



Bones and Muscles of Shoulder and Arm

DR. DAVID | 08/03/2026

OUTLINE

I. Arm Muscles	III. Shoulder Muscles
A. Anterior Compartment	A. Anterior Axioappendicular
B. Posterior Compartment	B. Posterior Axioappendicular Superficial Group
II. Bones of Shoulder and Arm	C. Posterior Axioappendicular Deep Group
	IV. Scapulohumeral Muscles
	V. Important Spaces

LEGENDS

Must know	Lecturer	Book	Presentation	Old Trans
!	👤	📖	💻	📝

LEARNING OBJECTIVES

At the end of the lecture, the student should be able to:

- ✓ Identify and describe the muscles of the anterior and posterior compartment for both arm and forearm.
- ✓ Differentiate the functional roles of the anterior posterior groups.

ARM

A. ANTERIOR COMPARTMENT

MUSCLES OF ANTERIOR COMPARTMENT

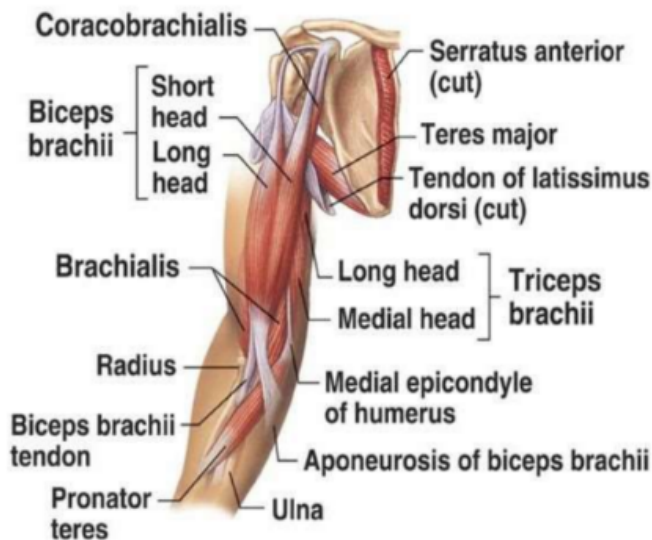


Figure 1. Anterior Compartment of the Arm

Biceps brachii

Origin	Insertion	Innervation
Long head: Supraglenoid tubercle of scapula Short head: Coracoid process of scapula	Radial tuberosity and deep fascia of forearm via bicipital aponeurosis	Musculocutaneous nerve (C5–C7)

- **Primary Action:** Supination of the forearm (Chief supinator when the elbow is flexed)
- **Secondary:** Flexes elbow joint, weak flexor of shoulder joint

Brachialis

Origin	Insertion	Innervation
Distal half of anterior humerus	Tuberosity and coronoid process of ulna	Musculocutaneous nerve (C5–C6) (lateral part: radial nerve C7, C8)

- **Primary Action:** Flexion of the forearm at the elbow joint (Chief flexor of the elbow joint in all positions)

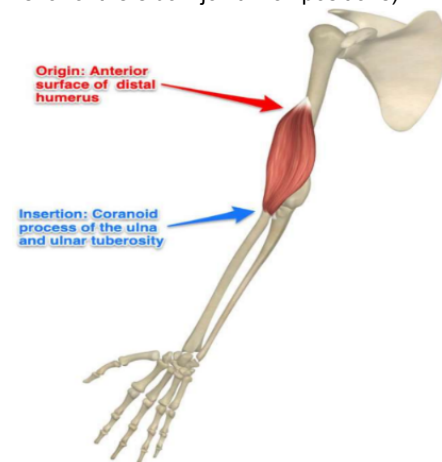


Figure 2. Brachialis

Coracobrachialis

Origin	Insertion	Innervation
Tip of coracoid process of scapula	Middle third of anteromedial humerus	Musculocutaneous nerve (C5–C7)

- **Primary Action:** Flexion and adduction of the arm at the shoulder joint (Functions primarily as a weak flexor/adductor and shoulder stabilizer rather than a chief mover)

