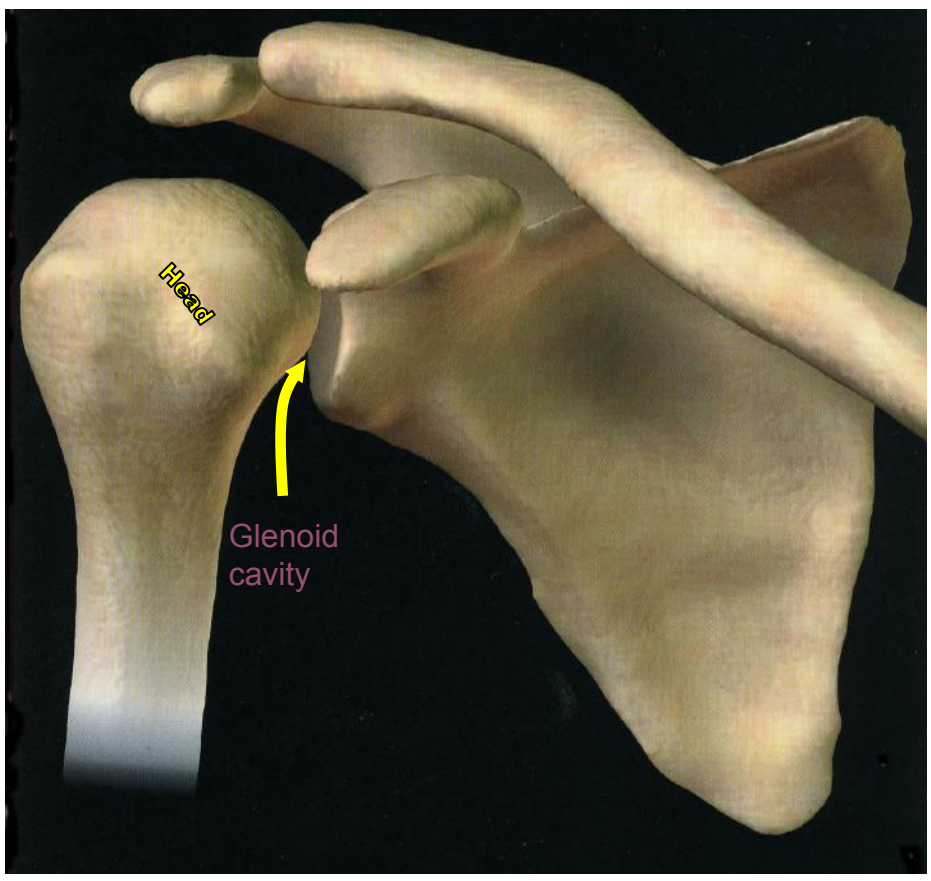
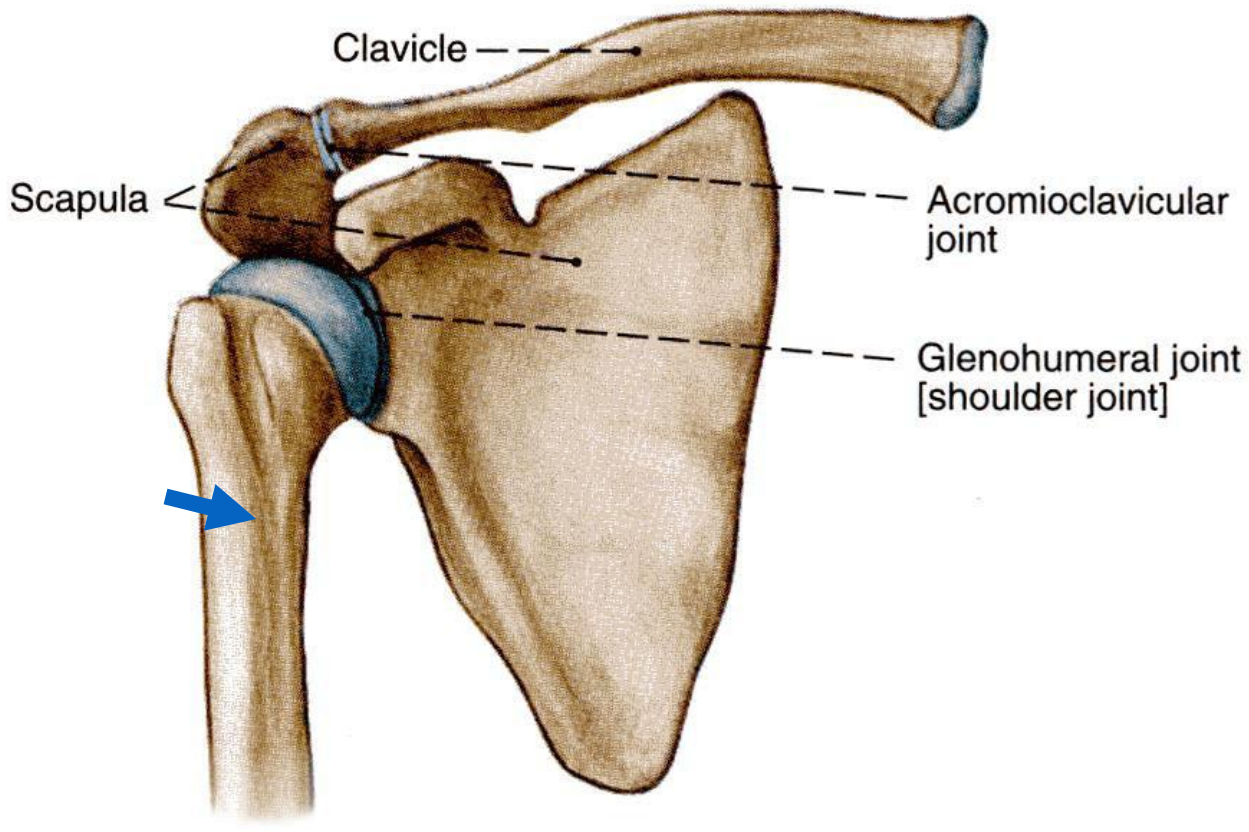
Learning objectives

- Anatomy of shoulder joint
- Formation , type & components
- Rotator cuff
- Relations /nerve & blood supply
- Movements & muscles producing them
- Dislocations /nerve injuries

Articulation - Rounded **head of humerus** &

Shallow , **glenoid cavity** of scapula.



