ANATOMY OF THE SHOULDER REGION

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OBJECTIVES

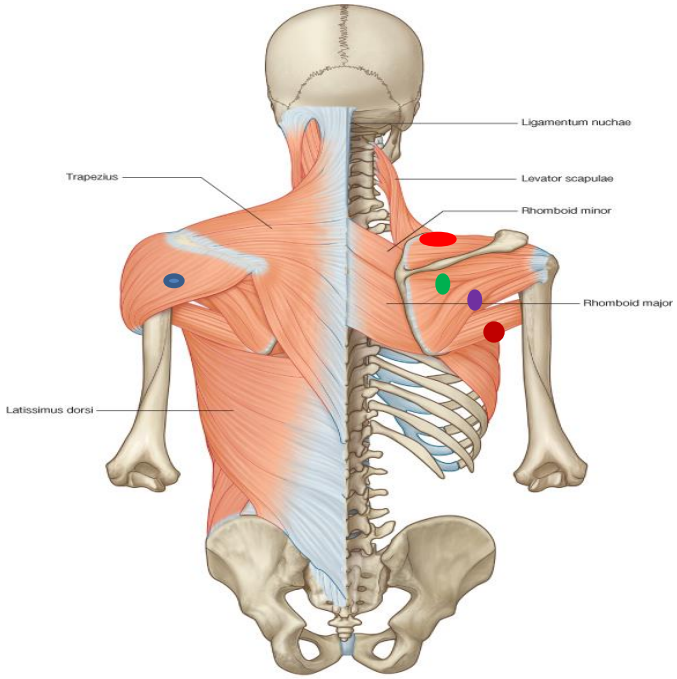
At the end of the lecture, students should:

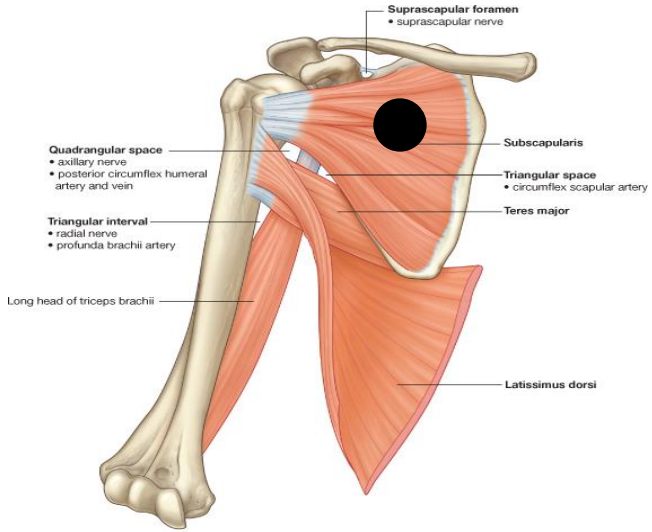
- *List the name of muscles of the shoulder region.*
- *Describe the anatomy of muscles of shoulder region regarding: attachments of each of them to scapula & humerus, nerve supply and actions on shoulder joint*
- *List the muscles forming the rotator cuff and describe the relation of each of them to the shoulder joint.*
- *Describe the anatomy of shoulder joint regarding: type, articular surfaces, stability, relations & movements.*

MUSCLES OF SHOULDER REGION

- They are muscles connecting scapula to humerus (move humerus through shoulder joint).

1. *Deltoid.*
2. *Supraspinatus.*
3. *Infraspinatus.*
4. *Teres minor.*
5. *Teres major.*
6. *Subscapularis.*