Coracobrachialis

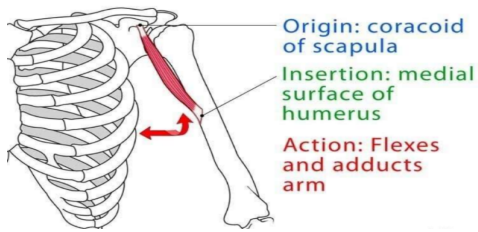


Figure 3. Coracobrachialis

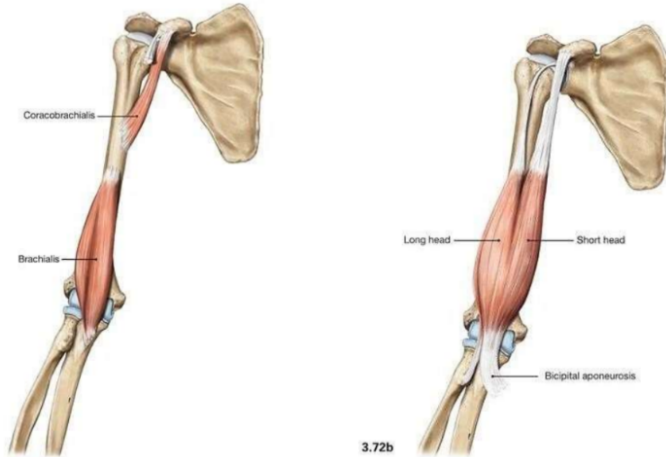


Figure 4. Coracobrachialis relative to Brachialis

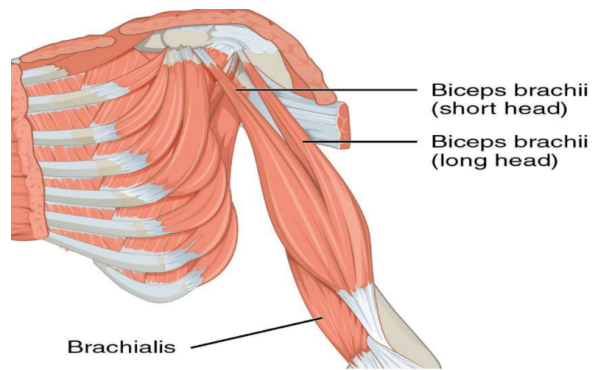


Figure 6. Brachialis relative to Biceps brachii long head and short head

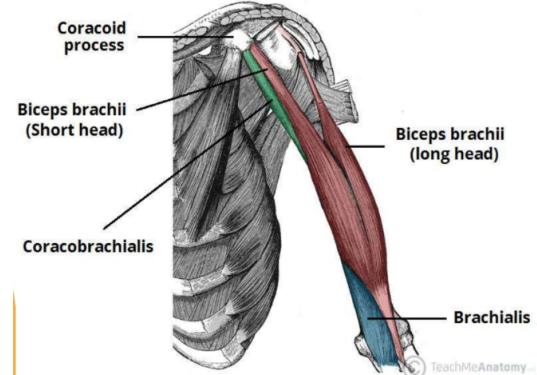


Figure 7. Anterior Compartment Muscles highlighted

Muscles of Arm: Anterior Views

SEE ALSO PLATE 447

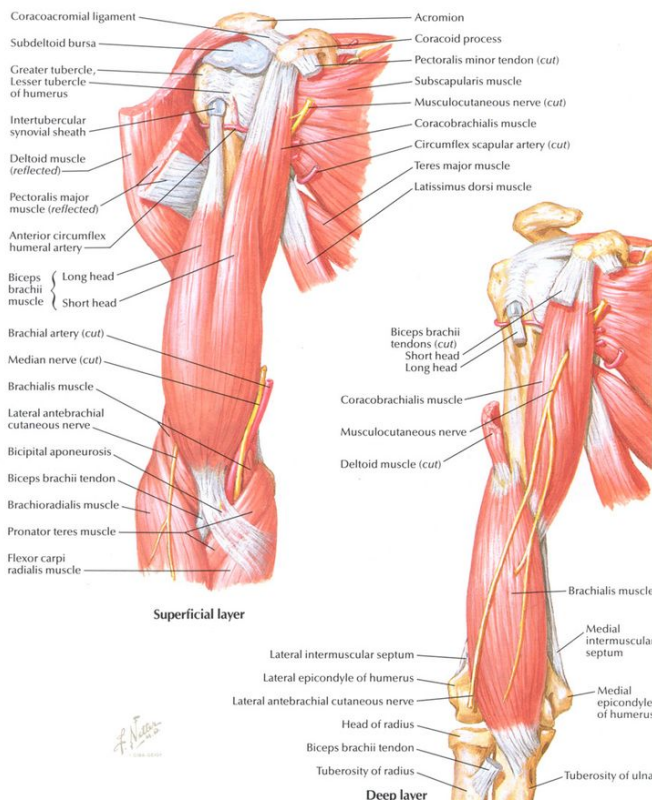


Figure 5. Brachialis, Biceps brachii, and Coracobrachialis (Notice in DEEP LAYER)

B. POSTERIOR COMPARTMENT

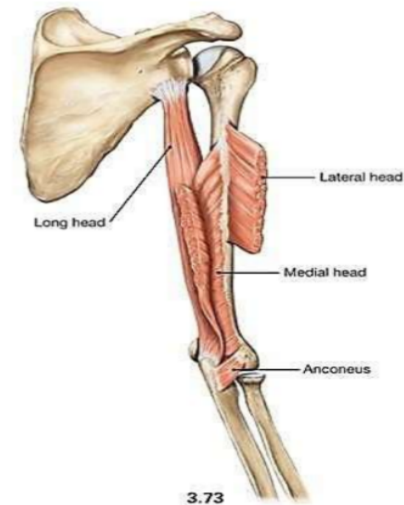


Figure 8. Posterior Compartment

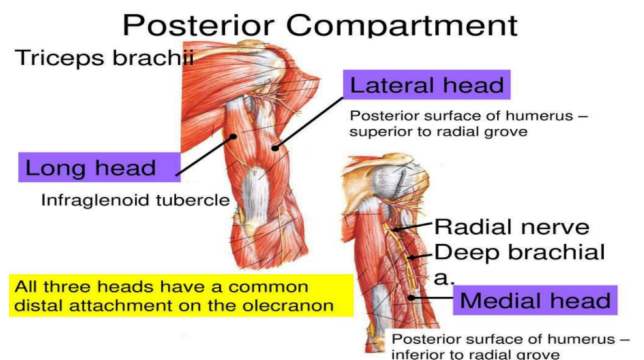


Figure 9. Posterior Compartment Muscles distal attachment

Triceps brachii

Origin	Insertion	Innervation
Long head: Infraglenoid tubercle of scapula Lateral head: Posterior humerus, superior to radial groove Medial head: Posterior humerus, inferior to radial groove	Olecranon process of ulna	Radial nerve (C6–C8) (Medial head is the main worker; roots often cited as C6–C8 or C7–C8)

- **Primary Action:** Extension of the forearm at the elbow joint (**Chief extensor** of the elbow joint; Medial head acts as the workhorse)
- **Secondary:** Long head extends and adducts the shoulder joint and resists dislocation during shoulder abduction

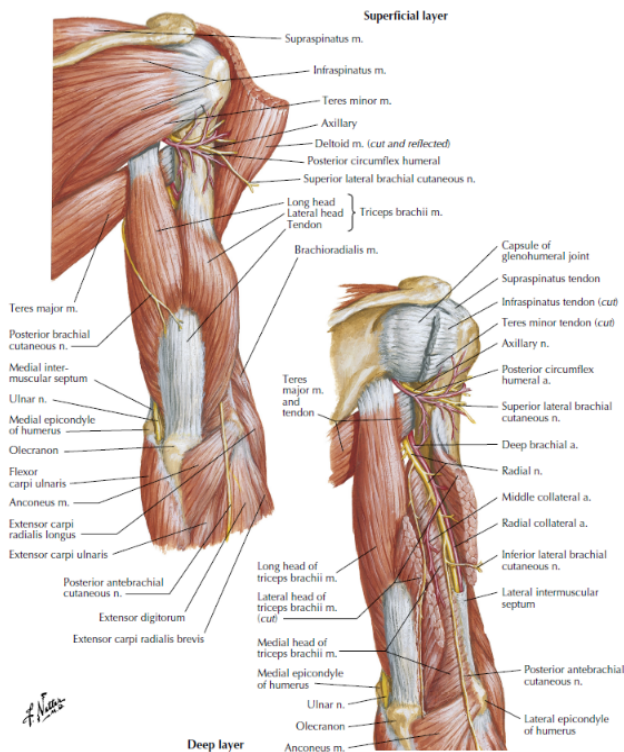


Figure 10. Triceps brachii (Notice in Deep Layer)