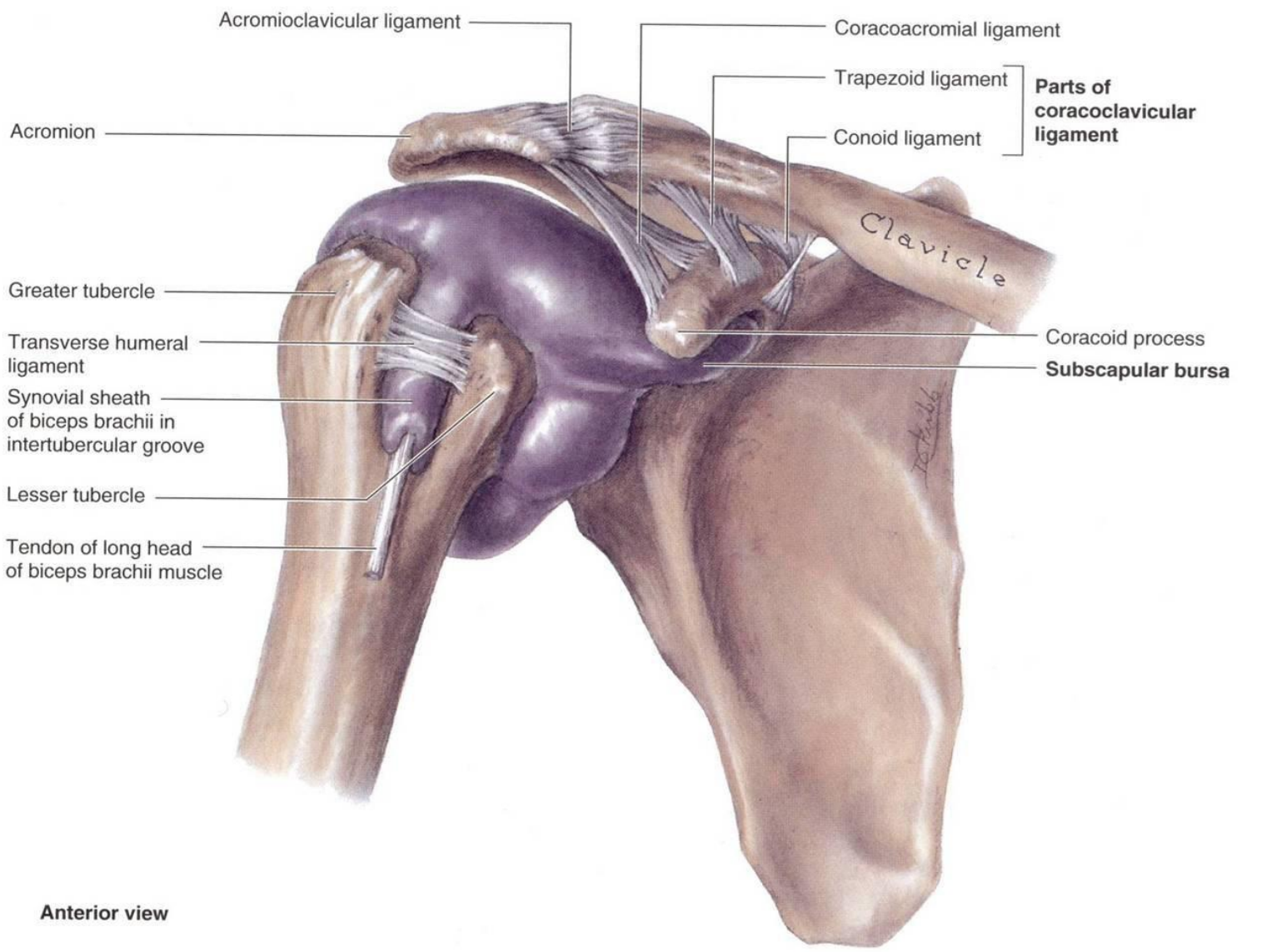


- Articular surfaces are covered by **articular - *hyaline cartilage*.**
- Glenoid cavity is deepened by ***fibro cartilaginous rim*** called **glenoid labrum**.

Synovial membrane

- lines fibrous capsule & **attached to margins of the cartilage** covering the articular surfaces.
- forms a **tubular sheath** around the tendon of the long head of biceps brachii.
- **It extends through anterior wall of capsule** to form **subscapularis bursa** beneath subscapularis muscle.

