

# **ANATOMY OF THE SHOULDER REGION**

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# OBJECTIVES

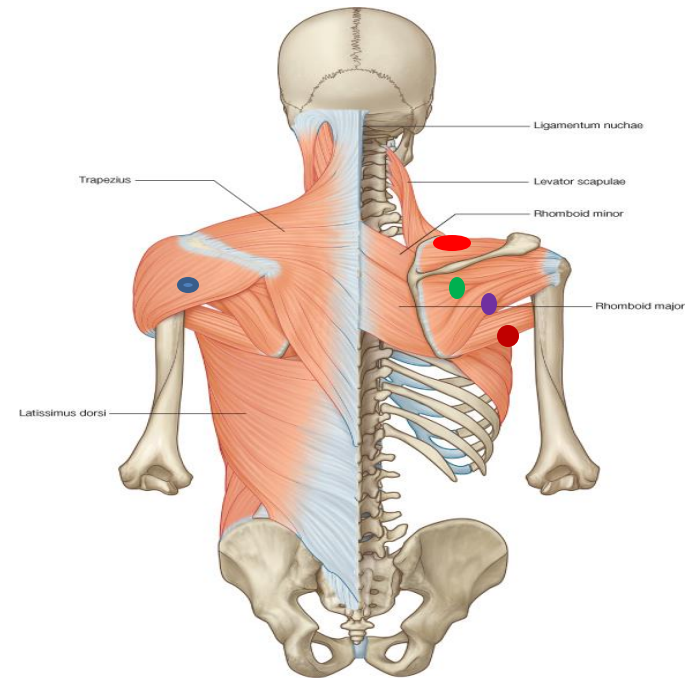
**At the end of the lecture, students should:**