Anconeus

Origin	Insertion	Innervation
Lateral epicondyle of humerus	Lateral surface of olecranon process and superior posterior ulna	Radial nerve (C7, C8, T1)

- **Primary Action:** Assists triceps in elbow extension and stabilizes the elbow joint (Functions primarily as a **weak synergist** and joint stabilizer, not a chief mover; also abducts ulna during pronation)

Brachial Plexus

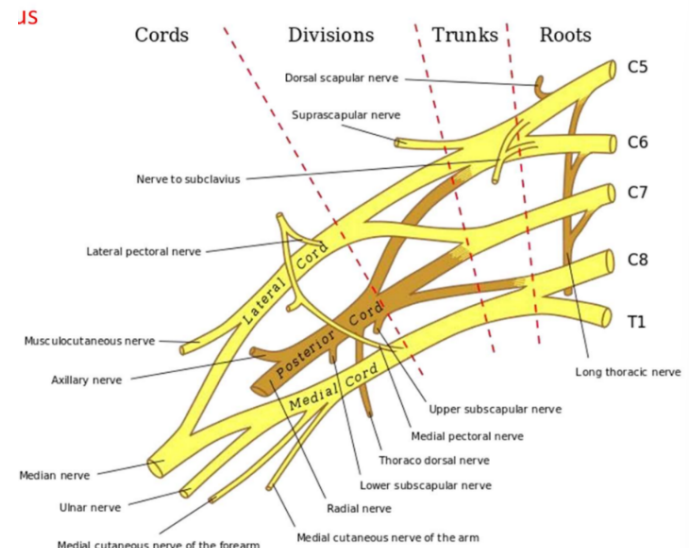


Figure 11. Brachial Plexus

BONES OF SHOULDER AND ARM

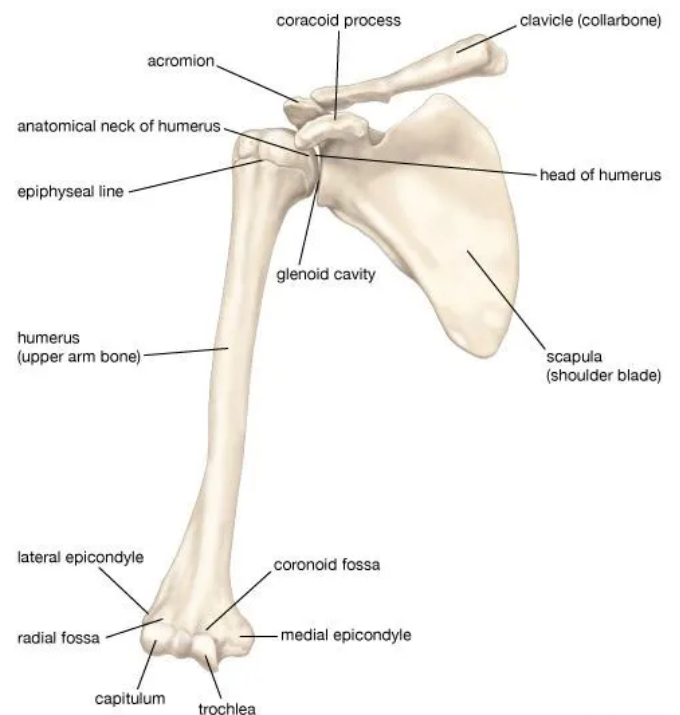


Figure 12. Bones of Shoulder and Arm

Humerus Scapula Posterior

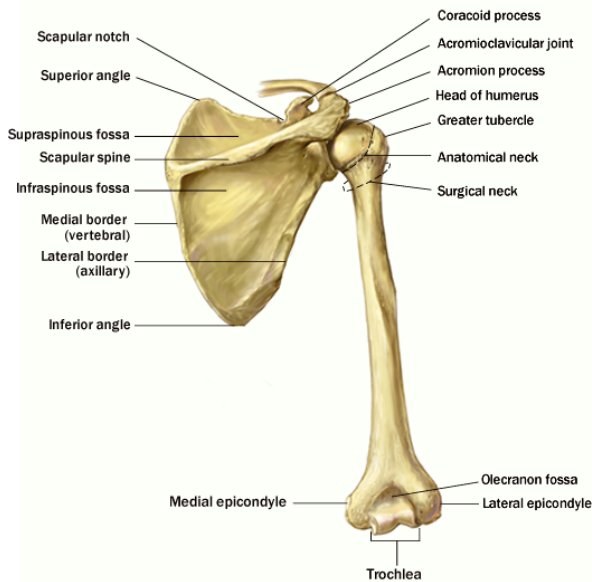


Figure 13. Shoulder Muscles in relation to the Humerus and Scapula posteriorly

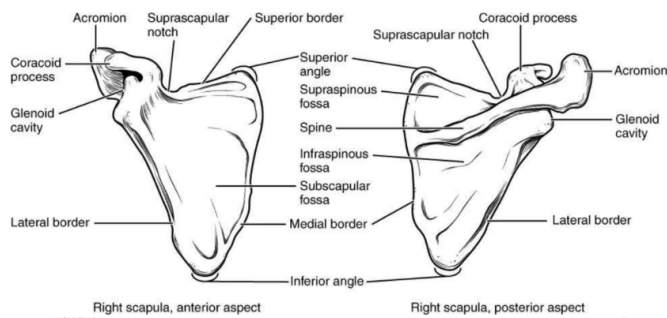


Figure 14. Anterior and posterior scapular labeled parts



Figure 15. Anterior and Posterior view of the humeral bone

MUSCLES OF THE SHOULDER

A. ANTERIOR AXIOAPPENDICULAR MUSCLES

Pectoralis major

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Clavicular head (medial clavicle); Sternocostal head (sternum, superior 6 costal cartilages).	Lateral lip of intertubercular sulcus of humerus.	Lateral and medial pectoral nerves (C5-T1)

- **Primary Action:** Adducts the humerus Medially rotates the humerus
- **Secondary:** Clavicular head flexes the humerus; sternocostal head extends the humerus from a flexed position.
- **Chief/Main mover:** Chief (powerful) flexor, adductor, and medial rotator of the humerus.

