

Introduction to Clinical Skills

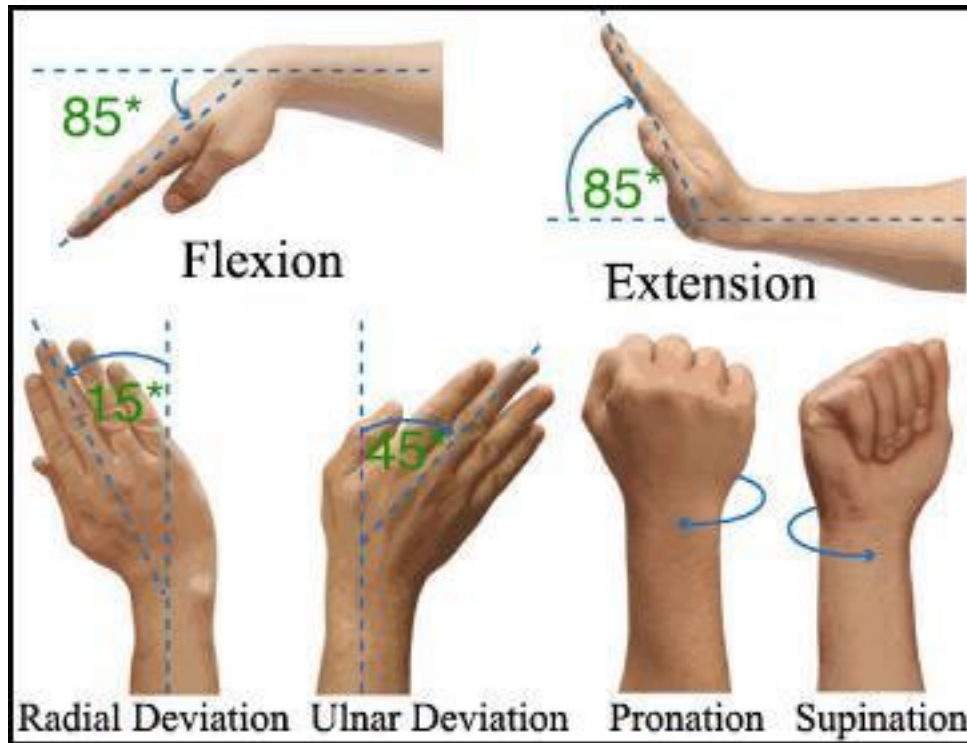
Practical – Hand and Wrist

Osteology ROM MMTs

Recap Elbow

- MMTs
 - Biceps Brachii
 - Brachialis
 - Brachoradialis
 - Triceps Brachii
 - Pronator Teres
 - Supinator