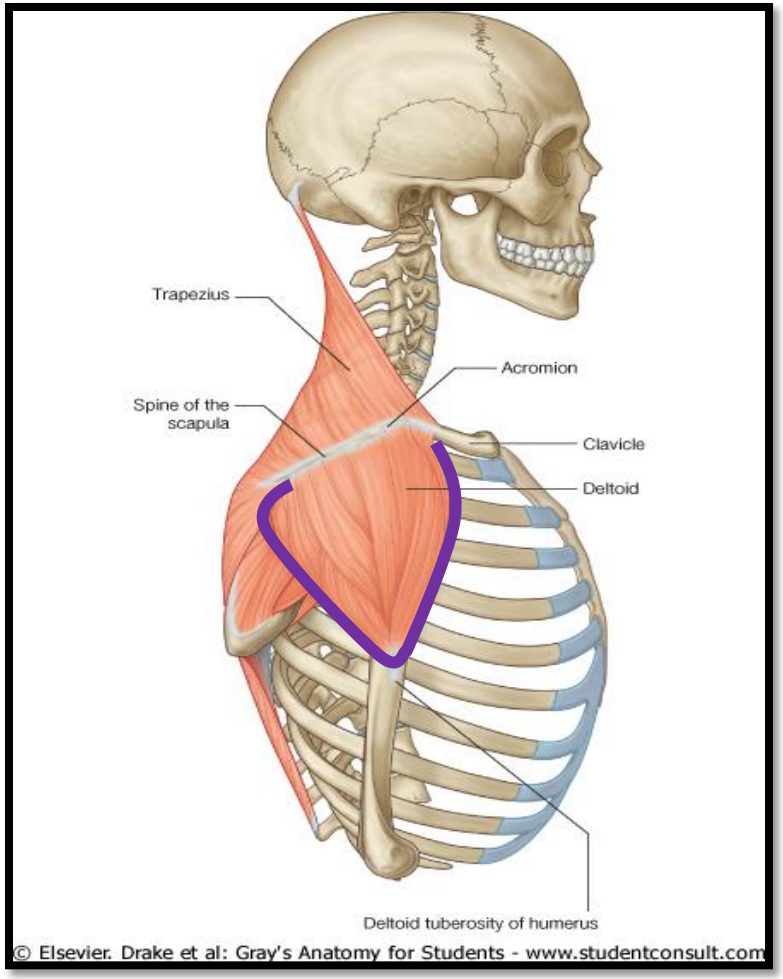




DELTOID

- A **triangular muscle** that forms the **contour of the shoulder.**
- **Origin:** lateral 1/3 of clavicle + acromion and spine of scapula *(look to insertion of trapezius)*.
- **Insertion:** deltoid tuberosity of humerus.
- **Nerve supply:** axillary nerve.
- **Actions:**

1. ***Anterior fibers:*** flexion & medial rotation of humerus (arm, shoulder joint).
2. ***Middle fibers:*** abduction of humerus from 15° - 90 °.
3. ***Posterior fibers:*** extension & lateral rotation of humerus.



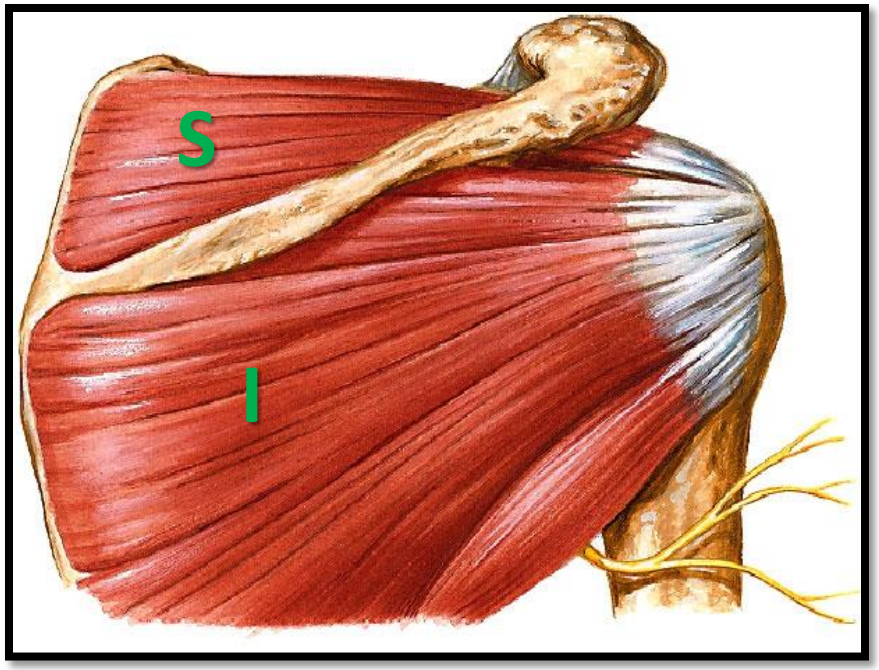
SUPRASPINATUS & INFRASPINATUS

- **Origin:**

1. *Supraspinatus:* supraspinous fossa.
2. *Infraspinatus:* infraspinaous fossa.