- *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.*

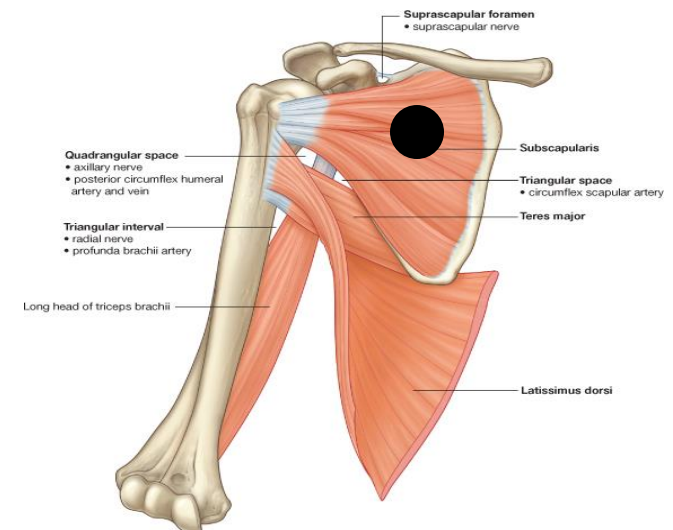
# MUSCLES OF SHOULDER REGION

□ 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.*



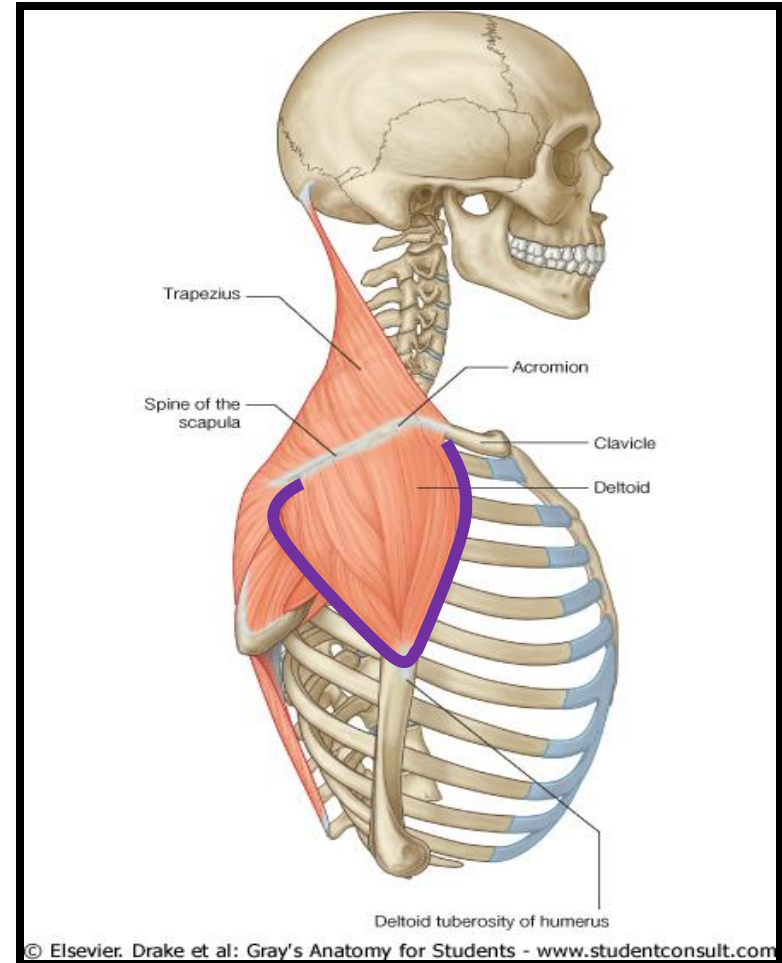
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# DELTOID

- ❑ 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:

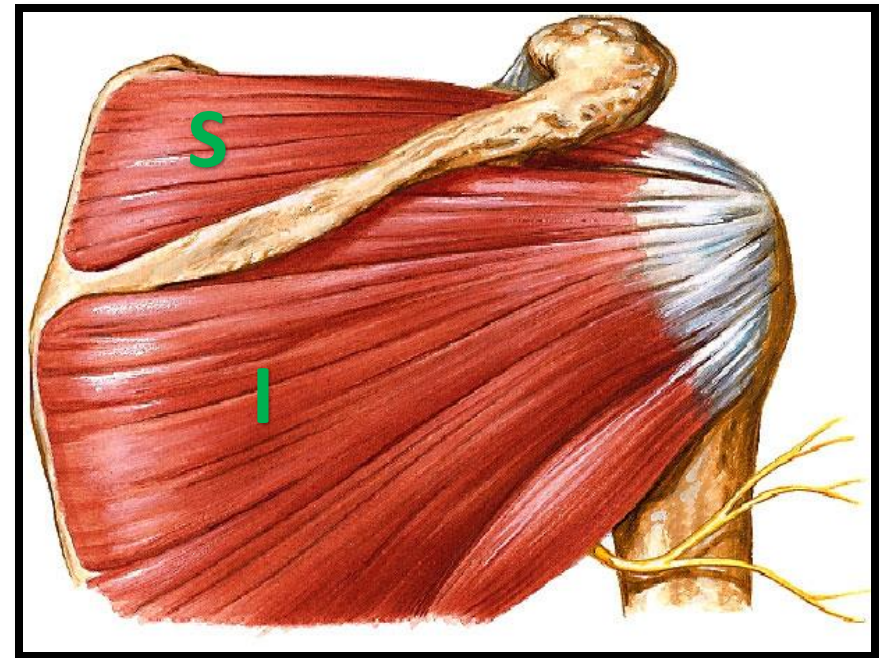
1. *Supraspinatus*: supraspinous fossa.
2. *Infraspinatus*: infraspinous fossa.

❑ **Insertion:** greater tuberosity of humerus.

❑ **Nerve supply:** suprascapular nerve.