Pectoralis major muscle

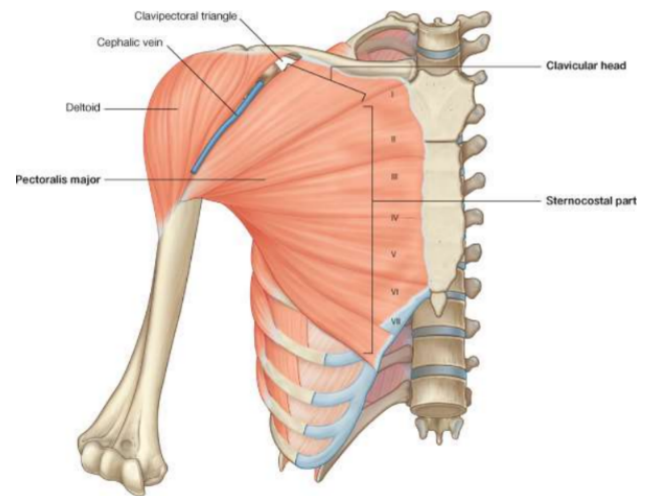
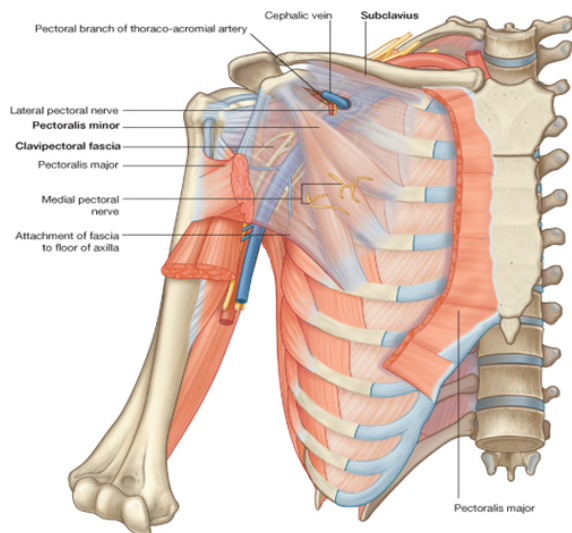


Figure 16. Pectoral Major

Pectoralis Minor

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
3rd–5th ribs near their costal cartilages.	Medial border and superior surface of the coracoid process of the scapula.	Medial pectoral nerve (C8, T1).

- **Primary Action:** Stabilizes the scapula by drawing it inferiorly and anteriorly against the thoracic wall.
- **Secondary:** Aids in respiration when the scapula is fixed.



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Figure 17. Pectoralis minor in relation to the Clavipectoral fascia and Pectoralis major

Subclavius

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Junction of the 1st rib and its costal cartilage.	Inferior surface of the middle third of the clavicle.	Nerve to subclavius (C5, C6).

- **Primary Action:** Anchors and depresses the clavicle.
- **Secondary:** Protects the subclavian vessels during clavicular fractures.

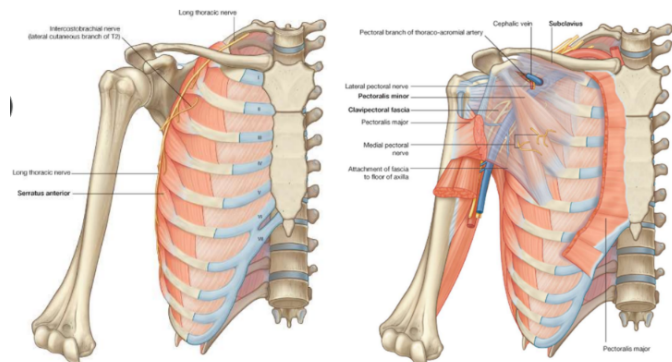


Figure 18. Subclavius

Serratus Anterior

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
External surfaces of the lateral parts of the 1st–8th ribs.	Anterior surface of the medial border of the scapula.	Long thoracic nerve (C5, C6, C7).

- **Primary Action:** Protracts the scapula and holds it against the thoracic wall.
- **Secondary:** Rotates the scapula superiorly.
- **Chief/Main mover:** Chief (strong) protractor of the scapula.

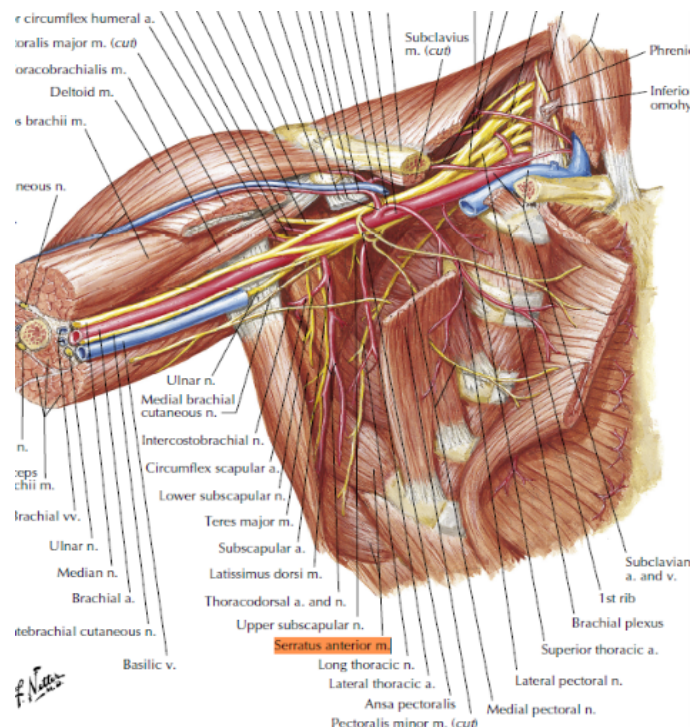


Figure 19. Serratus anterior (highlighted)

