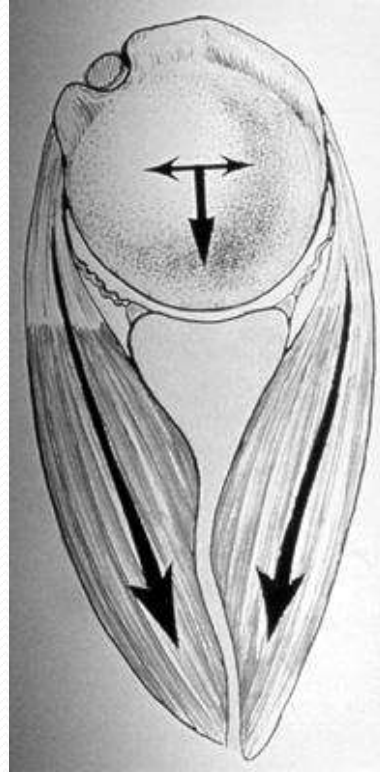
- **Layer Three:**
 - Rotator cuff



- origin from scapula
- envelope humeral head
- insert along the tuberosities
- adherent to the underlying GH capsule

Shoulder Joint

- Layer Three:
 - Rotator cuff

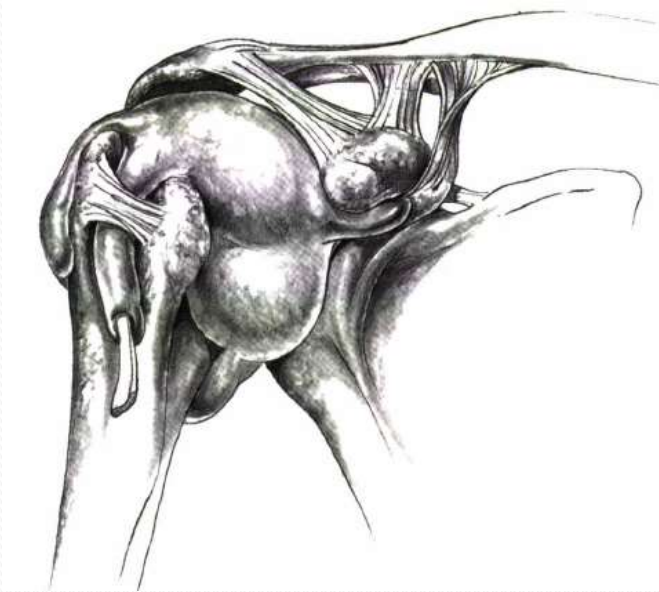


- Dynamic stabilizers
 - humeral depression, humeral rotation, abduction, and joint compression
 - role in initiation of abduction