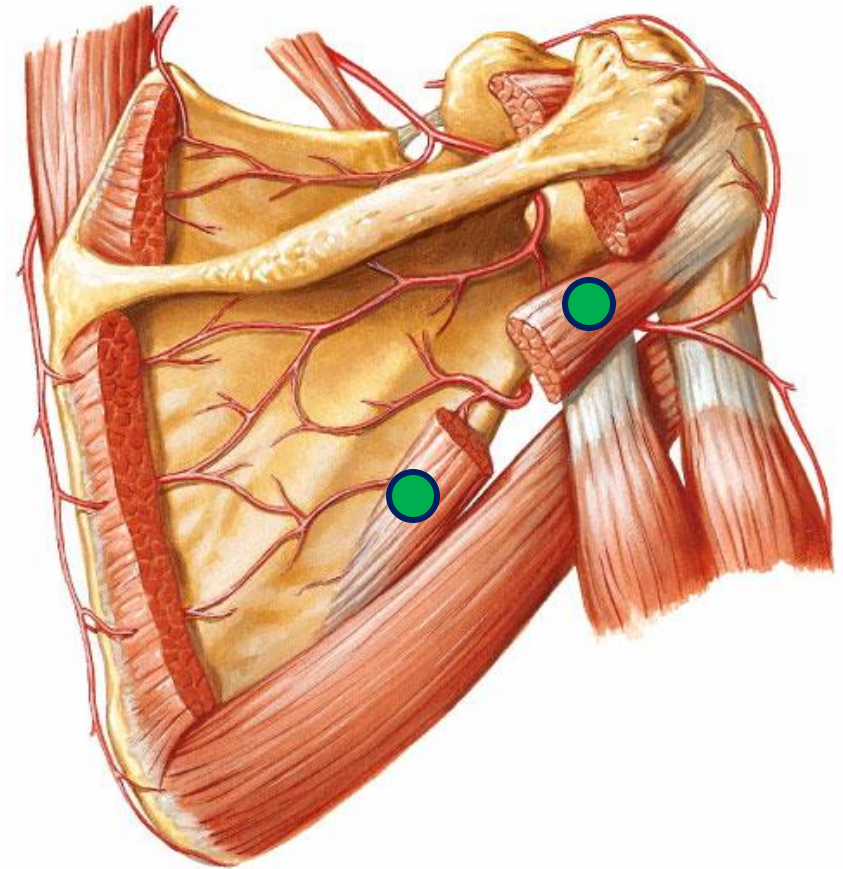
## ❑ Action:

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



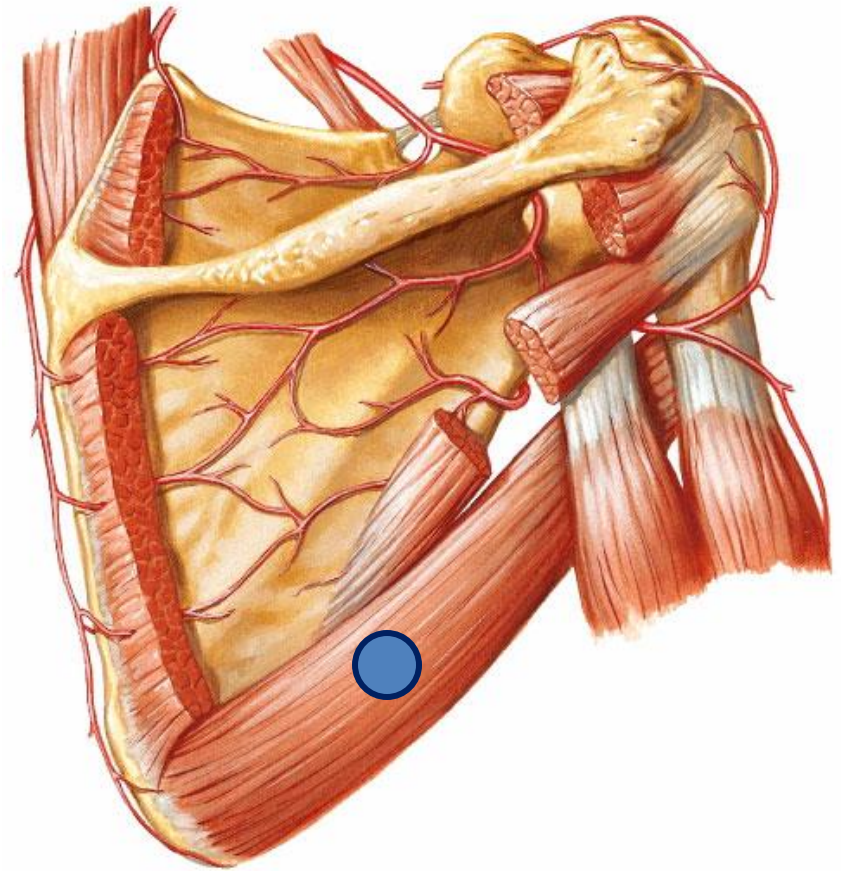
# TERES MINOR

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



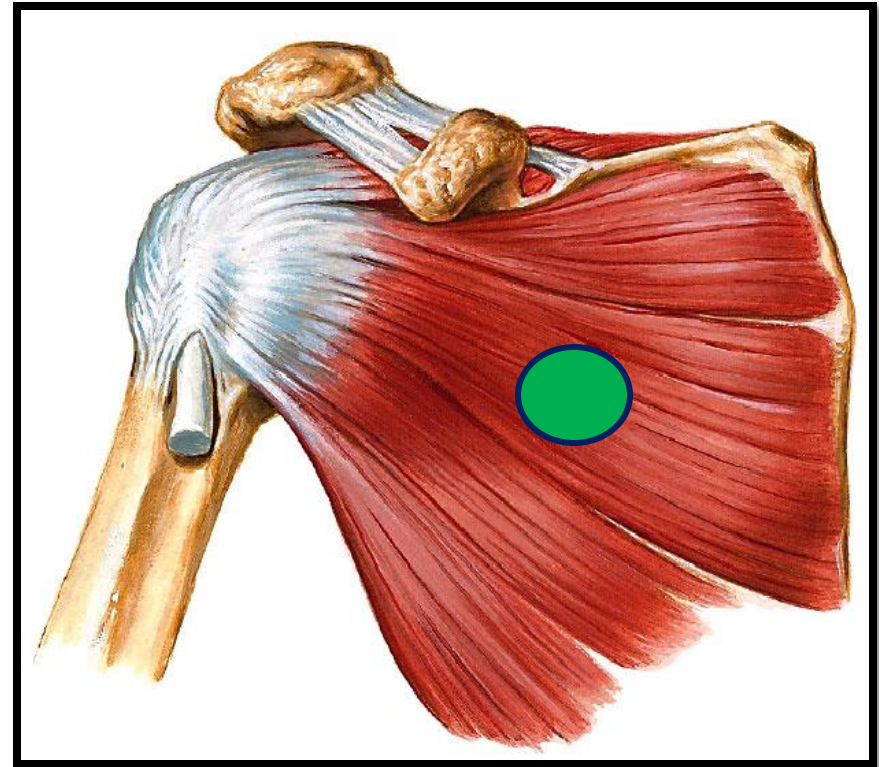
# TERES MAJOR

- ❑ **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.





