

## MUSCLES OF THE APPENDICULAR SKELETON

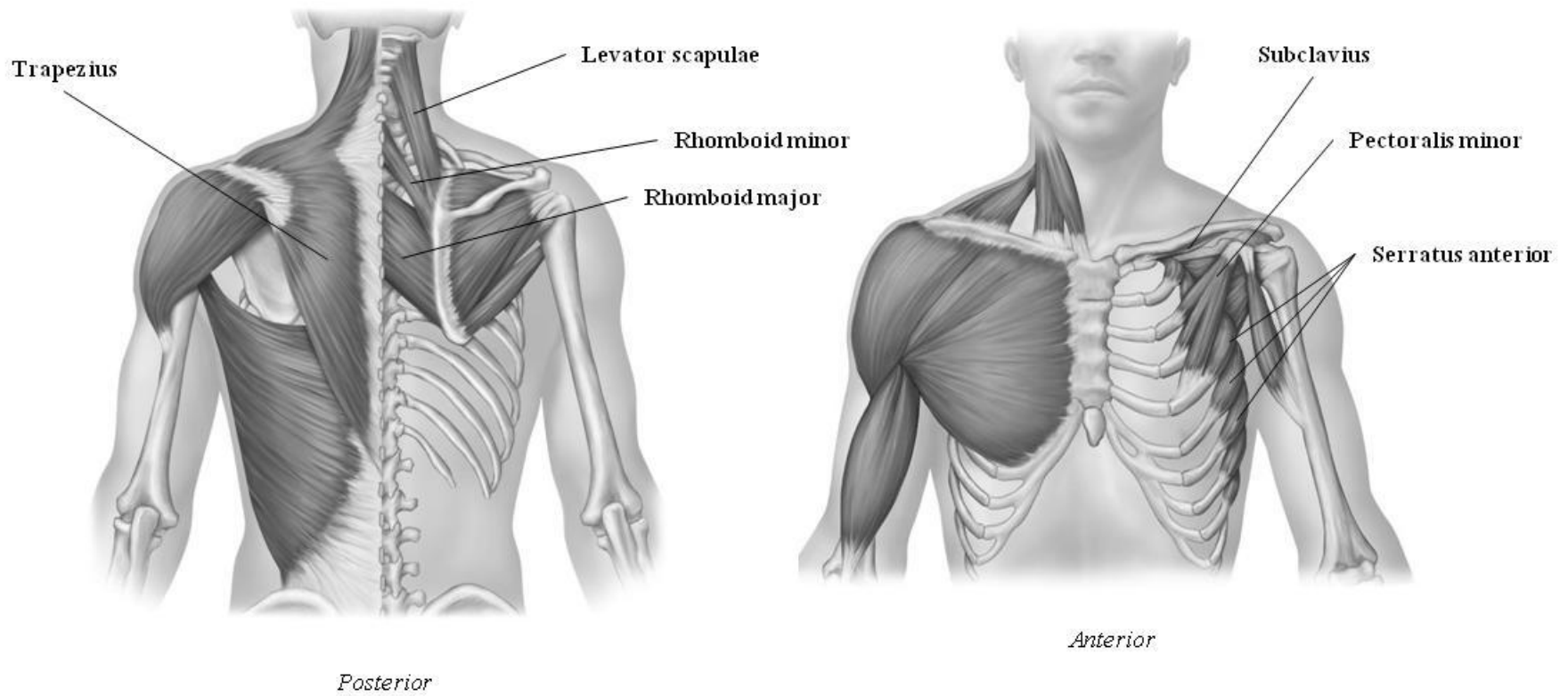
### UPPER LIMB

The muscles that act on the upper limb fall into four groups: those that stabilize the pectoral girdle, those that move the arm, those that move the forearm, and those that move the wrist, hand, and fingers.