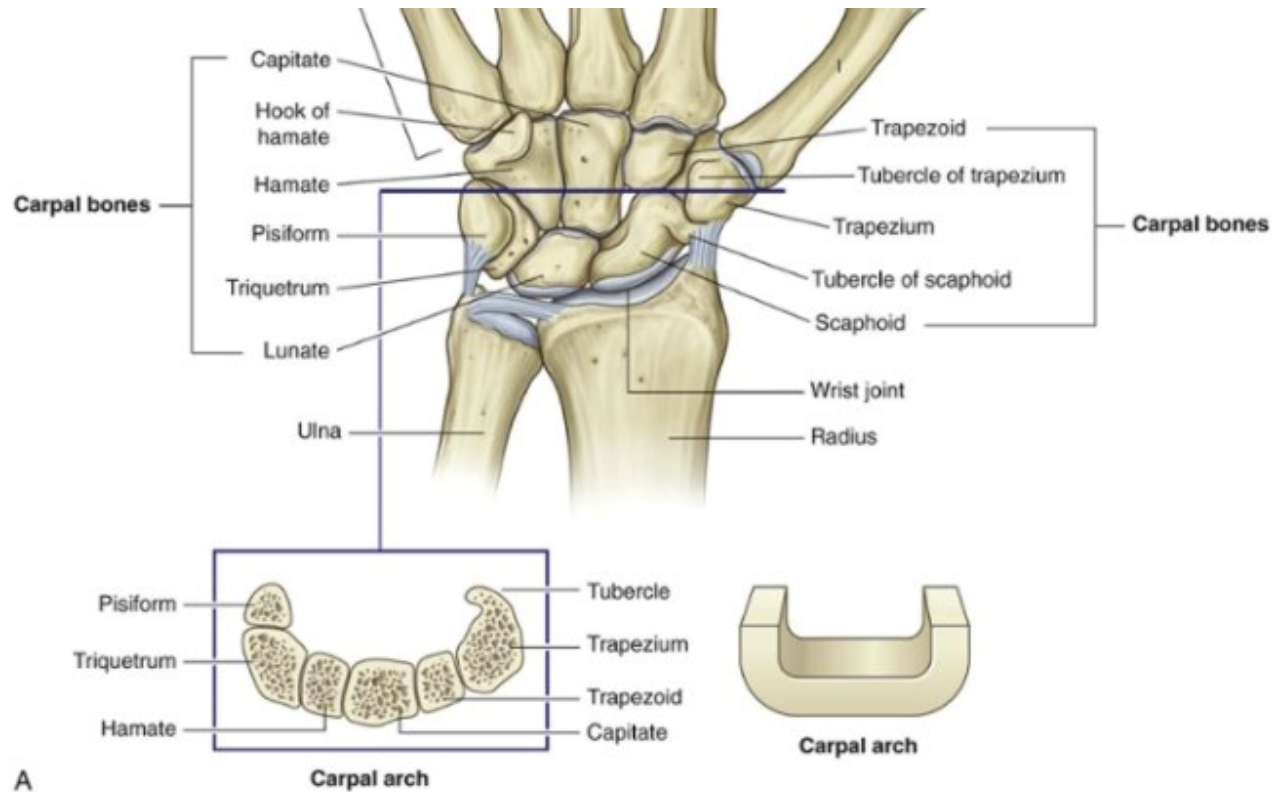
Radiocarpal Joint



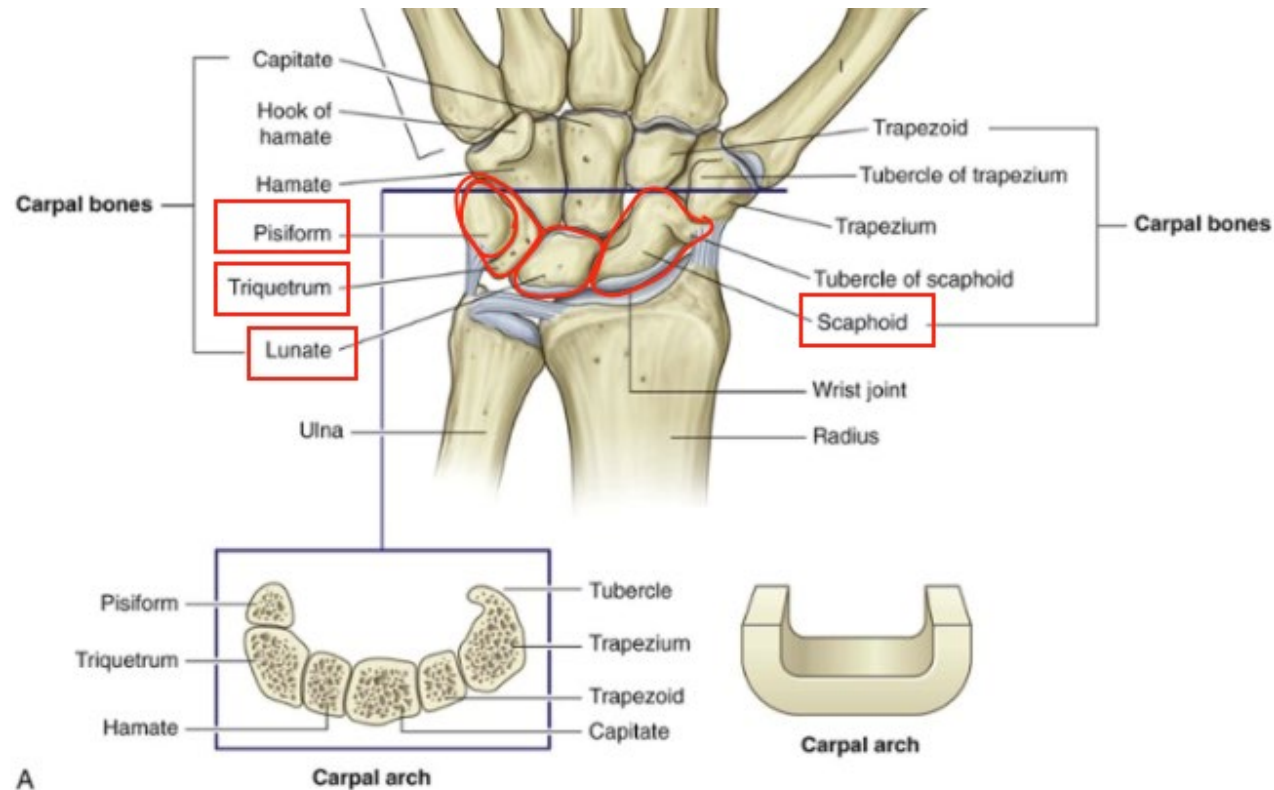
Radiocarpal Joint



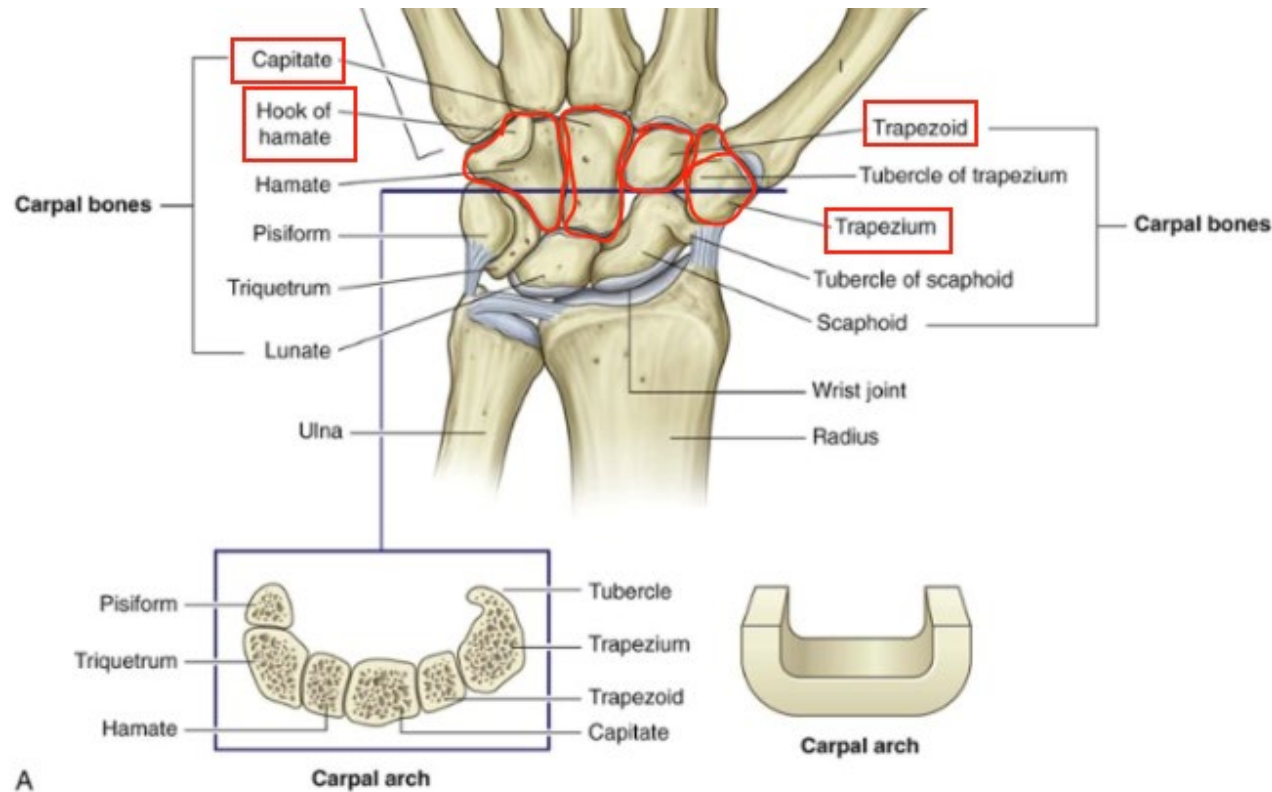
Carpal Bones



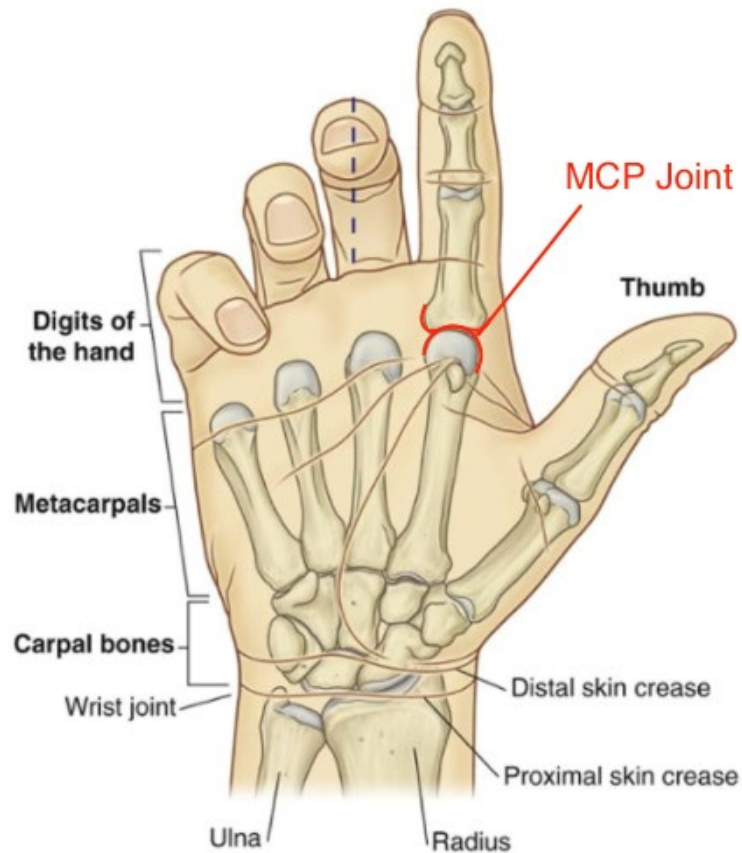
Carpal Bones - Proximal Row



Carpal Bones - Distal Row

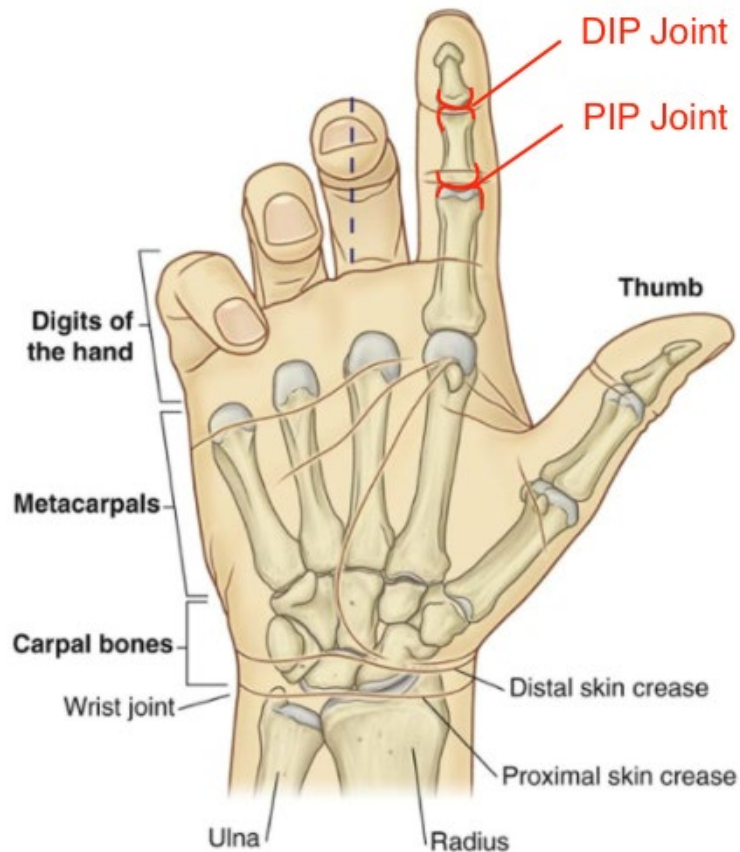


Metacarpalphangeal Joint



- Flexion – 90°
- Extension – 90° (PROM)
- Abduction – 30°

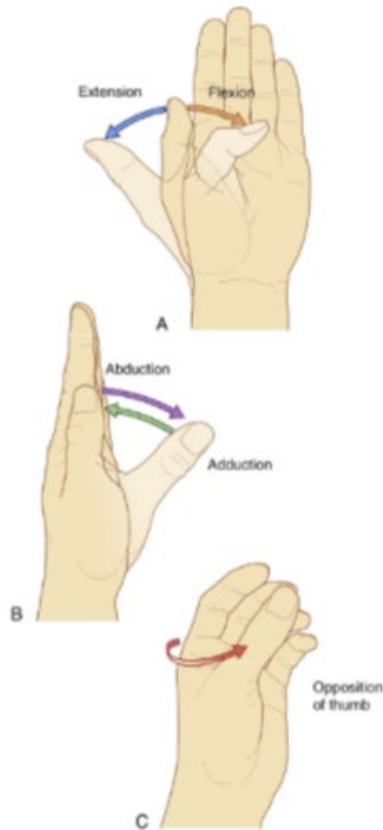
Proximal and Distal Interphalangeal Joint



- Flexion – 90°
- Extension – 90° (PROM)

First Metacarpal Phalangeal Joint

- Flexion – 90°
- Extension – 90° (PROM)



AROM

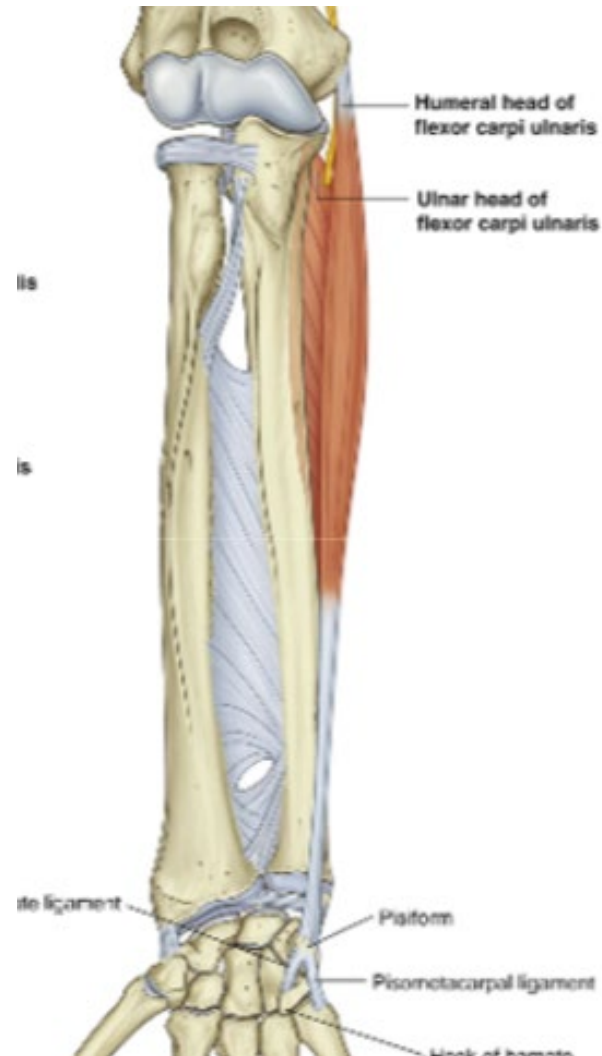
- Radiocarpal Joint
 - Flexion 85°
 - Extension 85°
 - Radial deviation 15°
 - Ulnar deviation 40-45°
- Metacarpophalangeal Joint
 - Flexion 85°
 - Extension 85°
 - Radial deviation 15°
- Thumb
 - Flexion
 - Extension (40-50° combined)
 - Abduction and Adduction (80° combined)
 - Opposition
- Proximal and Distal Interphalangeal Joint
 - Flexion
 - Extension

PROM

- Radiocarpal Joint
 - Flexion 85°
 - Extension 85°
 - Radial deviation 15°
 - Ulnar deviation $40-45^{\circ}$
- Metacarpophalangeal Joint
 - Flexion 90°
 - Extension up to 90°
 - Abduction 30°
 - Medial Rotation
 - Lateral Rotation
- Thumb
 - Flexion
 - Extension ($40-50^{\circ}$ combined)
 - Abduction and Adduction (80° combined)
 - Opposition
- Proximal and Distal Interphalangeal Joint
 - Flexion
 - Extension

