



Cubital fossa & Anatomy of the Forearm Muscles

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Intended Learning Outcomes (ILOs)

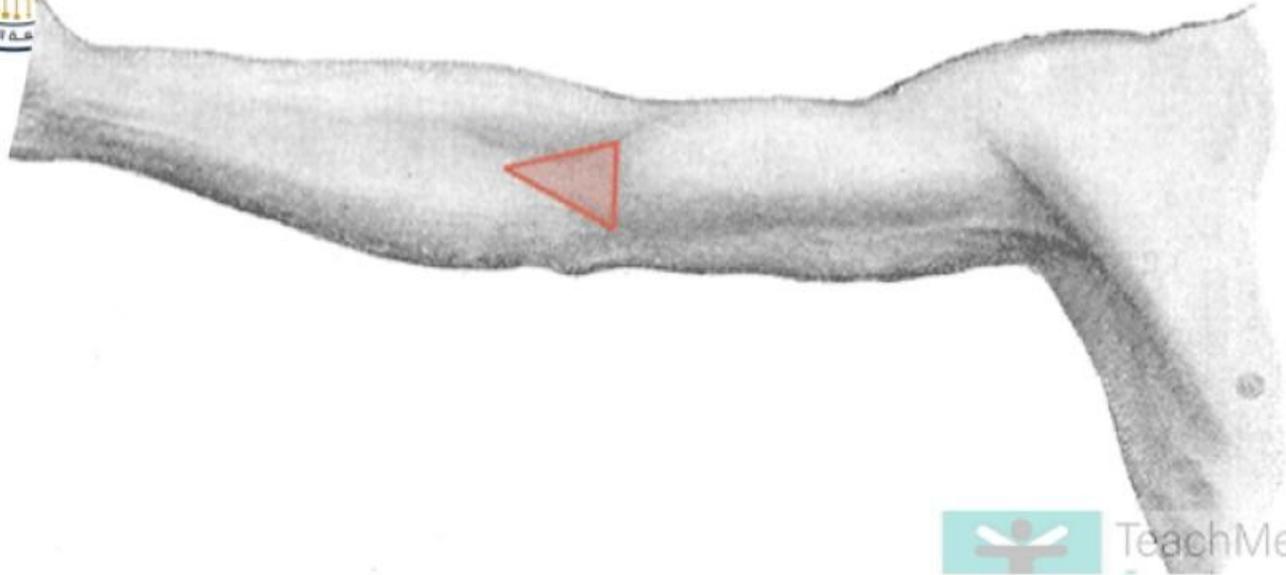
- 1. Identify the separation of the forearm into 2 compartments.**
- 2. Recognize the forearm muscles.**
- 3. List the origin, insertion, nerve supply and action of the forearm muscles.**



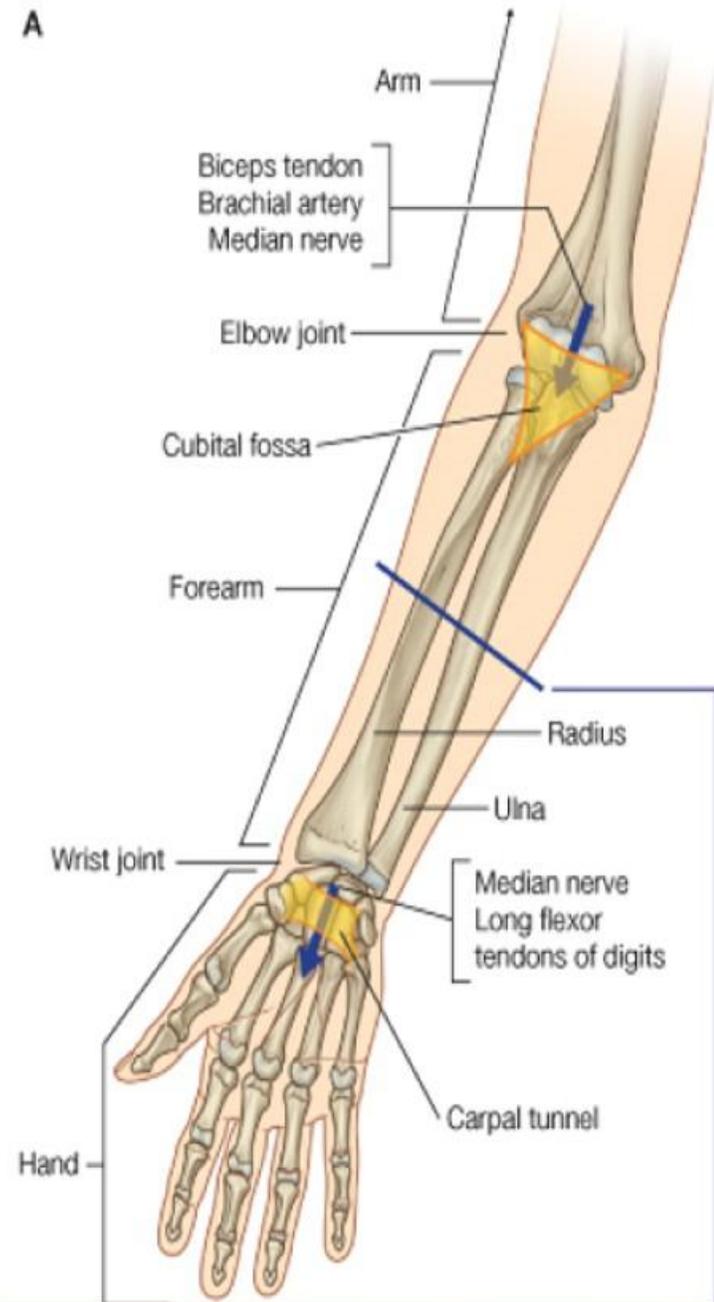
Agenda

1. What are the two compartments of the forearm?
2. What are the muscles of the forearm?
3. What is the origin, insertion, nerve supply and action of the forearm muscles?