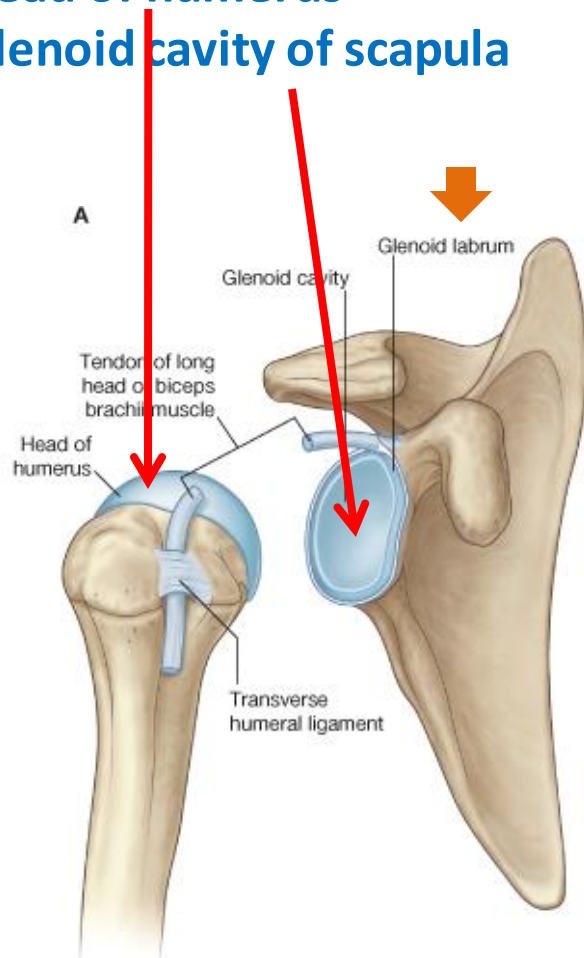
# SHOULDER JOINT

## □ TYPE:

Synovial, multiaxial (ball & socket)

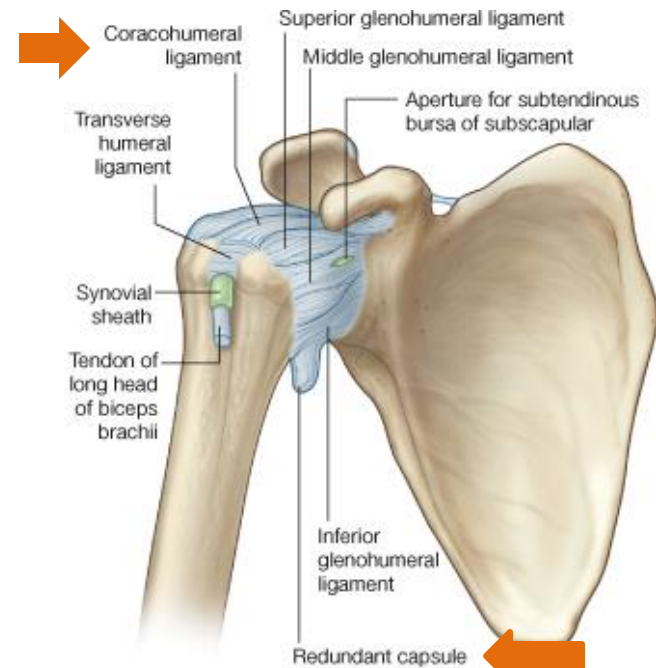
## □ ARTICULAR SURFACES:

1. Head of humerus
2. Glenoid cavity of scapula



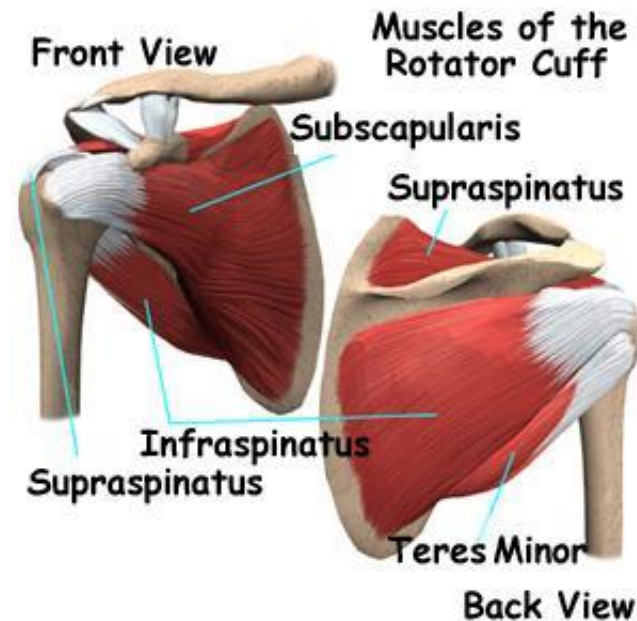
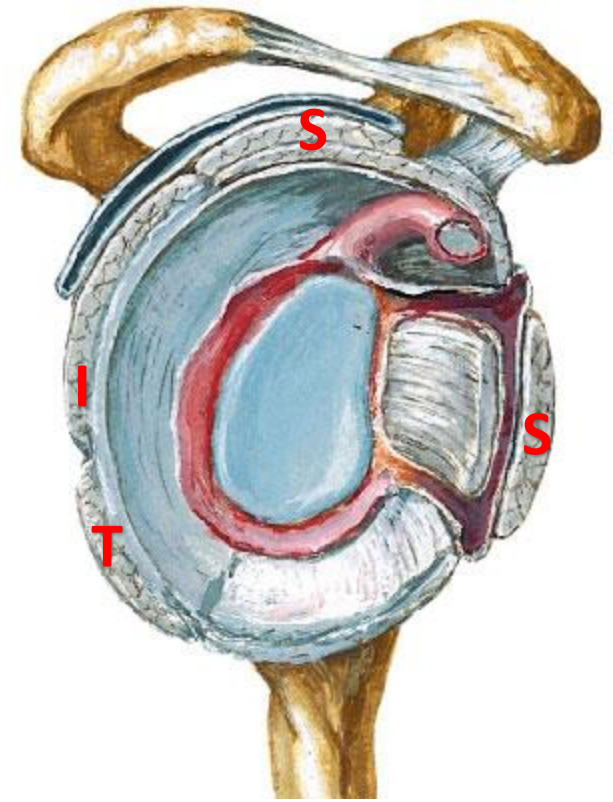
## □ STABILITY: NOT STABLE