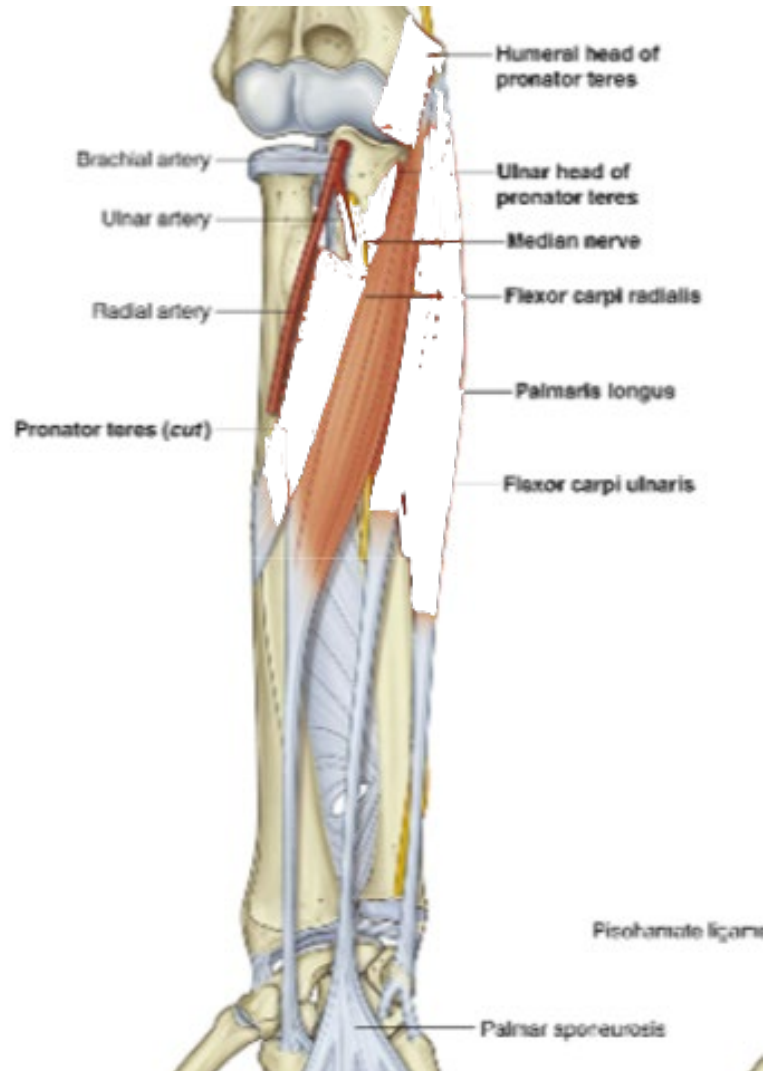
Wrist MMTs

- Flexor Carpi Ulnaris
- O: medial epicondyle humerus (CFO), medial border olecranon, upper 2/3rds posterior border or ulna via aponeurosis
- I: Pisiform and via ligaments to hook of Hamate and 5th Metacarpal
- A: Wrist Flexion and Ulnar Deviation



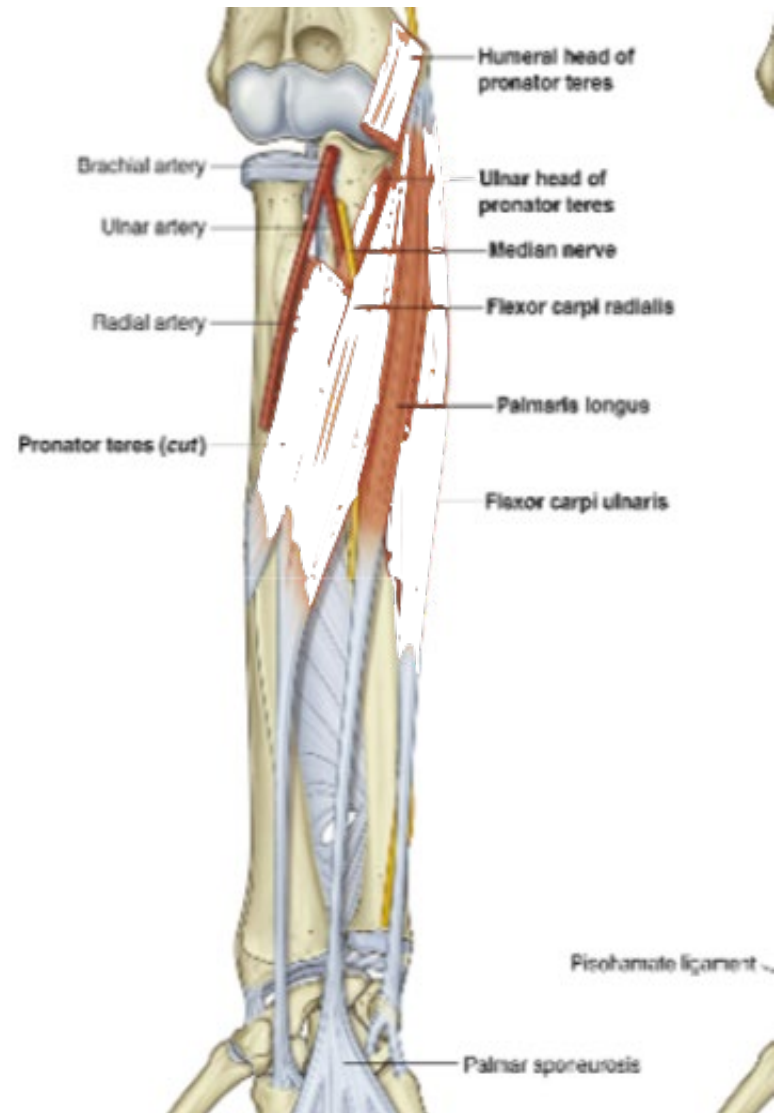
Wrist MMTs

- Flexor Carpi Radialis
- O: Medial epicondyle of humerus (CFO)
- I: palmar surface on bases of 2nd and 3rd metacarpals
- A: Wrist Flexion and Radial Deviation



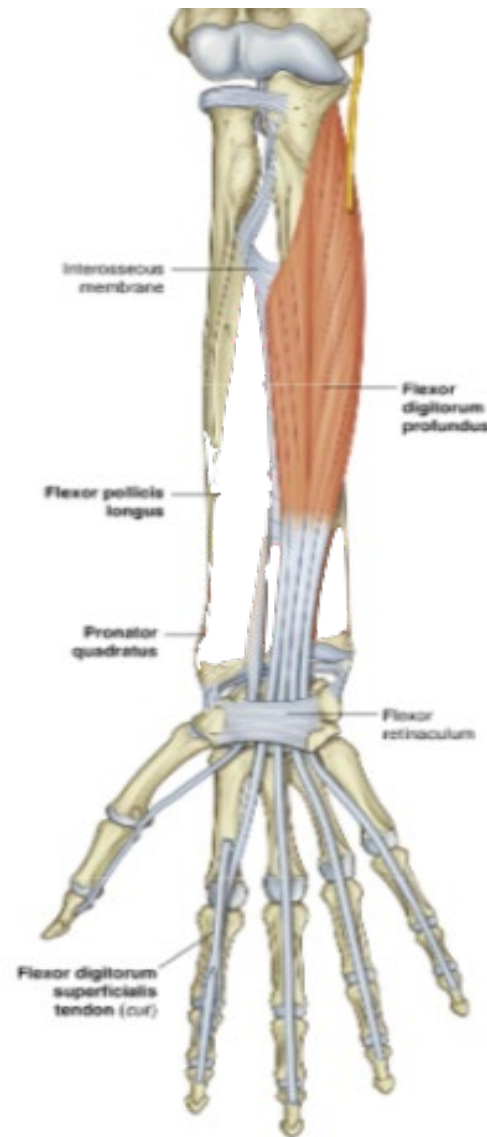
Wrist MMTs

- Palmaris Longus
- Vestigial muscle
- Lies beneath FCU and FCR
- O: medial epicondyle humerus
- I: flexor retinaculum
- A: weak flexor of wrist



