

Muscles of the Upper Limb

Lec.9

- ▶ The muscles of the upper limb can be divided into 6 different regions: pectoral, shoulder, upper arm, anterior forearm, posterior forearm, and the hand.

PECTORAL REGION

- ▶ There are 4 muscles of the pectoral region: pectoralis major, pectoralis minor, serratus anterior and subclavius. Collectively, these muscles are involved in movement and stabilisation of the scapula, as well as movements of the upper limb.

SHOULDER JOINT

- ▶ The muscles of the shoulder joint can be divided into an intrinsic and extrinsic group; The extrinsic group originate from the torso and attach to the bones of the shoulder, whereas the intrinsic ones originate from the bones of the shoulder and attach the humerus. They collectively act to move the upper arm and stabilise the shoulder joint.

UPPER ARM

- ▶ The upper arm, located between the shoulder and elbow joint, has an anterior and posterior compartment. The muscles located in the anterior compartment are involved in flexion at the elbow and shoulder joint whereas muscle in the posterior compartment, triceps brachii, extends the arm at the elbow joint.

FORE ARM

- ▶ The **muscles of the forearm** are subdivided into an anterior and posterior compartment. The muscles of the anterior compartment are further divided into a superficial, intermediate and deep layer; Innervated by both the ulnar and median nerve, they collectively act to pronate the forearm and to flex the wrist and the digits.
- ▶ The **muscles of the posterior compartment** are separated into a superficial and deep layer. These muscles are innervated by the radial nerve and are known as the extensor muscles due to their general action of extending the wrist and the digits.

MUSCLES OF HAND

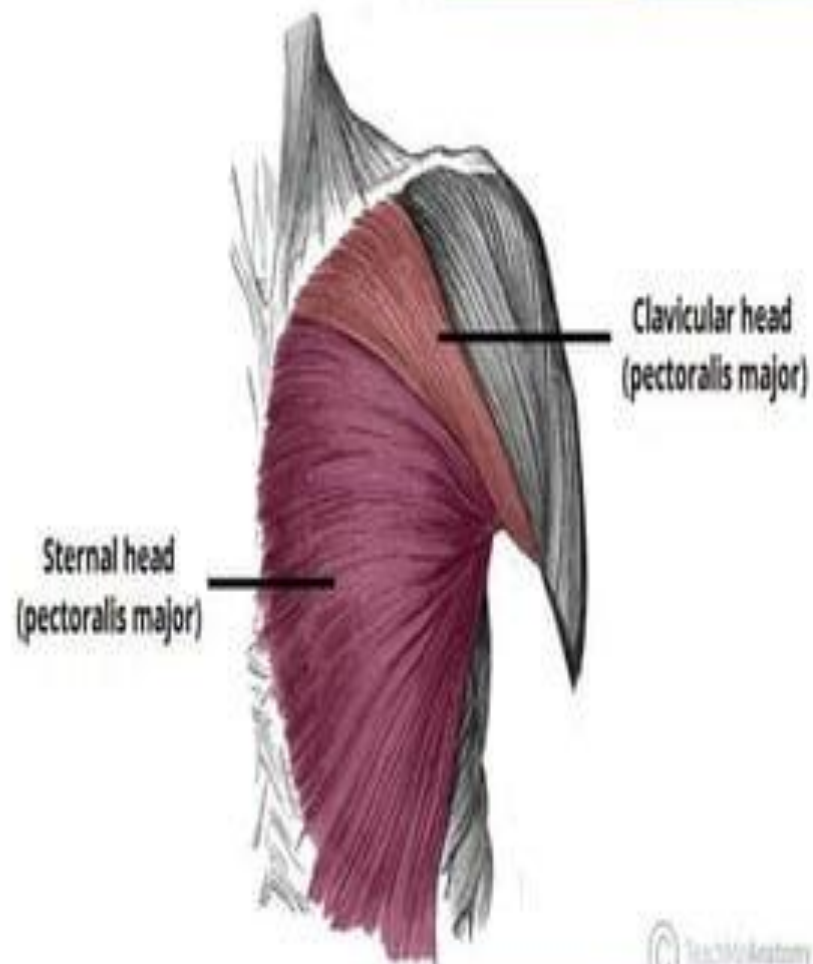
- ▶ The **muscles of the hand** can be divided into an extrinsic and intrinsic group. The extrinsic group originate from the forearm and attach to the bones of the hand, they are associated with forceful or non-precise movements. On the other hand, the intrinsic group originate and attach within the hand itself and are more involved with fine-tuned and delicate movements. Both groups are innervated by the ulnar and median nerve.