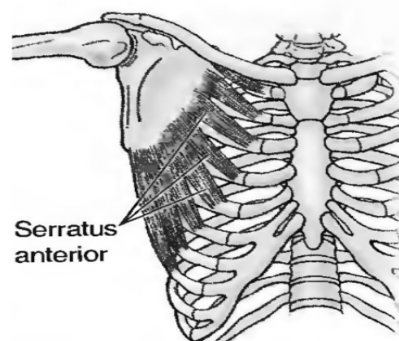


Figure 20. Serratus anterior isolated

B. POSTERIOR AXIOAPPENDICULAR MUSCLES SUPERFICIAL GROUP

Trapezius

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Superior nuchal line; occipital protuberance; nuchal ligament; spinous processes of C7–T12.	Lateral third of clavicle; acromion and spine of scapula.	Spinal accessory nerve (CN XI).

- **Primary Action:** Descending: Elevates; Middle: Retracts; Ascending: Depresses scapula.
- **Secondary Action:** All parts together rotate the glenoid cavity superiorly.
- **Chief/Main mover:** Chief elevator and rotator of the scapula.

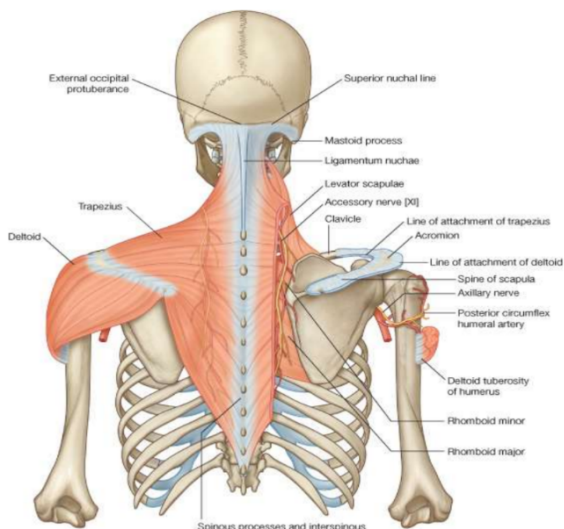


Figure 21. Trapezius

Latissimus dorsi

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Spinous processes of inferior 6 thoracic vertebrae; thoracolumbar fascia; iliac crest.	Floor of intertubercular sulcus of humerus.	Thoracodorsal nerve (C6, C7, C8).

- **Primary Action:** Extends, adducts, and medially rotates humerus.
- **Secondary:** Raises body toward arms during climbing.
- **Chief/Main mover:** Chief extensor, adductor, and medial rotator of the humerus.

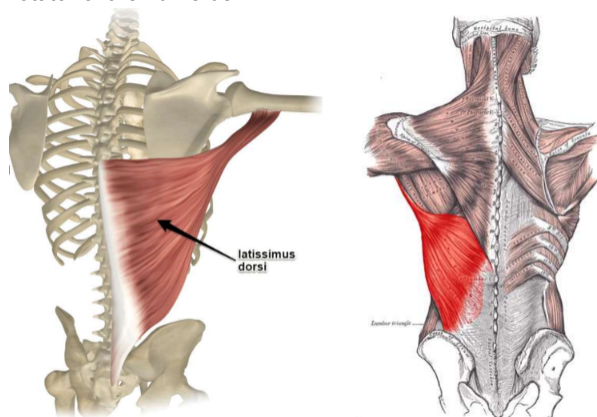


Figure 22. Latissimus dorsi

C. POSTERIOR AXIOAPPENDICULAR MUSCLES DEEP GROUP

Levator scapulae

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Transverse processes of C1–C4 vertebrae.	Medial border of scapula superior to root of spine.	Dorsal scapular (C5) and cervical (C3, C4) nerves.

- **Primary Action:** Elevates scapula.

- **Secondary:** Tilts glenoid cavity inferiorly by rotating scapula.

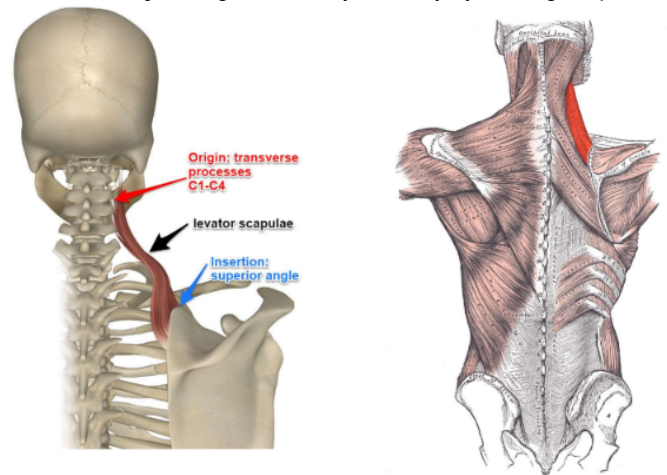


Figure 23. Levator scapulae

Rhomboids (Major & Minor)

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Nuchal ligament; spinous processes of C7–T5 vertebrae.	Medial border of scapula from level of spine to inferior angle.	Dorsal scapular nerve (C4, C5).

- **Primary Action:** Retract scapula.
- **Secondary:** Rotate scapula to depress glenoid cavity; fix scapula to thoracic wall.
- **Chief/Main mover:** Chief retractor of the scapula.

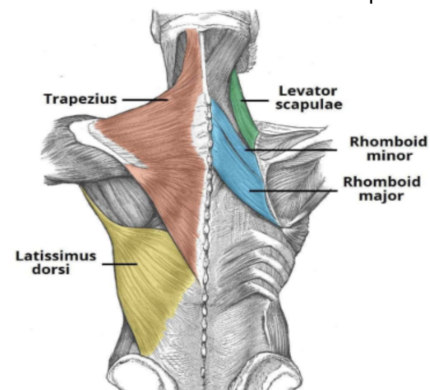


Figure 24. Rhomboids major and minor

D. SCAPULOHUMERAL (INTRINSIC SHOULDER) MUSCLES

Deltoid

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Lateral third of clavicle, acromion, and spine of scapula.	Deltoid tuberosity of humerus.	Axillary nerve (C5, C6).