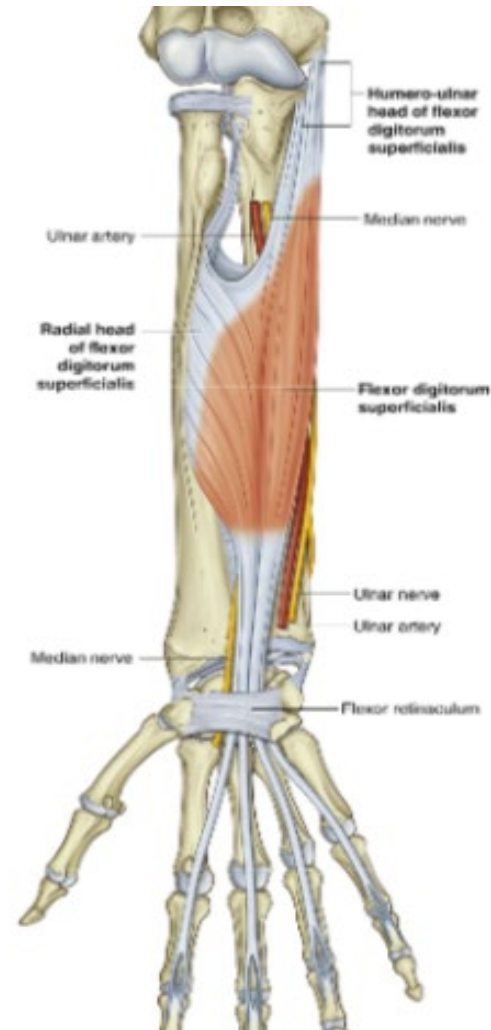
Wrist MMTs

- Flexor Digitorum Profundus (DIP)
- O: medial side of **coronoid process** and upper 3/4 **anterior and medial surface of ulna**, middle 1/3 of the interosseous membrane, posterior border or ulna via aponeurosis
- I: palmar surface of the base of the **distal phalanx** of ALL fingers
- A: flexes in order:
 - **DIP**
 - PIP
 - MCP
 - Radiocarpal joint



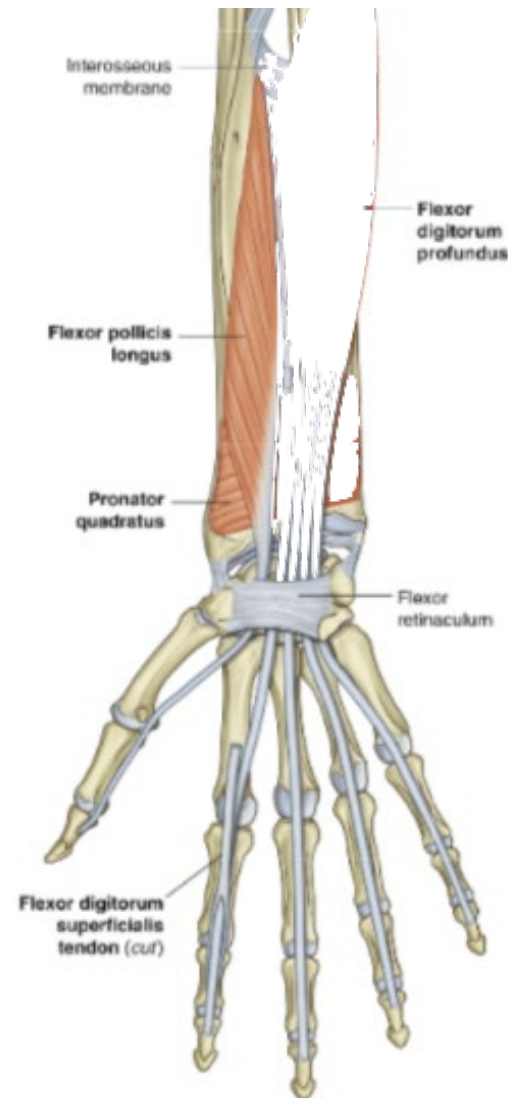
Wrist MMTs

- Flexor Digitorum Superficialis (PIP)
- O: medial epicondyle of humerus via **CFO**, ulnar collateral ligament, medial part of **coronoid process**, upper 2/3rds border of **radius**
- I: palmar surface of the base of **middle phalanx** of ALL fingers.
- A: Flexes in order:
 - PIP
 - MCP
 - Radiocarpal joint



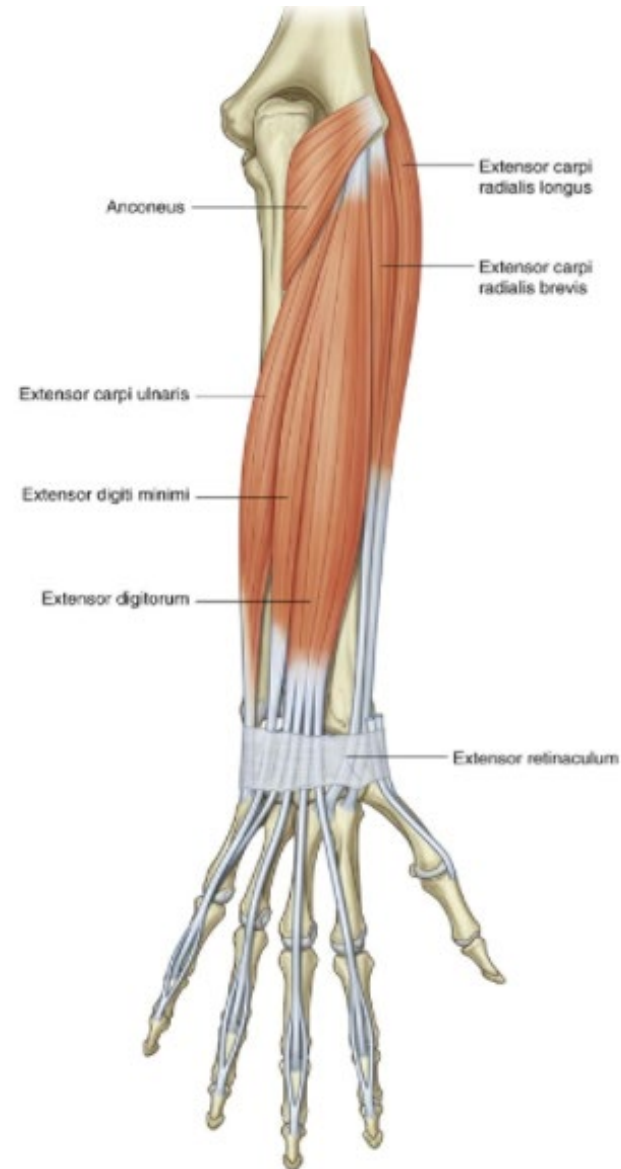
Hand MMTs

- Flexor Pollicis Longus
- O: anterior surface of **radius** between radial tuberosity and pronator Quadratus and adjacent Interosseus membrane
- I: palmar surface of the base of the **distal phalanx** of thumb
- A; ONLY flexor of the distal phalanx of the thumb