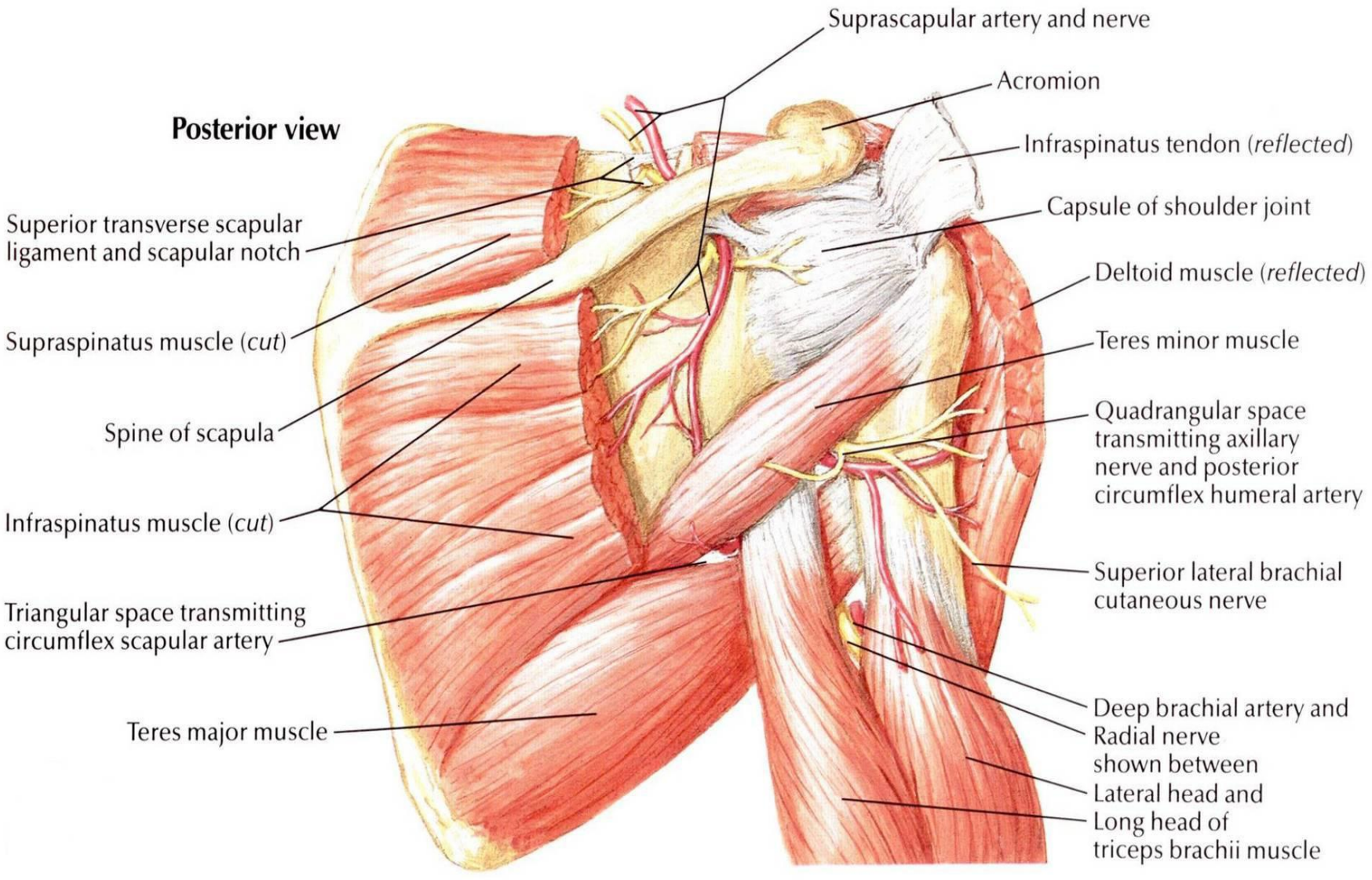
Synovial membrane



Musculotendinious/Rotator cuff

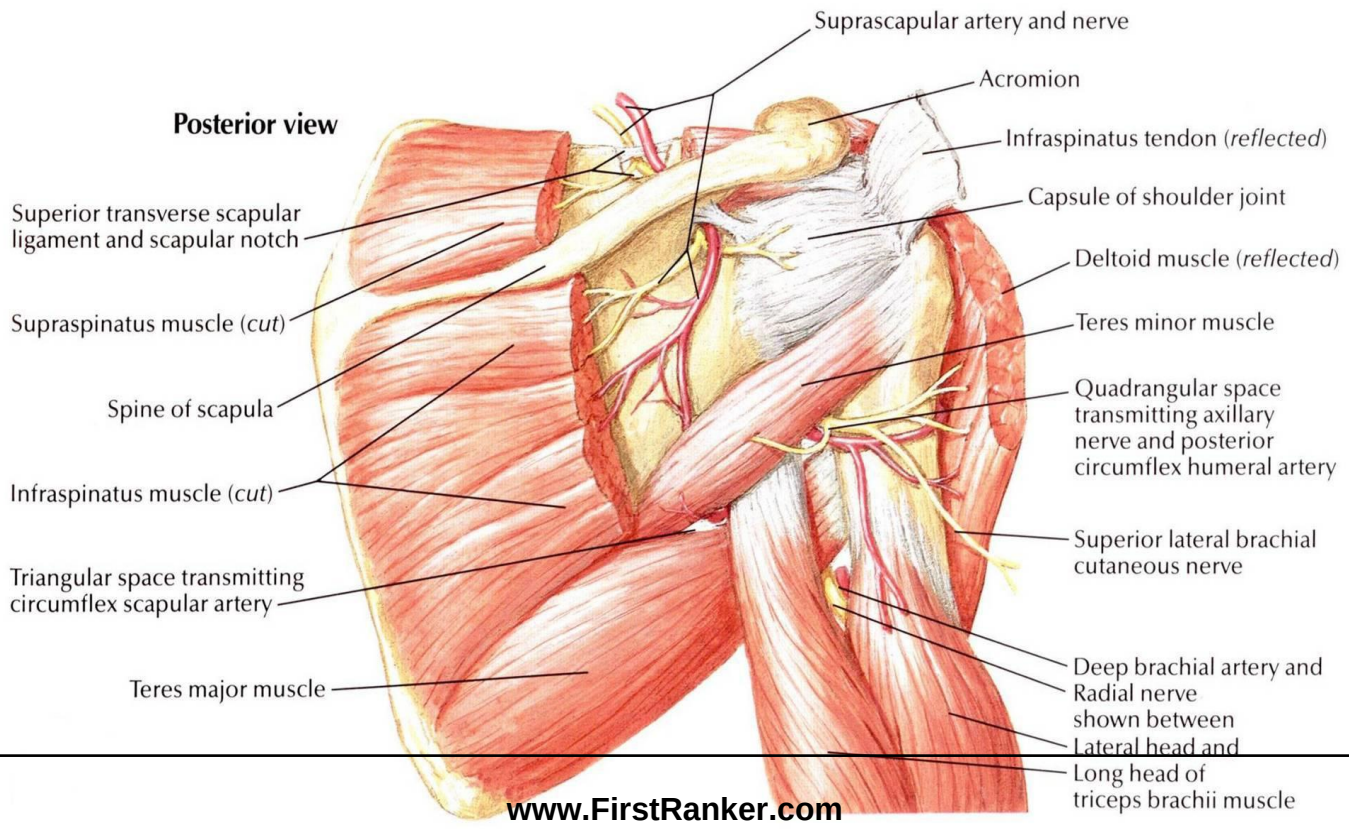
- Supraspinatus – superiorly
- Infraspinatus & Teres minor- posteriorly
- Subscapularis – anteriorly
- Long head of triceps – inferiorly (axillary n & post circumflex humeral artery – lax and least supported) –
- most common dislocations – Inferiorly axillary n palsy –loss of abduction

NERVE SUPPLY of Shoulder joint



NERVE SUPPLY of Shoulder joint

1. axillary n 2. suprascapular n &
3. lateral pectoral nerve.



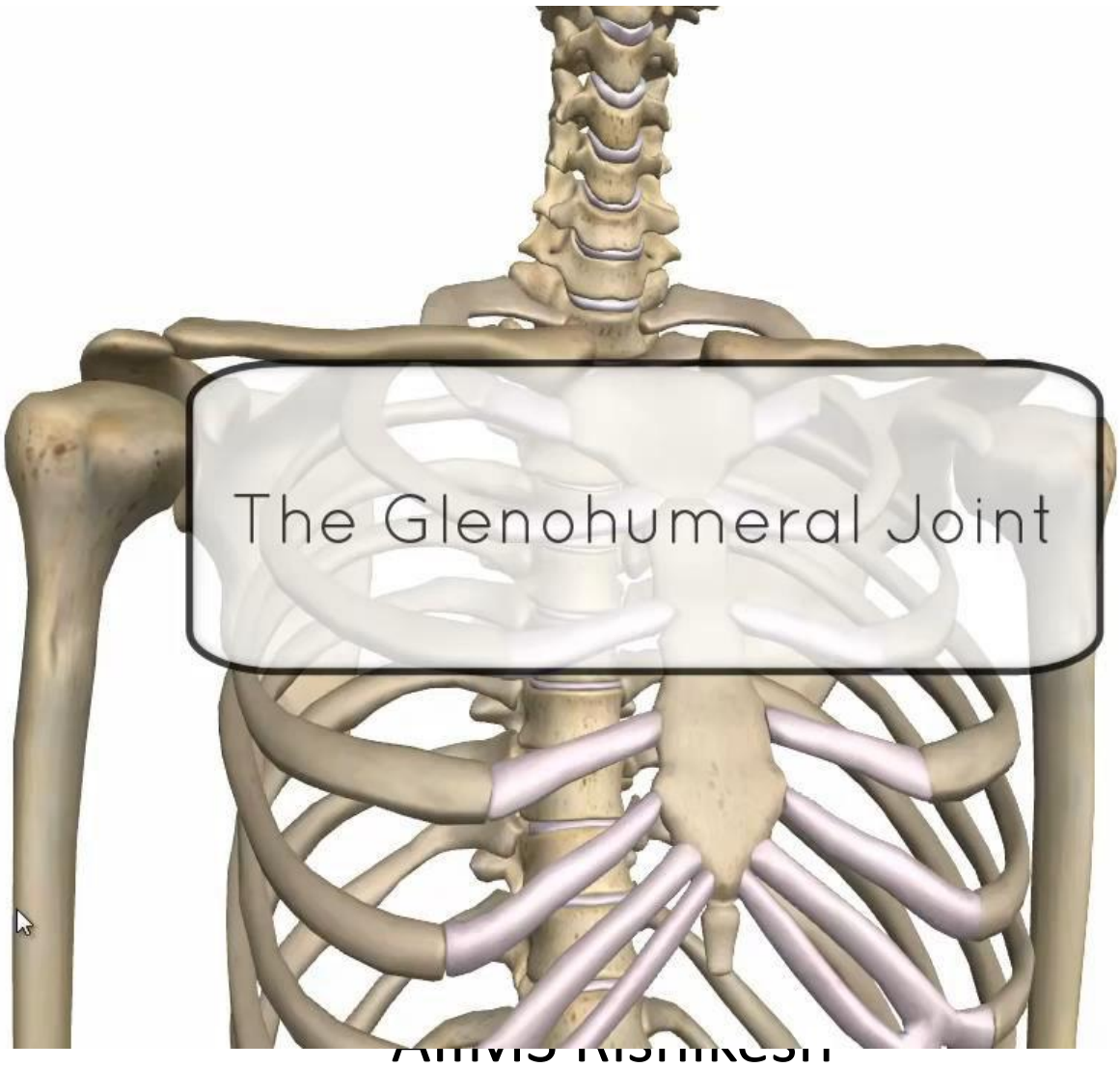
Shoulder joint - spaces

Quadrangular space

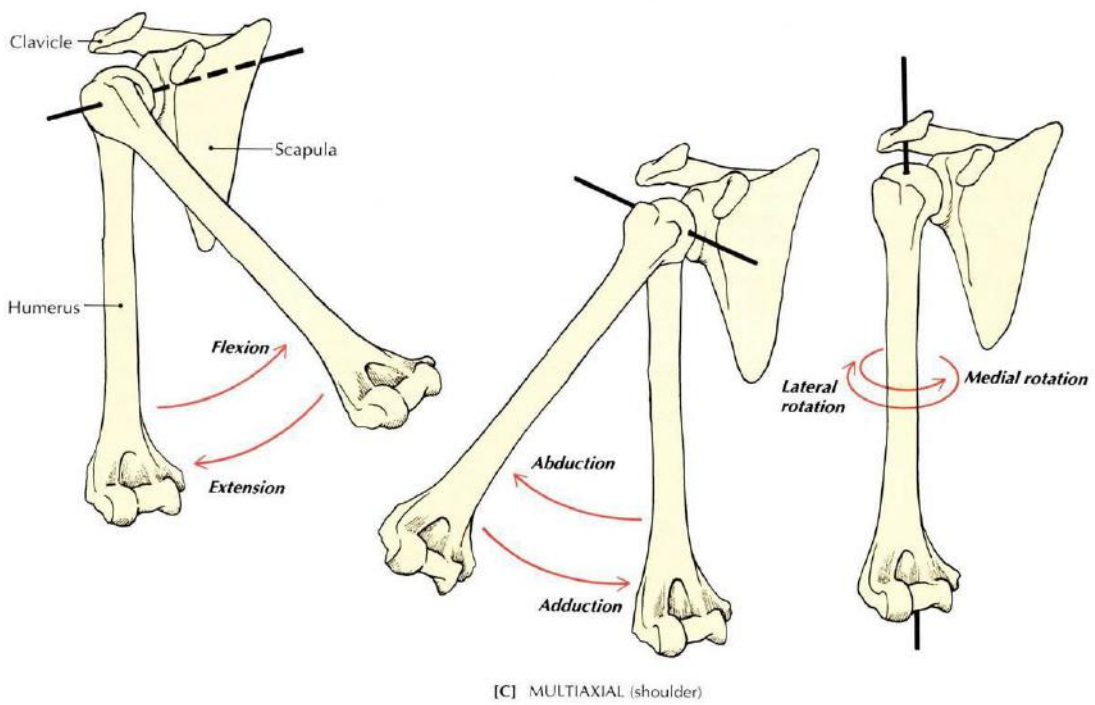
- Sup - teres minor
- Inf - teres major
- Medially - long head of triceps
- Laterally – lateral head of triceps (humerus)
- Contents – axillary nerve & posterior circumflex humeral artery