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



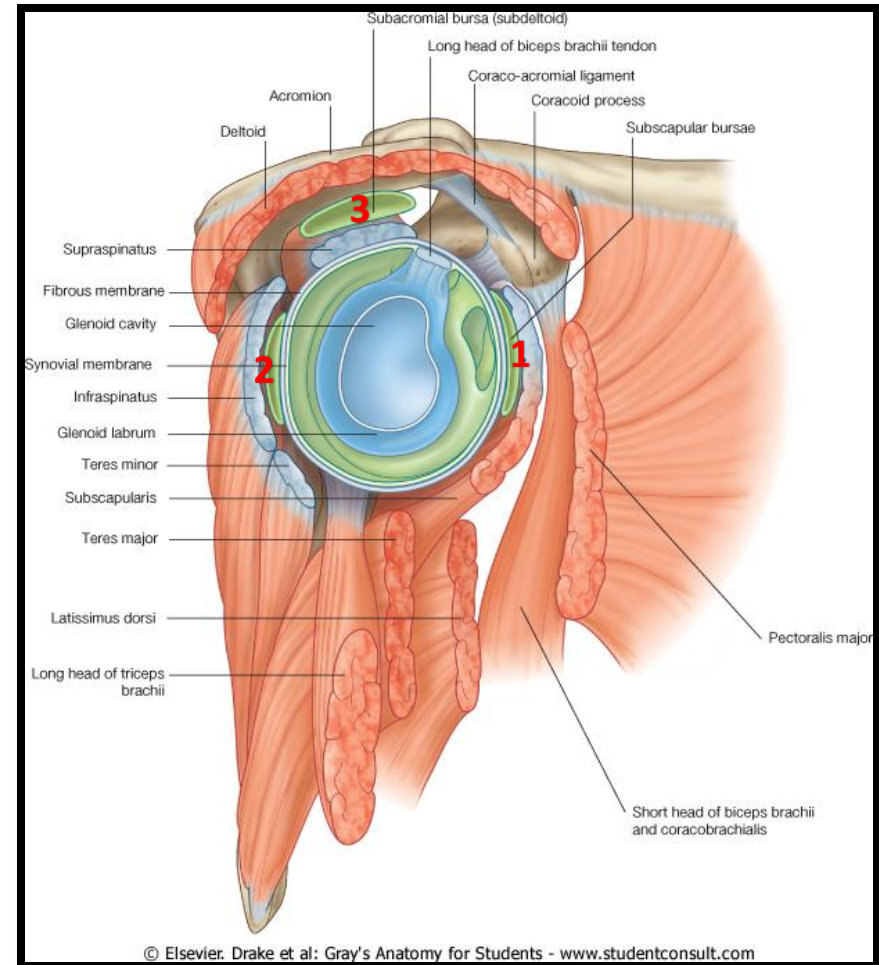
# ROTATOR CUFF

- ❑ 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**.