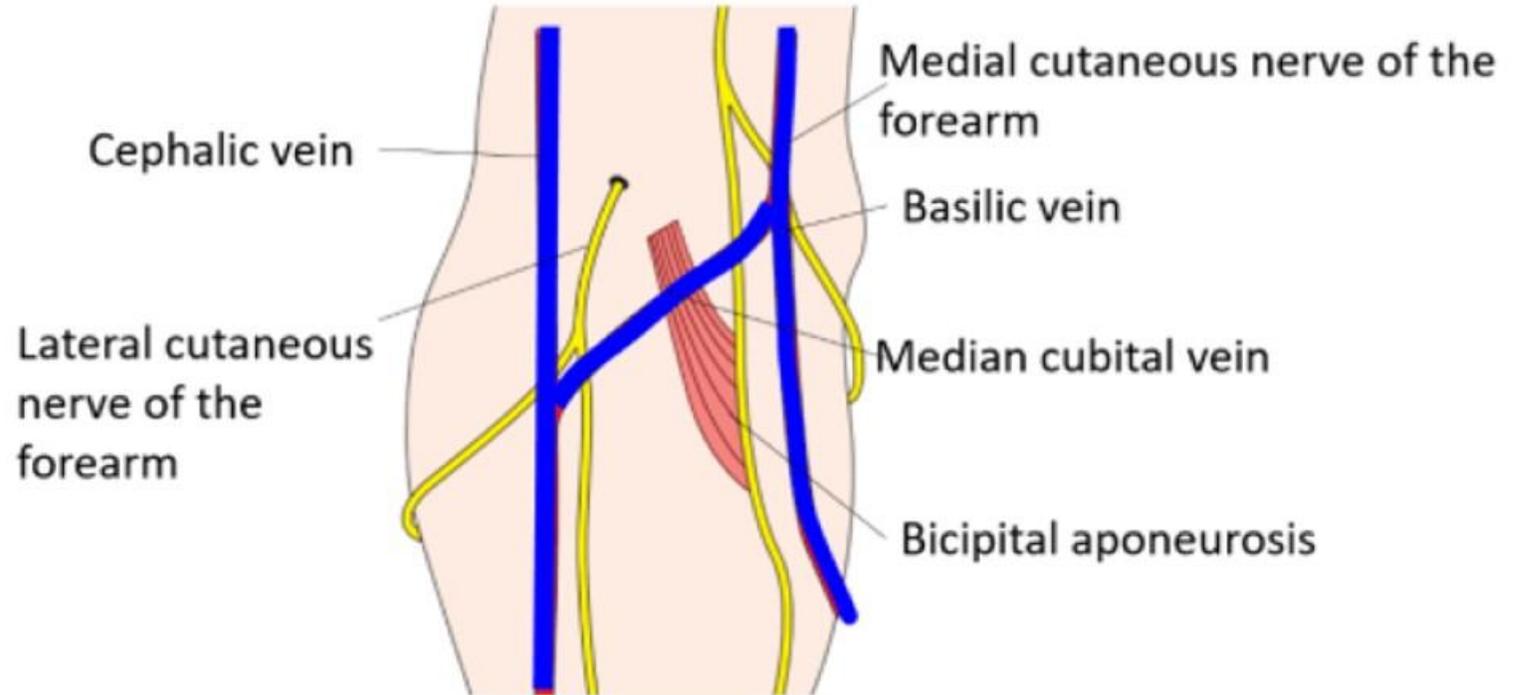
Cubital Fossa



• **Roof :**

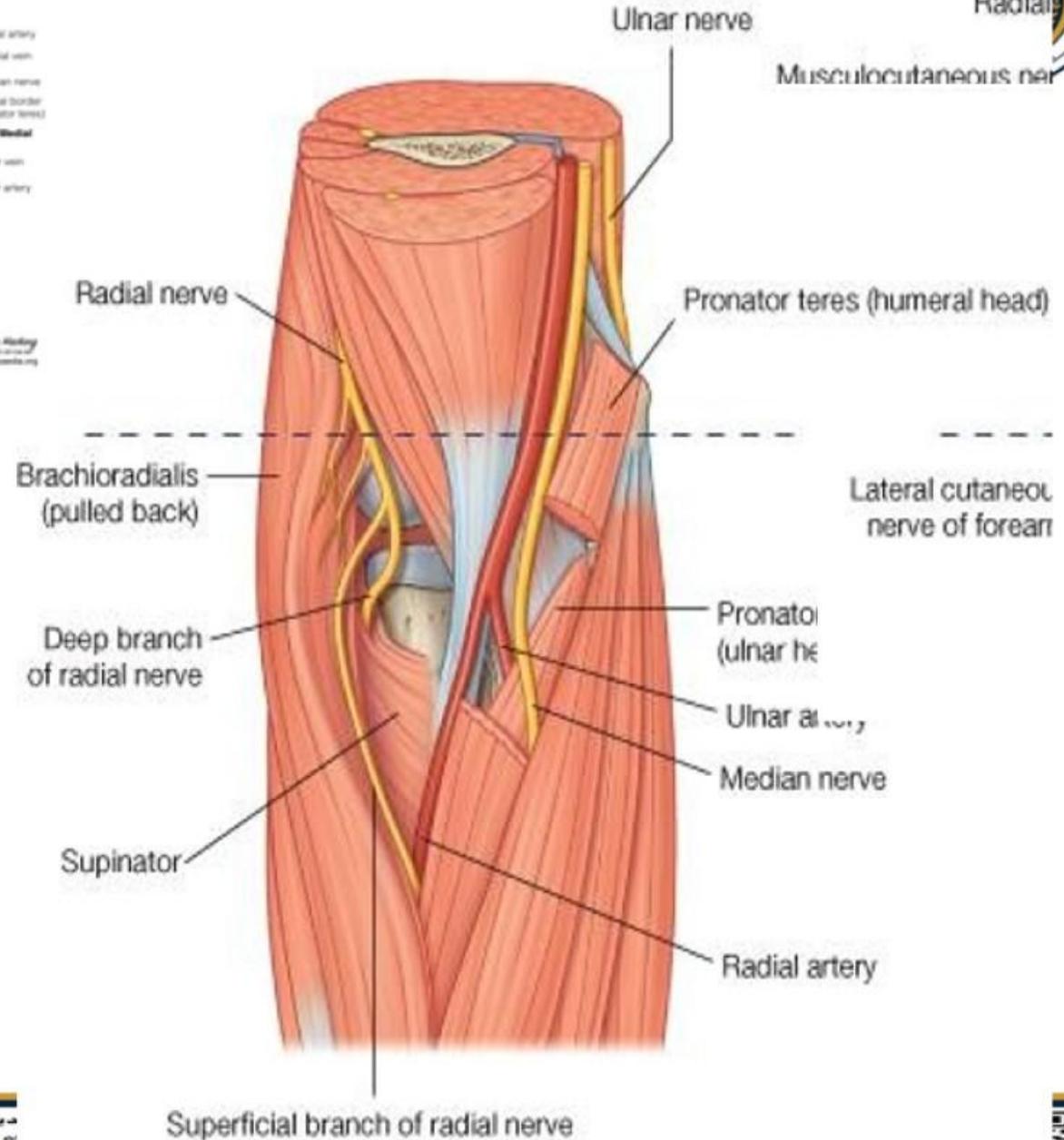
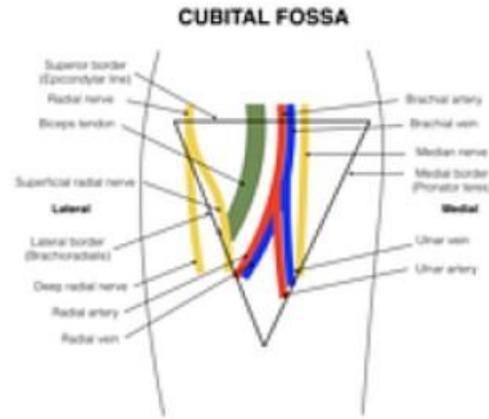
- 1 Skin
- 2 Superficial fascia containing
 - cephalic vein;
 - basilic vein
 - median cubital vein
- 3 Deep fascia
- 4 bicipital aponeurosis

Structures in the roof of cubital fossa



Contents of Cubital Fossa

- **Brachial artery** :
lies in middle of fossa, divides into
 - 1 ulnar artery
 - 2 radial artery



- **Median nerve** : on medial side of artery leaves fossa By passing between 2 heads of pronator teres.
- **Tendon of biceps** : on lateral side of brachial artery
- **Radial nerve** : lateral between brachialis & brachioradialis

• Forearm is divided into **anterior & posterior compartments**

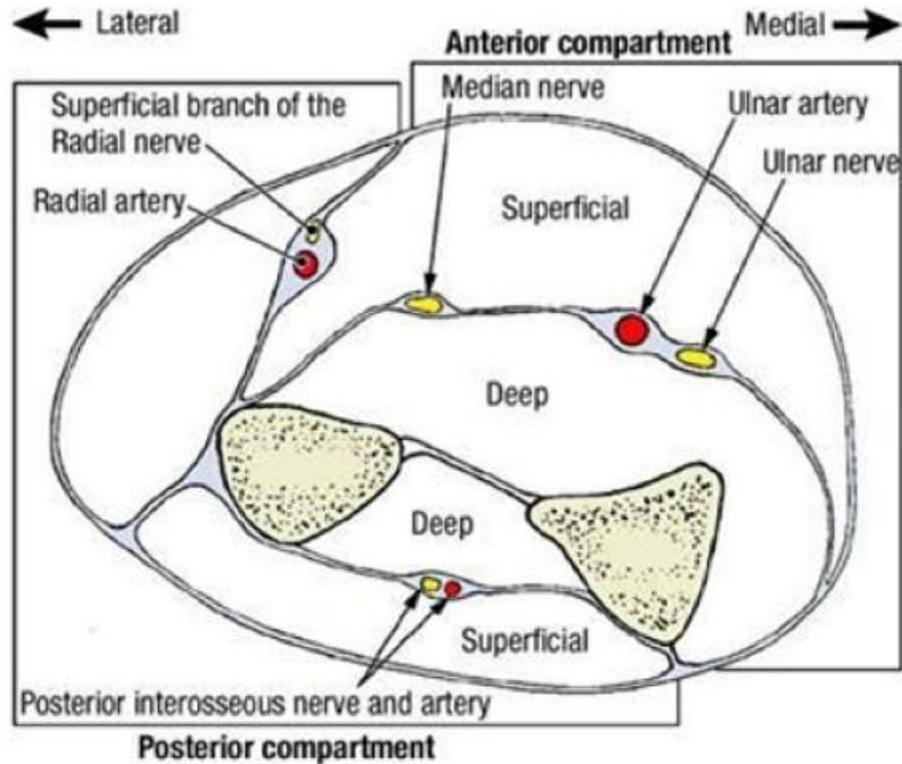
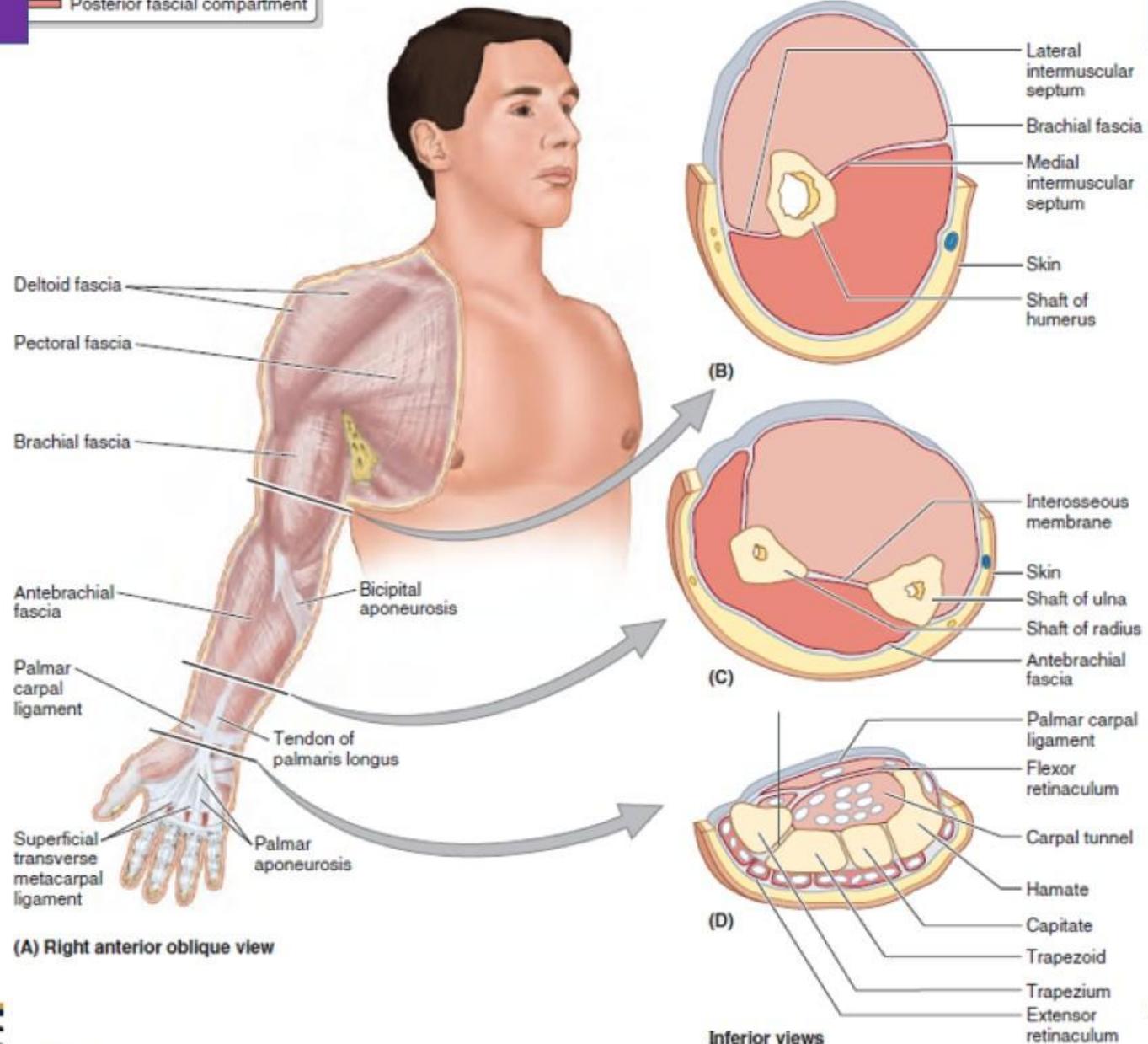


Figure 2.20. Compartments of the right forearm.