#### Muscles Stabilizing Pectoral Girdle (Marieb / Hoehn – Chapter 10; Pgs. 346 – 349; Figure 1)

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
ANTERIOR THORAX:				
<b>Pectoralis minor*</b>	anterior surface of ribs 3 – 5	coracoid process of scapula	pectoral nerves	protracts & depresses scapula
<b>Serratus anterior*</b>	ribs 1 – 8	medial border of scapula	long thoracic nerve	rotates scapula laterally
<b>Subclavius*</b>	rib 1	inferior surface of clavicle	-----	stabilizes / depresses pectoral girdle
POSTERIOR THORAX:				
<b>Trapezius*</b>	occipital bone / spinous processes of C <sub>7</sub> – T <sub>12</sub>	acromion / spine of scapula; lateral third of clavicle	accessory nerve (cranial nerve XI)	stabilizes / elevates / retracts / rotates scapula
<b>Levator scapulae*</b>	transverse processes of C <sub>1</sub> – C <sub>4</sub>	upper medial border of scapula	dorsal scapular nerve	elevates / adducts scapula
<b>Rhomboids*</b> (major / minor)	spinous processes of C <sub>7</sub> – T <sub>5</sub>	medial border of scapula	dorsal scapular nerve	adducts / rotates scapula

\* Need to be familiar with on both ADAM and the human cadaver

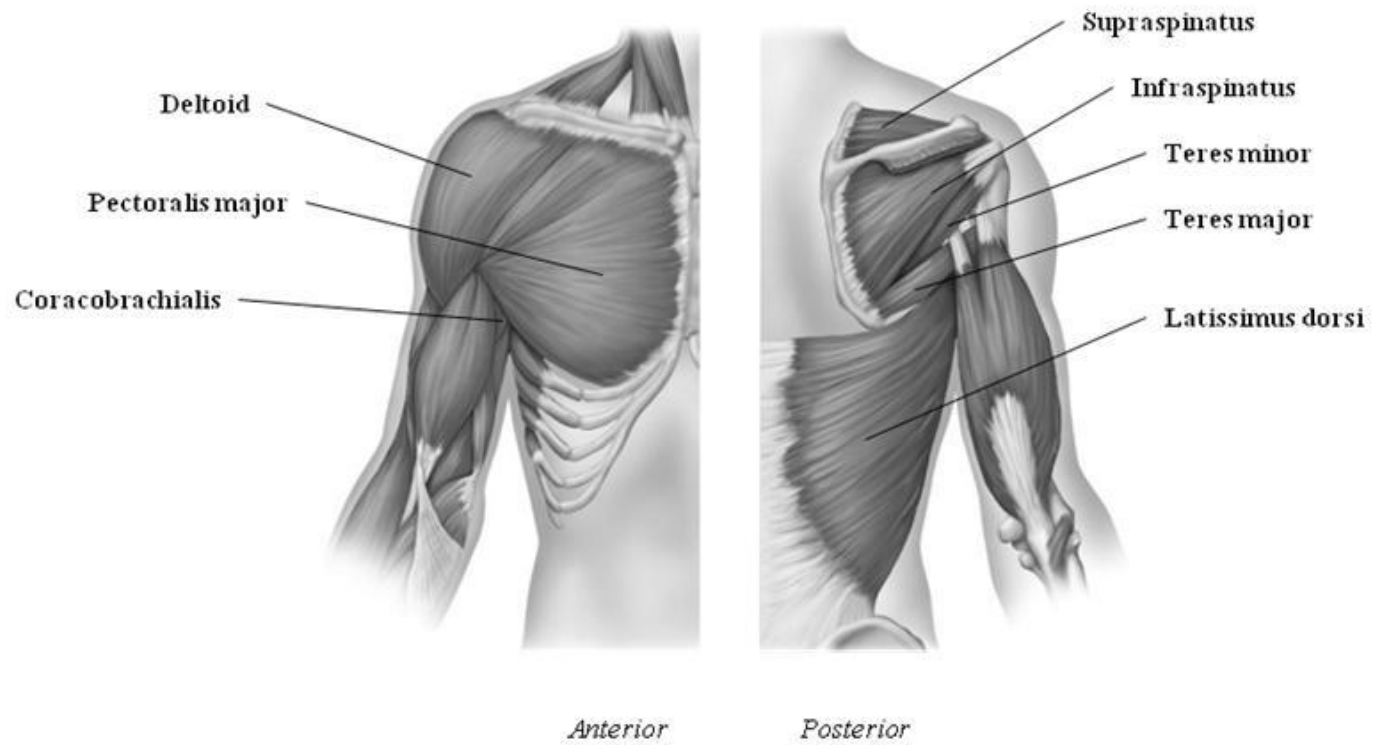


**Figure 1:** Muscles stabilizing pectoral girdle, posterior and anterior views

Muscles Moving Arm (Marieb / Hoehn – Chapter 10; Pgs. 350 – 352; Figure 2)