Triangular space

- Sup – teres major
- Medially- long head of triceps
- Laterally – triceps(humerus)
- Contents – in spiral groove Radial nerve & profunda brachii artery

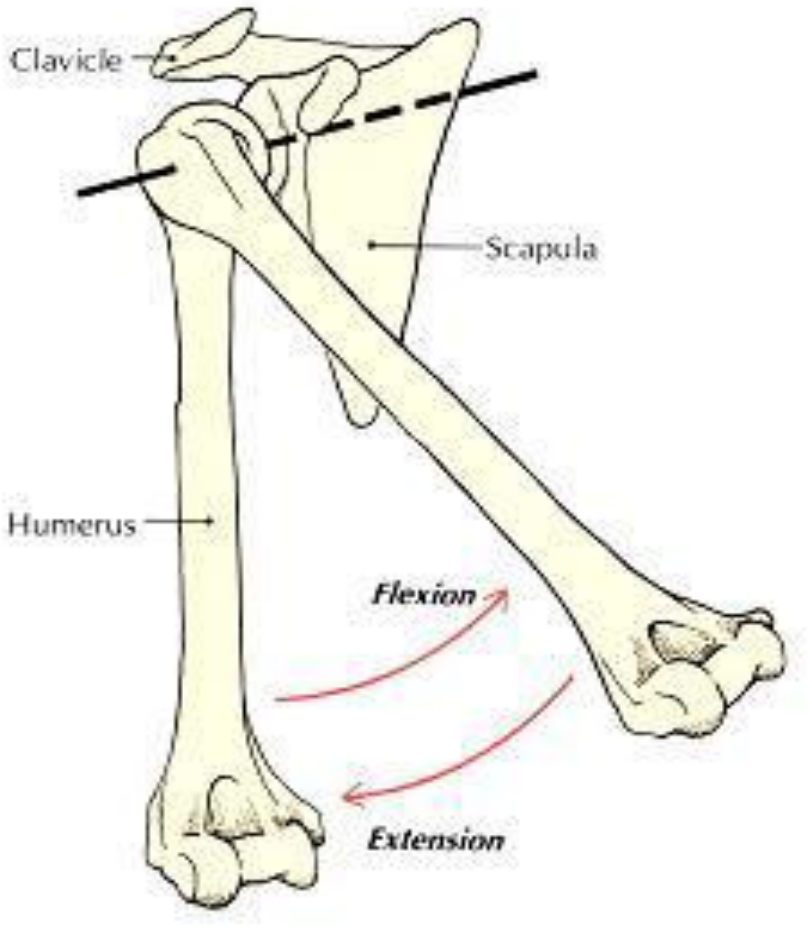


Shoulder joint -movements:



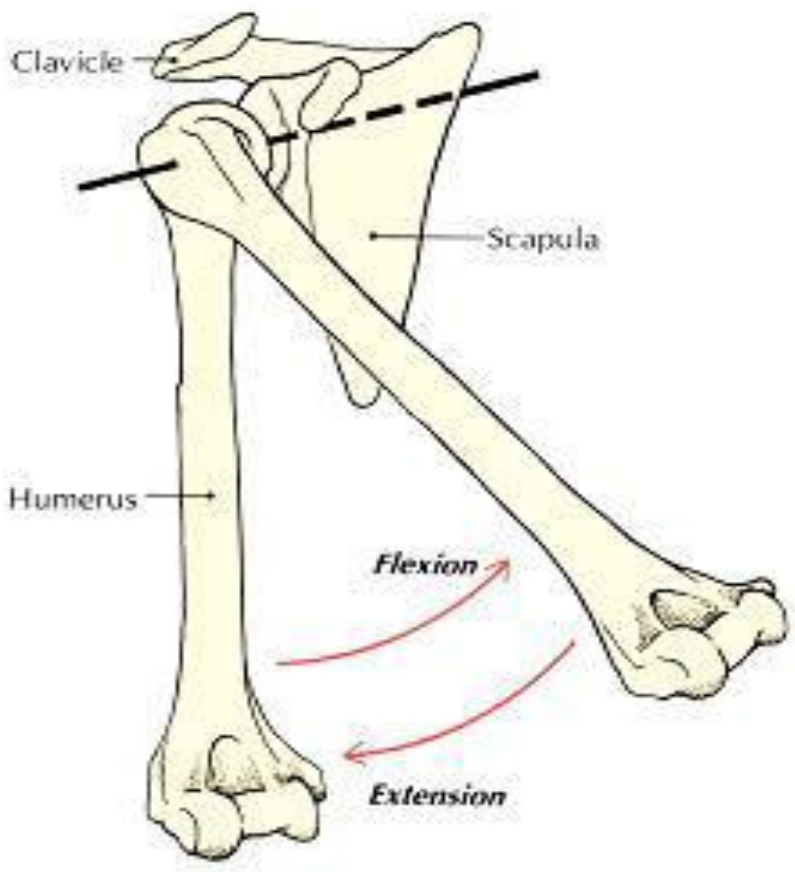
[C] MULTIAXIAL (shoulder)

- **Flexion**
- **Extension**
- **Abduction**
- **Circumduction**
- **Lateral rotation**
- **Medial rotation**