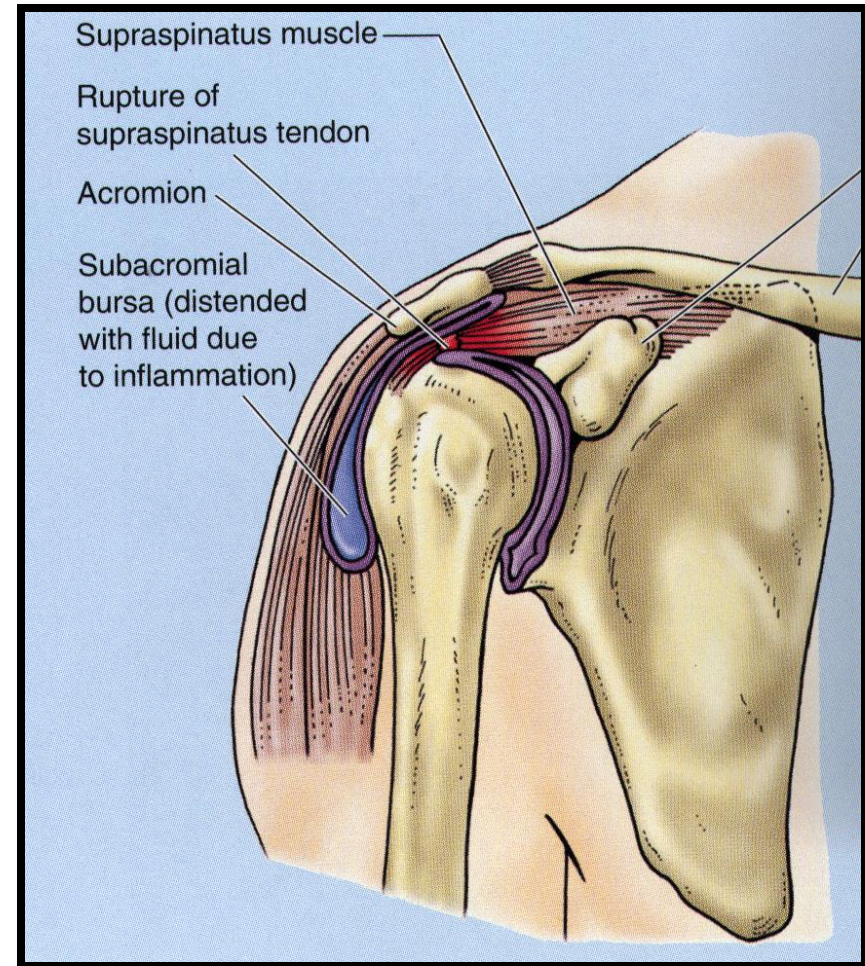
# BURSAE IN RELATION TO SHOULDER JOINT

- ❑ They **reduce friction** between tendons, joint capsule & bone.
  - ❑ They are liable to be **inflamed** 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.