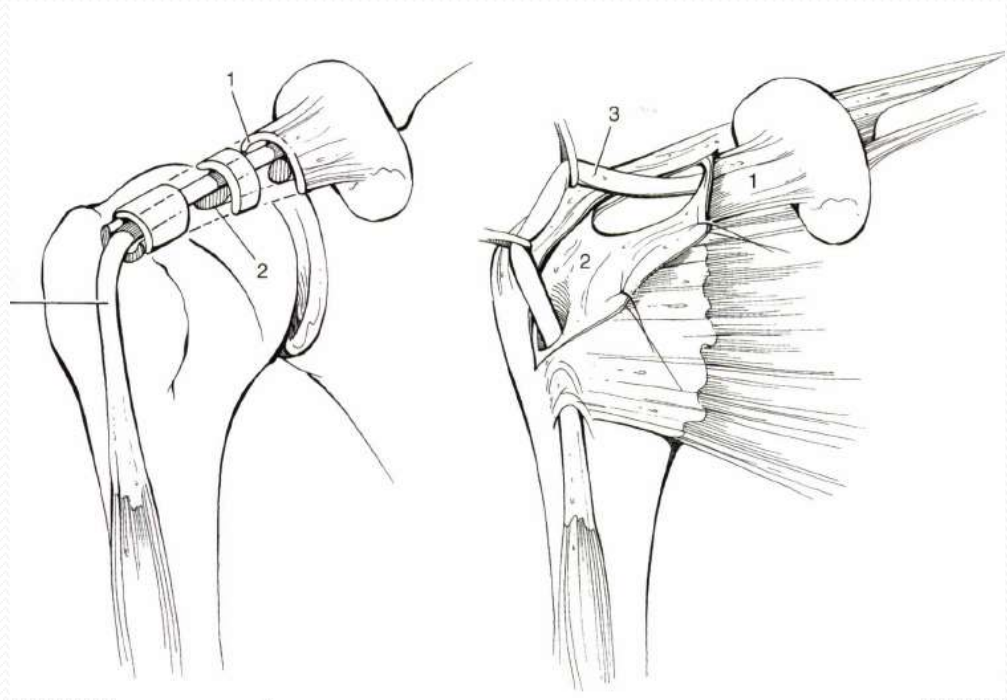


Shoulder Joint

- **Layer Three:**
 - Rotator cuff



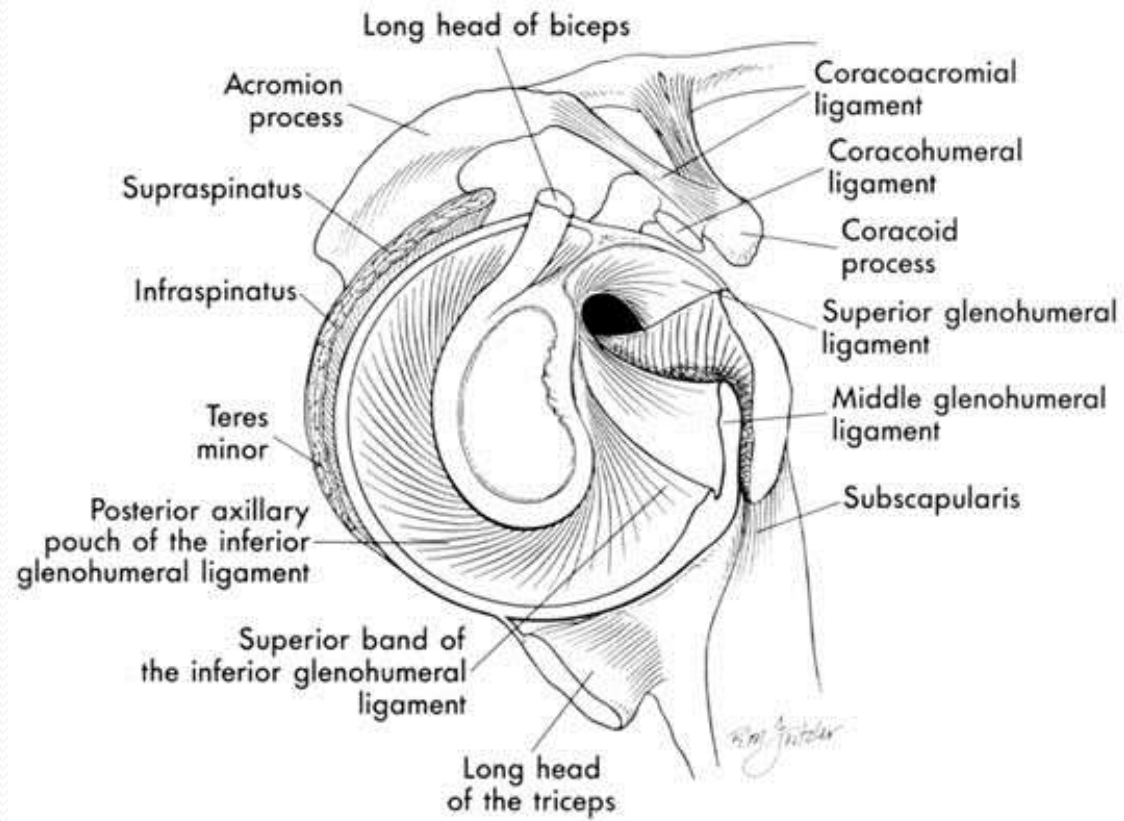
Subacromial bursae



Rotator interval

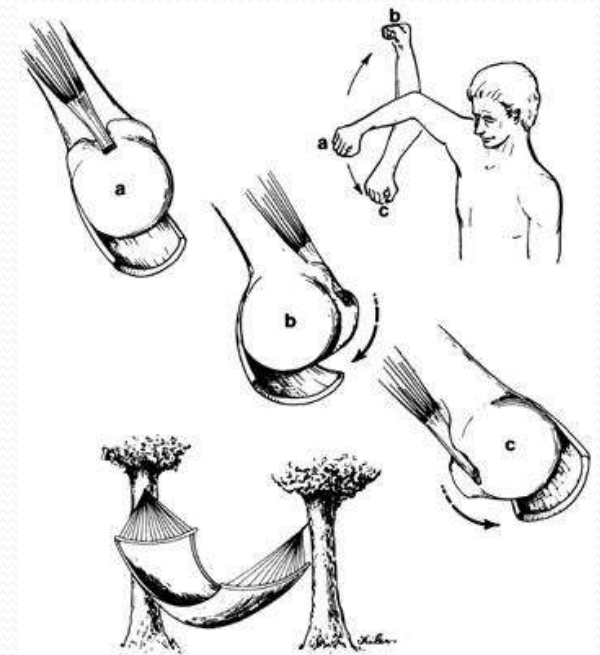
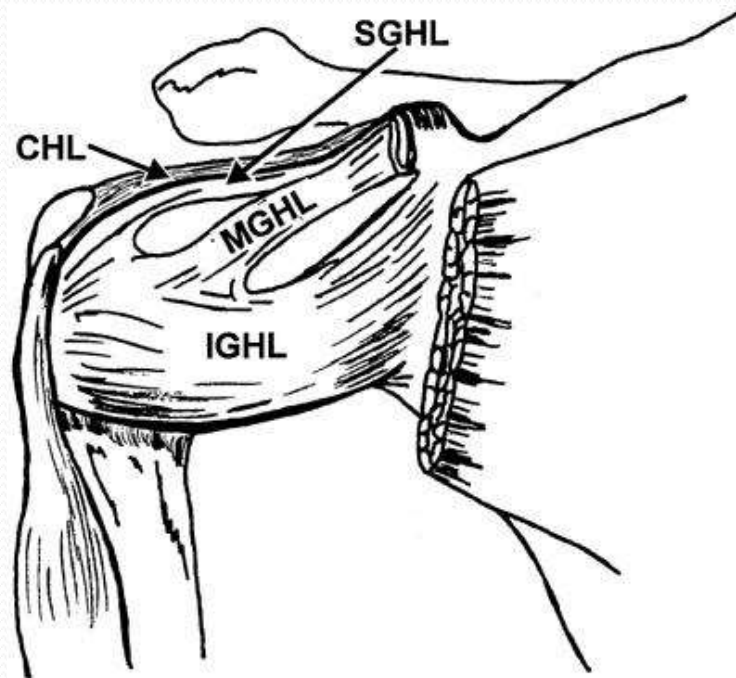
Shoulder Joint