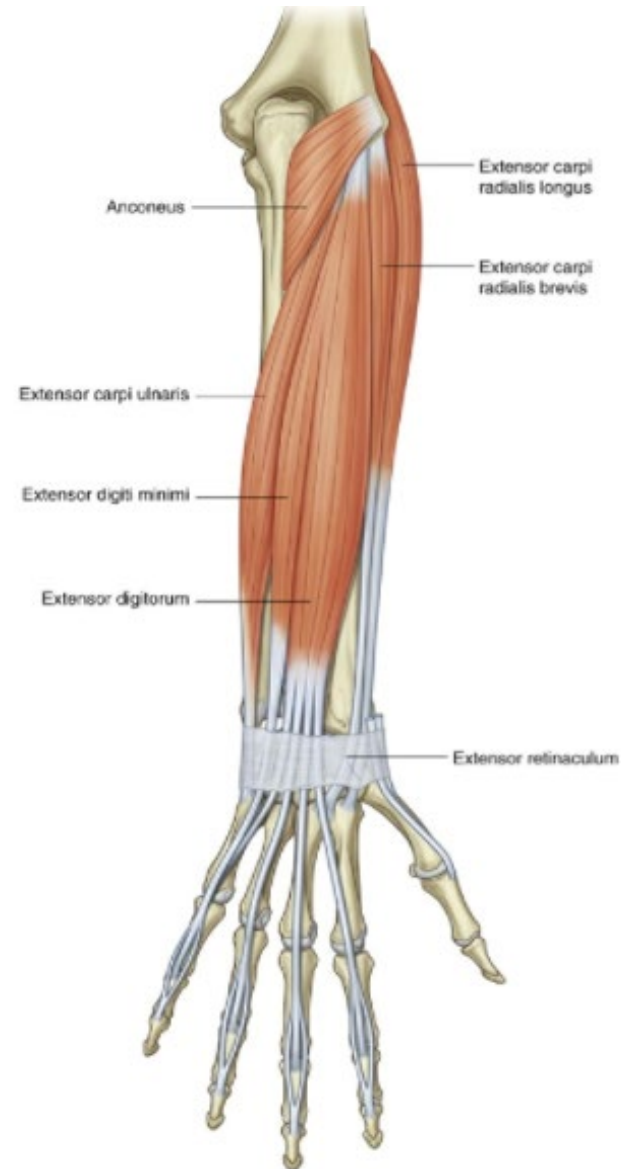
Hand MMTs

- Extensor Carpi Radialis Longus
- O: lower 1/3rd lateral supracondylar ridge of **humerus**
- I: posterior surface of **base 2nd metacarpal**
- Extensor Carpi Radialis Brevis
- O: **lateral epicondyle of humerus (CEO)**
- I: posterior surface of **base of 3rd metacarpal**
- A: Extension and radial deviation of wrist



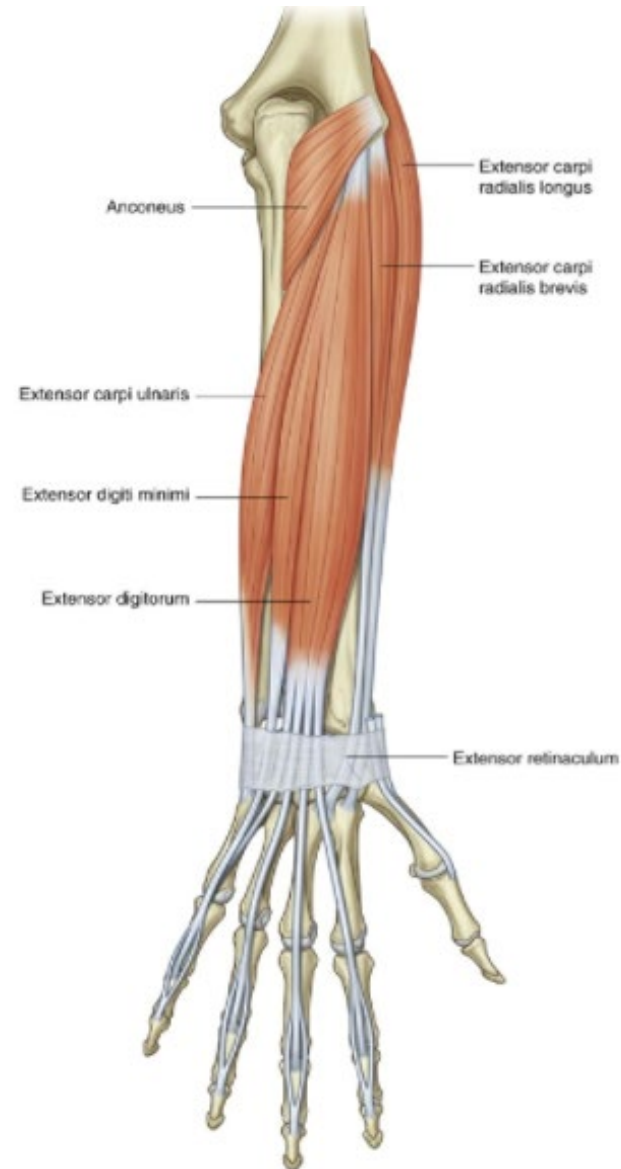
Hand MMTs

- Extensor Carpi Ulnaris
- O: lateral epicondyle of humerus via **CEO**
- I: medial side base of **5th metacarpal**
- A: extension and ulnar deviation of wrist



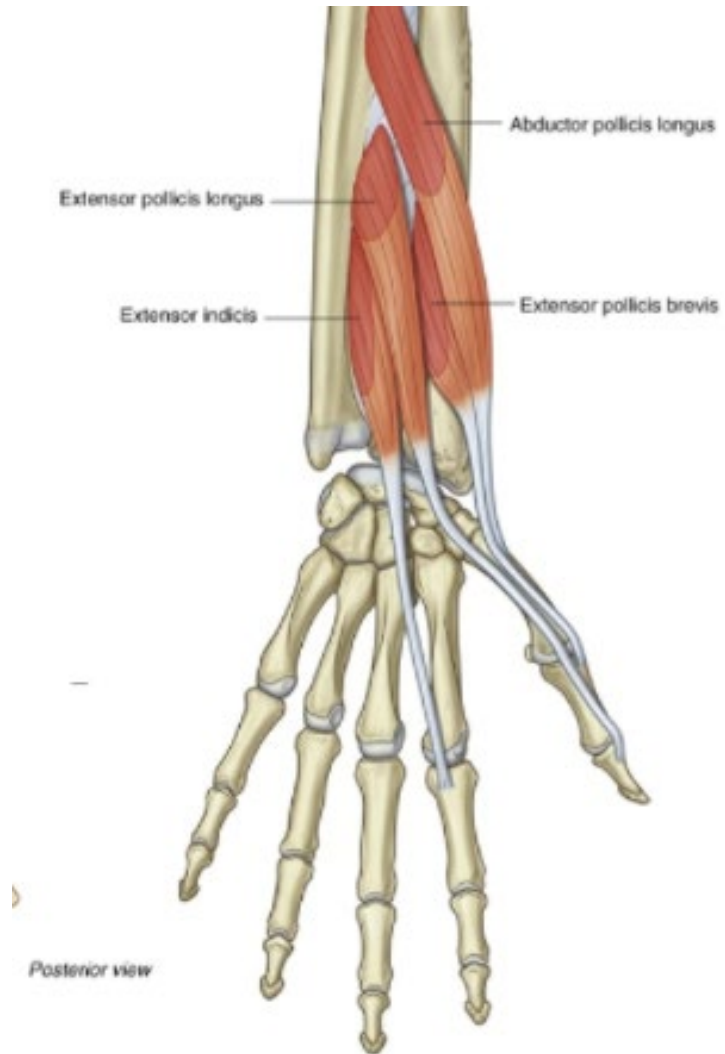
Hand MMTs

- Extensor Digitorum
- O: lateral epicondyle humerus
- I: via dorsal expansion to base of posterior surface of **middle and distal phalanges** of fingers
- A: extend in turn the:
 - DIP
 - PIP
 - MCP
 - Radiocarpal joint