MUSCLES OF PECTORAL REGION

- ▶ The **pectoral region** is located on the anterior chest wall. It contains four muscles that exert a force on the upper limb: the pectoralis major, pectoralis minor, serratus anterior and subclavius.

Pectoralis Major

- ▶ The pectoralis major is the most superficial muscle in the pectoral region. It is large and fan shaped, and is composed of a sternal head and a clavicular head.

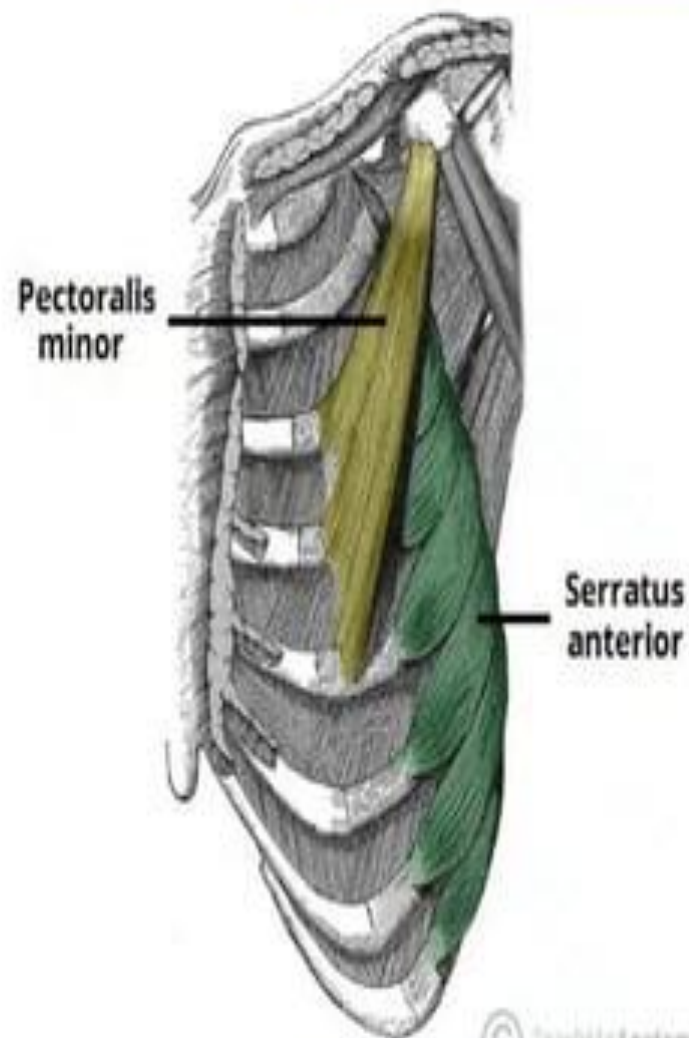


Pectoralis Minor

- ▶ The pectoralis minor lies underneath its larger counterpart muscle, pectoralis major. Both muscles form part of the anterior wall of the axilla region.