- Layer Four:
 - fibrous capsular elements



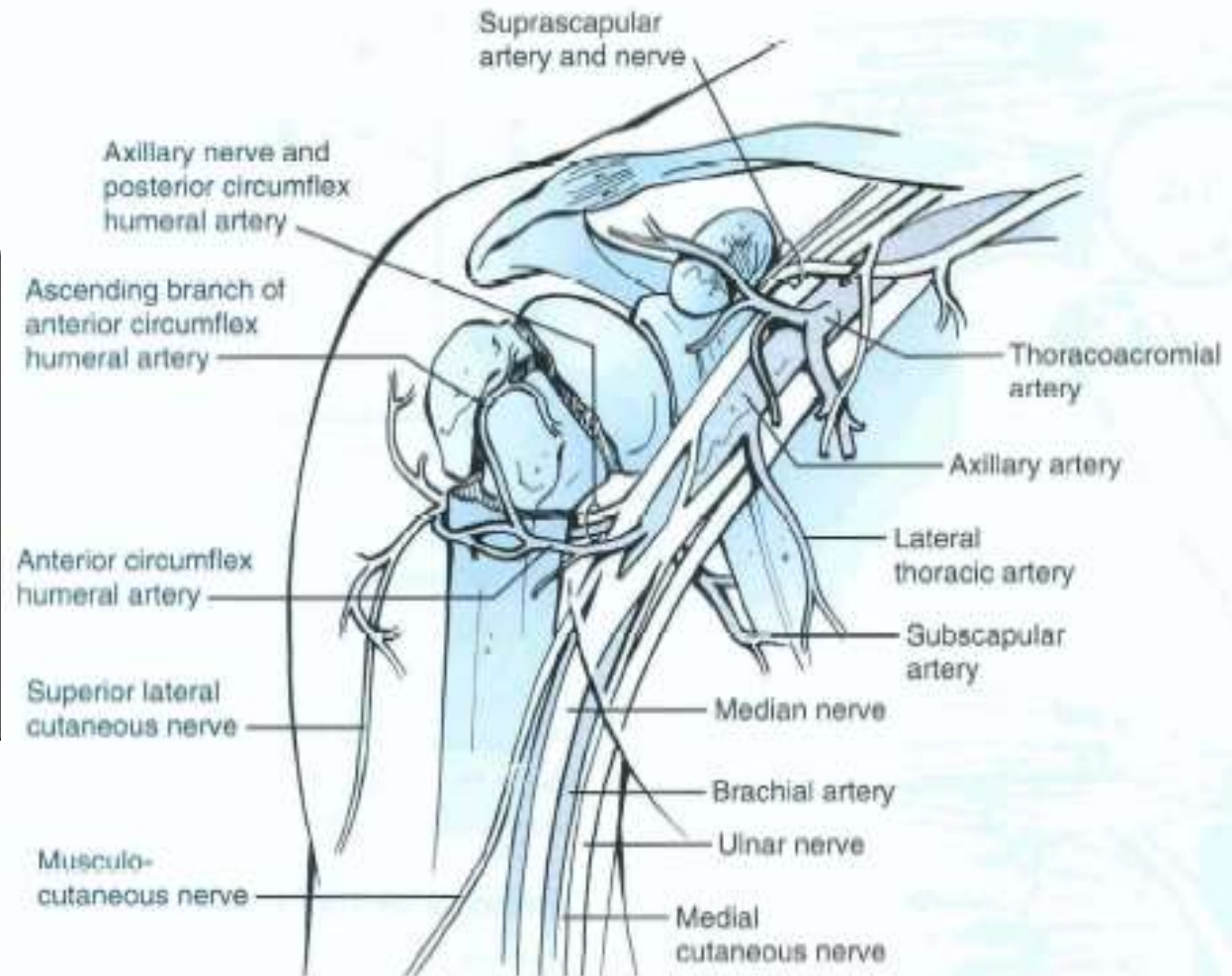
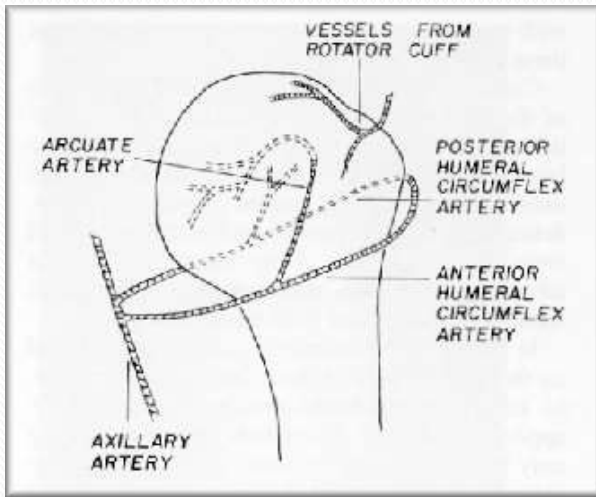
Shoulder Joint