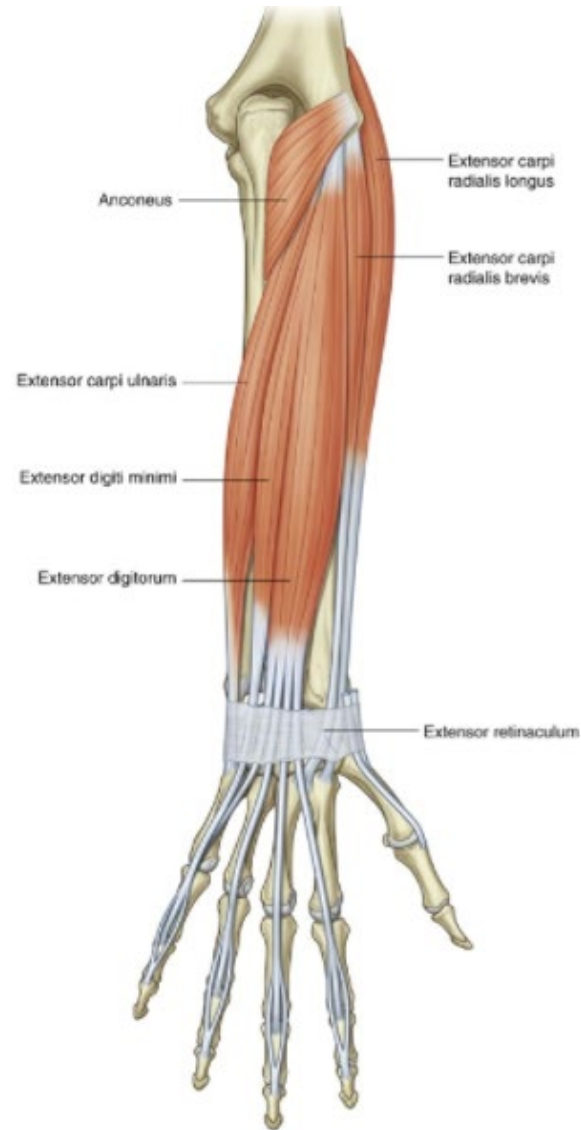
Hand MMTs

- Extensor Indicis
- O: lower part of posterior surface of **ulna** and adjacent interosseous membrane
- I: **dorsal digital expansion** (MCP)
- A: extends **index** finger



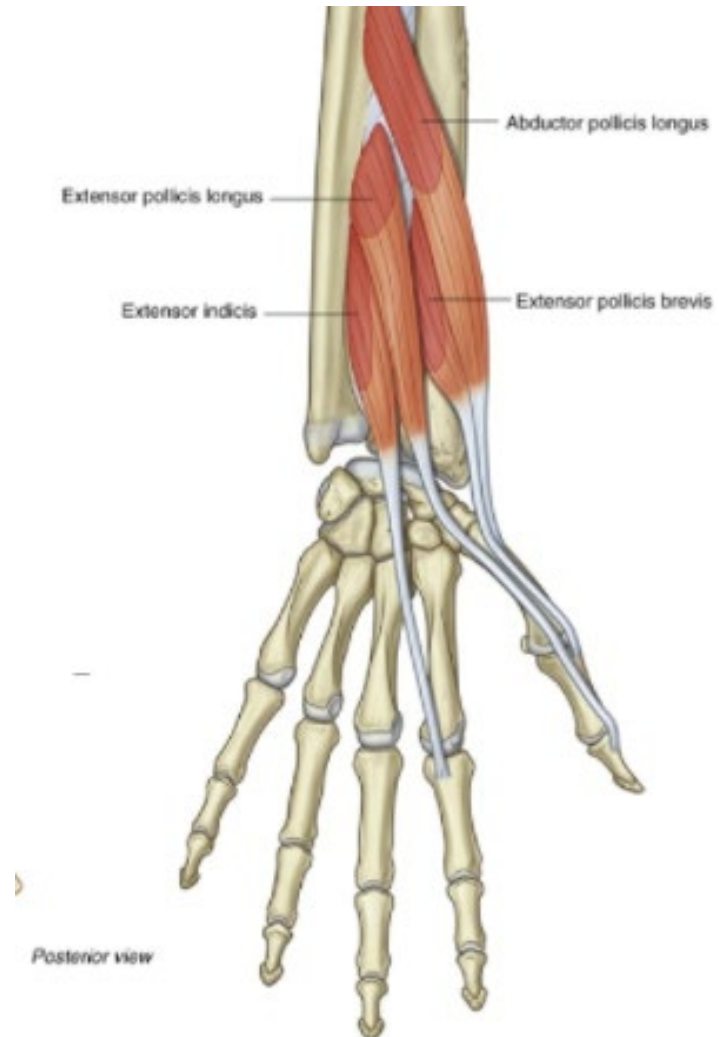
Hand MMTs

- Extensor Digiti Minimi
- O: lateral epicondyle of humerus via **CEO**
- I: **dorsal digital expansion** of little finger (MCP)
- A: extends **little finger**



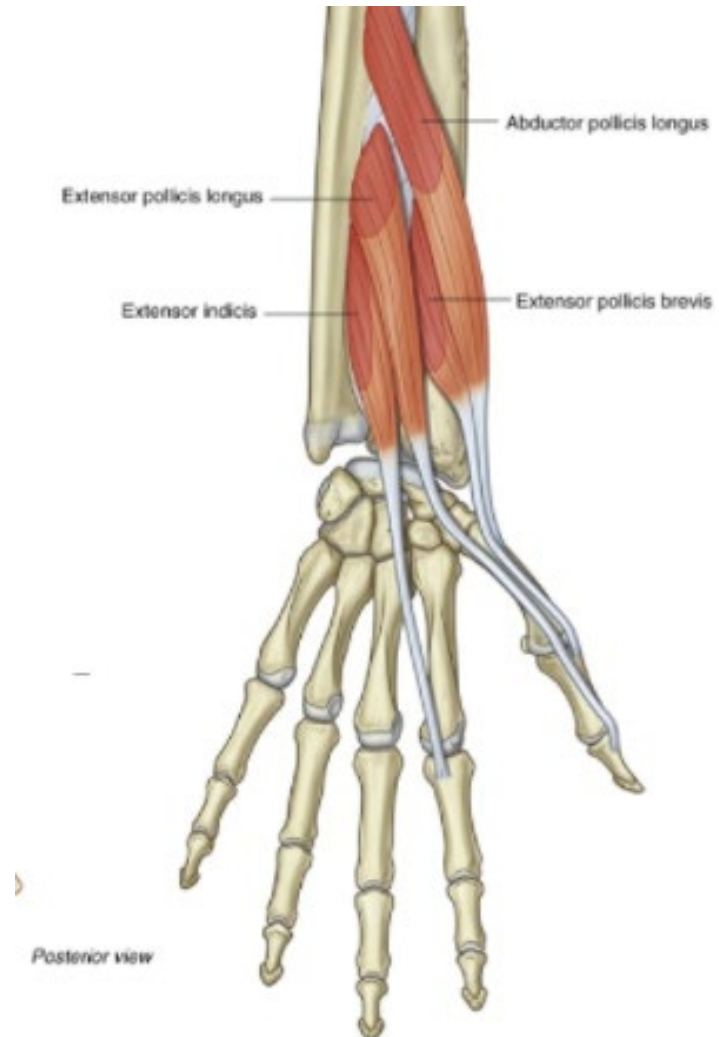
Hand MMTs

- Extensor Pollicis Longus
- O: middle 1/3rd posterior surface of the **ulna** and adjacent interosseous membrane
- I: dorsal surface of the base of the **distal phalanx** of thumb
- A: Extends ALL joints of the thumb and extends and abducts the wrist