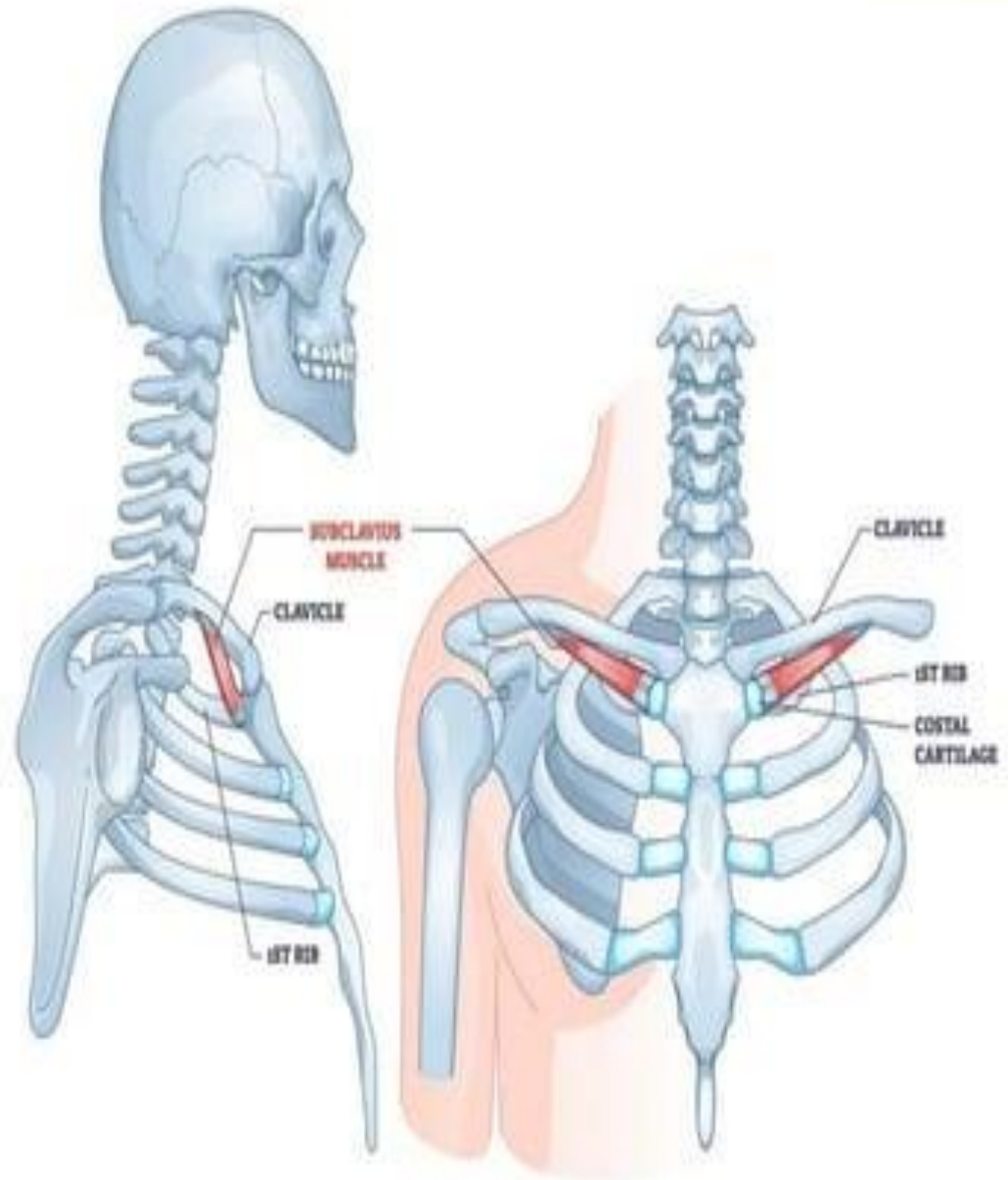
Serratus Anterior

- ▶ The serratus anterior is located more laterally in the chest wall and forms the medial border of the axilla region



Subclavius

- The subclavius is small muscle, which is located directly underneath the clavicle, running horizontally. It affords some minor protection to the underlying neurovascular structures (e.g in cases of clavicular fracture or other trauma).