- **Layer Four:**
 - fibrous capsular elements

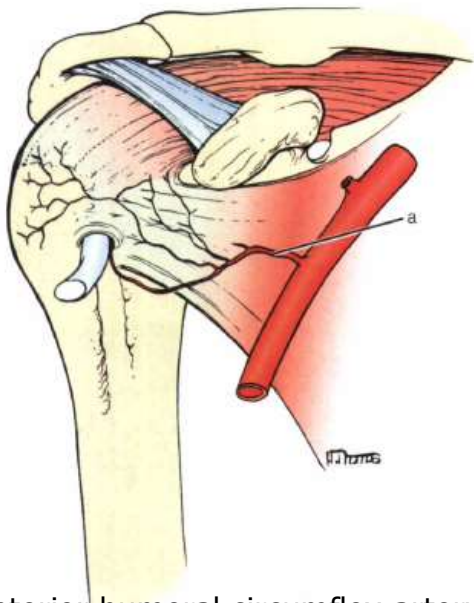


Lax capsule reinforced by glenohumeral ligaments

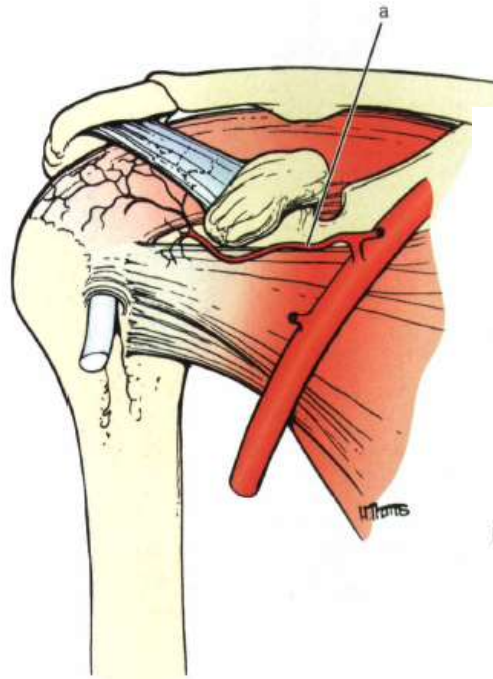
Vascular supply



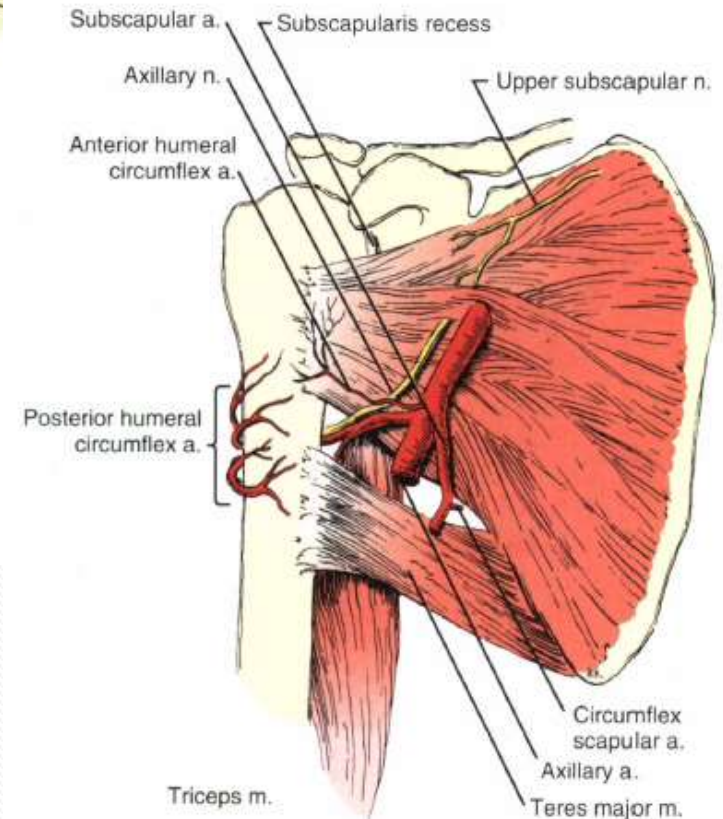
Vascular supply



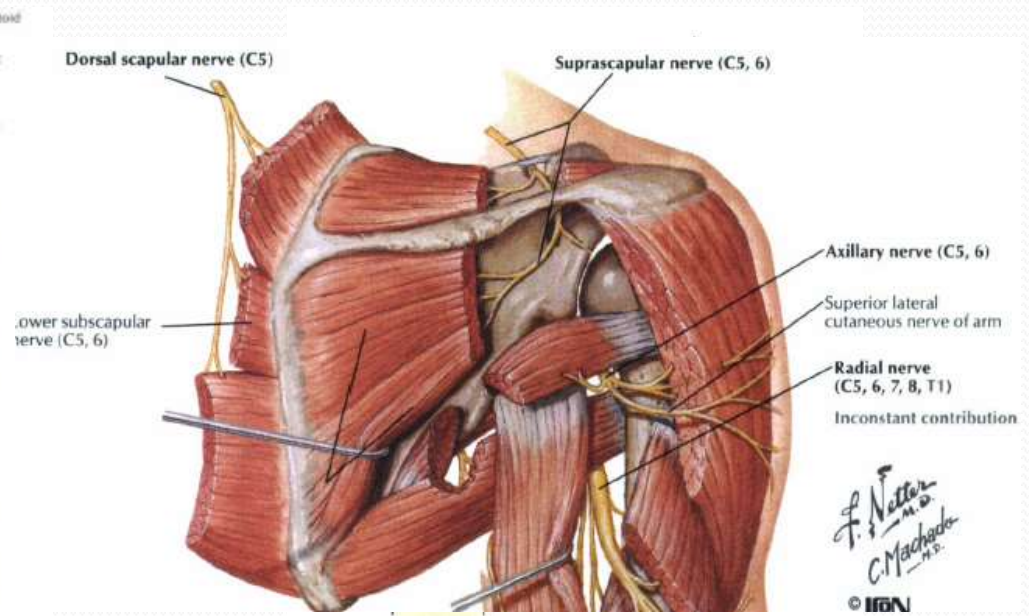
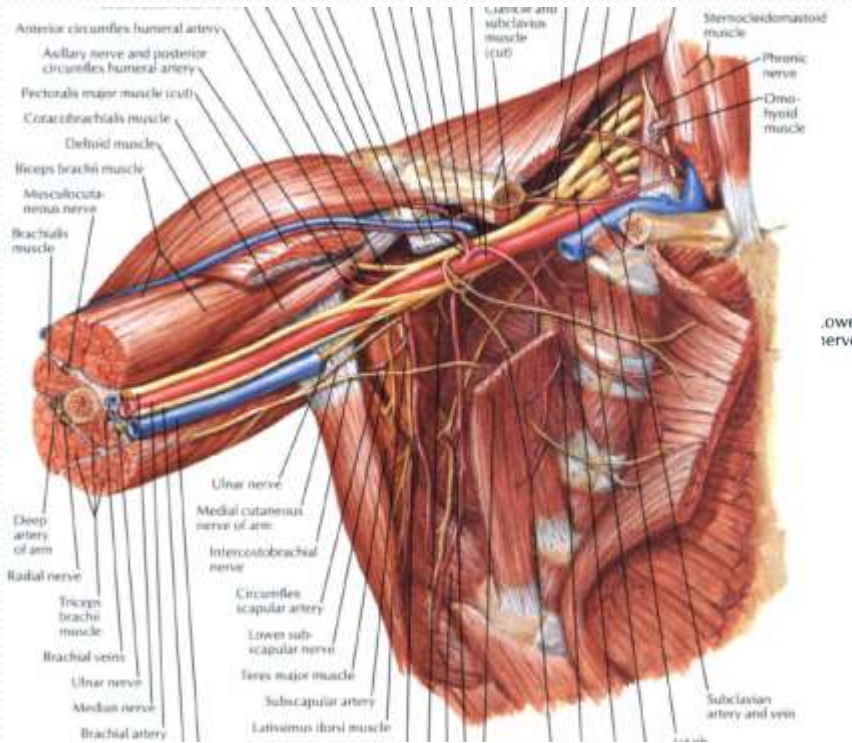
