

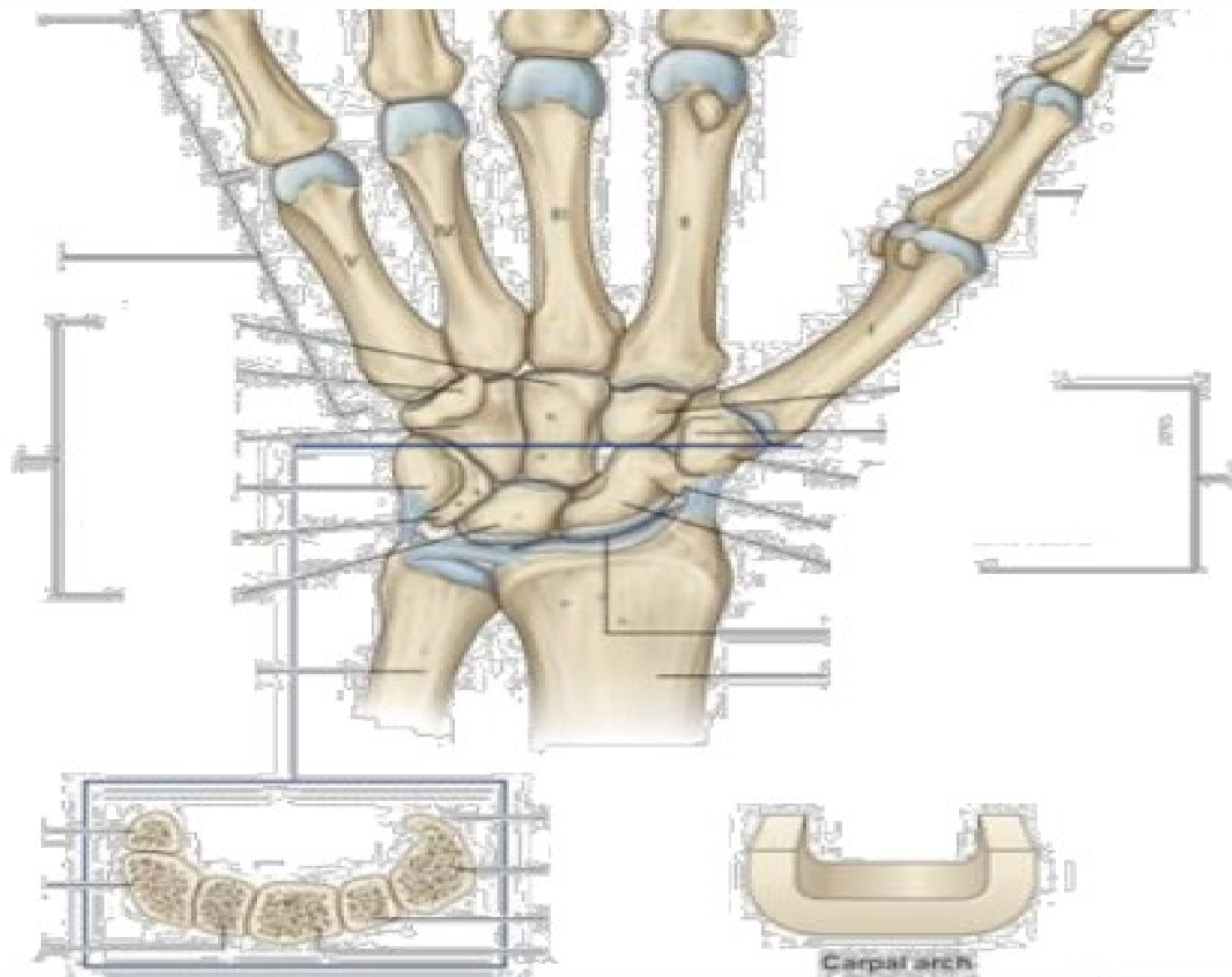
# SHSS5062

## WRIST ARTHROKINEMATICS

*Trawsnewid Addysg; Trawsnewid Bywydau*  
*Transforming Education; Transforming Lives*



[www.uwtsd.ac.uk](http://www.uwtsd.ac.uk)