Winging of the Scapula

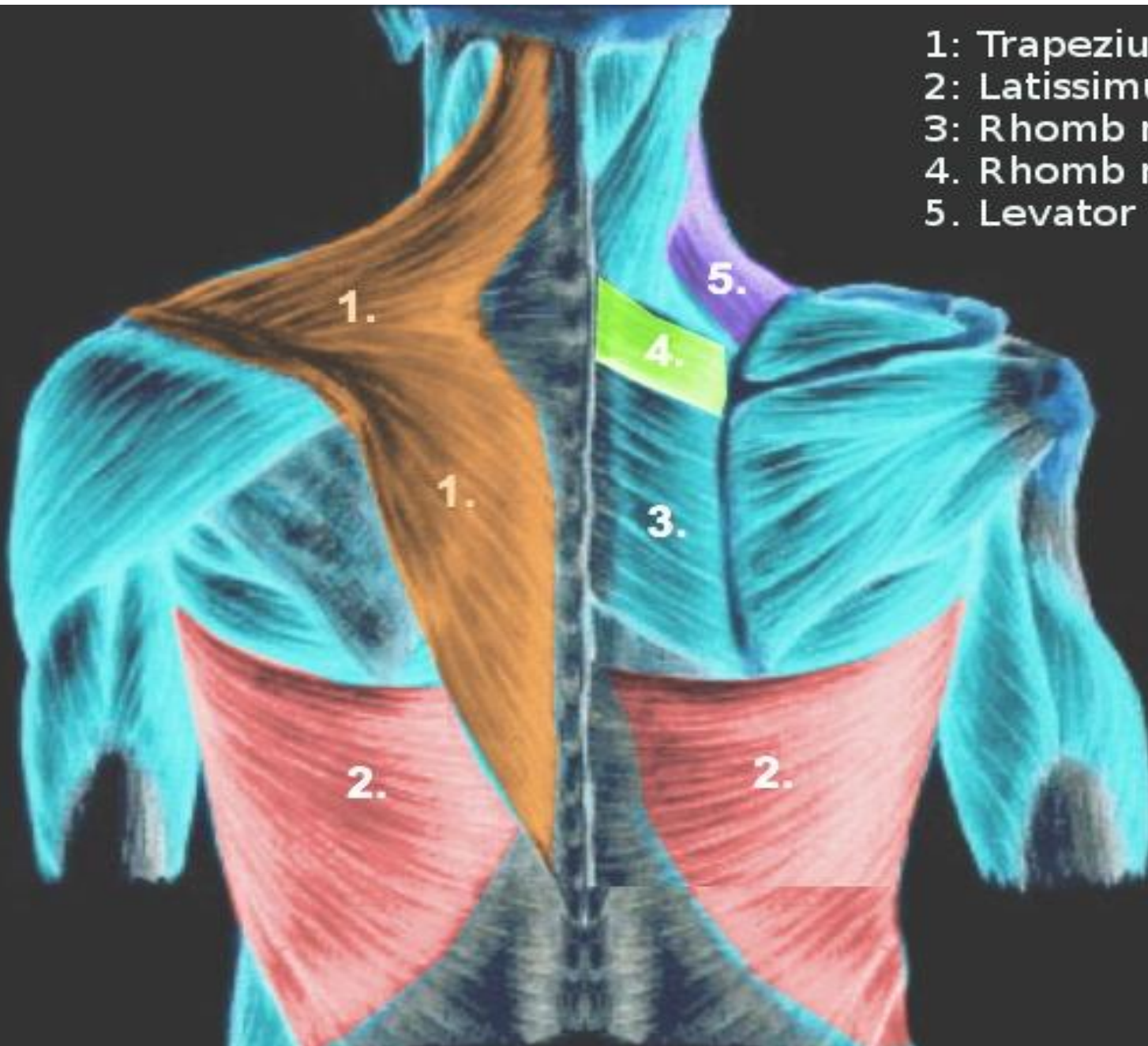
- ▶ One of the actions of the serratus anterior is to 'hold' the scapula against the ribcage. If the long thoracic nerve is damaged (and the serratus anterior therefore paralysed), a specific clinical sign is produced.
- ▶ In cases such as this, the scapula is no longer held against the ribcage - and protrudes out of the back. It is said to have a 'winged' appearance.
- ▶ Long thoracic nerve palsy is thought to most commonly occur from traction injuries, where the upper limb is stretched violently