Flexion - 90°

1. Deltoid - ant
2. Pectoralis major
3. Biceps brachii
4. Coracobrachialis

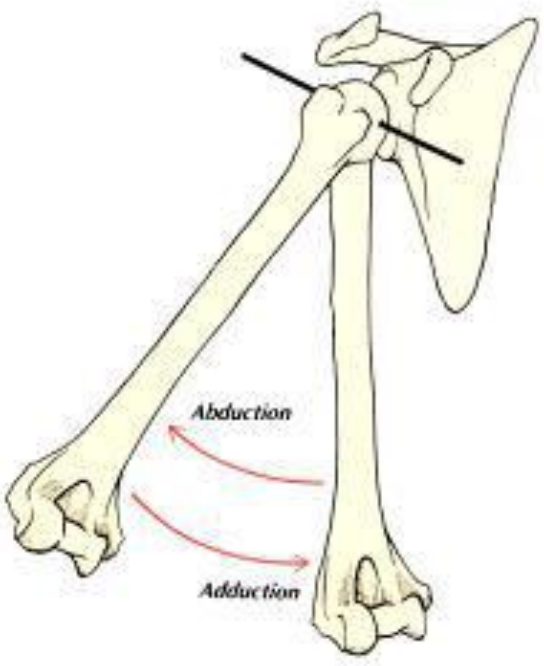


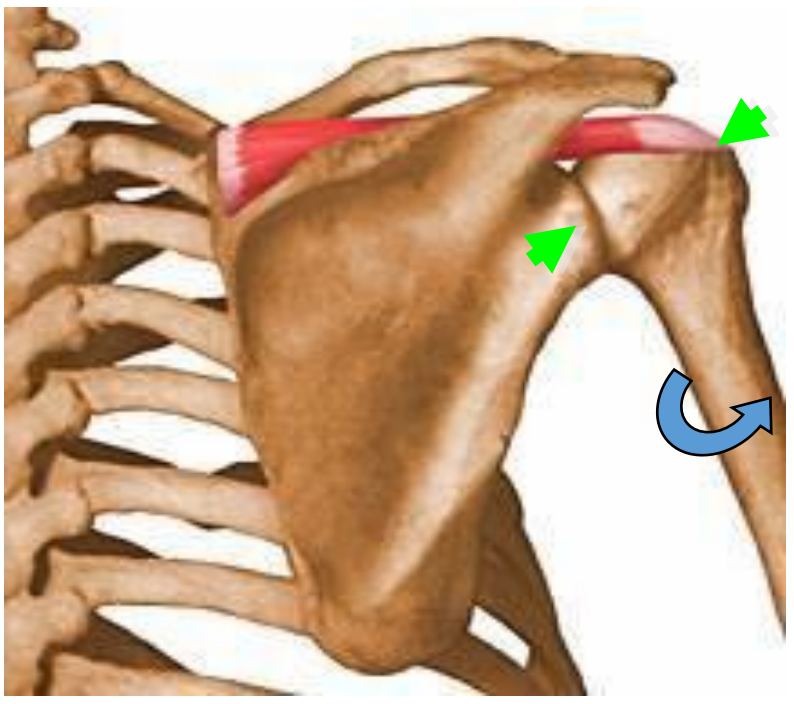
Extension is - 45°

- Deltoid post
- Latissimus dorsi
- Teres major

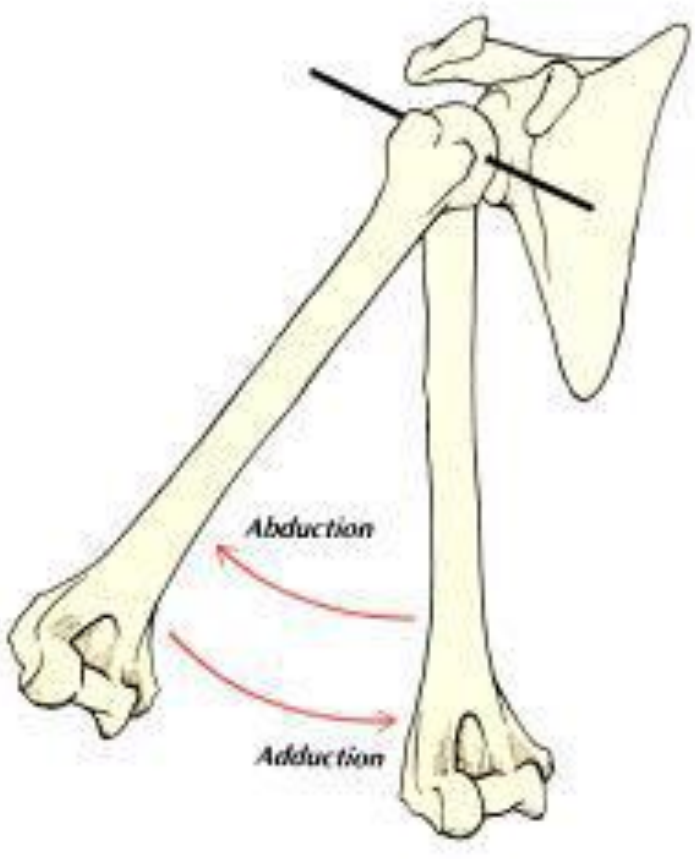
Abduction:

- Initiated - **supraspinatus** → 0 to 18
- 19 →120 - *middle fibers* of **deltoid.**
- Subscapularis
- Infraspinatus
- Teres minor
- Above 90 by rotation of scapula
- Trapezius & Serratus Anterior





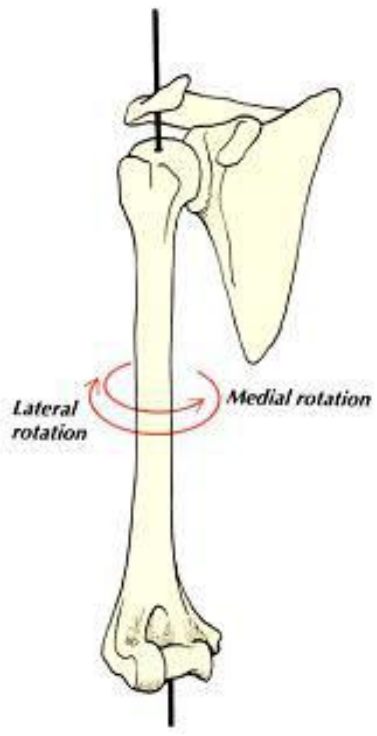
- Supraspinatus: ***initiates abduction***(0 to 15) and ***holds the head of the humerus*** against glenoid fossa of scapula;
- Latter function of supraspinatus **allows deltoid** muscle to contract and abduct humerus at shoulder joint.



Adduction:

Normally upper limb can be swung 45° across front of chest.

- pectoralis major
- latissimus dorsi
- teres major
- teres minor

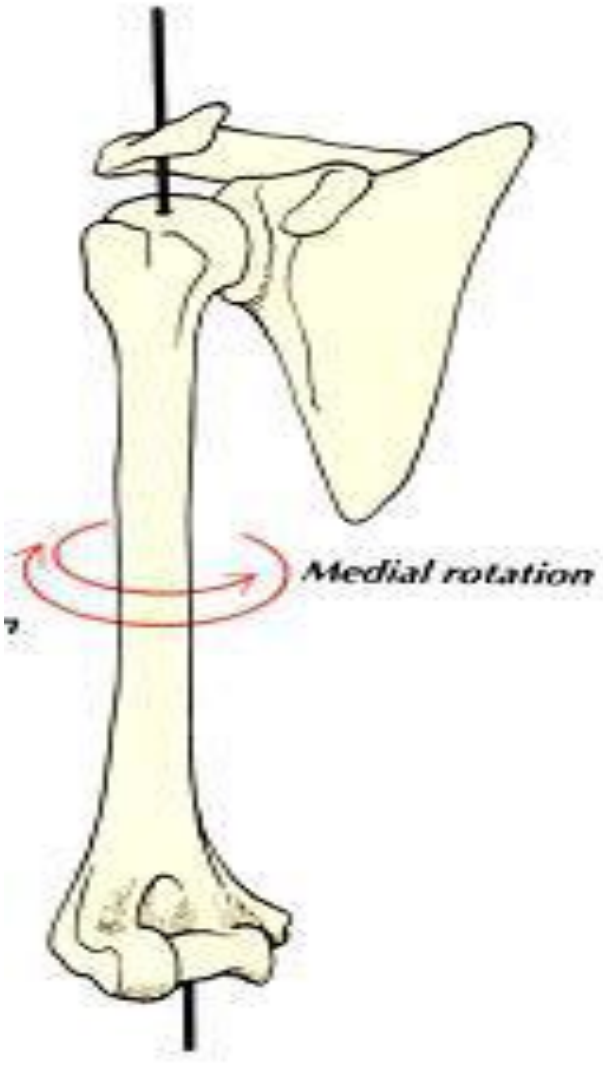


Lateral rotation

Is about 40 - 45°.