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
<b>Pectoralis major*</b>	sternum / clavicle / ribs 1 – 6	intertubercular sulcus / greater tubercle of humerus	pectoral nerves	flexes / medially rotates / adducts arm
<b>Deltoid*</b>	acromion / spine of scapula; lateral third of clavicle	deltoid tuberosity of humerus	axillary nerve	abducts arm
<b>Latissimus dorsi*</b>	spinous processes of T <sub>7</sub> – L <sub>5</sub> / ribs 9 – 12 / iliac crest of os coxa	intertubercular groove of humerus	thoracodorsal nerve	extends / adducts arm
<b>Subscapularis*</b>	subscapular fossa of scapula	lesser tubercle of humerus	subscapular nerves	rotates arm medially
<b>Supraspinatus*</b>	supraspinous fossa of scapula	greater tubercle of humerus	suprascapular nerve	abducts arm
<b>Infraspinatus*</b>	infraspinous fossa of scapula	greater tubercle of humerus	suprascapular nerve	rotates arm laterally
<b>Teres minor*</b>	lateral border of scapula	greater tubercle of humerus	subscapular nerves	rotates arm laterally
<b>Teres major*</b>	inferior border of scapula	lesser tubercle of humerus	subscapular nerves	rotates medially / adducts arm
<b>Coracobrachialis*</b>	coracoid process of scapula	medial shaft of humerus	musculocutaneous nerve	flexes / adducts arm