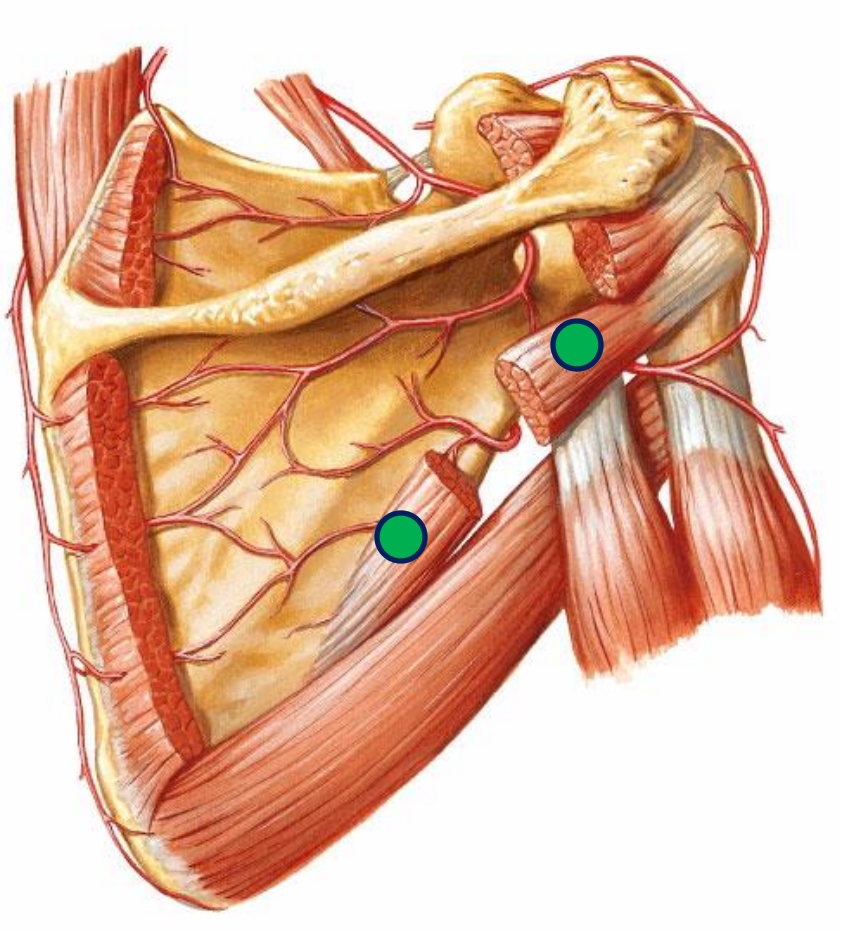
- **Insertion:** greater tuberosity of humerus.
- **Nerve supply:** suprascapular nerve.
- **Action:**

1. *Supraspinatus:* abduction of humerus from 0° - 15°.
2. *Infraspinatus:* lateral rotation of humerus.



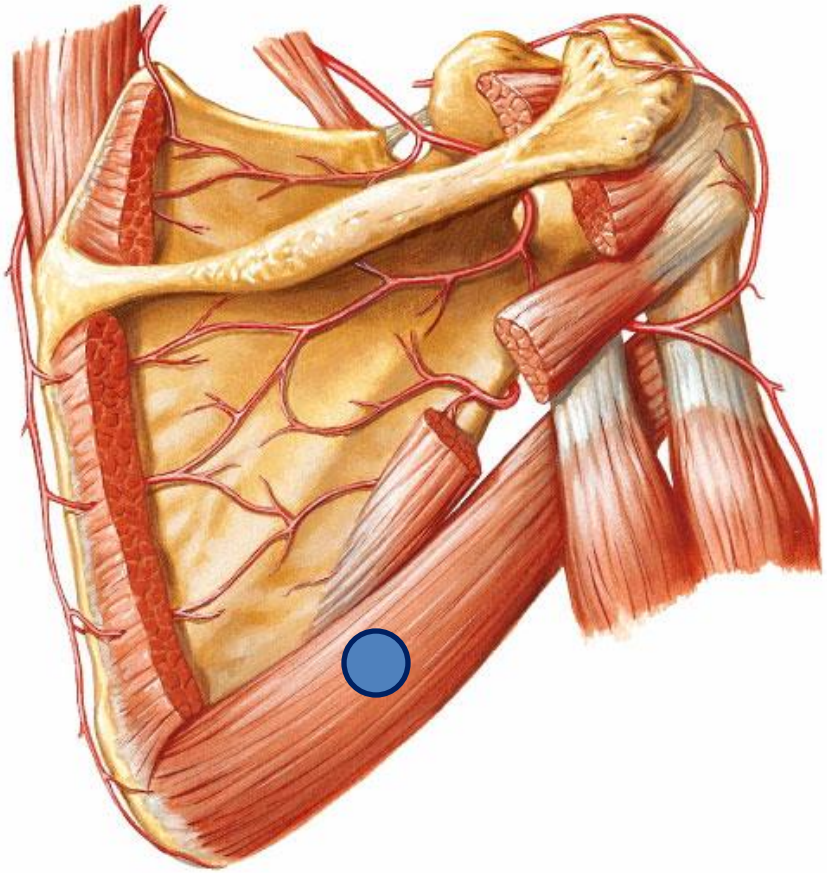
TERES MINOR

- **Origin:** lateral border of scapula.
- **Insertion:** greater tuberosity of humerus.
- **Nerve supply:** axillary nerve.
- **Action:** lateral rotation of humerus.