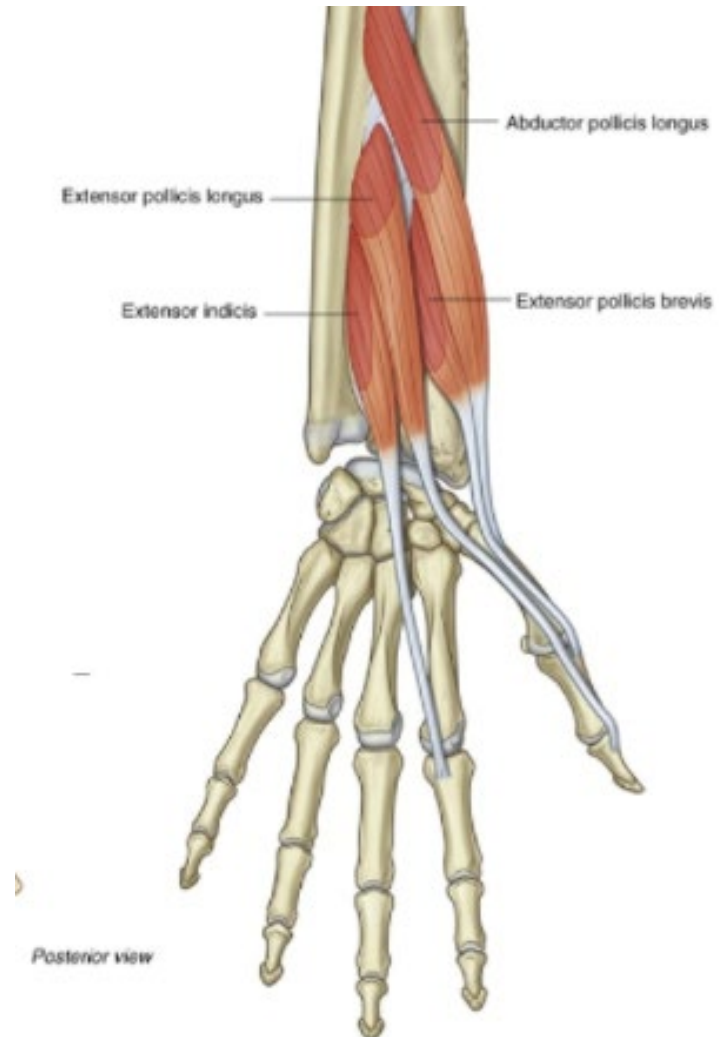
Hand MMTs

- Extensor Pollicis Brevis
- O: middle 1/3rd posterior surface of **radius** and adjacent interosseous membrane
- I: dorsal surface of the base of the **proximal phalanx** of the thumb
- A: extends carpometacarpal and metacarpophalangeal joint of thumb.
- Also assists with wrist extension and abduction



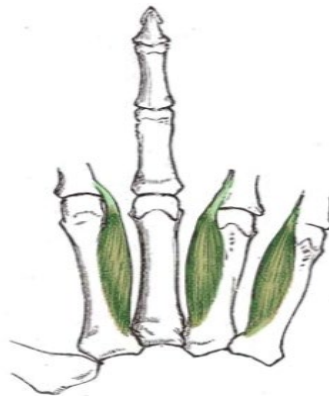
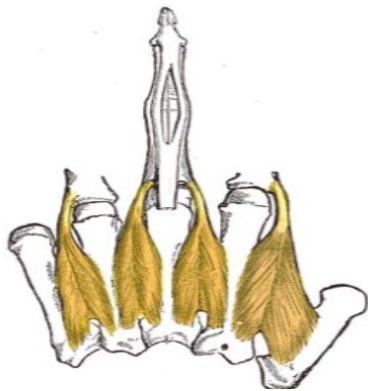
Hand MMTs

- Abductor Pollicis Longus
- O: middle part of the posterior surfaces of **ulna** and **radius** and adjacent interosseous membrane
- I: radial side at the base of the **thumb metacarpal**
- A: abducts the thumb

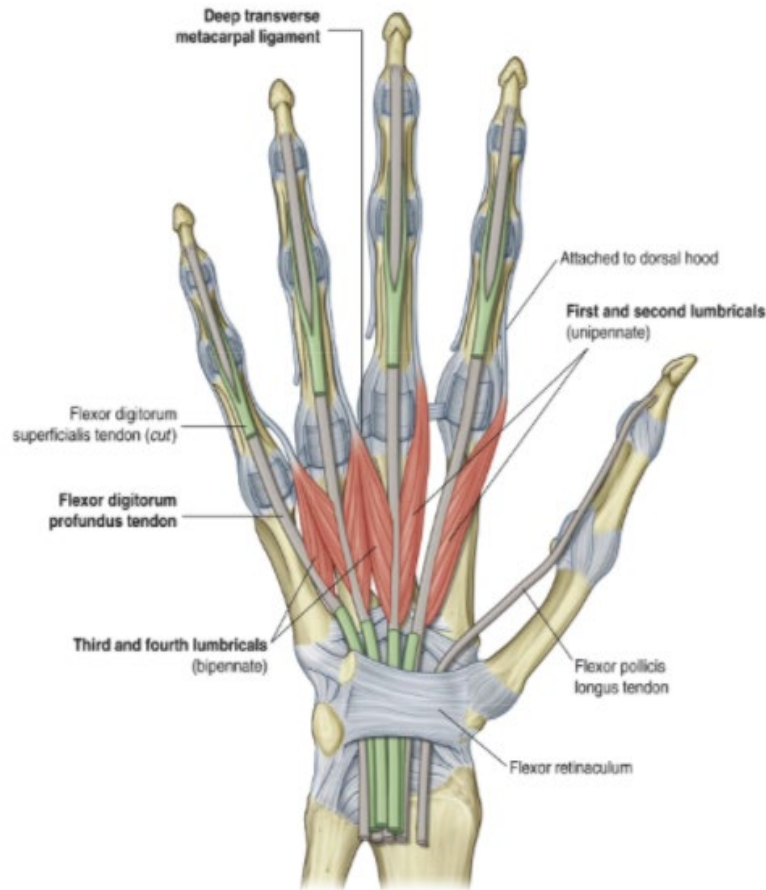


Hand MMTs

- Palmar Interossei
 - O: each muscle arises from the shaft of the metacarpal
 - I: dorsal digit expansion and base of proximal phalanx of same finger
 - A: adduct ALL fingers except middle finger
 - PAD
- Dorsal Interossei
 - O: bipennate muscles. Attach to side of adjacent metacarpals
 - I: dorsal digit expansion and proximal phalanx of appropriate finger
 - A: abduct the INDEX, MIDDLE and RING fingers
DAB



Hand MMTs



- Lumbricals
- O: lateral side of flexor digitorum profundus tendon
- I: lateral edge of dorsal extension digital expansion of the same finger
- A: flex MCP joint AND extend DIP and PIP of all fingers