Upper limb

Arm & Cubital region
Arm

Lateral intermuscular septum

Anterior (flexor) compartment: stronger

Medial intermuscular septum

Posterior (extensor) compartment
Coracobrachialis

**Origin:**
- coracoid process (apex)

**Insertion:**
- mid-shaft of humerus (medial side)

**Function:**
- helps flex and adduct arm
- stabilize glenohumeral joint

**Innervation:**
- musculocutaneous nerve

*Serve as a shunt muscle, when carrying a heavy suitcase: deltoid, long head of the triceps, coracobrachialis*
Biceps brachii

Three-joint muscle

**Origin:**
- long head: supraglenoid tubercle
- short head: coracoid process (apex)

**Insertion:**
- radial tuberosity

**Function:** 和elbow與forearm位置息息相關
- accessory flexor of arm
- extended elbow: simple flexor of forearm
- 90° elbow:
  1. supinated forearm: flexor
  2. pronated forearm: primary supinator

**Innervation:**
- musculocutaneous nerve
Brachialis

**Origin:**
- distal half of humerus (anterior)

**Insertion:**
- tuberosity of ulna

**Function:**
- pure flexor of forearm, in all directions

**Innervation:**
- musculocutaneous nerve
Triceps brachii

Origin:
1. long head: infraglenoid tubercle
2. lateral head: superior to radial groove (strongest)
3. medial head: inferior (workhorse)

Insertion: Olecranon

Function:
- extensor of forearm
  - long head: extend and adduct arm, shunt muscle

Innervation:
- radial nerve
Brachial artery

Profunda brachii artery

Axillary artery

Radial artery

Bicipital aponeurosis

Ulnar artery

Medial bicipital groove

Coracobrachialis

Teres major
Periarticular arterial anastomoses

- Profunda brachii artery (deep brachial artery)
- Humeral nutrient artery
- Brachial artery
- Superior ulnar collateral
- Middle collateral
- Radial collateral
- Inferior ulnar collateral
- Interosseous recurrent
- Anterior ulnar recurrent
- Posterior ulnar recurrent artery
- Radial artery
- Ulnar artery
Superior lateral cutaneous nerve of arm
Inferior lateral cutaneous nerve of arm
Posterior cutaneous nerve of forearm
Axillary nerve
Radial nerve

Posterior cutaneous nerve of arm
Anconeus

green: branch at axilla
blue: branch at radial groove

Wrist-drop
Cubital fossa

- Lateral epicondyle
- Medial epicondyle
- Pronator teres
- Brachialis
- Brachioradialis
Honeymoon palsy (wrist drop)

- Radial nerve
- Supernicial branch
- Deep branch
- Supinator
- Lateral cutaneous nerve of forearm
- Median nerve
- Ulnar nerve
- Radial nerve
- Musculocutaneous nerve
- Medial cutaneous nerve of forearm
- Median cubital vein
- Cephalic vein
- Basilic vein
- Brachioradialis
- Pronator teres
- Median nerve
- Median nerve
- Medial cutaneous nerve of forearm
Superficial back
Scapular region

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Shoulder:
upper limb → trunk and neck

Bone:
Clavicle
Scapula
Proximal end of humerus
Movements of the scapula (physiological scapulothoracic joint)

- Elevation
- Depression
- Protraction
- Retraction
- Upward rotation
- Downward rotation
Movements of *glenohumeral joint*
Lateral posterior cutaneous branch  Medial posterior cutaneous branch
Shoulder

**Superficial muscles:**

Trapezius

- scapula and clavicle → trunk
  (pectoral girdle)

Deltoid

- scapula and clavicle → humerus

**Deep to trapezius:**

- Levator scapulae
- Rhomboid minor
- Rhomboid major
Trapezius

Origin:
Skull, ligamentum nuchae, vertebrae C7-T12

Insertion:
Spine of scapula, acromion, lateral 1/3 clavicle

Function:
Upper fibers: elevate scapula
Middle fibers: retract scapula
Lower fibers: depress scapula
Upper fibers+Lower fibers: upward rotate scapula