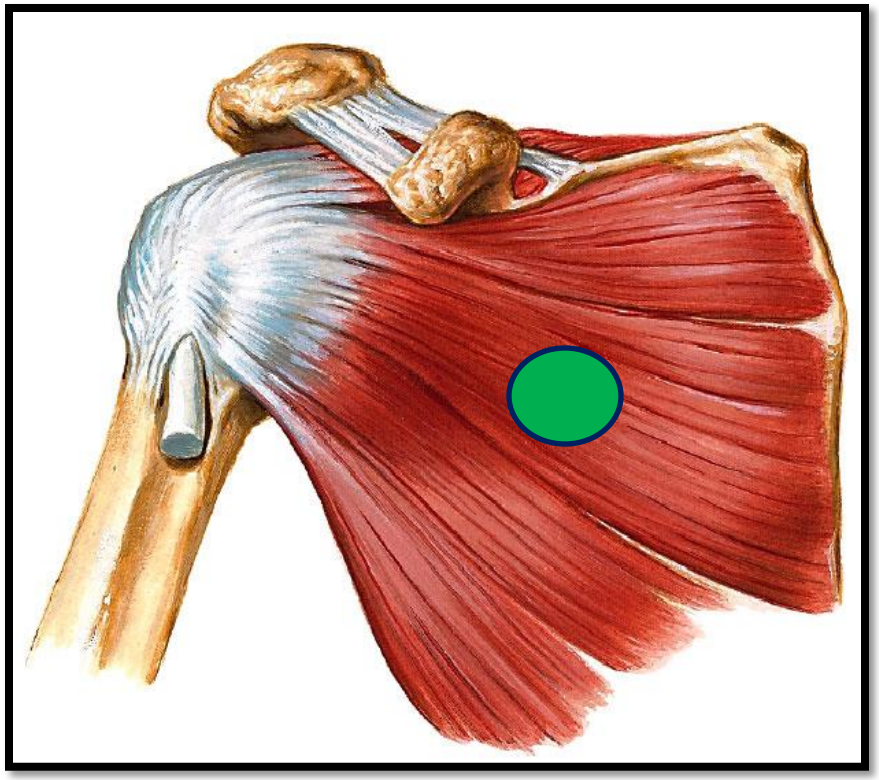
TERES MAJOR

- **Origin:** lateral border of scapula.
- **Insertion:** bicipital groove of humerus (*look to insertion of latissimus dorsi & pectoralis major*).
- **Nerve supply:** lower subscapular nerve.
- **Actions:** extension, adduction & medial rotation of humerus (*look to action of latissimus dorsi)*.



SUBSCAPULARIS

- **Origin:** subscapular fossa.
- **Insertion:** lesser tuberosity of humerus.
- **Nerve supply:** upper & lower subscapular nerves.
- **Action:** medial rotation of humerus.



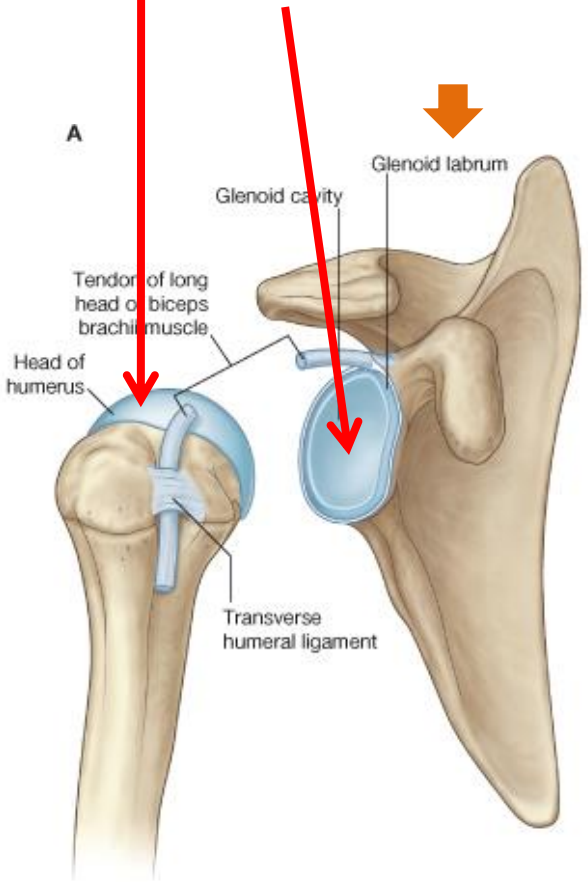
SHOULDER JOINT

❑TYPE:

Synovial, multiaxial (ball & socket)

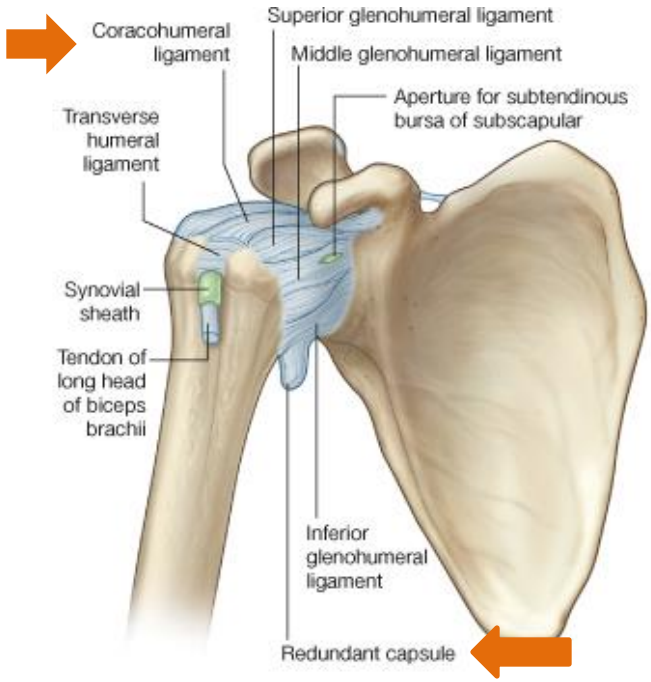
❑ARTICULAR SURFACES:

1. Head of humerus
2. Glenoid cavity of scapula



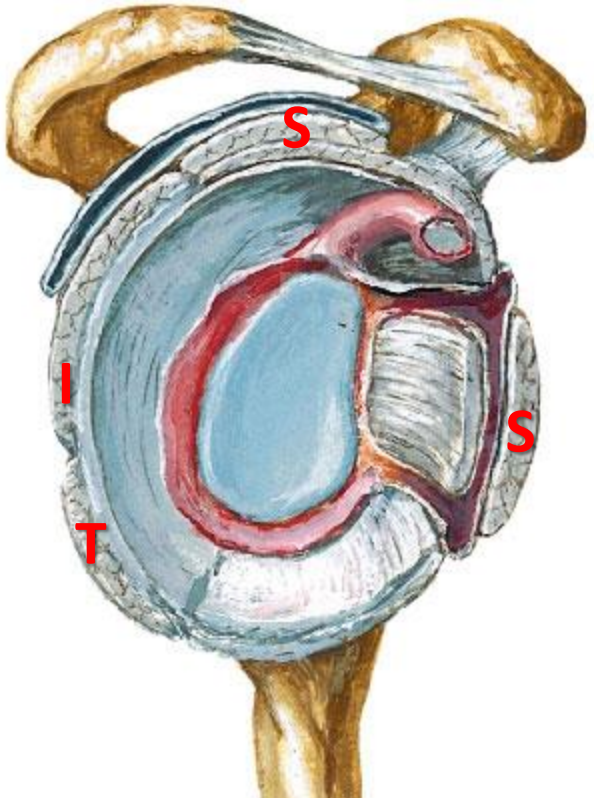
❑STABILITY: NOT STABLE

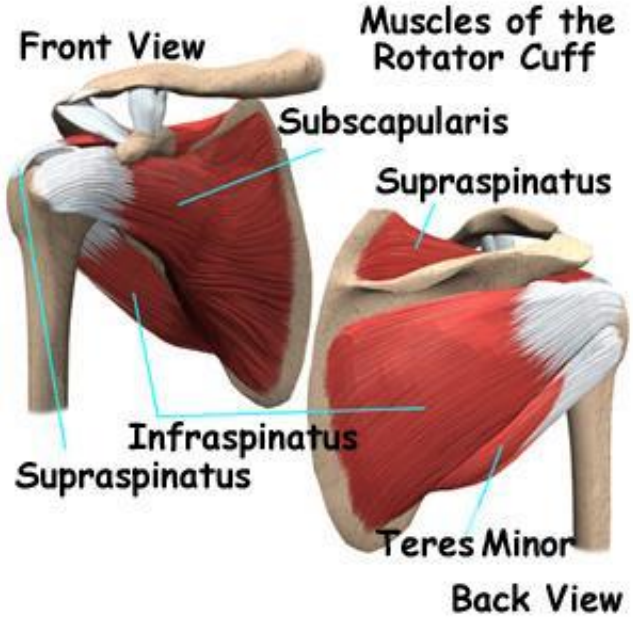
1. Head of humerus is 3 times larger than glenoid cavity
2. Capsule is redundant.
3. Few ligamentous support: glenoid labrum, coracohumeral
4. Main support: muscles around the joint **(ROTATOR CUFF)**
5. Wide range of movement