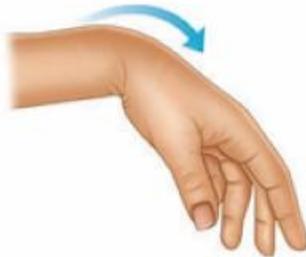
(A) Right anterior oblique view

Inferior views

Important Info to know

Movements of wrist joint

FLEXION



EXTENSION



ABDUCTION



ADDUCTION



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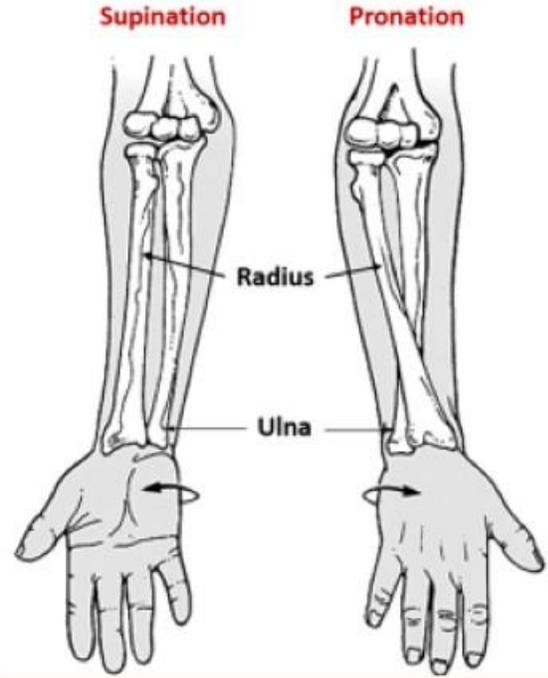
AnatomyStuff



Movements of elbow joint



Movements of radioulnar joint



Names of fingers

Thumb

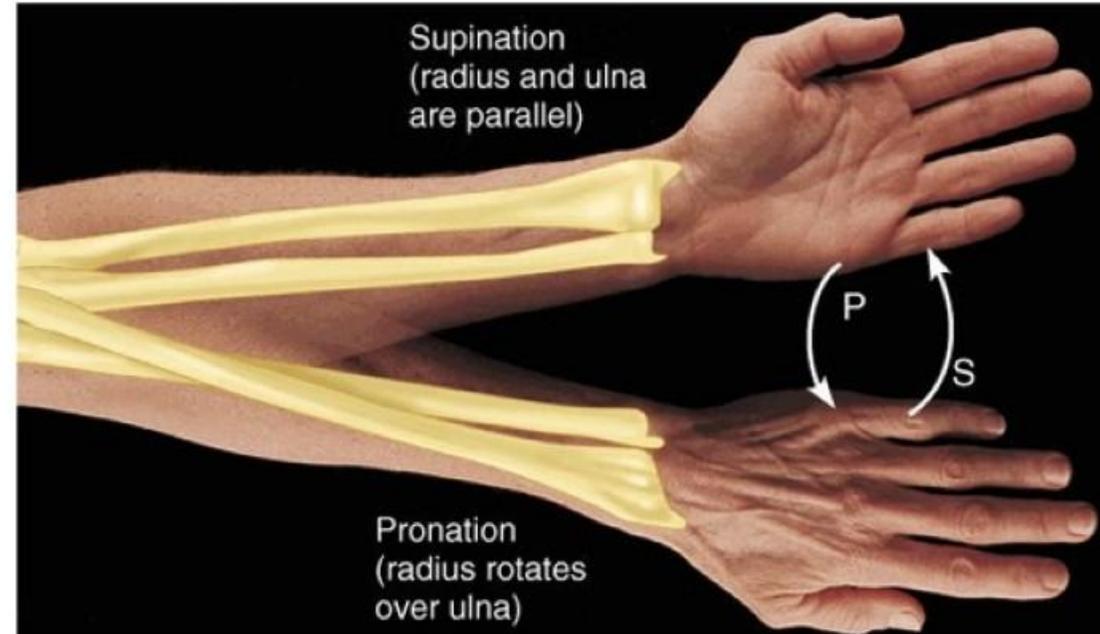
Index

Middle finger

Ring finger

Little finger

Supination & Pronation



Supination (S): Palm is anterior. Radius and ulna are parallel

Pronation (P): Palm is posterior. Radius moves over the ulna

**Occur at the
superior and inferior
radio-ulnar joints**

The Forearm: Muscles

Anterior compartment

Flexors and Pronators

8 muscles: 5 superficial & 3 deep

Supplied by Median & its anterior interosseus branch (Except 1 1/2 muscles by Ulnar nerves)

Posterior compartment

Extensors and supinator

12 muscles: 7 superficial & 5 deep

Supplied by Radial nerve & its posterior interosseus branch

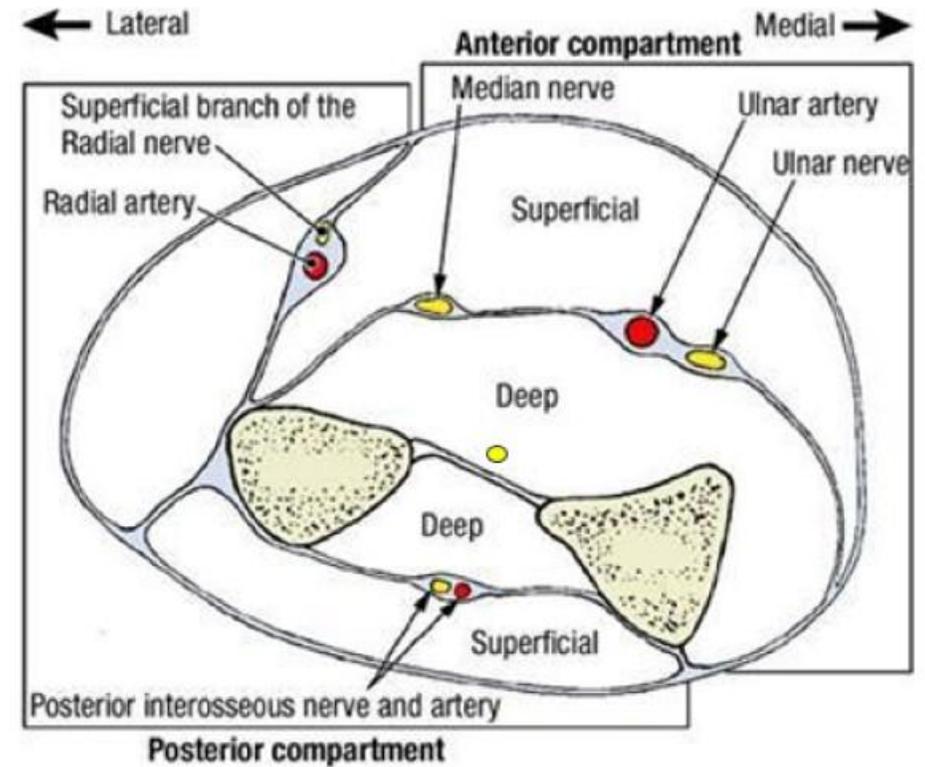
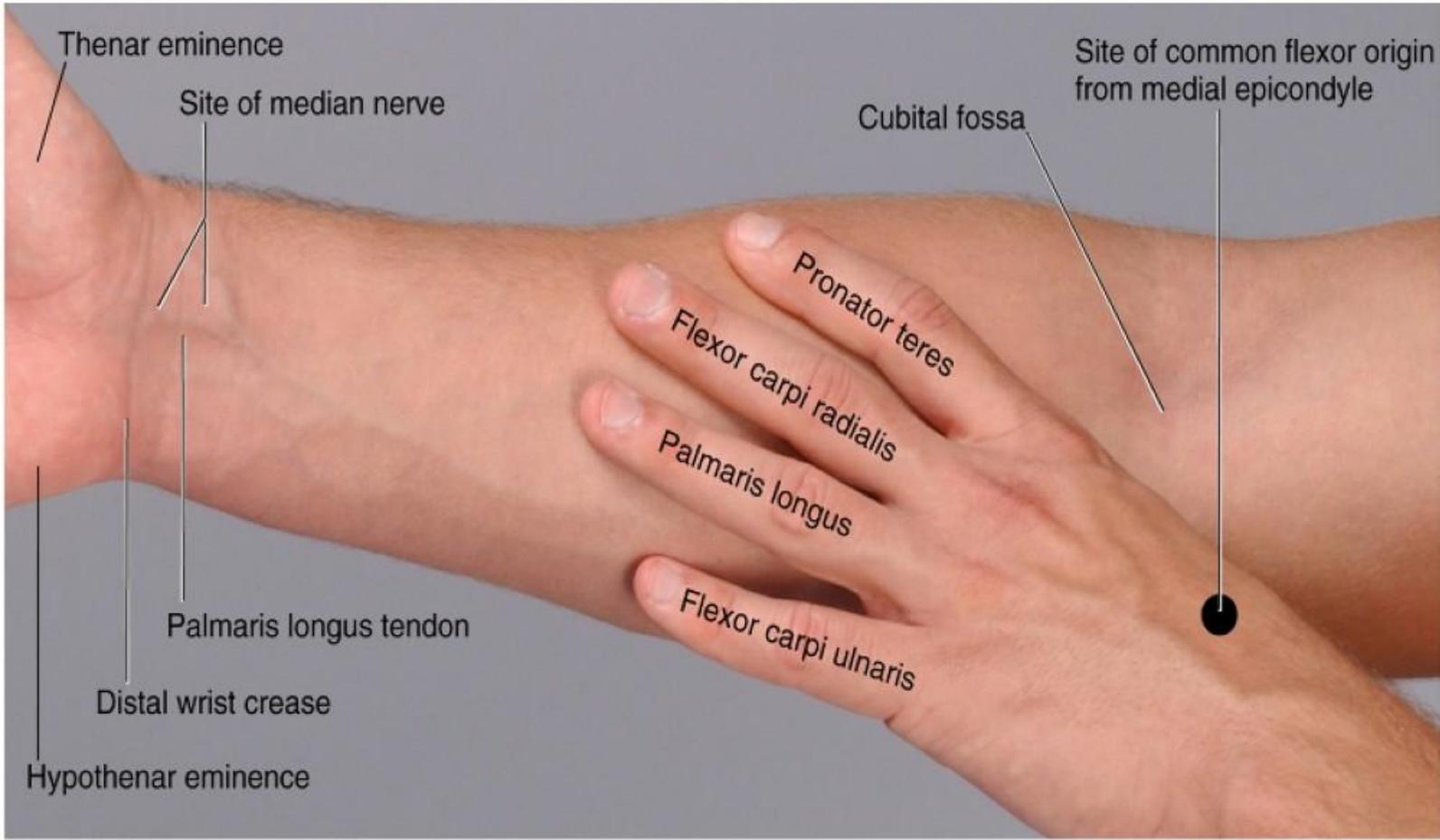
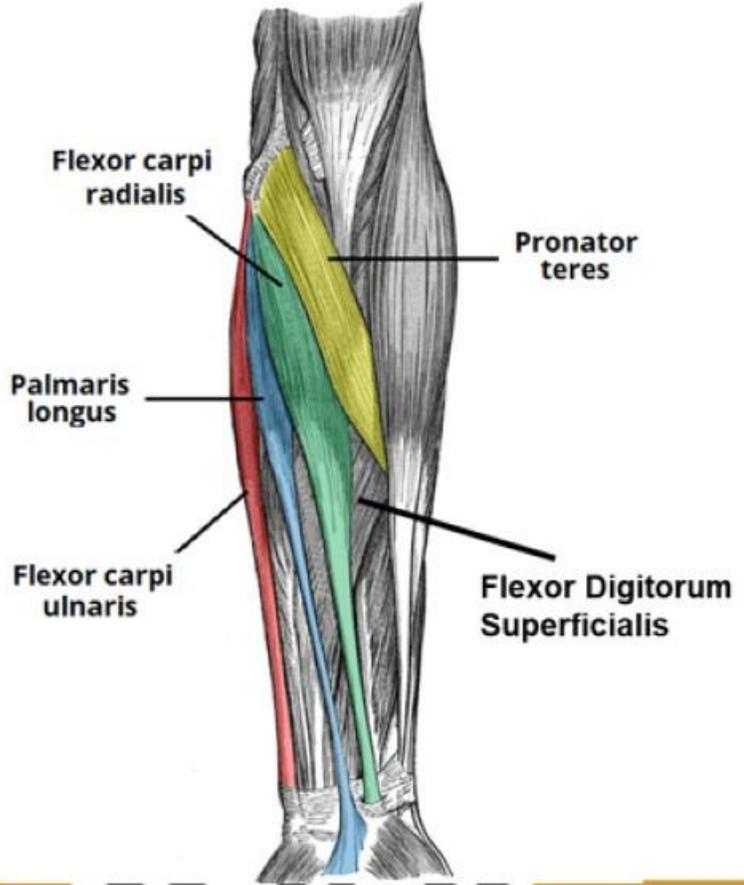