Extrinsic Shoulder Muscles

- Muscles of the thorax
 - Anterior: pectoralis major, pectoralis minor, serratus anterior, and subclavius
 - Posterior: latissimus dorsi, trapezius muscles, levator scapulae, and rhomboids
 - These muscles are involved with the movements of the scapula including elevation, depression, rotation, and lateral and medial movements
- Prime movers of shoulder elevation are the trapezius and levator scapulae

- 1: Trapezius
- 2: Latissimus dorsi
- 3: Rhomb major
- 4. Rhomb minor
- 5. Levator scapula



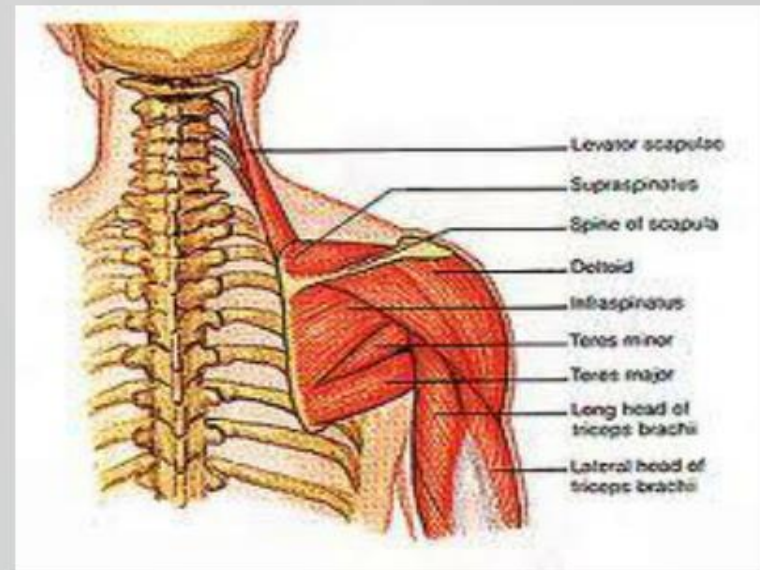
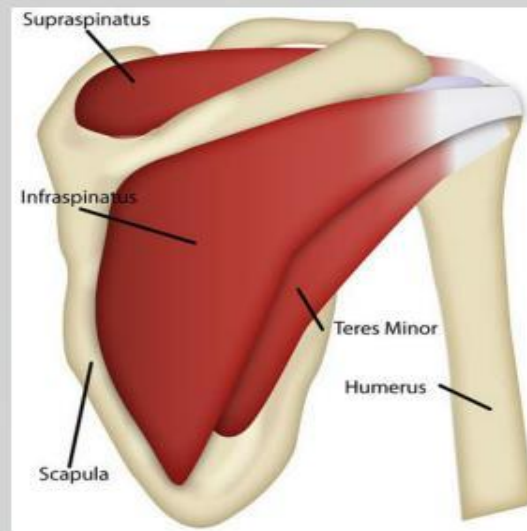
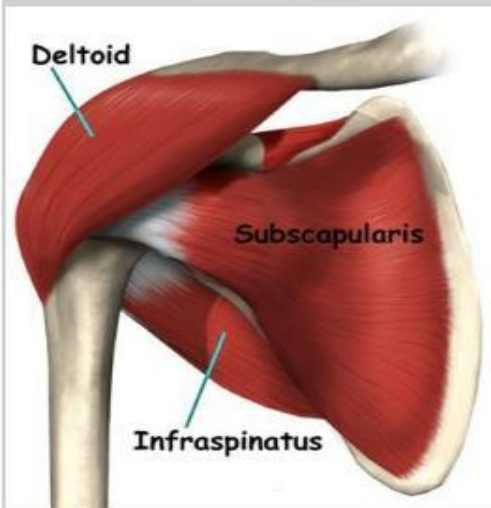
SCAPULOHUMERAL (INTRINSIC SHOULDER) MUSCLES