ROTATOR CUFF

- It is formed of **4 muscles**: *supraspinatus, infraspinatus, teres minor & subscapularis (SITS).*
- Muscles form a tendinous cuff around the shoulder joint covering its **anterior, posterior** and **superior** aspects.
- The cuff is **deficient inferiorly** and this is the site of potential weakness.
- The **tone** of these muscles help in **stabilizing the shoulder joint.**

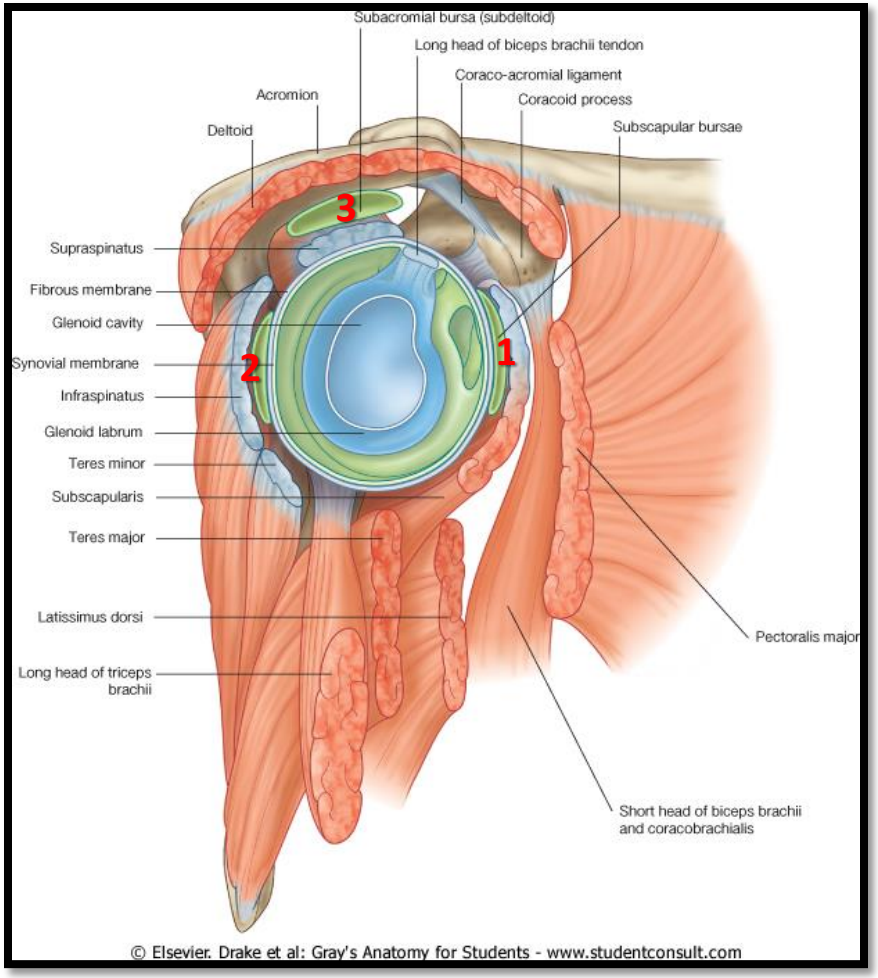




BURSAE IN RELATION TO SHOULDER JOINT

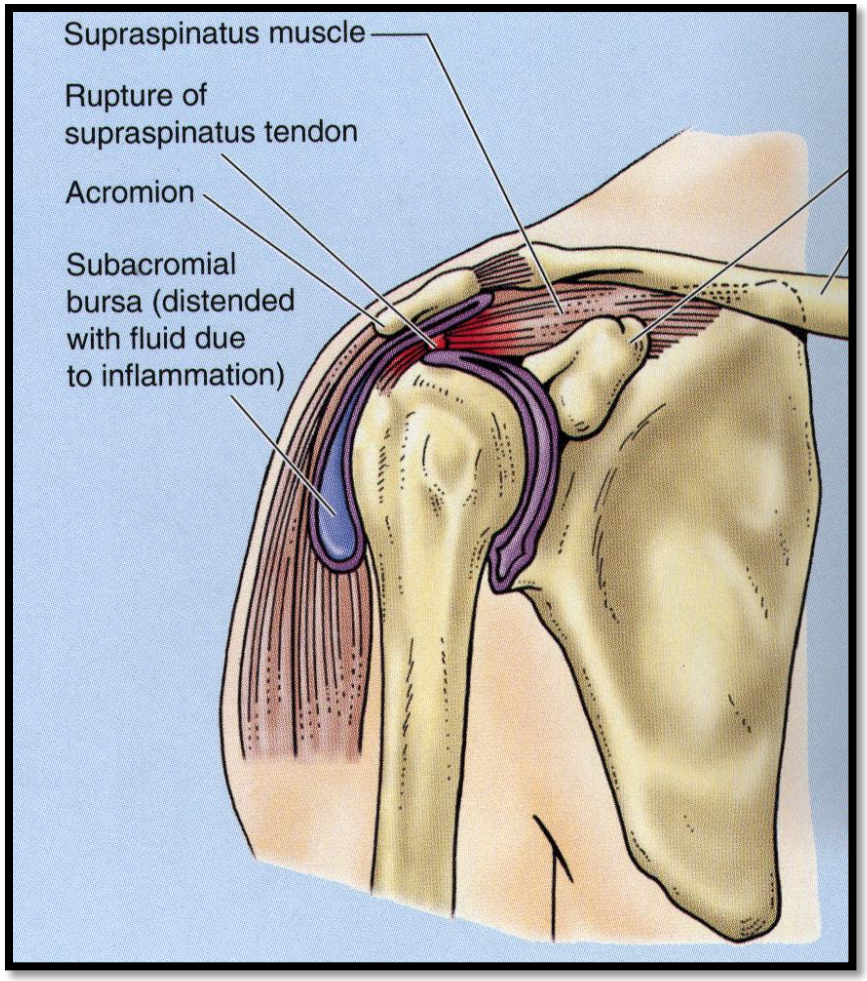
- They **reduce friction** between tendons, joint capsule & bone.
- They are liable to be **inflammed** following injury of rotator cuff muscles.

1. **Subscapularis bursa:** between subscapularis tendon & capsule.
2. **Infraspinatus bursa:** between infraspinatus tendon & capsule.
3. **Subacromial bursa:** between deltoid, supraspinatus and capsule.