- **Primary Action:** Acromial part abducts arm; clavicular part flexes and medially rotates; spinal part extends and laterally rotates arm.
- **Secondary Action:** Acts with rotator cuff to hold humeral head in glenoid cavity.

- **Chief/Main mover:** Chief abductor of the arm after the initial 15°.

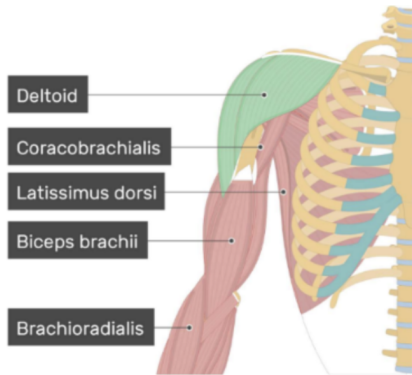


Figure 25. Deltoid in relation to the shoulder and arm muscles

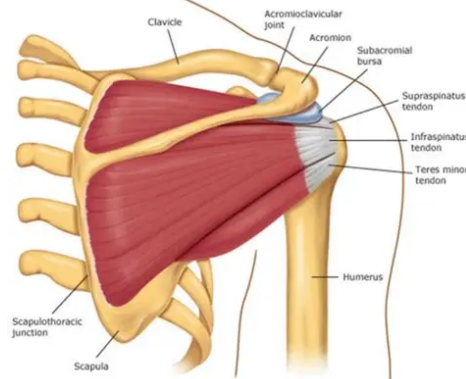


Figure 26. Deltoid origin

Supraspinatus (Rotator Cuff)

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Supraspinous fossa of scapula.	Superior facet of greater tubercle of humerus.	Suprascapular nerve (C4, C5, C6).

- **Primary Action:** Initiates and assists deltoid in abduction of arm.
- **Secondary Action:** Acts with rotator cuff to hold humeral head in glenoid cavity.
- **Chief/Main mover:** Chief initiator of arm abduction (first 0–15°).

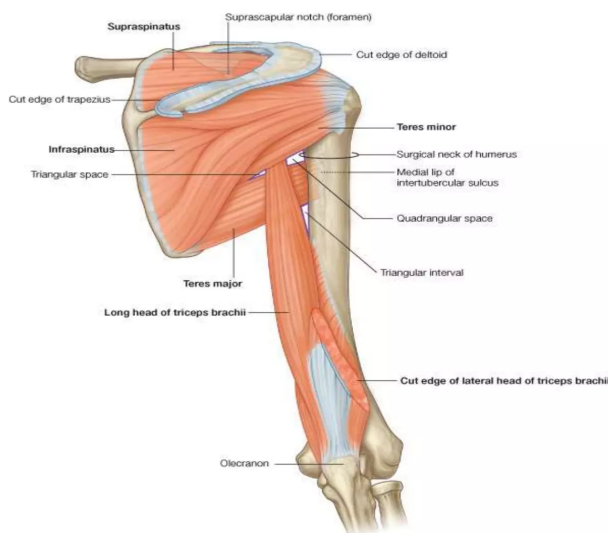


Figure 27. Supraspinatus

Infraspinatus (Rotator Cuff)

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Infraspinous fossa of scapula.	Middle facet of greater tubercle of humerus.	Suprascapular nerve (C5, C6).

- **Primary Action:** Laterally rotates arm.
- **Secondary Action:** Acts with rotator cuff to stabilize the shoulder joint.
- **Chief/Main mover:** Chief lateral rotator of the arm.

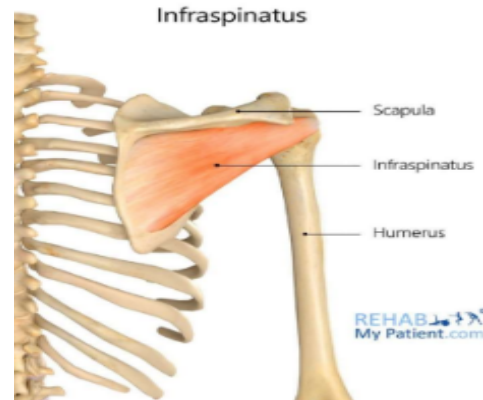


Figure 28. Infraspinatus

Teres Minor (Rotator Cuff)

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Middle part of lateral border of scapula.	Inferior facet of greater tubercle of humerus.	Axillary nerve (C5, C6).

- **Primary Action:** Laterally rotates arm.
- **Secondary Action:** Acts with rotator cuff to hold humeral head in glenoid cavity

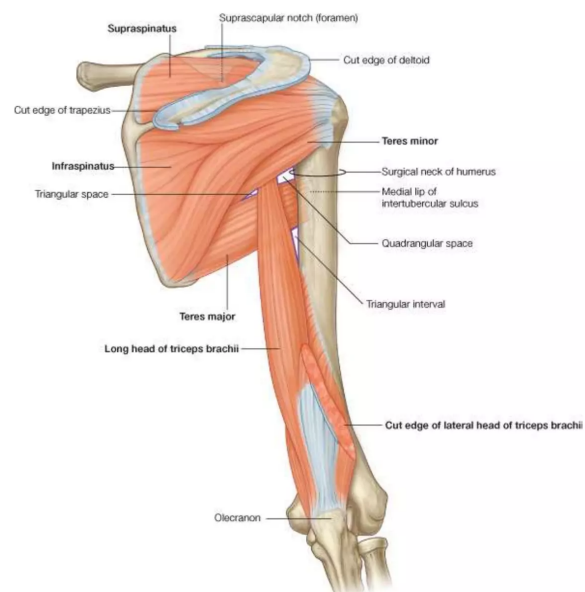


Figure 29. Teres minor in relation to the shoulder muscles

Teres minor

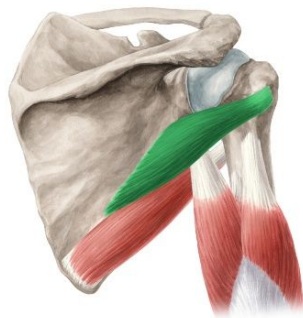


Figure 30. Teres minor

Teres Major

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Posterior surface of inferior angle of scapula.	Medial lip of intertubercular sulcus of humerus.	Lower subscapular nerve (C5, C6).