Figure 2.20. Compartments of the right forearm.

Anterior Forearm Muscles

5 Superficial Muscles



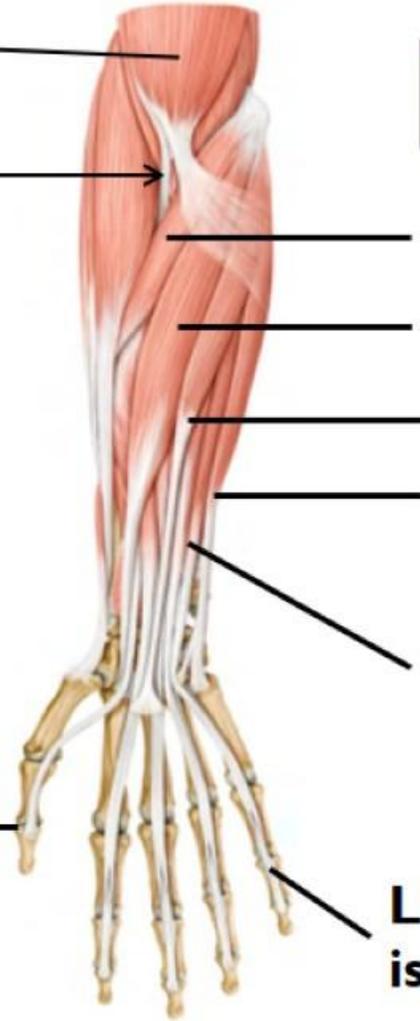
Anterior Forearm Muscles

Biceps brachii

Find the Biceps tendon

Thumb is lateral

Little finger is medial



5 Superficial Muscles

- Pronator Teres**
- Flexor Carpi Radialis**
- Palmaris Longus**
- Flexor Carpi Ulnaris**
- Flexor Digitorum Superficialis**

Share a common flexor Origin: **FRONT** of the medial epicondyle of the humerus

Share a common action: **Flexion of the elbow**

All supplied by Median nerve EXCEPT Flexor Carpi **Ulnaris** supplied by **Ulnar nerve**



Pronator Teres

Origin

- 2 Heads:**
- **Humeral head:** Front of the medial epicondyle of the humerus
 - **Ulnar head:** Medial border of the coronoid process of the ulna

Clinical Note: Median nerve passes between the two heads

Insertion

Pronator tuberosity on the lateral surface of the middle of the shaft of **the radius**

Nerve Supply

Median nerve

Action

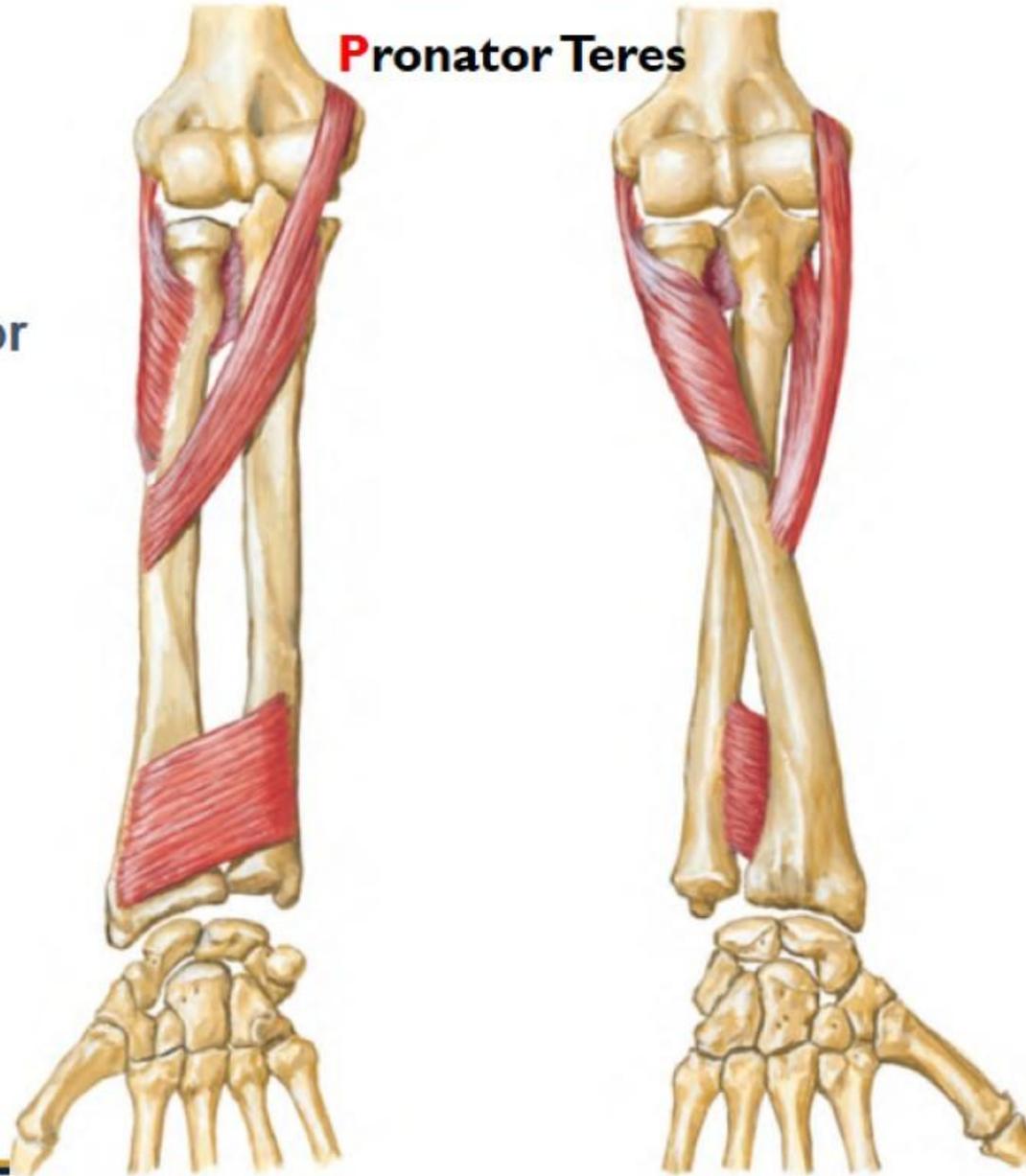
1. **Flexion of the forearm (elbow joint)**
2. **Pronation of the forearm (radioulnar joints)**



Pronator Teres

Supinator

Pronator Quadratus



Flexor Carpi Radialis

Origin Front of the medial epicondyle of the humerus

Insertion Bases of the 2nd & 3rd metacarpal bones

Nerve Supply Median nerve

- Action**
1. Flexion of the forearm (elbow joint)
 2. Flexion of the hand (wrist joint)
 3. Radial deviation (Abduction) of the hand (wrist joint)



Palmaris Longus

Origin Front of the medial epicondyle of the humerus

Insertion Palmar Aponeurosis & Flexor retinaculum

Nerve Supply Median nerve

Action

1. Flexion of the forearm (elbow joint)
2. Flexion of the hand (wrist joint)

 **N.B. May be Absent**



Flexor Carpi Ulnaris

Origin

2 Heads:

- **Humeral head:** Front of the medial epicondyle of the humerus
- **Ulnar head:** Medial border of olecranon process of ulna and **posterior border of ulna**

Insertion

Pisiform, hamate & 5th metacarpal bones

N.B. The pisiform is a sesamoid bone inside the tendon of FCU

Nerve Supply

Ulnar nerve

Action

1. Flexion of the forearm (elbow joint)
2. Flexion of the hand (wrist joint)
3. **Ulnar deviation (adduction) of the hand (wrist joint)**



Flexor Digitorum Superficialis

Origin

2 Heads:

- **Humeroulnar head:** Front of the medial epicondyle of the humerus & coronoid process of ulna
- **Radial head:** Anterior oblique line of the radius

Insertion

Middle Phalanges of the medial 4 fingers

Nerve Supply

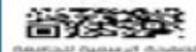
Median nerve

Action

1. Flexion of the forearm (elbow joint)
2. Flexion of the hand (wrist joint)
3. Flexion of the Carpometacarpal & the proximal interphalangeal joints of the medial 4 fingers



N.B. Does NOT flex the DIP (distal interphalangeal) joints



KEN HUB

Quiz

Which muscle in the forearm is supplied by the ulnar nerve?