anterior humeral circumflex artery



thoracoacromial artery



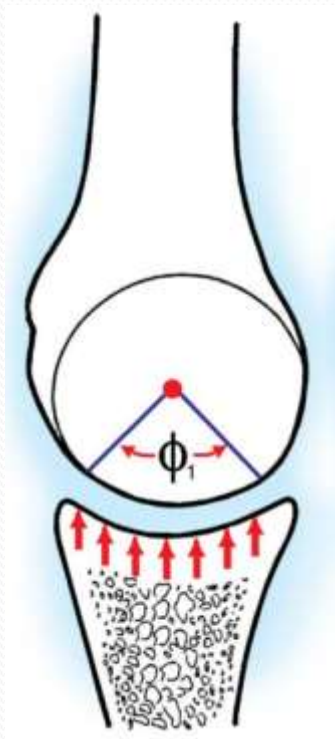
Innervation of shoulder



- Axillary nerve
- Suprascapular nerve

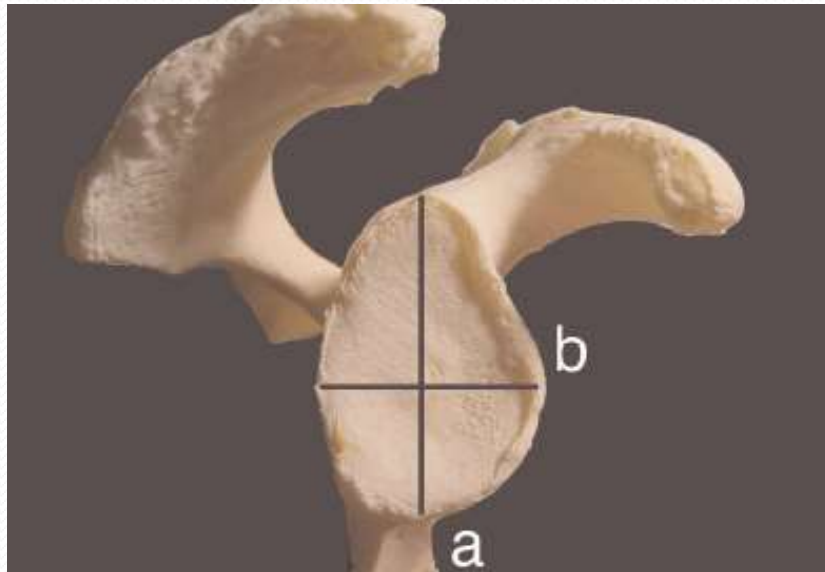
Bony anatomy

- **bony anatomy does not provide inherent stability**
(1/4 of the humeral head articulates with the glenoid)
- **close concavity-convexity match**