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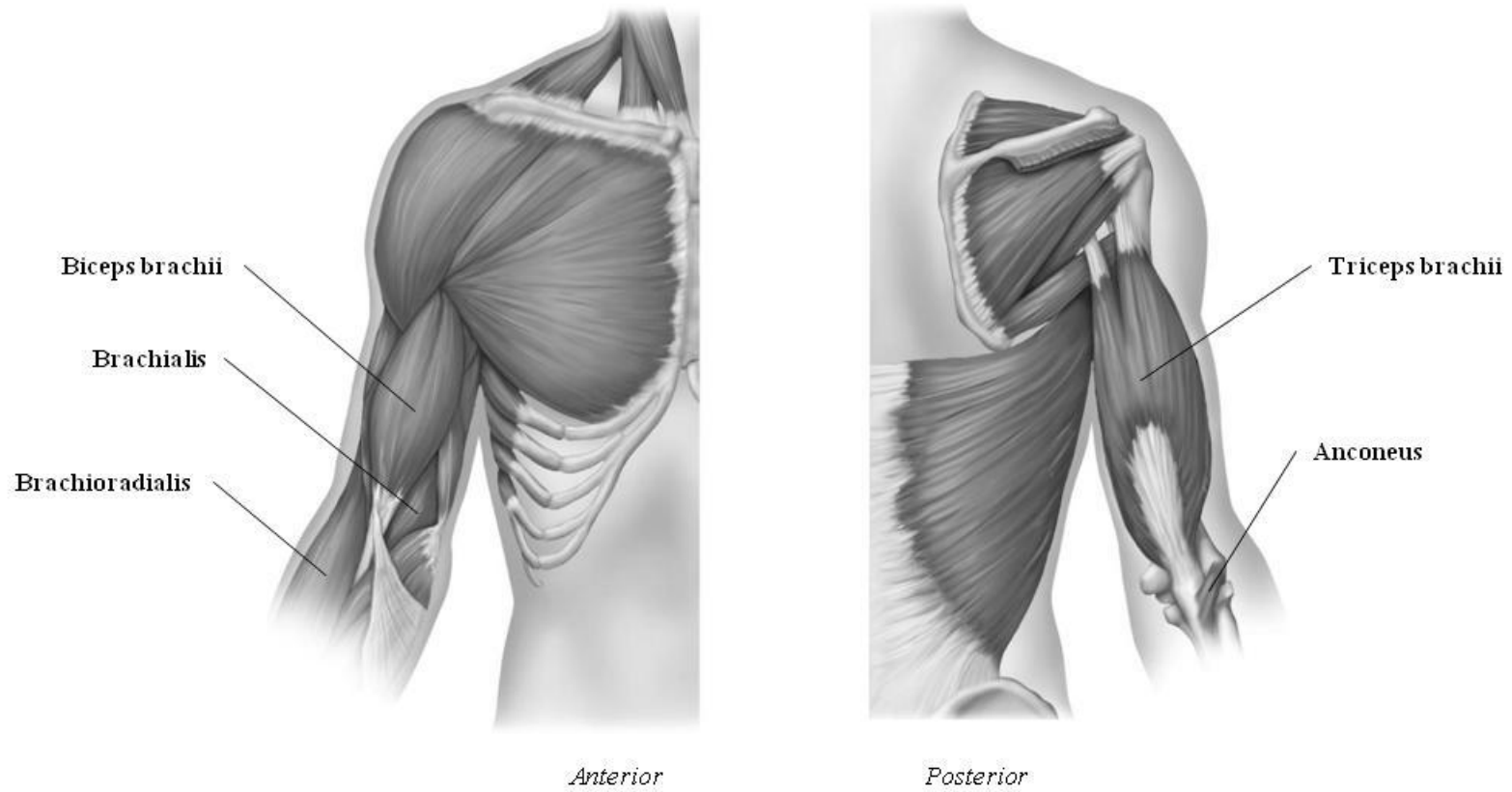


**Figure 2:** Muscles that move the arm, anterior and posterior views (note: subscapularis not shown)

Muscles Moving Forearm (Marieb / Hoehn – Chapter 10; Pgs. 352 – 353; Figure 3)

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
POSTERIOR MUSCLES:				
<b>Triceps brachii*</b>	below glenoid cavity of scapula / posterior shaft of humerus	olecranon process of ulna	radial nerve	extends forearm
<b>Anconeus</b>	lateral epicondyle of humerus	olecranon process of ulna	radial nerve	extends forearm
ANTERIOR MUSCLES:				
<b>Biceps brachii*</b>	coracoid process / above glenoid cavity of scapula	radial tuberosity of radius	musculocutaneous nerve	flexes forearm
<b>Brachialis*</b>	anterior face of distal humerus	coronoid process of ulna	musculocutaneous nerve	flexes forearm
<b>Brachioradialis*</b>	lateral epicondyle of ulna	styloid process (radius)	radial nerve	flexes forearm