Innervation:
Accessory nerve (CN XI): motor fibers
C3 and C4
Deltoid

Origin:
spine of scapula, acromion, lateral 1/3 clavicle

Insertion:
deltoid tuberosity of humerus

Function:
- anterior part: **flexes** and **medially rotates** arm
- middle part: **abducts** arm
- posterior part: **extends** and **laterally rotates** arm
- all: **abductor > 15°**; shunt muscle

Innervation:
axillary nerve
Levator scapulae

Origin:
transverse processes of C1 to C4

Insertion:
scapula: superior angle to root of spine

Function:
scapula: elevation and downward rotation
neck: extension and lateral flexion

Innervation:
dorsal scapular (C4, C5) nerve
cervical (C3, C4) nerves
Rhomboid minor

Origin:
lower end of ligamentum nuchae
spinous processes of C7 and T1

Insertion:
scapula: smooth triangular area at root of spine

Function:
scapula: elevation, retraction, downward rotation

Innervation:
dorsal scapular nerve (C4, C5)
Rhomboid major

Origin:
spinous processes of T2 to T5

Insertion:
scapula: from insertion of rhomboid minor to inferior angle

Function:
scapula: elevation, retraction, downward rotation

Innervation:
dorsal scapular nerve (C4, C5)
Latissimus dorsi

Origin:
Spinous processes of inferior 6 thoracic vertebrae, thoracolumbar facia, iliac crest, inferior 3 or 4 ribs

Insertion:
floor of intertubercular groove of humerus

Function:
Humerus: *adduction*, extension, medial rotation
Scapula: *downward rotation*, depression

Innervation:
Thoracodorsal nerve (*C6, C7, C8*)
Elevate ribs
2nd to 5th intercostal nerves

Serratus posterior superior

Origin: nuchal ligament, C7-T3 spinous processes

Insertion: superior borders of 2nd to 4th ribs

Serratus posterior inferior

Origin: T11-L2 spinous processes

Insertion: inferior borders of 8th to 12th ribs

Depress ribs
T9-T12 thoracic nerves
Posterior scapular region

Supraspinatus

Infraspinatus

Teres minor

Teres major

Long head of triceps brachii
Supraspinatus

Origin:
supraspinous fossa (medial 2/3)

Insertion:
greater tubercle (superior facet)

Function:
abduction of arm (<15°)

Innervation:
suprascapular nerve
Infraspinatus

**Origin:**
Infraspinous fossa (medial 2/3)

**Insertion:**
greater tubercle (middle facet)

**Function:**
Powerful *lateral rotator* of humerus

**Innervation:**
suprascapular nerve
Teres minor

Origin:
  lateral upper 2/3 of scapula

Insertion:
  greater tubercle (inferior facet)

Function:
  lateral rotation of arm

Innervation:
  axillary nerve
Teres major

Origin:
Inferior angle (posterior) of scapula

Insertion:
Medial lip of intertubercular sulcus of humerus

Function:
Medial rotation and adduction help extension

Innervation:
Inferior subscapular nerve
Long head of triceps brachii

Origin:
Infraglenoid tubercle on scapula

Insertion:
Olecranon process of ulna

Function:
Arm: adductor and extensor
Forearm: extensor

Innervation:
Radial nerve
Rotator cuff muscles

Supraspinatus

Infraspinatus

Teres minor

Subscapularis
Gateways to the posterior scapular region

- Suprascapular nerve
- Suprascapular artery
- Superior transverse scapular ligament (Suprascapular notch)
- Axillary nerve
- Posterior circumflex humeral artery
- Circumflex scapular artery
- Profunda brachii artery
- Radial nerve
- Cut edge of lateral head of triceps
Arterial anastomoses around the shoulder

- Thyrocervical trunk
- Suprascapular artery
- Circumflex scapular artery
- Transverse cervical artery
- Subscapular artery
- Anterior circumflex humeral artery
- Posterior circumflex humeral artery
- Thoracodorsal artery
- Profunda brachii artery

Deep branch of transverse cervical artery (dorsal scapular artery)

也可能subclavian artery分支