POST -

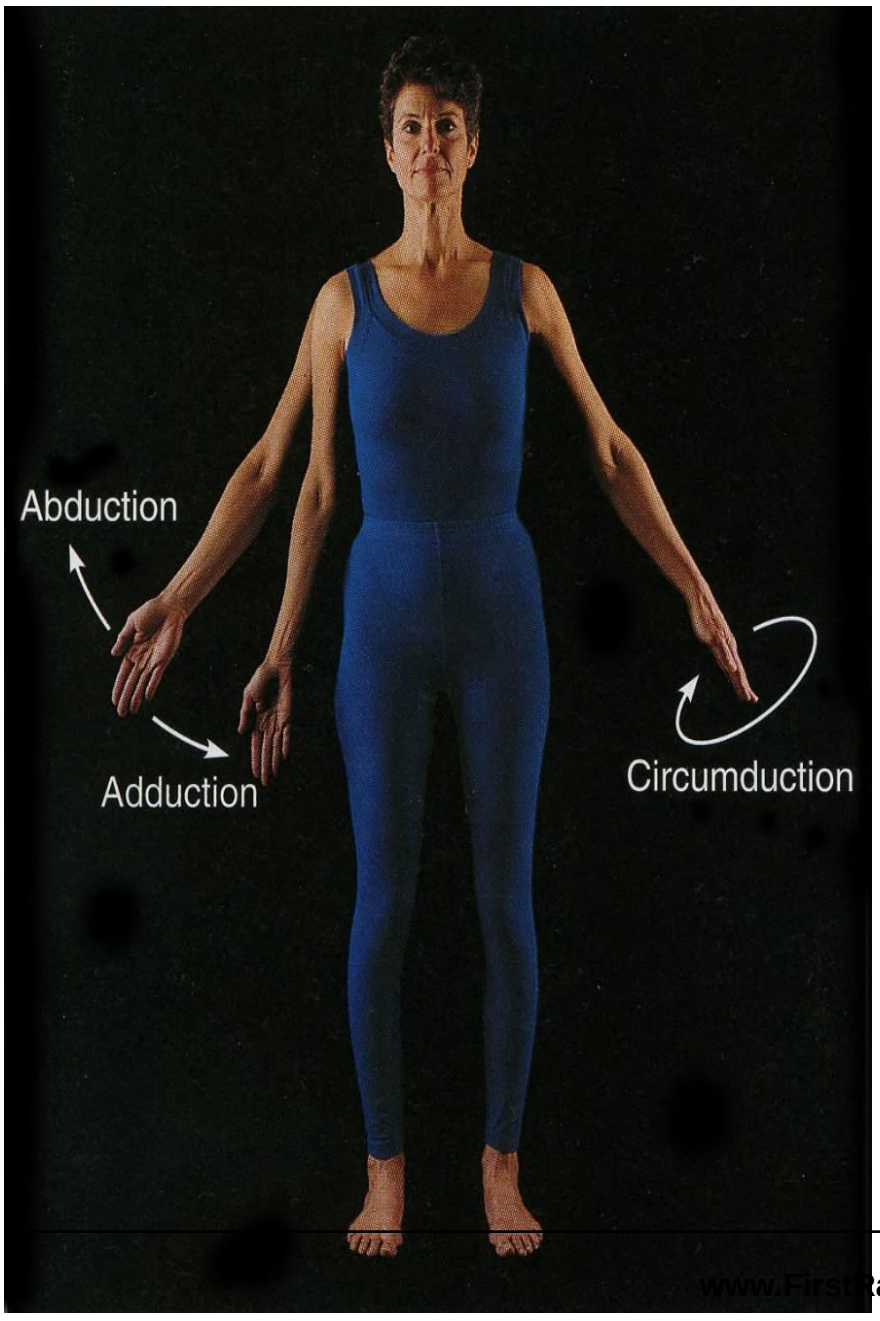
- infraspinatus
- teres minor
- ***posterior*** fibers of the deltoid muscle



Medial rotation:

- Normal medial rotation is about 55°.
- performed by : muscles attached at BG - ANT

- pectoralis major
- Subscapularis
- latissimus dorsi
- teres major
- ***anterior*** fibers of deltoid.

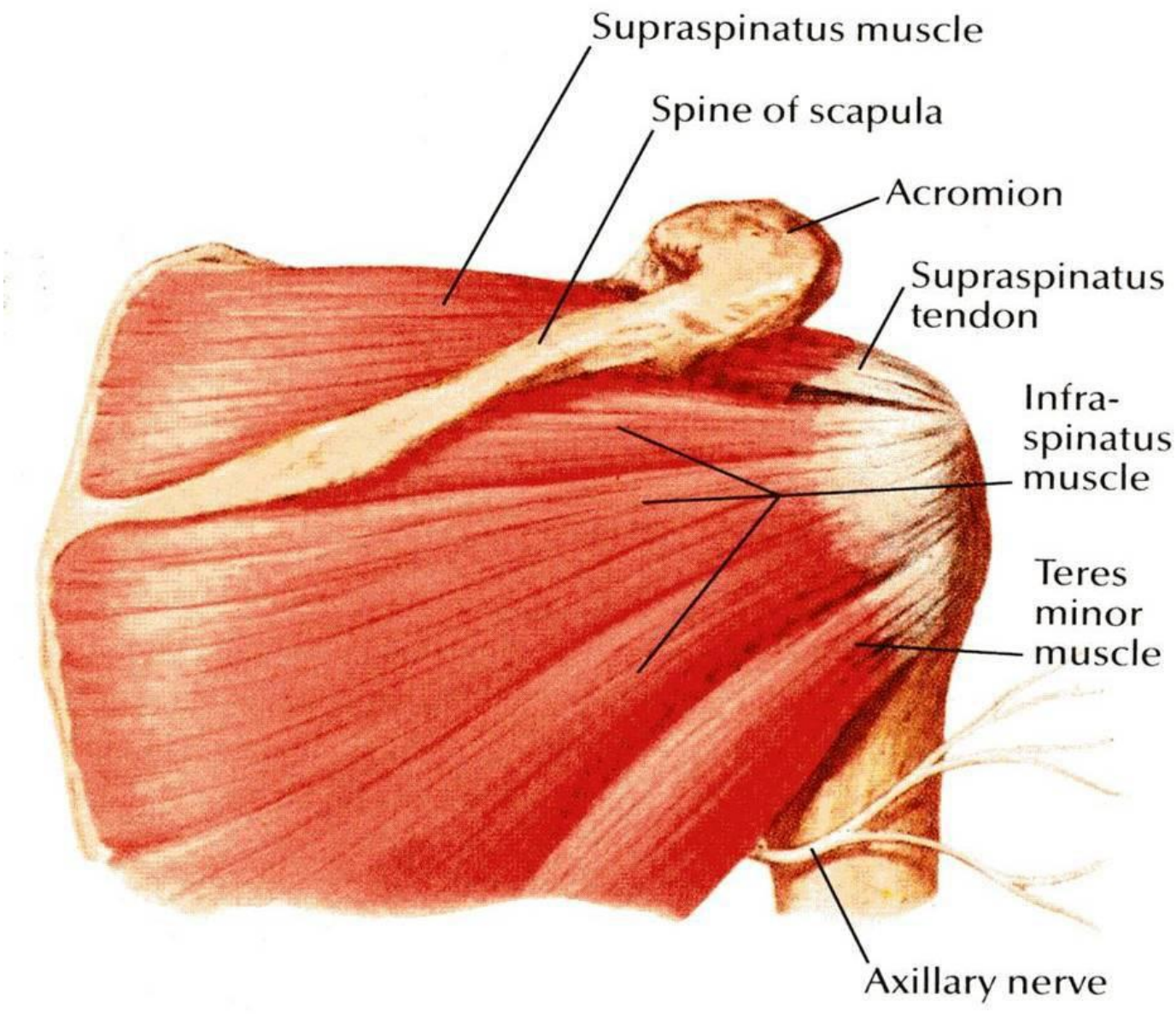


Circumduction:

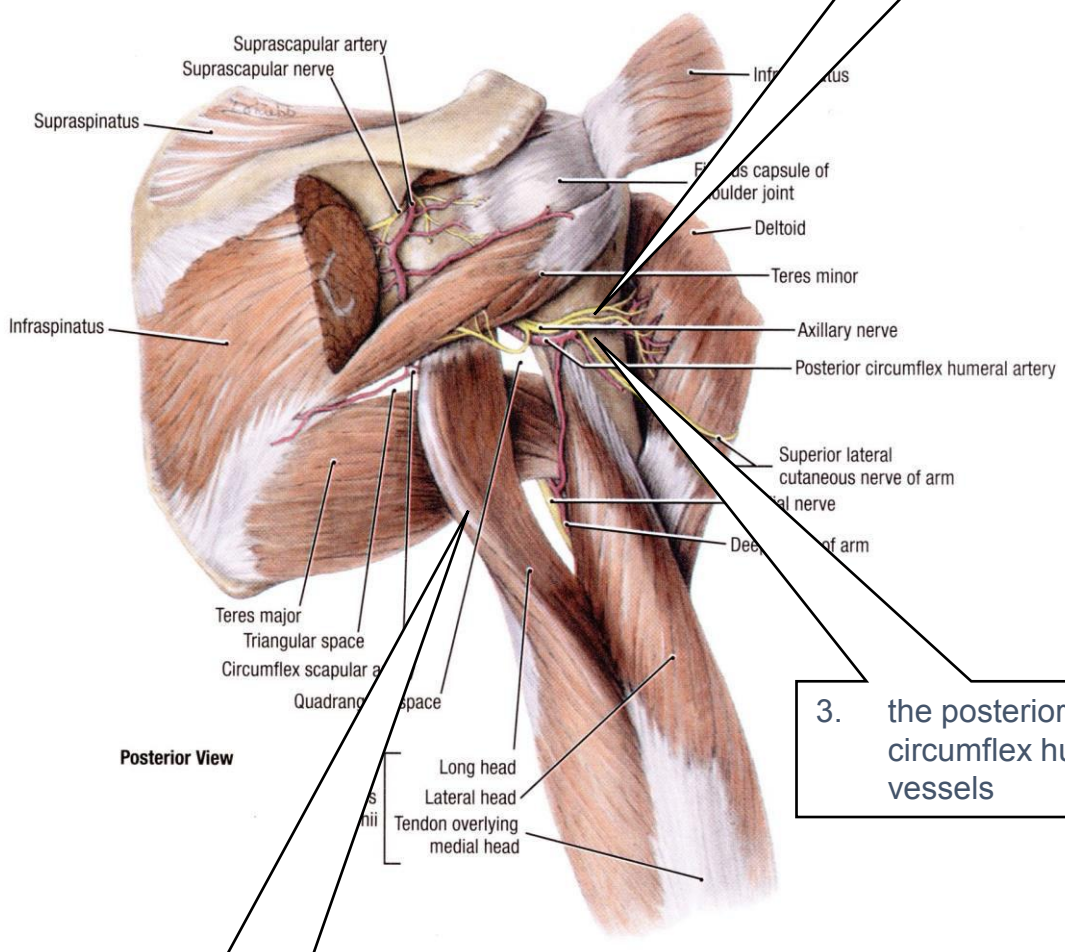
This is a movement in which distal end of humerus moves in circular motion while proximal end remains stable.

- It is -

1. Flexion,
2. Abduction,
3. Extension &
4. Adduction Successively



Posterior view



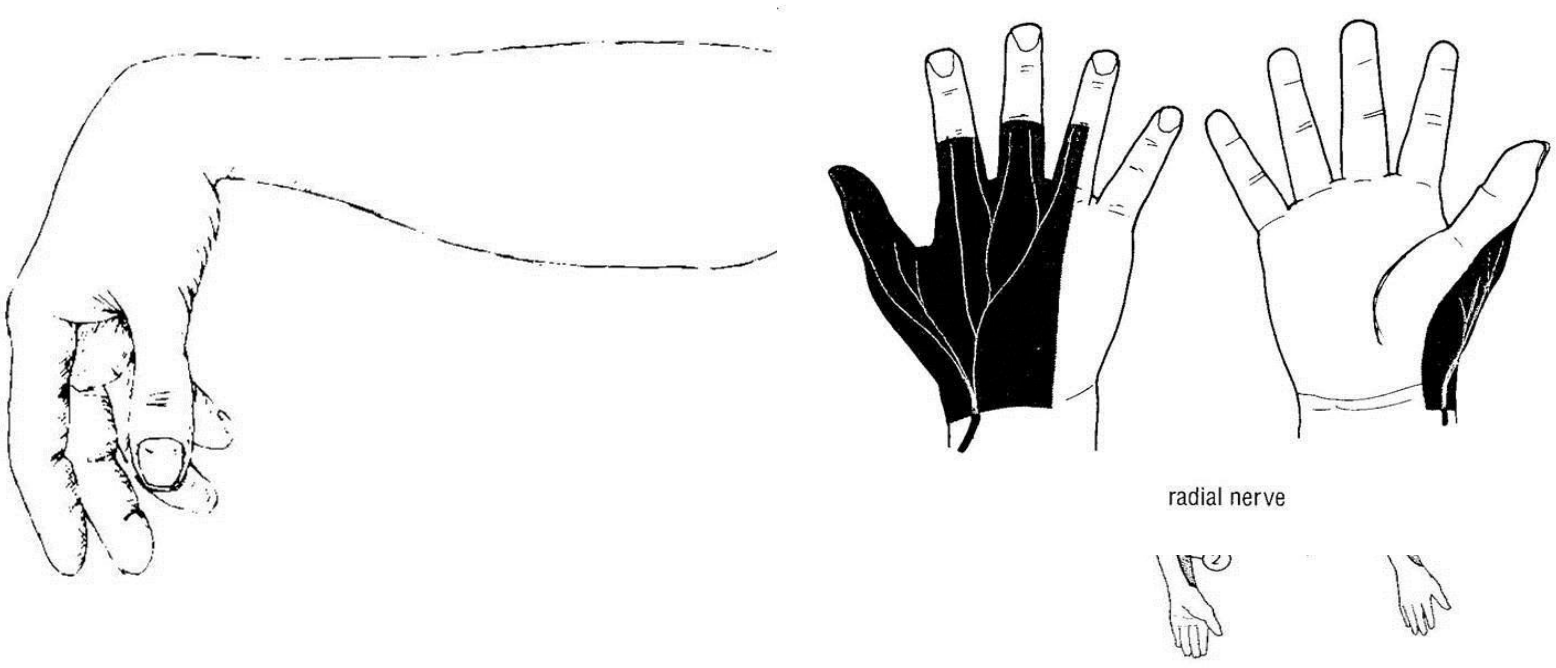
2. the axillary nerve

3. the posterior circumflex humeral vessels

1. the long head of the triceps muscle

Stability of the shoulder joint

- This joint is **unstable** because of :
  - ***shallowness*** of glenoid fossa
  - ***weak ligaments***
- Its strength almost entirely depends on **tone** of rotator cuff muscles.
- Tendons of these muscles are fused to underlying capsule of shoulder joint.
- ***Least supported part of joint*** lies in **inferior** location, where it is unprotected by muscles.



- A ***subglenoid*** displacement of the head of the humerus into the quadrangular space can cause **damage to the axillary nerve.**
- This is indicated by *paralysis of the deltoid muscle* and ***loss of skin sensation*** over the lower half of the deltoid.
- Downward displacement of the humerus can also **stretch and damage the radial nerve**.