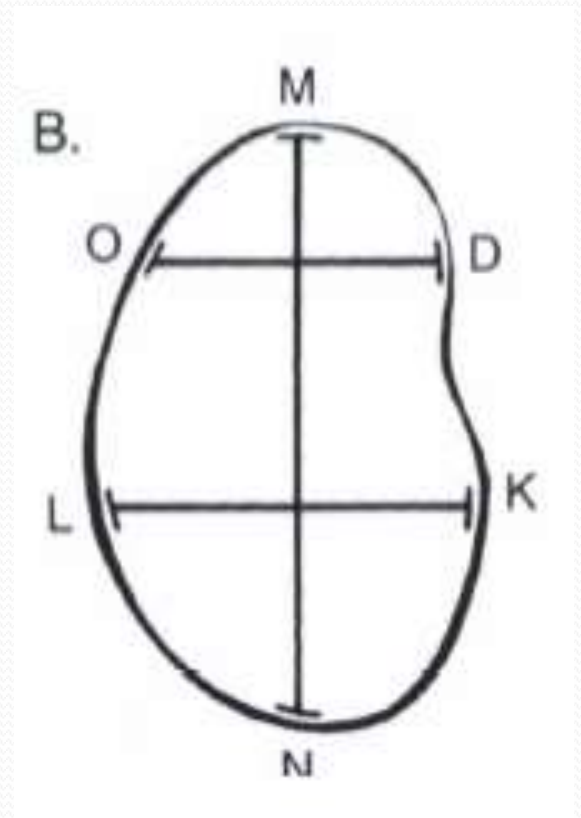


- **Glenoid diameter**

- Superior anteroposterior 18-30 mm
- Inferior anteroposterior 21-35 mm
- Superoinferior (height) 30-48 mm

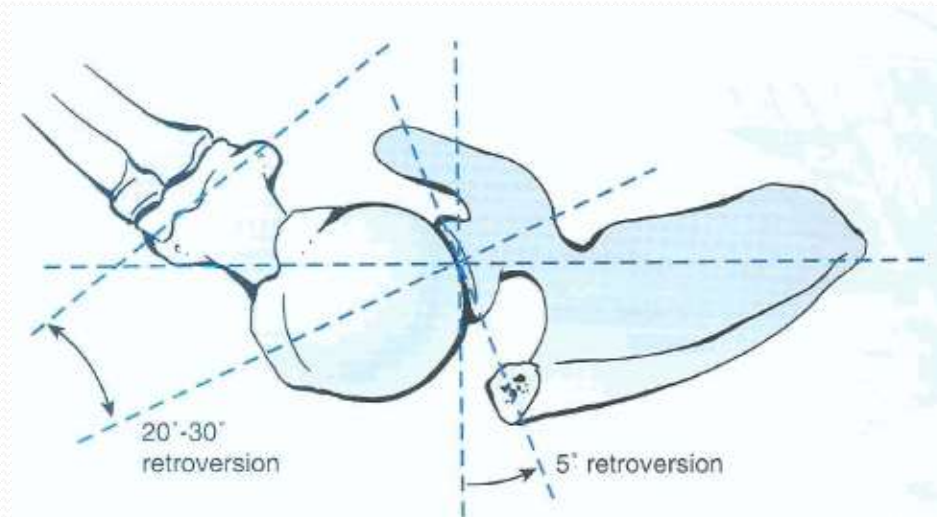
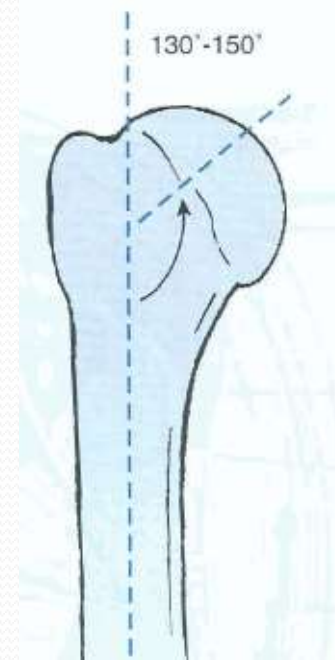


typical “pearshape”



Bony anatomy

- **Inclination**
 - Humeral head 130-150 degrees
 - Glenoid 4.2 degrees (-7 to 20 degrees)
- **Version**
 - Glenoid 1.5 degrees retroversion (10.5 retroversion to 9.5 degrees anteversion)
 - Humeral head 0-55 degrees retroversion