- **Primary Action:** Adducts and medially rotates arm.
- **Secondary Action:** Acts as an important stabilizer of the humeral head in its socket.

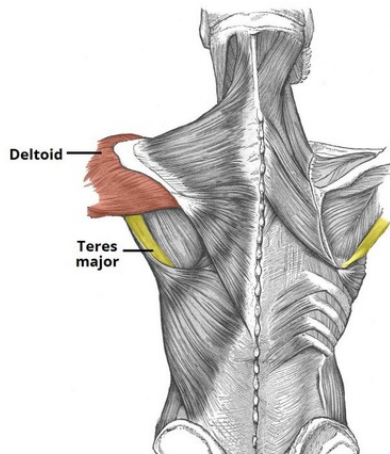


Figure 31. Teres major in relation to deltoid

Teres major

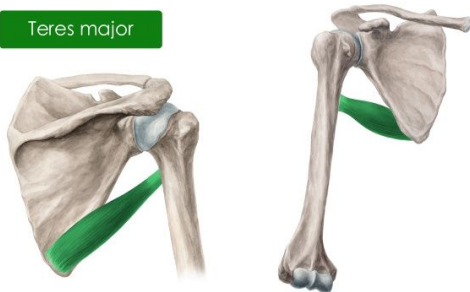


Figure 32. Teres major

Subscapularis (Rotator Cuff)

Origin / Proximal Attachment	Insertion / Distal Attachment	Innervation
Subscapular fossa	Lesser tubercle of humerus	Upper and lower subscapular nerves (C5, C6, C7)

- **Primary Action:** Medially rotates arm.
- **Secondary Action:** Acts with rotator cuff to hold humeral head in glenoid cavity.

- **Chief/Main mover:** Chief (primary) medial rotator of the arm

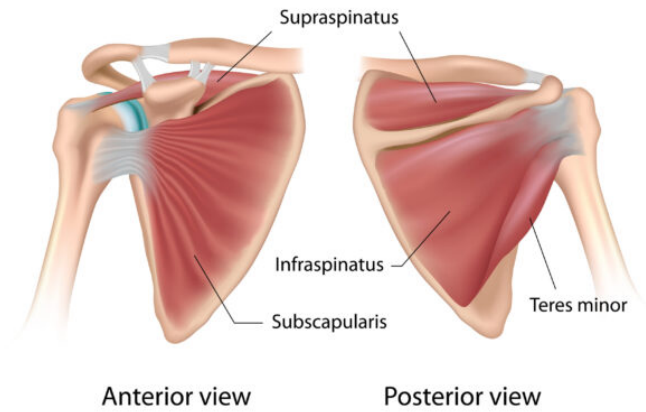


Figure 33. Subscapularis in relation to supraspinatus, infraspinatus, and teres minor

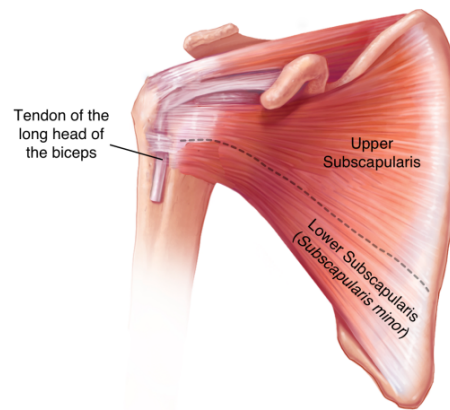


Figure 34. Subscapularis

A. IMPORTANT SPACES

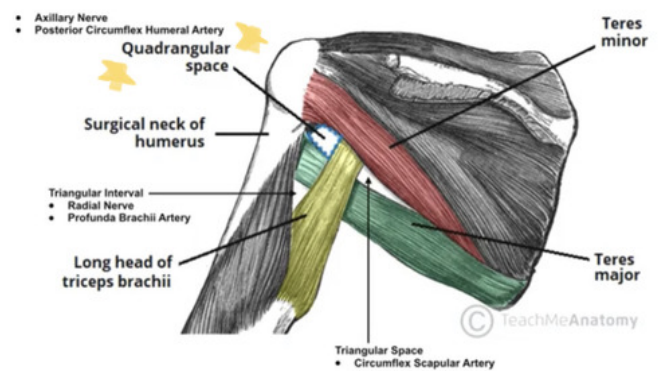


Figure 35. Quadrangular space highlighted



Figure 36. Easy reminder of the Quadrangular space

Quadrangular Space

Superior Boundary	Inferior Boundary	Medial Boundary	Lateral Boundary
Teres minor (subscapularis anteriorly).	Teres major.	Long head of triceps brachii.	Surgical neck of humerus.

- **Key Contents:** Axillary nerve and posterior circumflex humeral artery.
- **Clinical Significance:** Quadrangular space syndrome causes deltoid/teres minor weakness and lateral shoulder numbness and may occur with humeral surgical neck fractures or shoulder dislocations.

Triangular Space

Superior Boundary	Inferior Boundary	Medial Boundary	Lateral Boundary
Teres minor	Teres major.	Apex directed medially	Long head of triceps brachii

- **Key Contents:** Scapular circumflex artery.
- **Clinical Significance:** Scapular anastomosis provides vital collateral arterial blood flow around the scapula if the axillary artery is occluded proximal to the subscapular branch.