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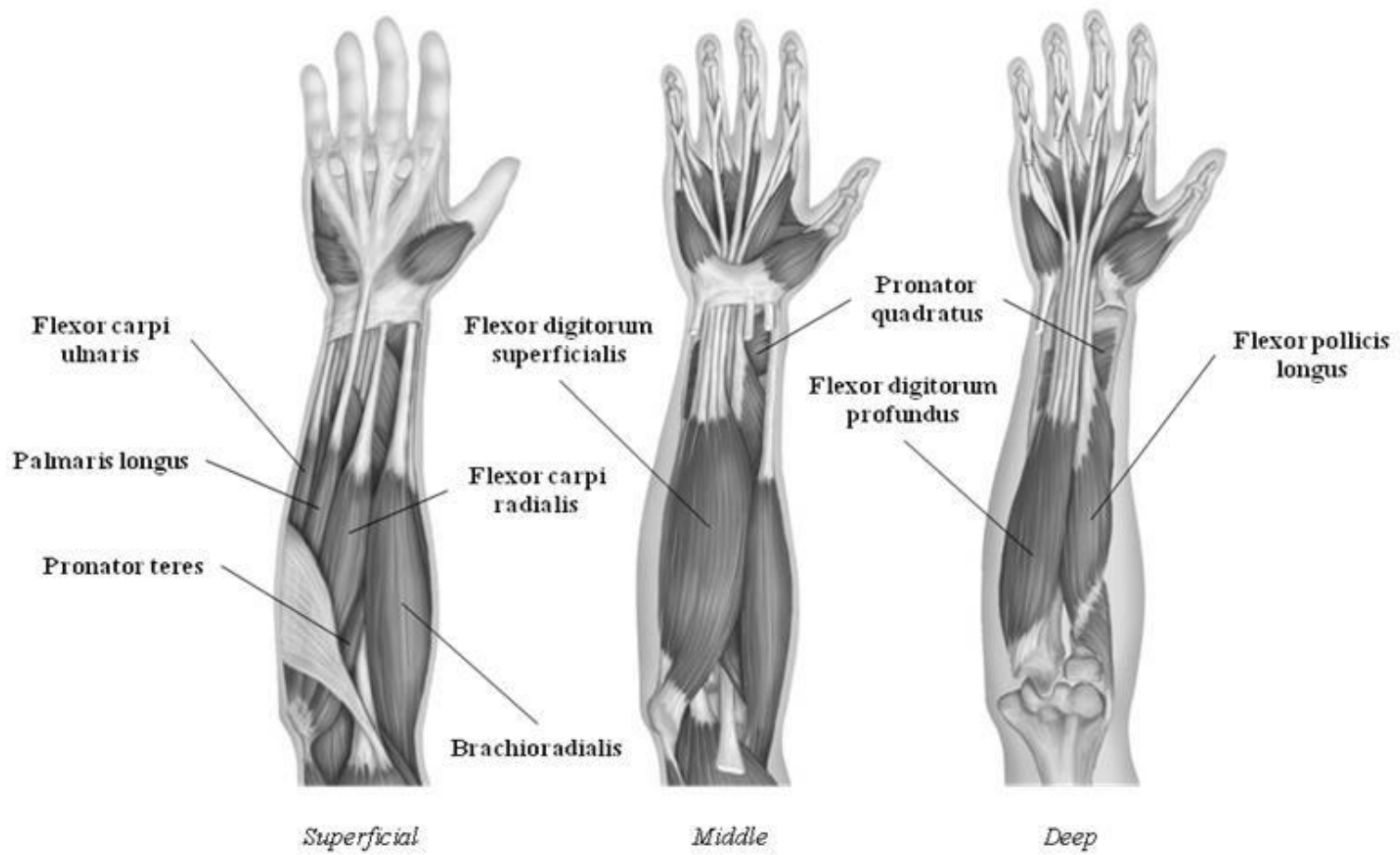


**Figure 3:** Muscles that move the forearm, anterior and posterior views

Muscles Moving Wrist, Hand, and Fingers - Anterior (Marieb / Hoehn – Chapter 10; Pgs. 354 – 356; Figure 4)