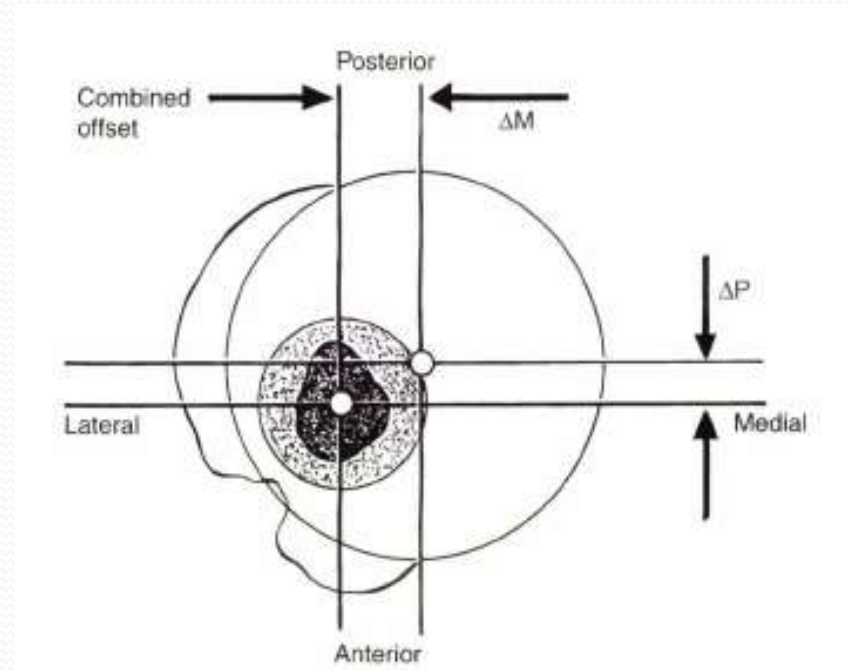


Bony anatomy

Humeral Head Offset

- distance between the center of the humeral head and central axis of intramedullary canal

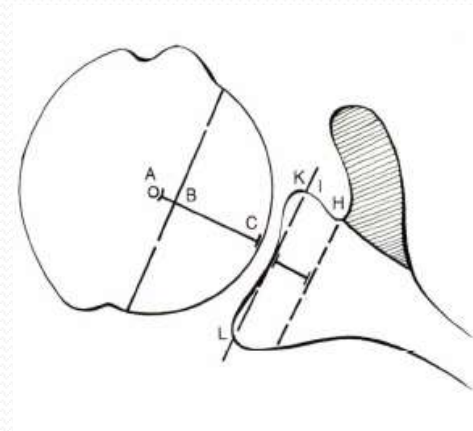
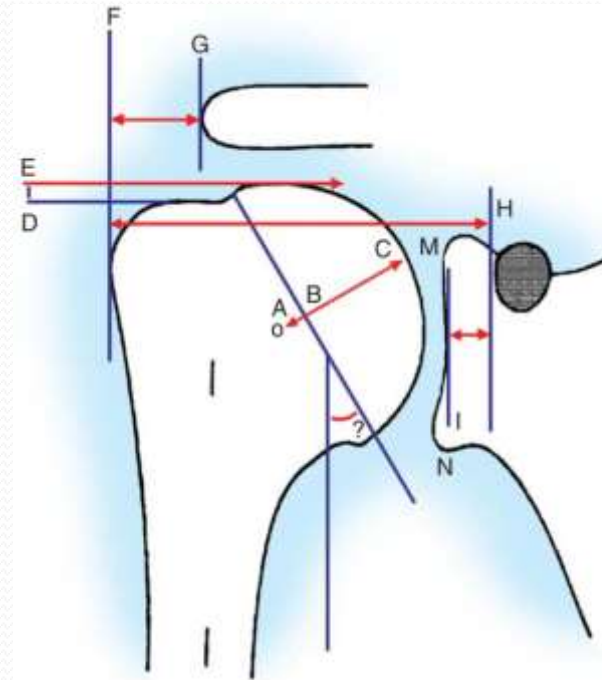
- **Medial (coronal) 4-14 mm**
- **Posterior (transverse) -2 to 10 mm**