- A) Pronator teres**
- B) Flexor carpi radialis**
- C) Palmaris longus**
- D) Flexor digitorum superficialis**
- E) Flexor carpi ulnaris**

Answer: E



Deep Anterior Forearm Muscles

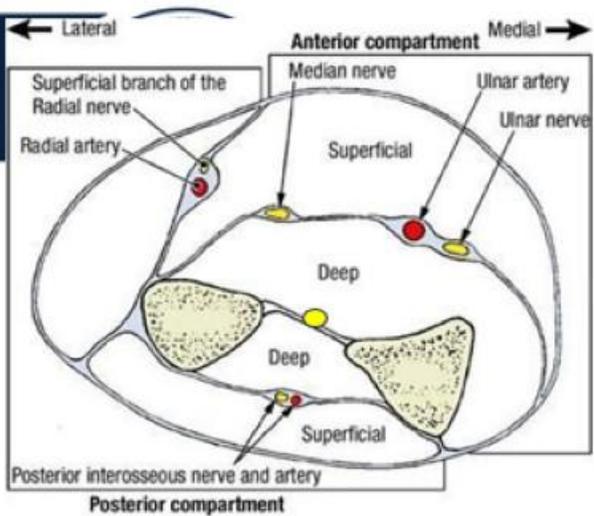


Figure 2.20. Compartments of the right forearm.

Flexor Pollicis Longus
From radius to thumb

Flexor Digitorum Profundus
From ulna to medial 4 fingers

Pronator Quadratus
From ulna to radius

Thumb is lateral

Little finger is medial

3 Deep Muscles

Have no action on the elbow joint

Deep flexors reach the distal phalanges

Are supplied by Anterior interosseous branch of the median nerve EXCEPT: Ulnar (medial) half of flexor digitorum profundus by Ulnar nerve



Flexor Digitorum Profundus

Origin

Upper $\frac{3}{4}$ of the anterior & medial surfaces of the ulna & **Posterior border of the ulna** & interosseous membrane

Insertion

Distal Phalanges of the medial 4 fingers

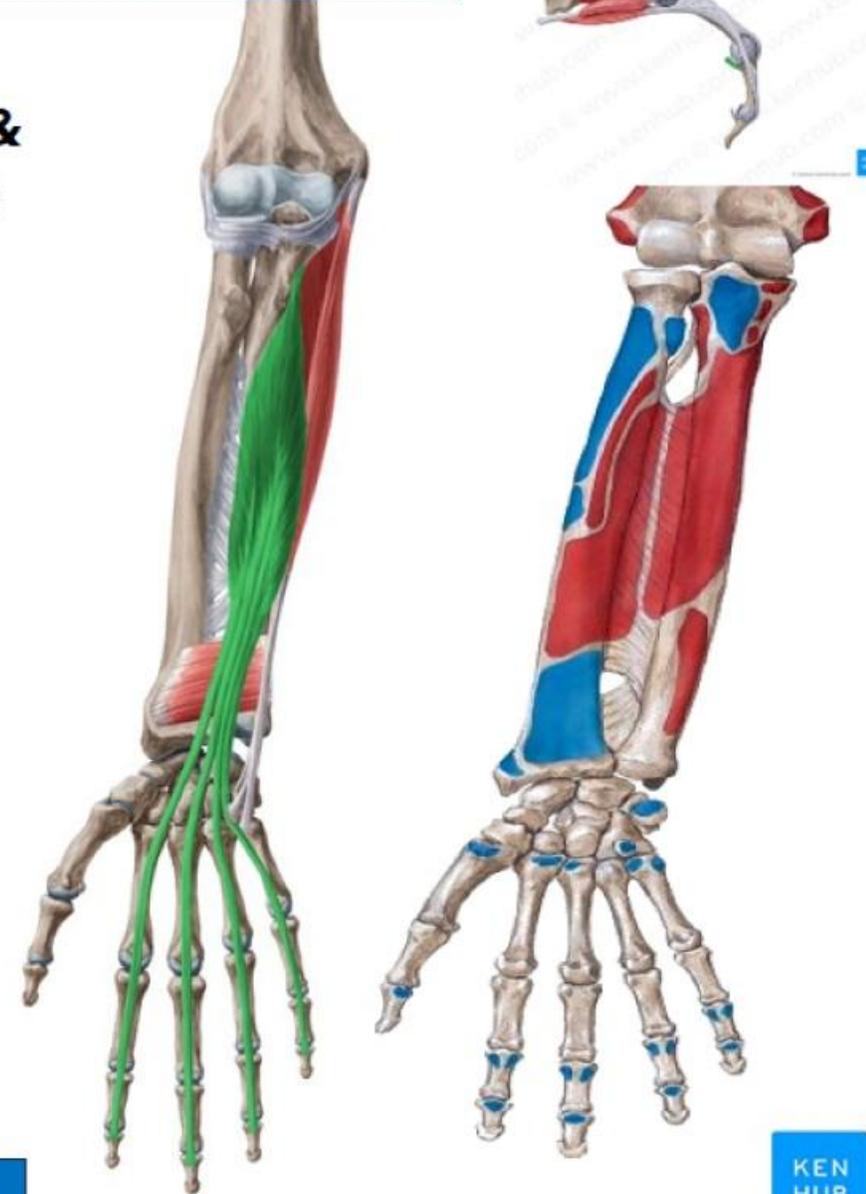
Nerve Supply

2 Nerves

- Medial $\frac{1}{2}$: Ulnar nerve
- Lateral $\frac{1}{2}$: Anterior interosseous branch of median nerve

Action

1. Flexion of the hand (wrist joint)
2. Flexion of **ALL** joints of the medial 4 fingers



N.B. Flexes the DIP (distal interphalangeal) joints

Flexor Pollicis Longus

Origin

Upper 2/3 of anterior surface of the **radius**
(below anterior oblique line) and interosseous membrane

Insertion

Base of the distal phalanx of the thumb

Nerve Supply

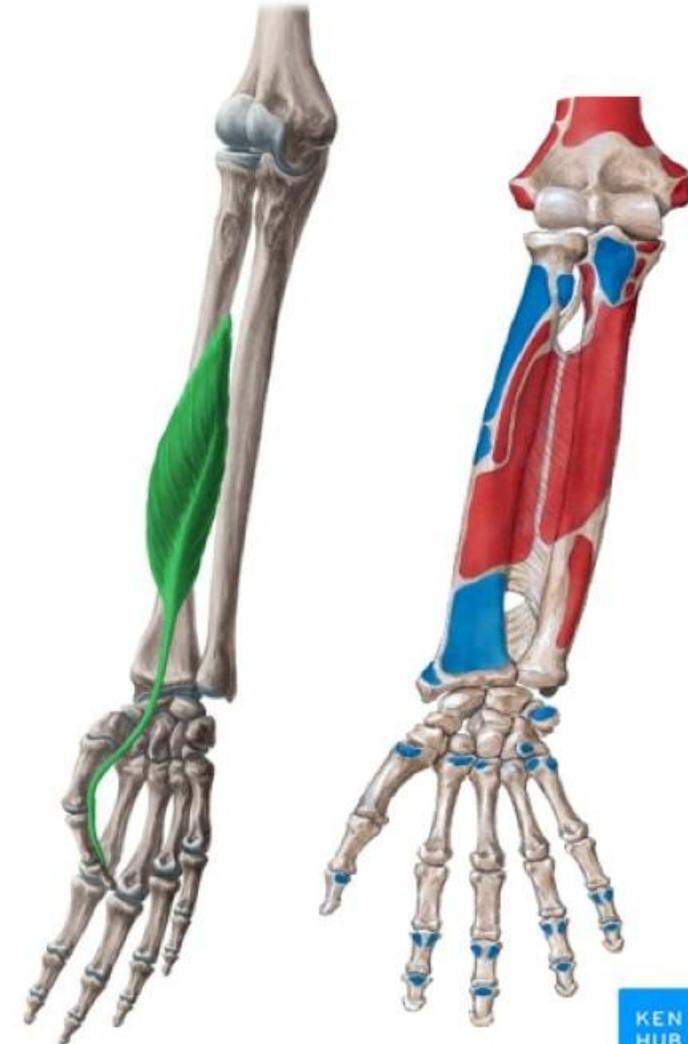
Anterior interosseous branch of median nerve