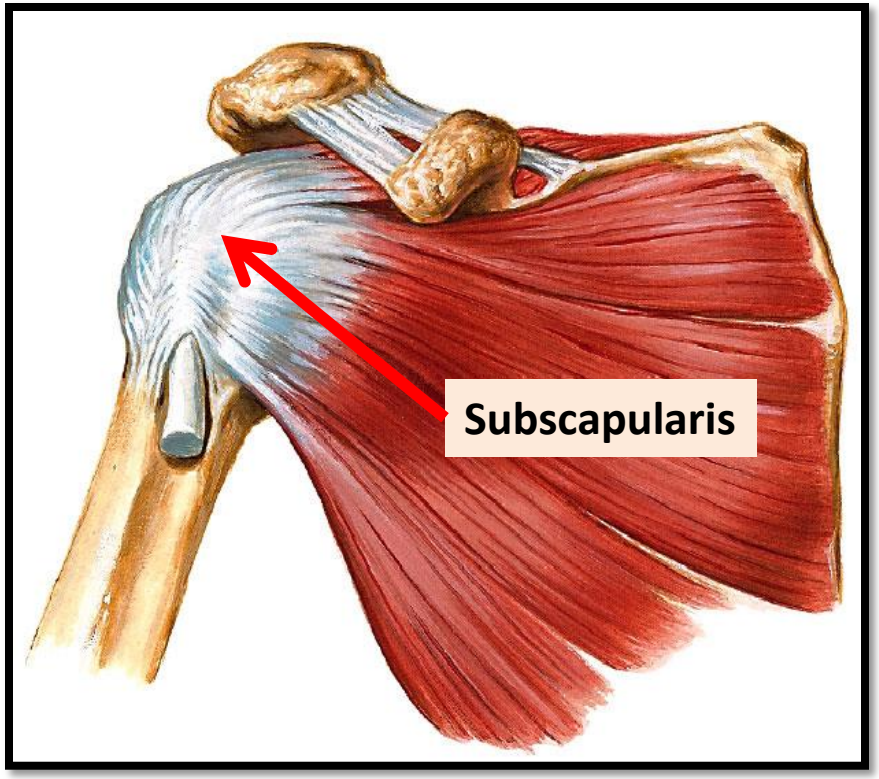


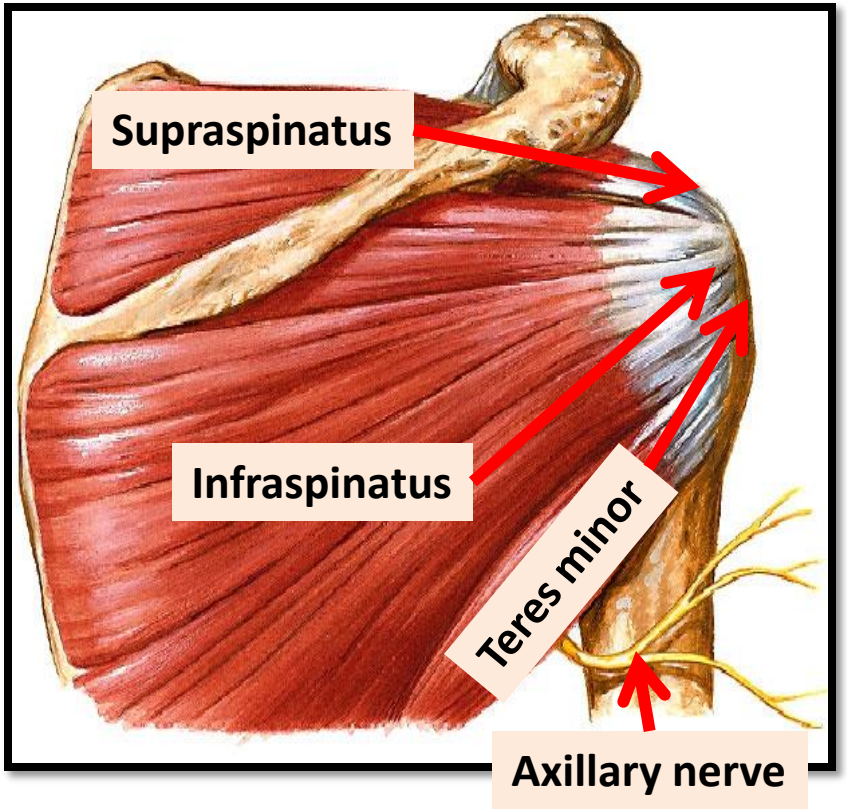
ROTATOR CUFF

- Rotator cuff can be **damaged** due to **trauma** (during playing baseball) or **disease** (in older individuals).
- Trauma can tear or rupture one or more tendon (s) forming the cuff. Patients with rotator injury will present with pain, shoulder instability, and limited range of motion.
- **Supraspinatus tendon** is the most common site of rotator cuff injury.



RELATIONS OF SHOULDER JOINT





- **ANTERIOR:** subscapularis
- **POSTERIOR:** infraspinatus, teres minor
- **SUPERIOR:** supraspinatus
- **INFERIOR:** axillary nerve

MOVEMENTS OF SHOULDER JOINT

❑FLEXION:

1. Anterior fibers of deltoid
2. Pectoralis major
3. Coracobrachialis (muscle of arm)
4. Short head of biceps brachii (muscle of arm)

❑EXTENSION:

1. Posterior fibers of deltoid
2. Latissimus dorsi
3. Teres major

MOVEMENTS OF SHOULDER JOINT

❑ABDUCTION:

1. From 0° - 15°: Supraspinatus
2. From 15° - 90 °: Middle fibers of deltoid

❑ADDUCTION:

1. Pectoralis major
2. Latissimus dorsi
3. Teres major

MOVEMENTS OF SHOULDER JOINT

❑MEDIAL ROTATION:

1. Pectoralis major
2. Latissimus dorsi