6 scapulohumeral muscles

Deltoid, teres major, supraspinatus, infraspinatus, subscapularis, and teres minor

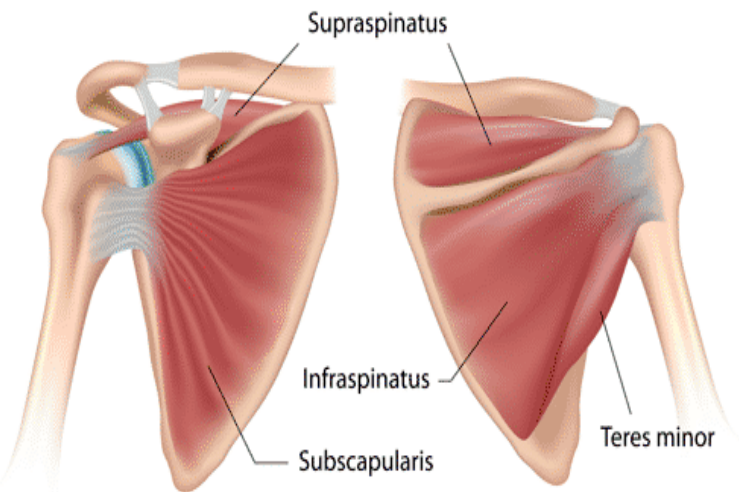
pass from scapula to humerus

Act on the glenohumeral joint.



All the intrinsic muscles but the deltoid and the subscapularis are muscles of the posterior scapular region.

Rotator Cuff of the Shoulder

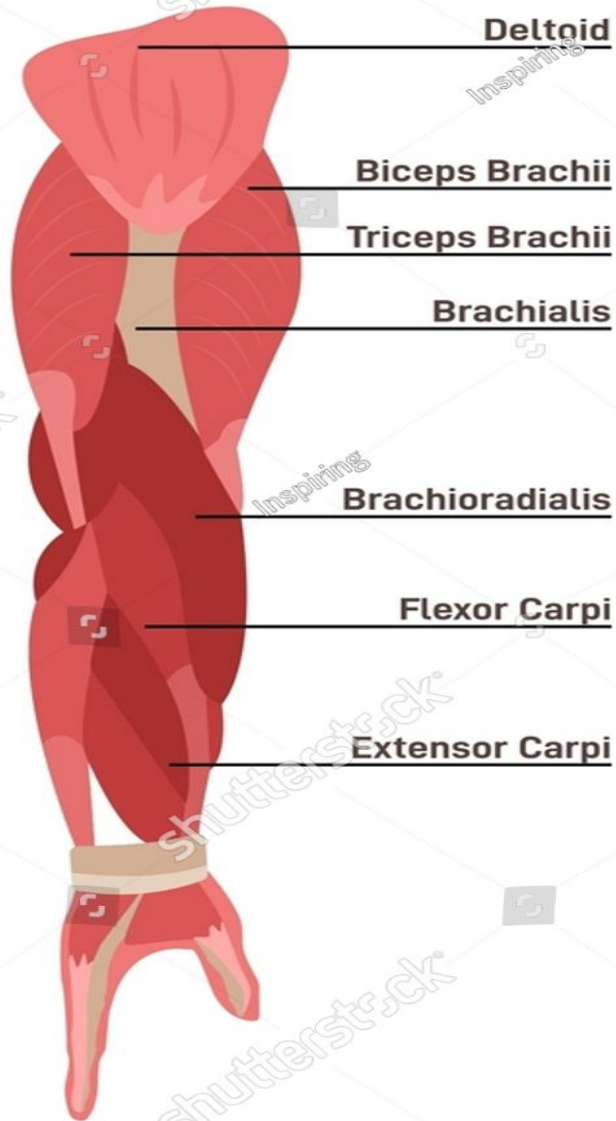


Rotator Cuff is a group of muscles surrounding the shoulder joint.