Action

1. Flexion of the hand (wrist joint)
2. Flexion of **ALL** joints of the thumb



N.B. Flexes the IP
(interphalangeal) joint



Pronator Quadratus

Origin

Oblique ridge of the anterior surface of the lower $\frac{1}{4}$ of the ulna

Insertion

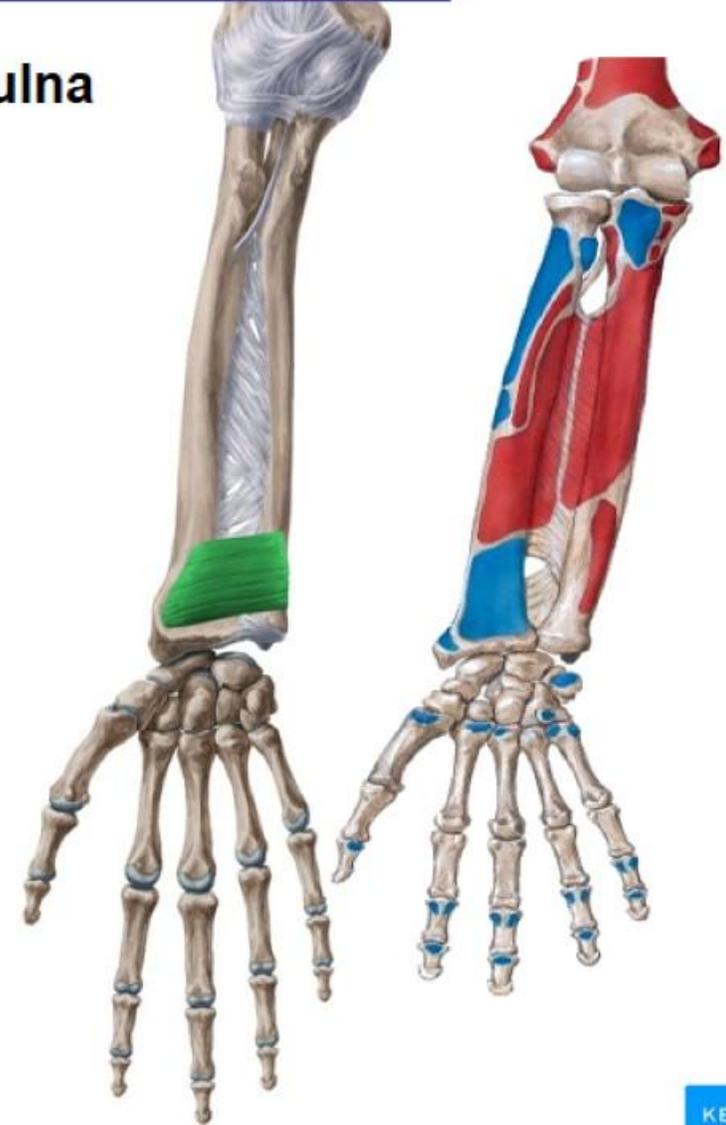
Lower $\frac{1}{4}$ of the anterior surface of radius

Nerve Supply

Anterior interosseous branch of median nerve

Action

MAIN pronator of the forearm



Quiz

Which muscle is responsible for flexing the distal interphalangeal joint of the medial 4 fingers?

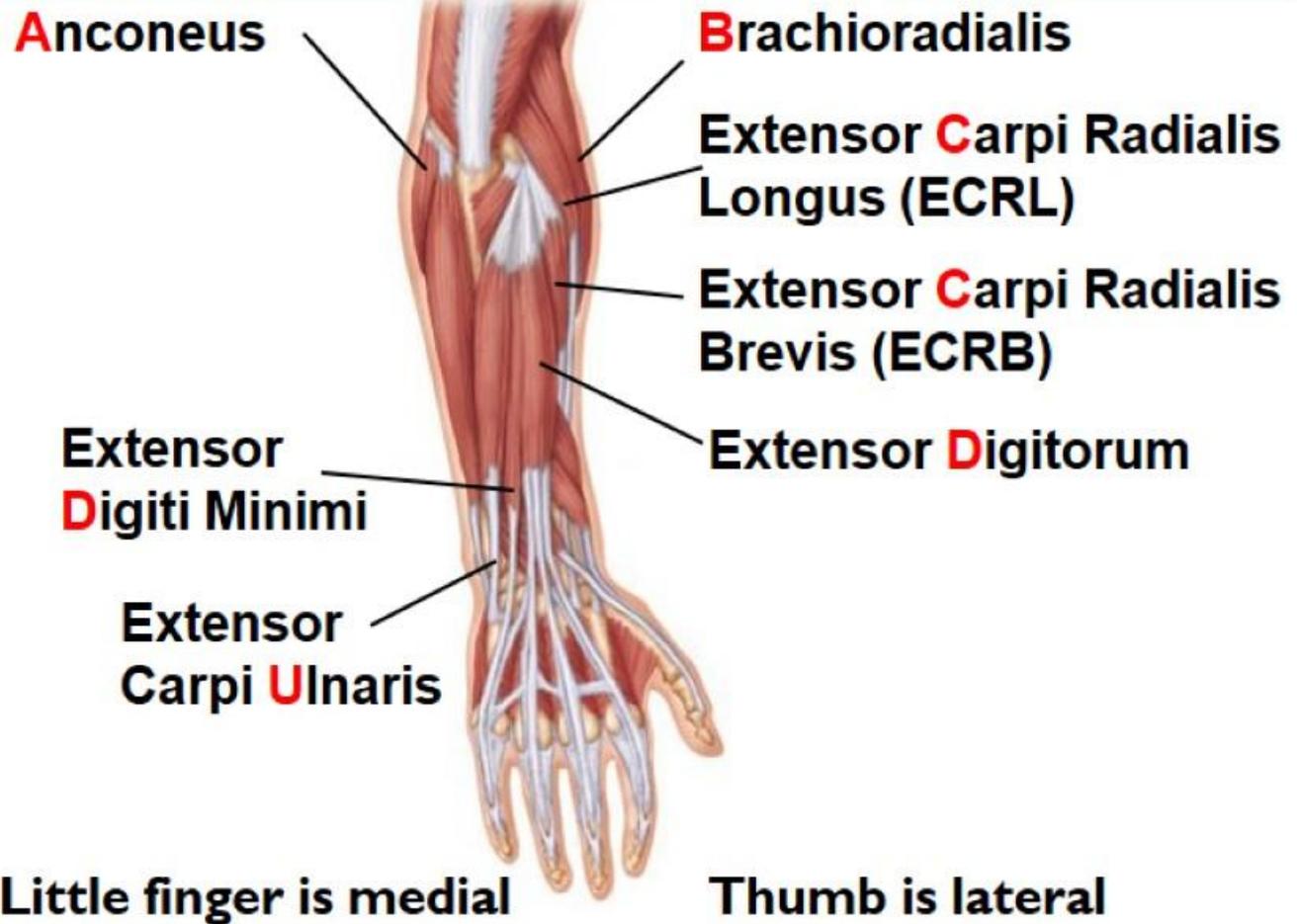
- A) Flexor digitorum superficialis**
- B) Palmaris longus**
- C) Flexor digitorum profundus**
- D) Flexor carpi ulnaris**
- E) Flexor pollicis longus**