3. Teres major

Inserted in bicipital groove

4. Anterior fibers of deltoid
5. Subscapularis

❑LATERAL ROTATION:

1. Posterior fibers of deltoid
2. Infraspinatus
3. Teres minor

SUMMARY

- **MUSCLES OF SHOULDER REGION:**

1. Origin: scapula.
2. Insertion: humerus.
3. Action: move humerus (SHOULDER JOINT)
4. Nerve supply: anterior rami of spinal nerves through brachial plexus.

- **ROTATOR CUFF:** 4 muscles in scapular region surrounds and helps in stabilization of shoulder joint *(supraspinatus, infraspinatus, teres minor, subscapularis).*

SUMMARY

❑Shoulder joint:

1. **Type:** synovial, ball & socket
2. **Articular surfaces:** head of humerus & glenoid cavity of scapula
3. **Stability:** depends on rotator cuff
4. **Relations:** rotator cuff and axillary nerve
5. **Movement:** flexion, extension, abduction, adduction, medial & lateral rotation

QUESTION 1

- Which one of the following muscles is inserted into the lesser tuberosity of the humerus?

1. Subscapularis 
2. Deltoid
3. Teres major
4. Infraspinatus

QUESTION 2

- Which one of the following muscles belong to the rotator cuff?

1. Subscapularis. ⟸
2. Deltoid.
3. Teres major.
4. Rhomboid minor.


THANK YOU