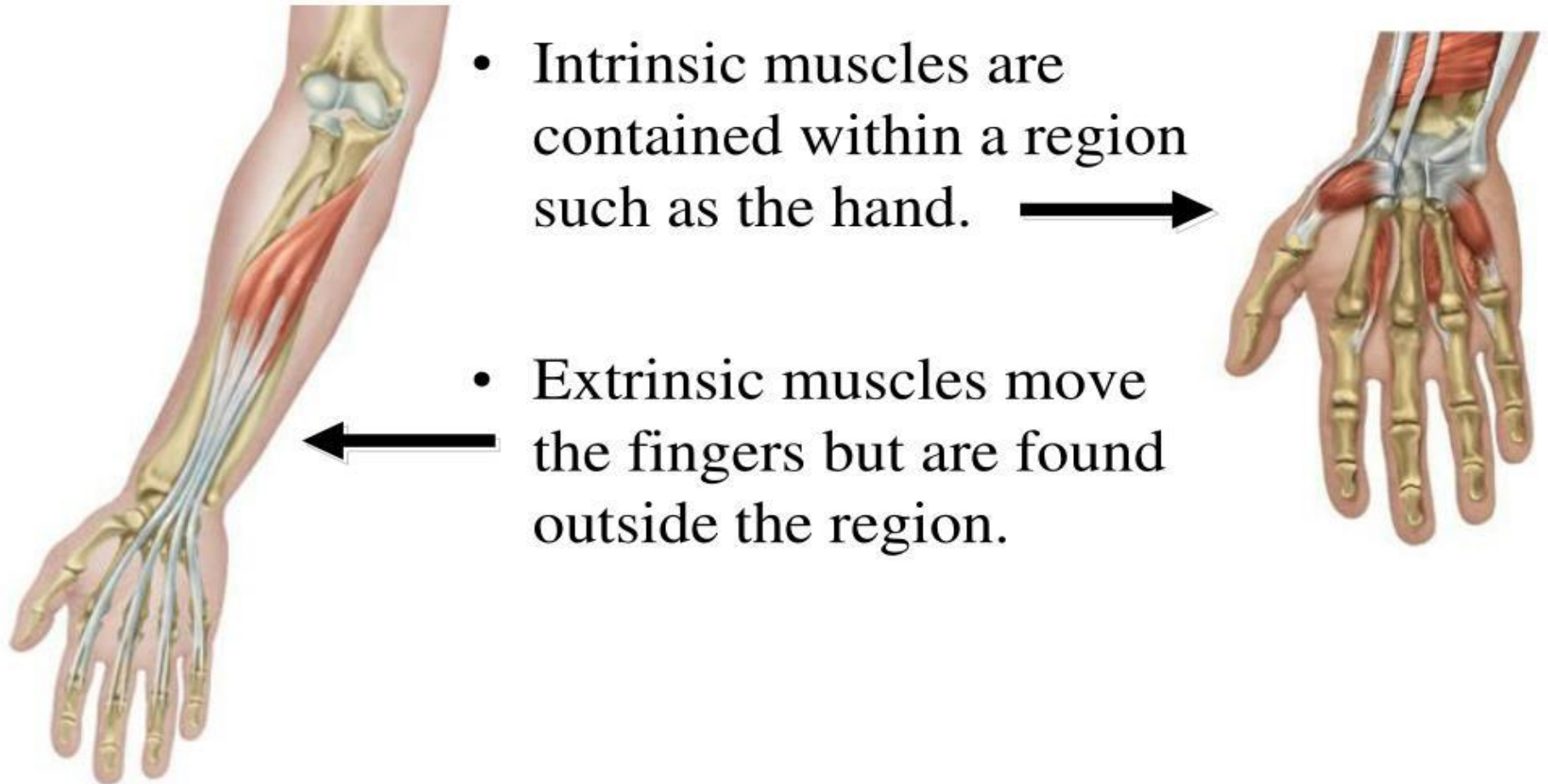
It consists of 4 muscles abbreviated in the word "SITS":