Answer: C

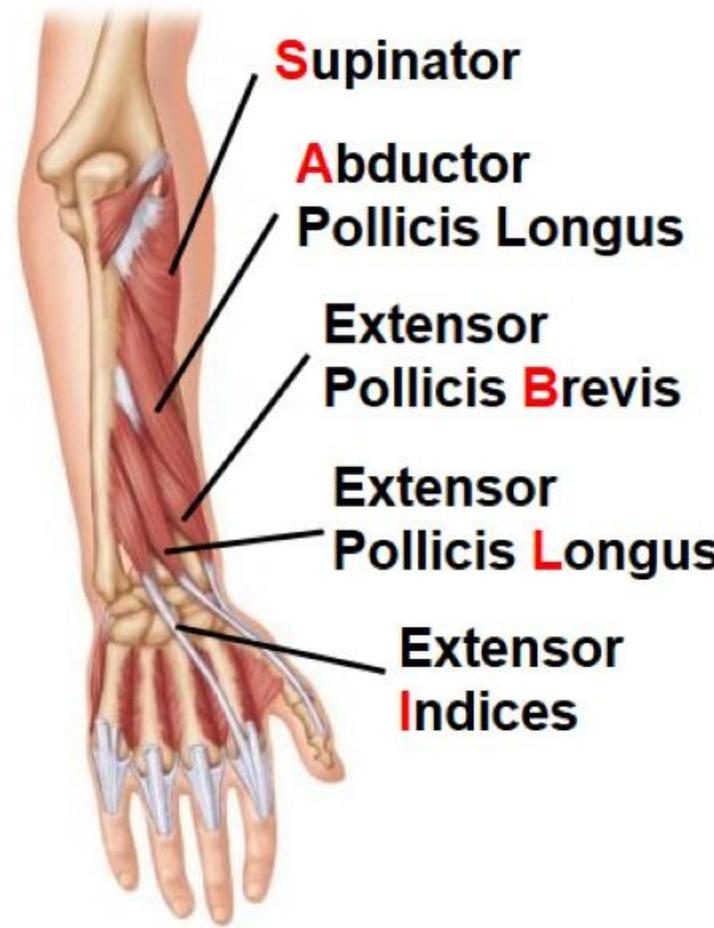


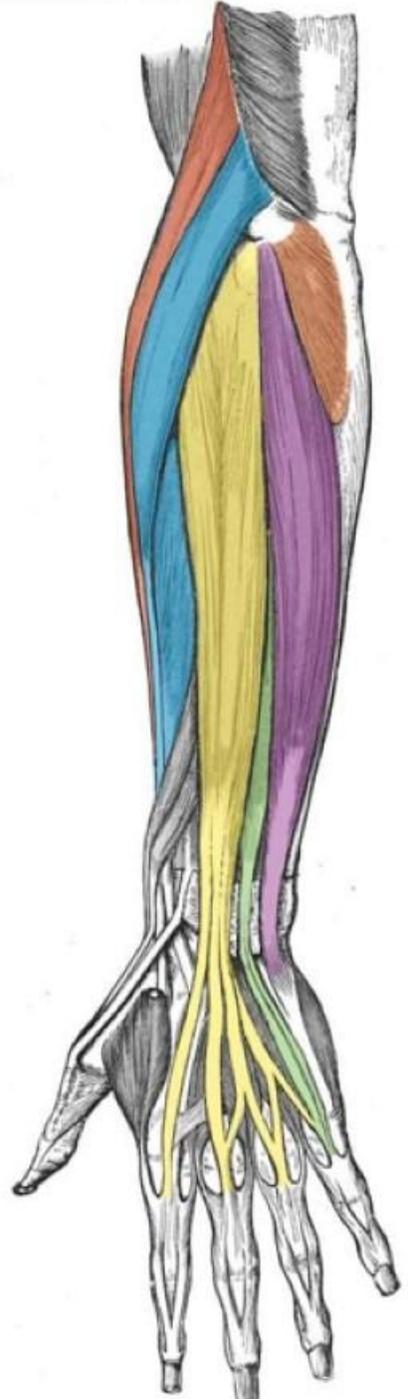
Posterior Forearm Muscles

7 Superficial Muscles

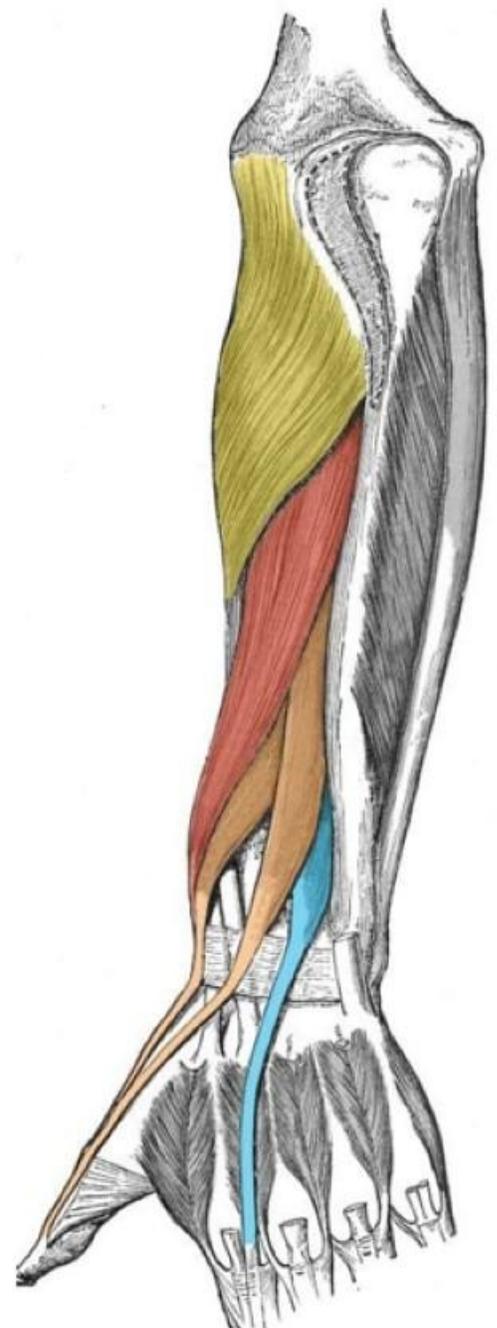


5 Deep Muscles





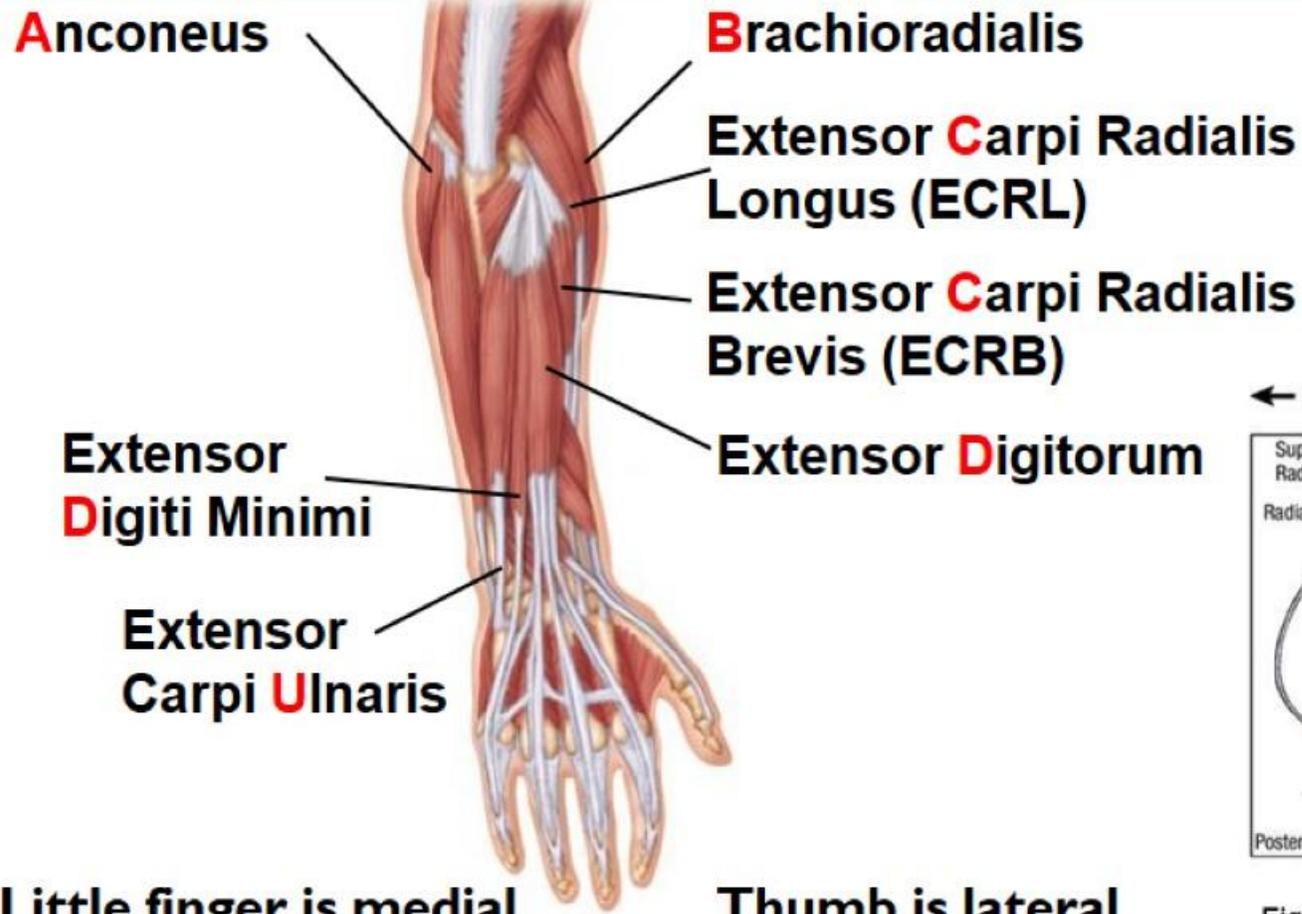
-  Brachioradialis
-  Extensor carpi radialis longus and brevis
-  Extensor digitorum
-  Extensor digit minimi
-  Extensor carpi ulnaris
-  Anconeus



-  Supinator
-  Abductor pollicis longus
-  Extensor pollicis longus and brevis
-  Extensor indicis

Posterior Forearm Muscles

7 Superficial Muscles



5 of them Share a **common extensor**
Origin:
FRONT of the lateral epicondyle of the humerus

Share a **common action:**
Extension of the elbow

All supplied by Radial nerve & posterior interosseus nerve

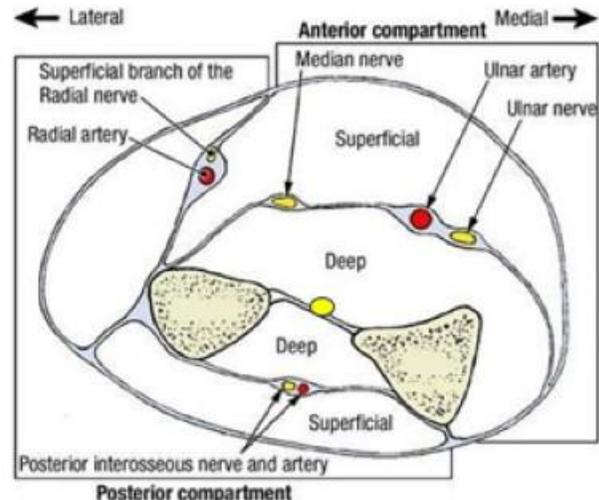


Figure 2.20. Compartments of the right forearm.

Brachioradialis

Origin

Upper 2/3 of the lateral supracondylar ridge & Lateral intermuscular septum

Insertion

Lateral part of styloid process of the radius

Nerve Supply

Radial Nerve

Action

1. Initiation of both supination & pronation to reach the mid-prone position
2. Flexion of the elbow when the forearm is in the mid-prone position



Extensor Carpi Radialis Longus

Origin

Lower 1/3 of the lateral supracondylar ridge
& Lateral intermuscular septum

Insertion

Dorsum of the base of the 2nd metacarpal bone

Nerve Supply

Radial Nerve

Action

1. Extension of the elbow
2. Extension of the wrist
3. Abduction (Radial deviation) of the wrist



Extensor Carpi Radialis Brevis

Origin

Common Extensor Origin (Front of lateral epicondyle) of the humerus

Insertion

Dorsum of the base of the 3rd metacarpal bone

Nerve Supply

Posterior interosseous nerve

Action

- 1. Extension of the elbow**
- 2. Extension of the wrist**
- 3. Abduction (Radial deviation) of the wrist**



Extensor Digitorum

Origin

Common Extensor Origin (Front of lateral epicondyle) of the humerus

Insertion

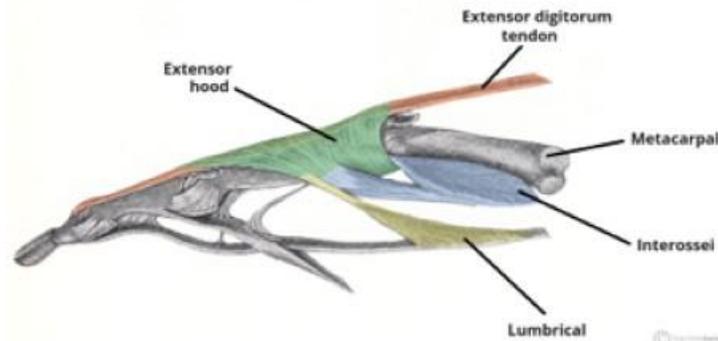
By 4 tendons into the **Extensor expansion of the medial 4 fingers to the middle and distal phalanges**

Nerve Supply

Posterior interosseous nerve

Action

- 1. Extension of the elbow**
- 2. Extension of the wrist**
- 3. Extension of all joints of the medial 4 fingers**