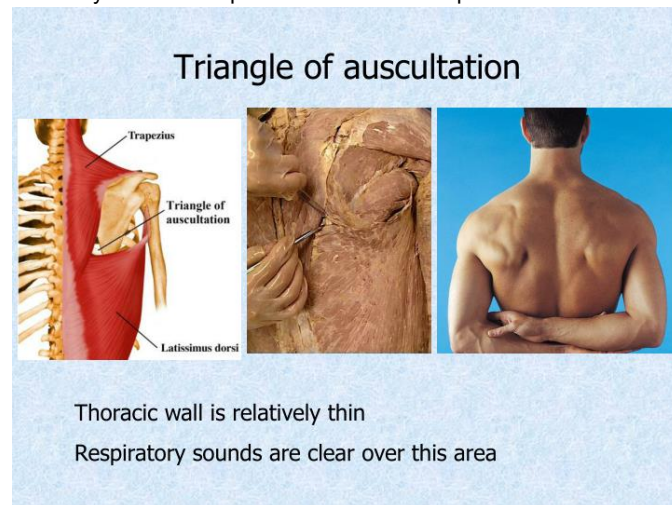
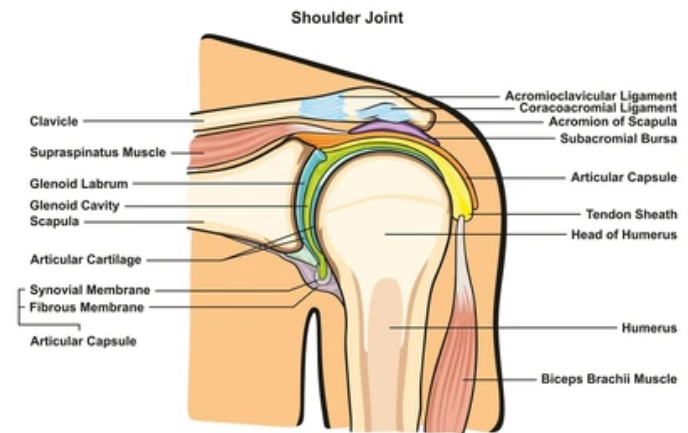


Figure 37. Triangle of Auscultation

Triangular Interval

Superior Boundary	Inferior Boundary	Medial Boundary	Lateral Boundary
Teres major	Apex directed inferiorly	Long head of triceps brachii.	Lateral head of triceps/humeral shaft

- **Key Contents:** Radial nerve and profunda brachii artery.
- **Clinical Significance:** Radial nerve entrapment or injury during mid-shaft humeral fractures can cause weakness of wrist and finger extension, resulting in wrist drop.



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Figure 38. Shoulder joint

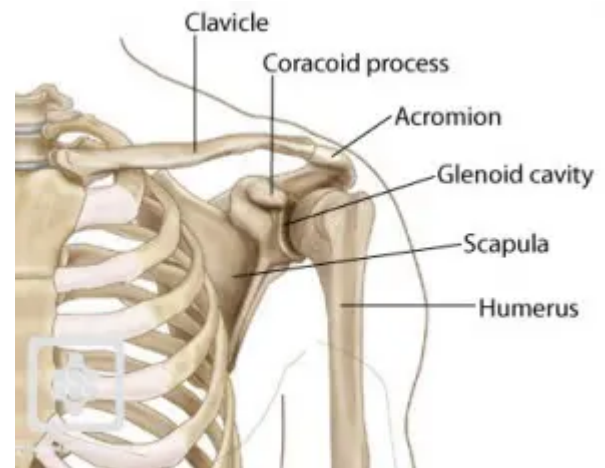
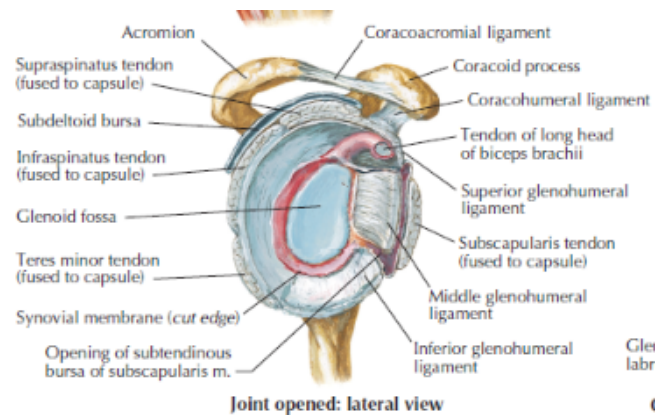
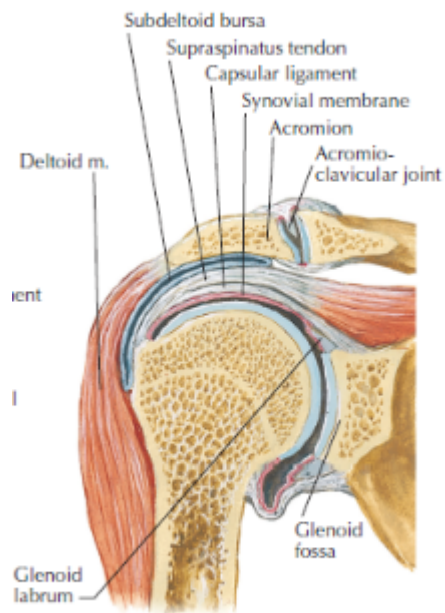


Figure 39. Bones of the shoulder left anterior view



Joint opened: lateral view

Figure 40. Synovial Joint of the Shoulder



Coronal section through shoulder girdle

Figure 41. Synovial membrane of the Shoulder in relation to the deltoid and bones of the shoulder

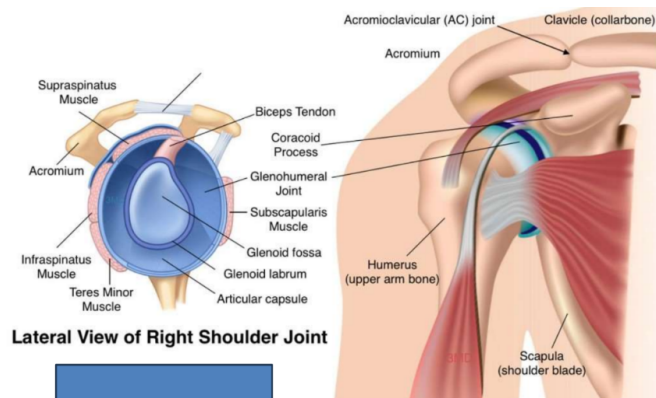


Figure 42. Lateral view of the right shoulder joint

REFERENCES

1. Moore, (2023), Clinically Oriented Anatomy 9th Edition
2. Doc. David, (2026) Muscles and bones of the Arm and Forearm