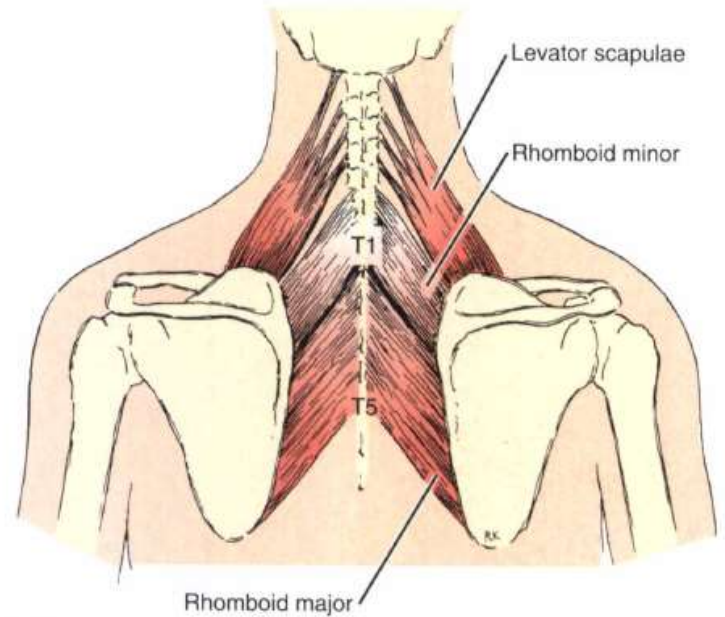
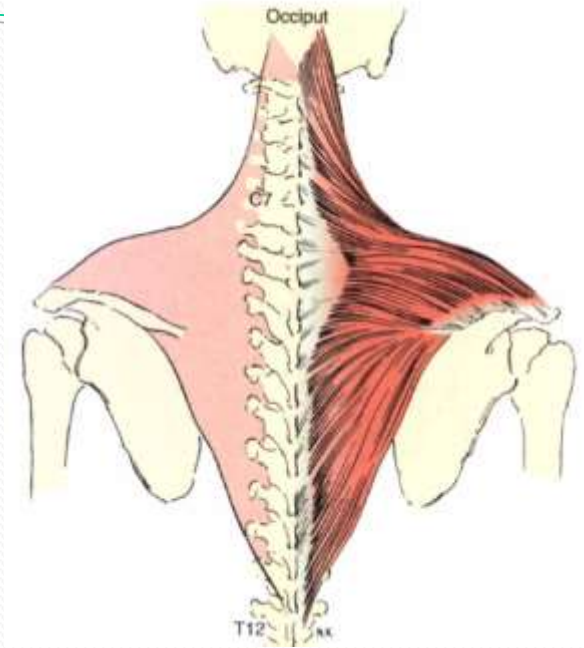
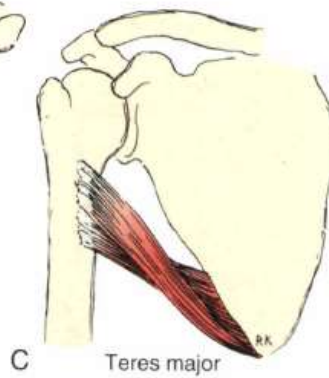
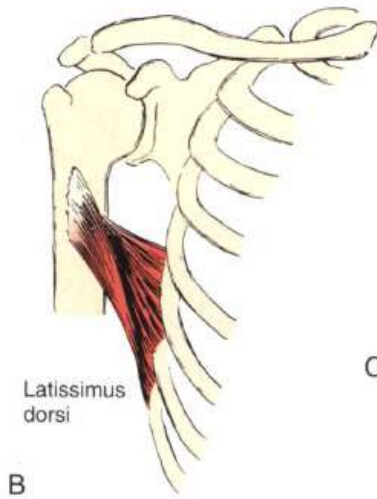
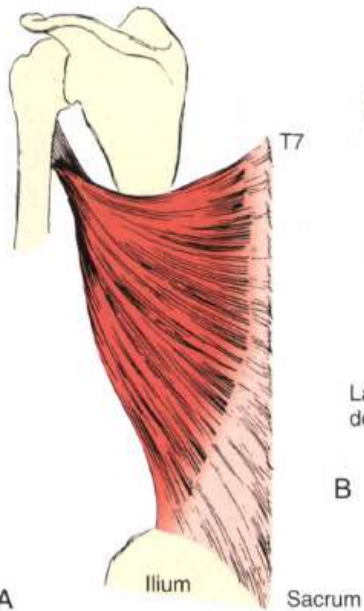
Bony anatomy

- F-H Offset
- B-C Head thickness
- D-E = 8mm

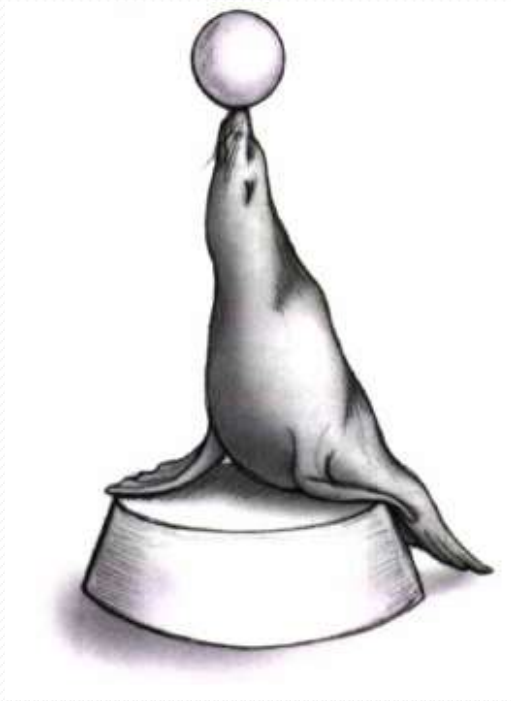
Top of humeral head is higher than greater tuberosity



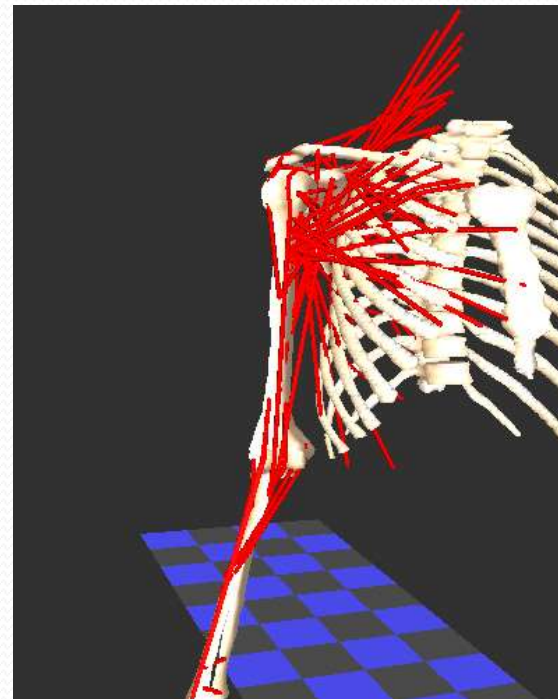
Scapular motion



Scapular motion



Synchronous mobility of the scapula and humeral head





Thank you for attention