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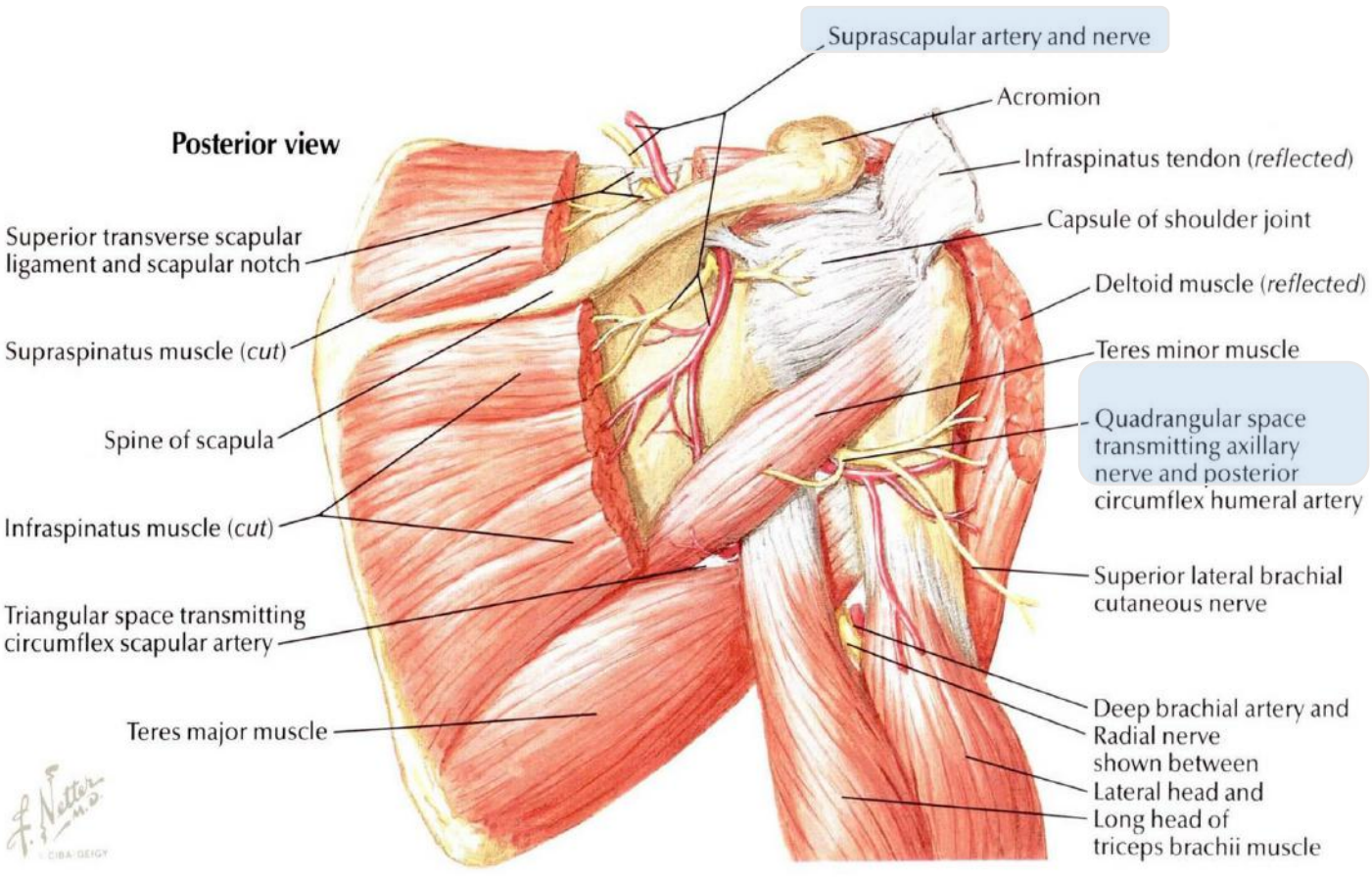
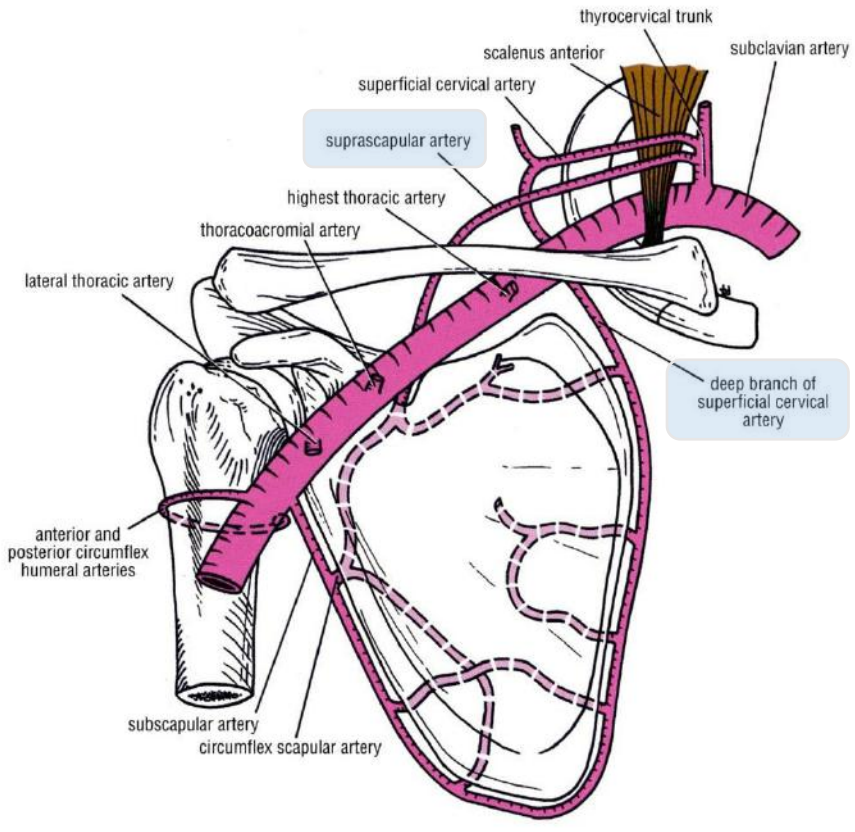
Shoulder pain

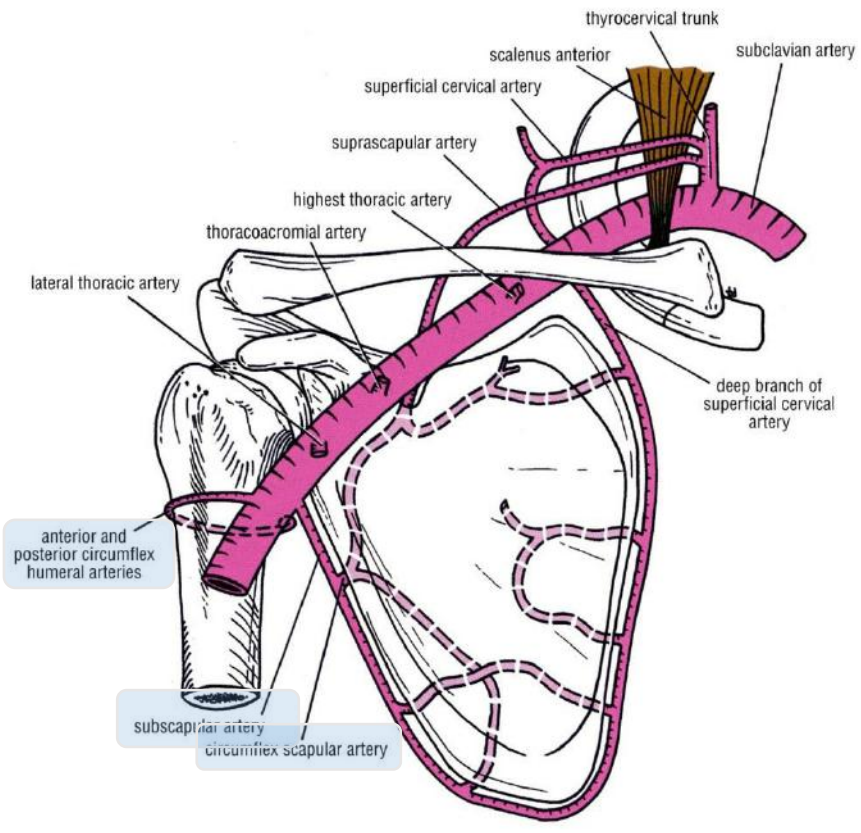


Branches from 1st part of subclavian artery



- **suprascapular artery,** (branch from 1st part of subclavian artery) distributed to supraspinous and infraspinous fossae of scapula.
- **superficial cervical artery,** which gives off a ***deep branch*** that runs down medial border of scapula.

Branches from 3rd part of axillary artery



- **subscapular artery** and its ***circumflex scapular branch*** supply subscapular and infraspinous fossae of scapula.
- **anterior & posterior circumflex humeral artery.**
- Both circumflex arteries form an ***anastomosing circle*** around surgical neck of the humerus.