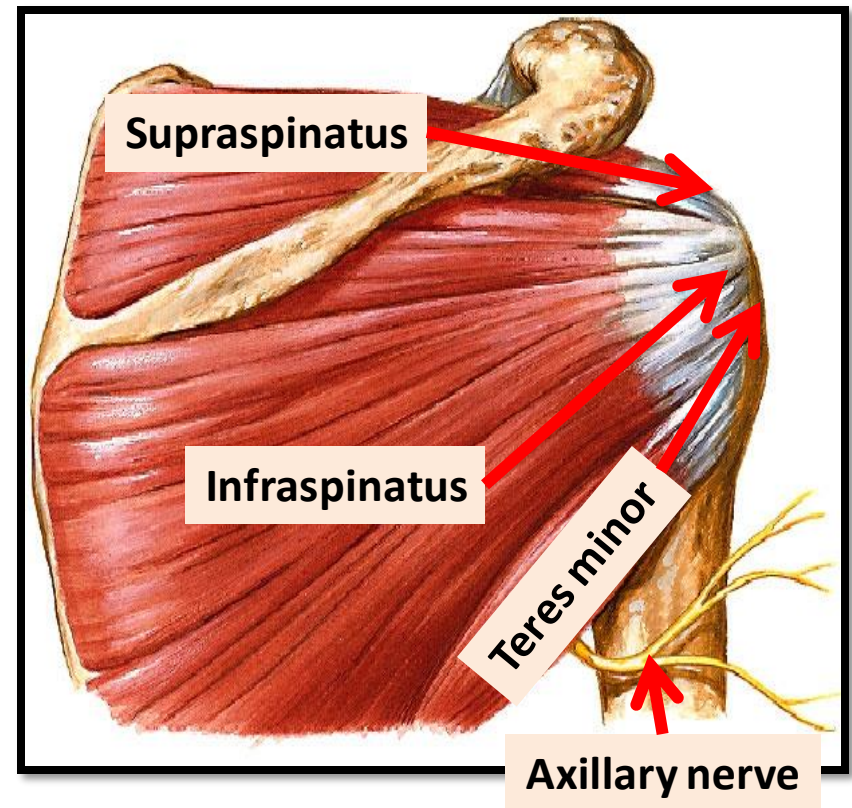
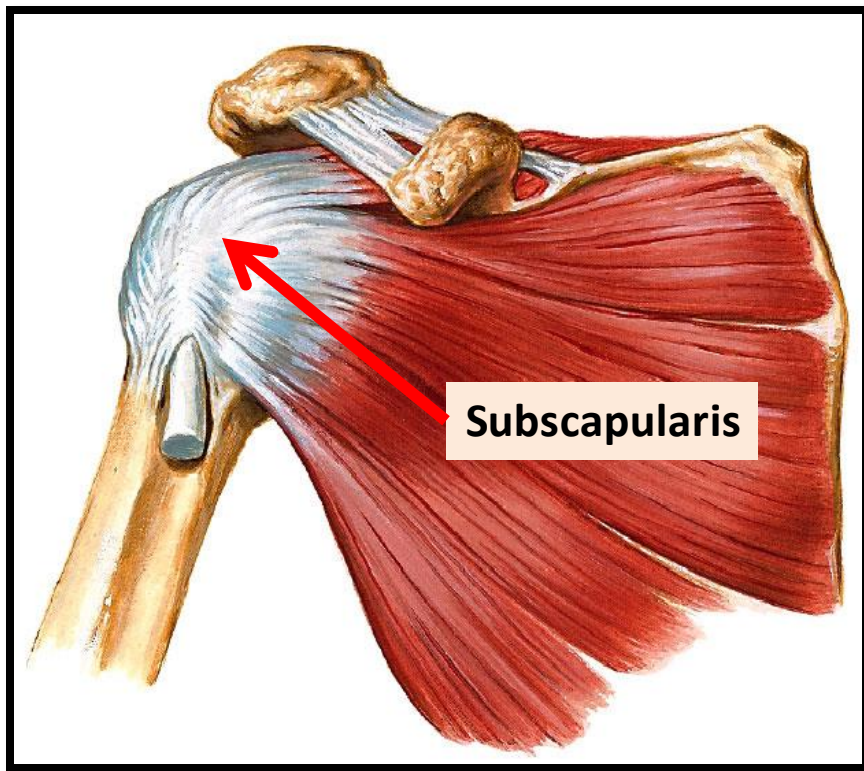


# ROTATOR CUFF

- ❑ 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
- Inserted in bicipital groove**
- 

# MOVEMENTS OF SHOULDER JOINT

## □ MEDIAL ROTATION:

1. Pectoralis major
  2. Latissimus dorsi
  3. Teres major
  4. Anterior fibers of deltoid
  5. Subscapularis
- Inserted in bicipital groove**
- 

## □ 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.

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**THANK YOU**