1. Supraspinatus muscle.
2. Infraspinatus muscle.
3. Teres minor muscle.
4. Subscapularis muscle.

Arm Muscles



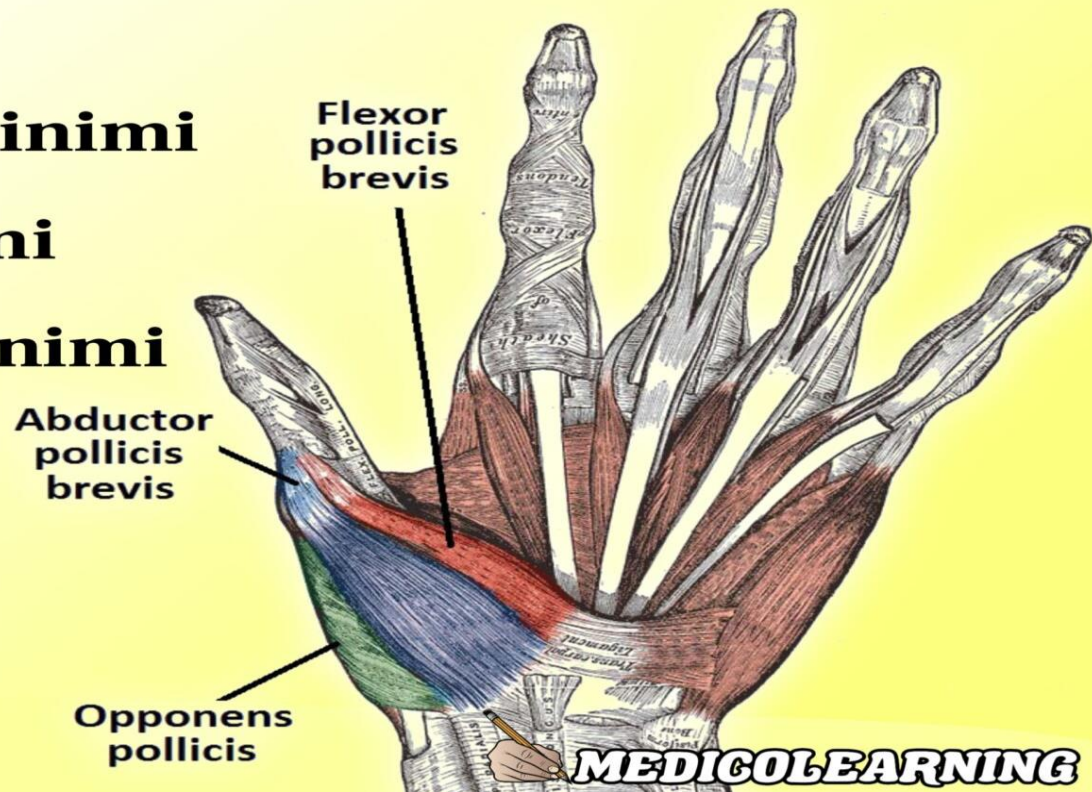
Intrinsic and Extrinsic Muscles



Intrinsic muscles of the Hand

- **A**bductor pollicis brevis
- **F**lexor pollicis brevis
- **O**pponens pollicis
- **A**dductor pollicis
- **O**pponens digiti minimi
- **F**lexor digiti minimi
- **A**bductor digiti minimi

**All For One
One For All**



MEDICOLEARNING

The End