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
<b>SUPERFICIAL MUSCLES:</b>				
<b>Pronator teres*</b>	medial epicondyle of humerus; coronoid process of ulna	lateral shaft of radius	median nerve	pronates forearm
<b>Flexor carpi radialis*</b>	medial epicondyle of humerus	metacarpals 2 – 3	median nerve	flexes / abducts wrist
<b>Palmaris longus</b>	medial epicondyle of humerus	palmar aponeurosis	median nerve	tenses skin of palm during hand movement
<b>Flexor carpi ulnaris*</b>	medial epicondyle of humerus; olecranon process of ulna	pisiform / hamate bone of carpals	ulnar nerve	flexes / adducts wrist
<b>Flexor digitorum superficialis*</b>	medial epicondyle of humerus; coronoid process of ulna ; shaft of radius	middle phalanges 2 – 5	median nerve	flexes wrist / fingers
<b>DEEP MUSCLES:</b>				
<b>Flexor digitorum profundus*</b>	coronoid process / anteriomedial surface of ulna	distal phalanges 2 – 5	ulnar / median nerves	flexes wrist / fingers
<b>Flexor pollicis longus</b>	anterior surface of radius	distal phalanx of thumb	median nerve	flexes thumb
<b>Pronator quadratus</b>	distal surface of anterior ulna	distal surface of anterior radius	median nerve	pronates forearm

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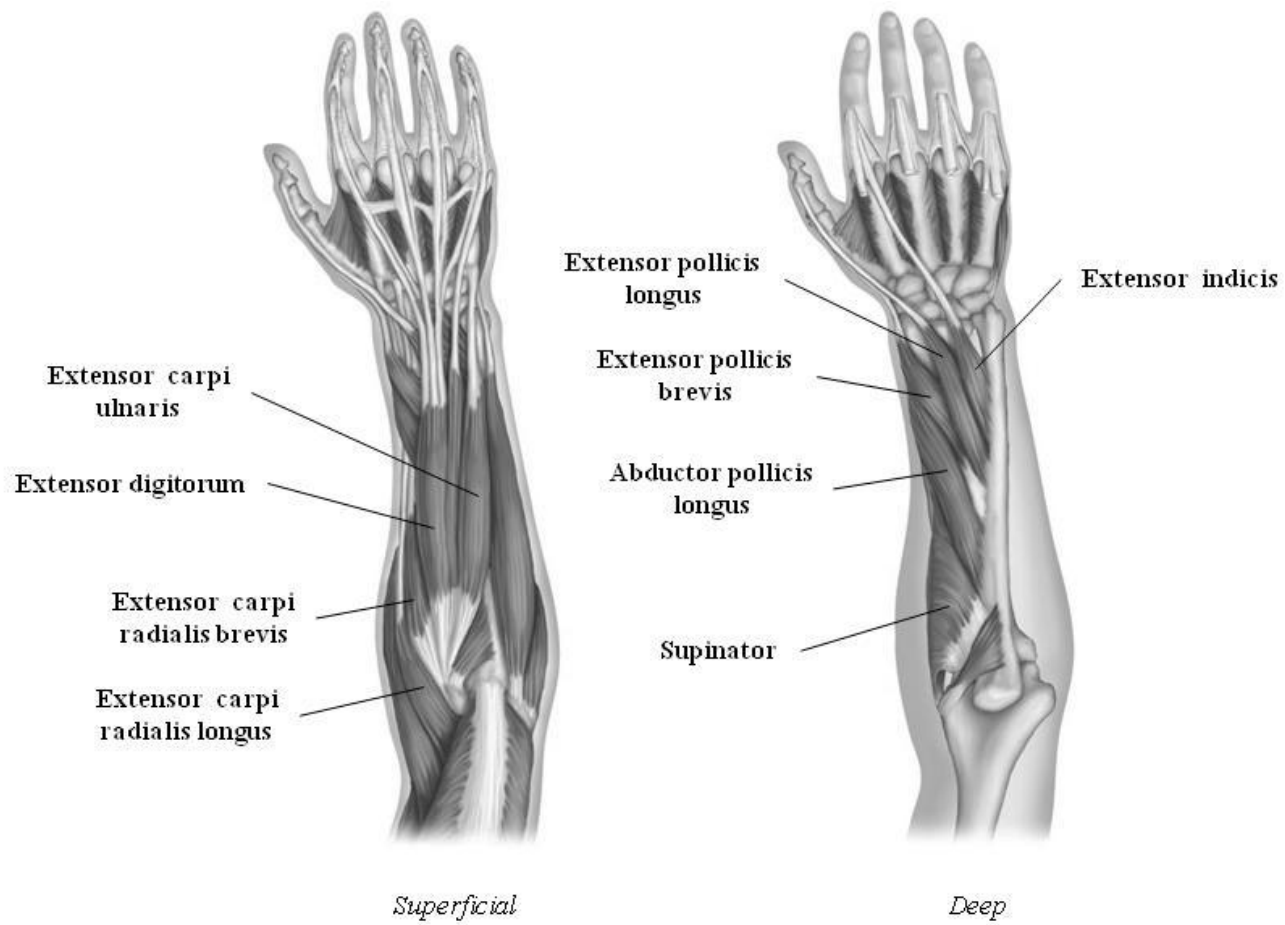
**Figure 4:** Anterior muscles that move the wrist, hand, and fingers