Extensor Digiti Minimi

Origin

Common Extensor Origin (Front of lateral epicondyle) of the humerus

Insertion

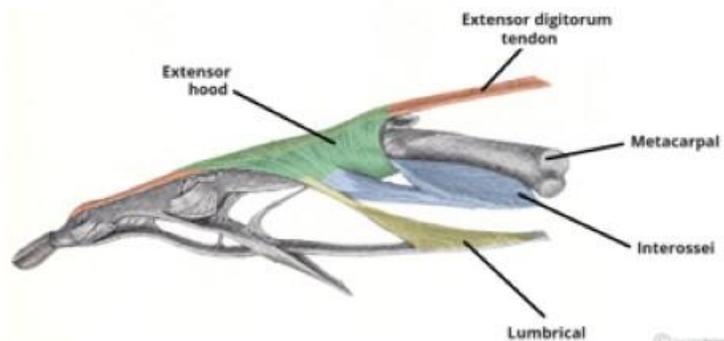
Extensor expansion of the little finger

Nerve Supply

Posterior interosseous nerve

Action

1. Extension of the elbow
2. Extension of the wrist
3. Extension of all joints of the little finger



Extensor Carpi Ulnaris

Origin

Common Extensor Origin (Front of lateral epicondyle) of the humerus & **Posterior Border of the ulna**

Insertion

Dorsum of the base of the 5th metacarpal

Nerve Supply

Posterior interosseous nerve

Action

1. Extension of the elbow
2. Extension of the wrist
3. Adduction (ulnar deviation) of the wrist



Anconeus

Origin Back of the lateral epicondyle

N.B: Considered the fourth head of the triceps

Insertion Lateral part of olecranon process

Nerve Supply Radial Nerve

Action I. Assists the triceps in elbow extension



Deep Posterior Forearm Muscles

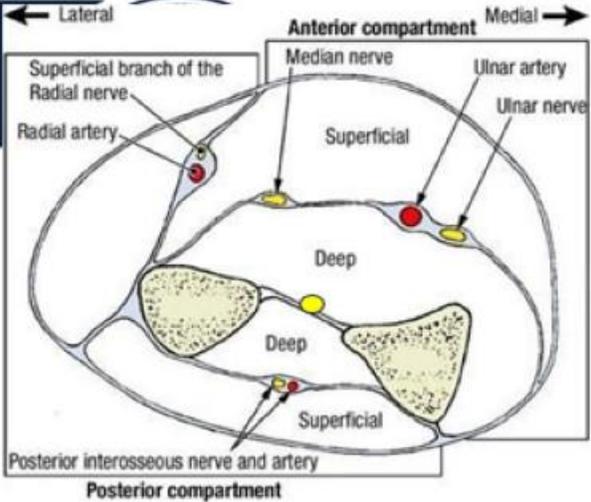
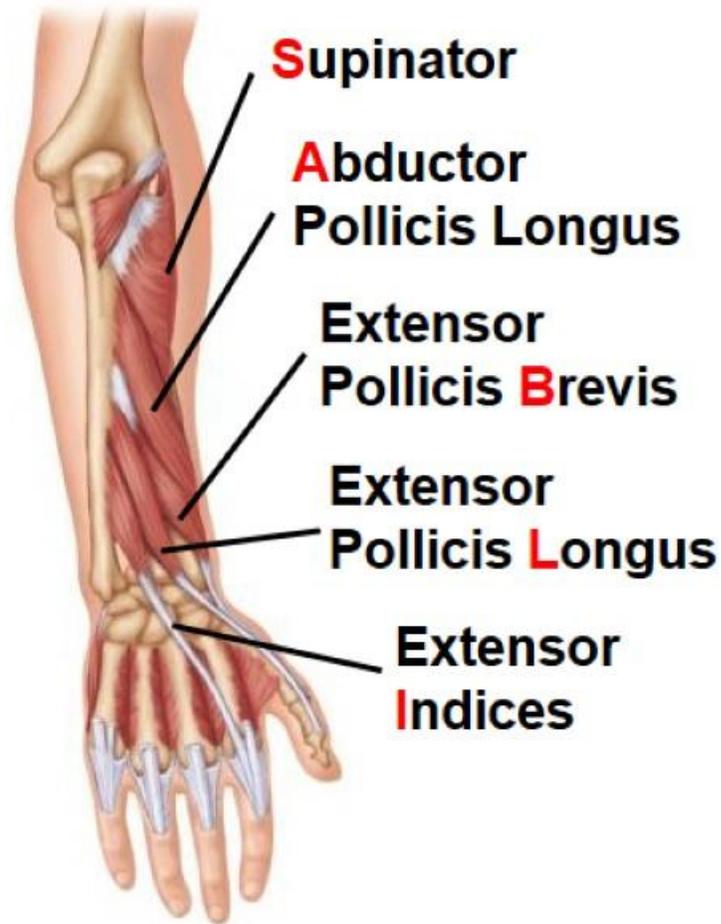


Figure 2.20. Compartments of the right forearm.



5 Deep Muscles

Have no action on the elbow joint

Are supplied by Posterior interosseous branch of the Radial nerve

Supinator

Origin

2 heads

- **Superficial** head: Lateral epicondyle, radial collateral and annular ligaments
- **Deep** head: Supinator crest and supinator fossa of ulna

Insertion

The front, lateral surface and back of the upper 1/3 of the radius.

Nerve Supply

Posterior interosseous nerve

Action

- I. Supination of the forearm



Abductor Pollicis Longus

Origin

- Upper 1/3 of the posterior surface of the ulna
- Upper 1/3 of the posterior surface of the radius
- Interosseous membrane

Insertion

Lateral side of base of the 1st metacarpal

Nerve Supply

Posterior interosseous nerve

Action

Abduction of the thumb



M **N**



Flexion



Extension



Abduction



Adduction



Opposition

Extensor Pollicis Brevis

Origin

- Lower 1/3 of the posterior surface of the **radius**
- Interosseous membrane

Insertion

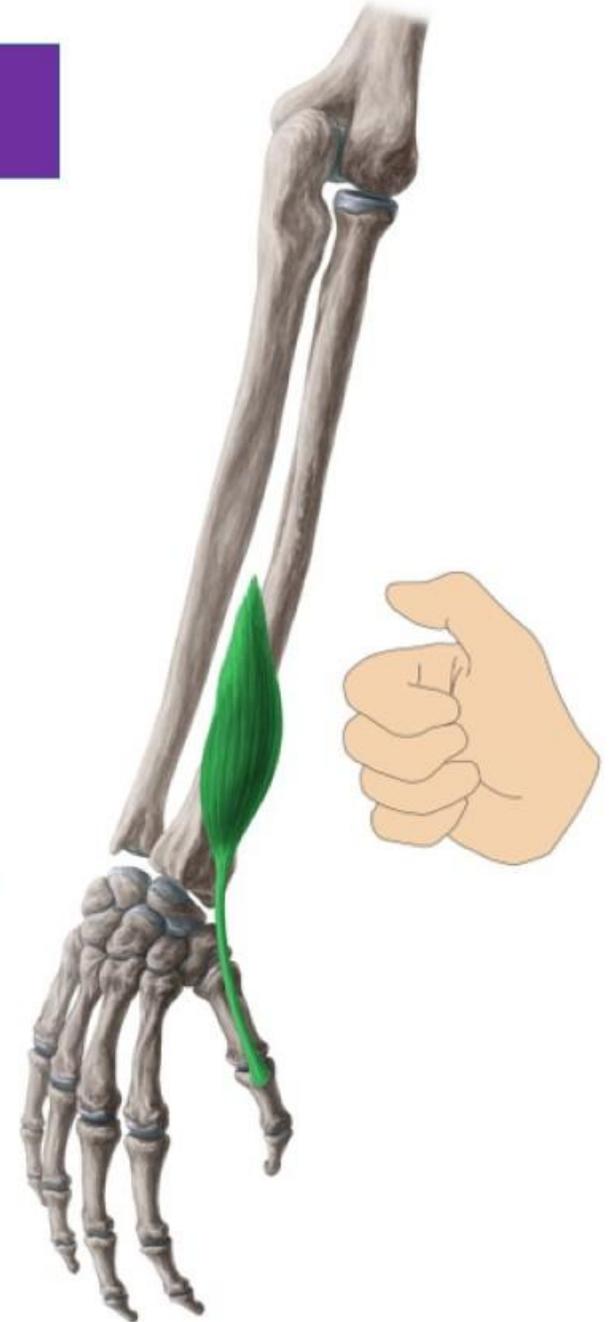
Base of the proximal phalanx of the thumb

Nerve Supply

Posterior interosseous nerve

Action

Extension of the thumb without extending the interphalangeal joint



Extensor Pollicis Longus

Origin

- Middle 1/3 of the posterior surface of the ulna
- Interosseous membrane

Insertion

Base of the distal phalanx of the thumb

Nerve Supply

Posterior interosseous nerve

Action

Extension of all joints of the thumb



Extensor Indices

Origin

- Lower 1/3 of the posterior surface of the ulna
- Interosseous membrane

Insertion

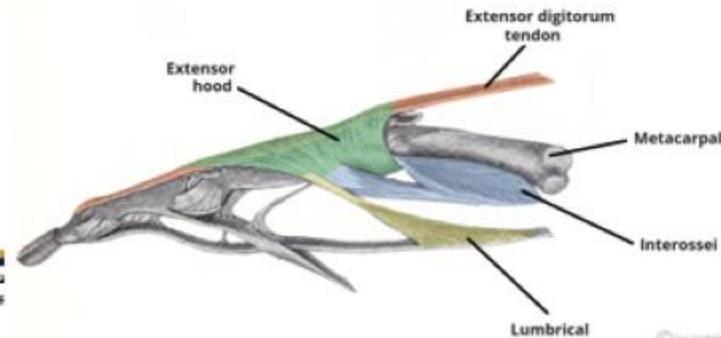
Extensor expansion of the index finger

Nerve Supply

Posterior interosseous nerve

Action

Extension of all joints of the index finger



Quiz

Which forearm muscle can extend the interphalangeal joint of the thumb?

- A) Abductor pollicis longus**
- B) Abductor pollicis brevis**
- C) Extensor digitorum**
- D) Extensor pollicis longus**
- E) Extensor pollicis brevis**

Answer: D

Thank You!

The image features the words "Thank You!" in a highly stylized, 3D block font. The text is arranged in two lines: "Thank" on top and "You!" on the bottom. Each letter is thick and has a vibrant color gradient. The "Thank" letters transition from purple on the left to pink in the middle, and then to orange and yellow on the right. The "You!" letters transition from light blue on the left to a bright cyan in the middle, and finally to a greenish-yellow on the right. The exclamation point is a solid greenish-yellow. The letters have a slight perspective, giving them a three-dimensional appearance. Several yellow, five-pointed stars are scattered around the text, some appearing to be attached to the letters or floating nearby. The entire graphic is set against a plain white background.