Muscles Moving the Wrist, Hand, and Fingers - Posterior (Marieb / Hoehn – Chapter 10; Pgs. 356 – 357; Figure 5)

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
<b>SUPERFICIAL MUSCLES:</b>				
<b>Extensor carpi radialis*</b> (longus / brevis)	lateral epicondyle of humerus	metacarpals 2 – 3	radial nerve	extends / abducts wrist
<b>Extensor digitorum*</b>	lateral epicondyle of humerus	distal phalanges 2 – 5	radial nerve	extends fingers
<b>Extensor carpi ulnaris*</b>	lateral epicondyle of humerus	metacarpal 5	radial nerve	extends / adducts wrist
<b>DEEP MUSCLES:</b>				
<b>Supinator</b>	lateral epicondyle of humerus; proximal end of ulna	proximal end of radius	radial nerve	supinates forearm
<b>Abductor pollicis longus*</b>	posterior surface of radius and ulna	metacarpal 1 / trapezium of carpals	radial nerve	abducts / extends thumb
<b>Extensor pollicis*</b> (longus / brevis)	dorsal shaft of radius / ulna	proximal / distal ends of phalange 1	radial nerve	extends thumb
<b>Extensor indicis</b>	posterior surface of distal ulna	phalange 2	radial nerve	extends index finger

\* Need to be familiar with on both ADAM and the human cadaver



**Figure 5:** Posterior muscles that move the wrist, hand, and fingers

Out-of-Class Assignment: Intrinsic Muscles of the Hand

Intrinsic muscles are found only in the palm of the hand (none on the dorsal surface). These small, relatively weak muscles control the precise movements of the metacarpals and the fingers, leaving the powerful movements of the fingers (e.g., power grip) to the forearm muscles. The intrinsic muscles of the palm are divided into three groups: those in the *thenar eminence* (ball of thumb), the *hypothenar eminence* (ball of the little finger), and the *midpalm*. The thenar and hypothenar eminence groups are responsible for flexing, abducting, and opposing the respective digits. The midpalm muscles extend the fingers at the interphalangeal joints.

Below is a table listing the individual muscles in each functional group. For each muscle, fill in the appropriate origin, insertion, innervation, and action and then correctly label the muscle on the associated figure(s). This exercise is to introduce you to these muscles; **you will not be responsible for these groups of muscles for the practical exam.**

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
THENAR MUSCLES:				
<b>Abductor pollicis brevis</b>				
<b>Flexor pollicis brevis</b>				
<b>Opponens pollicis</b>				
<b>Adductor pollicis</b>				

MUSCLE:	ORIGIN:	INSERTION:	INNERVATION:	ACTION:
<b>HYPOTHENAR MUSCLES:</b>				
<b>Abductor digiti minimi</b>				
<b>Flexor digiti minimi brevis</b>				
<b>Opponens digiti minimi</b>				
<b>MIDPALMAR MUSCLES:</b>				
<b>Lumbricals</b>				
<b>Palmar interossei</b>				
<b>Dorsal interossei</b>				



*Superficial*



*Deep*