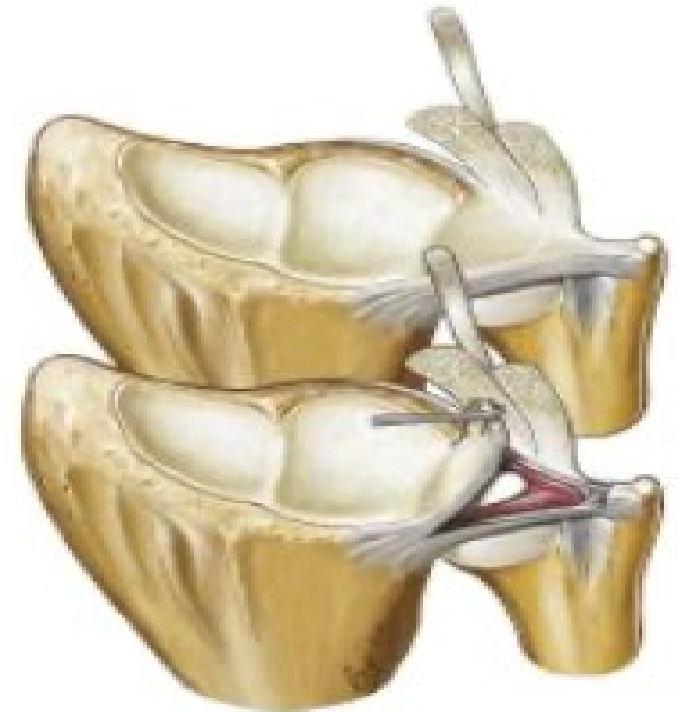
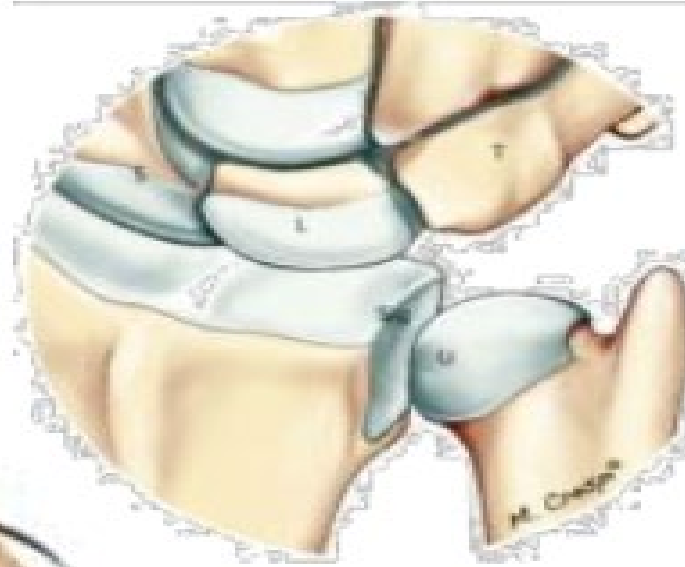


# Range of Movement

- Multiple joint movements contribute to full ROM
  - Supination 80-90°
  - Pronation 70-80°
  - Flexion 70-85°
  - Extension 60-75°
  - Radial Deviation 10-20°
  - Ulnar Deviation 35-40°

# Distal Radio-Ulnar Joint (DRUJ)

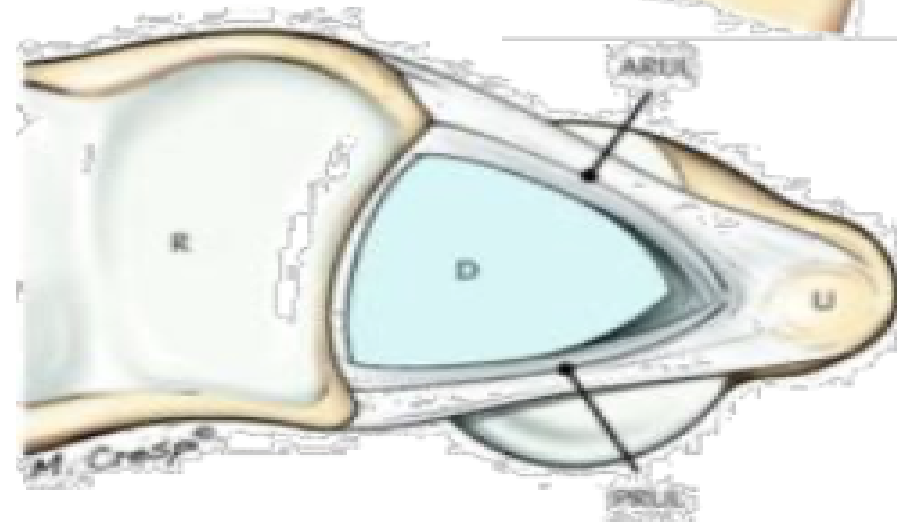
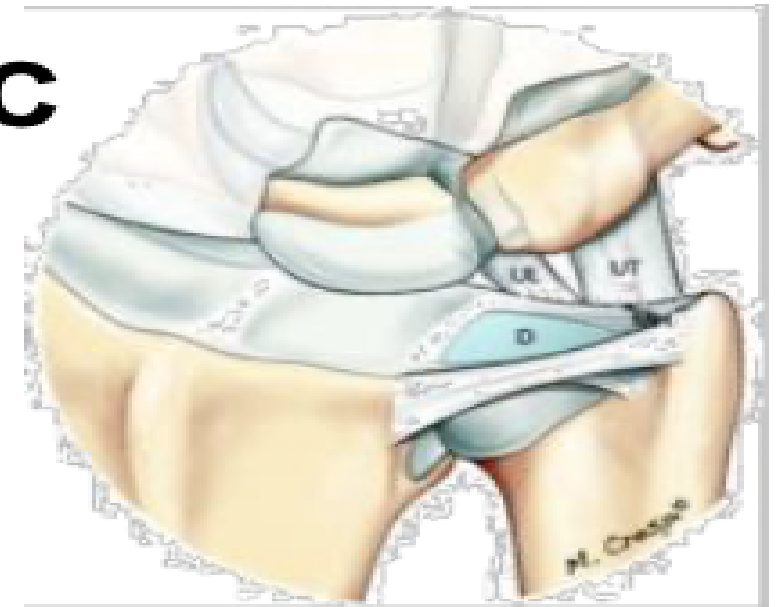
- Uniaxial pivot joint
- Convex: Ulna head
- Concave: Sigmoid Notch



- Stability from TFCC and Musculature

# DRUJ and TFCC

- TFCC provides main stability and occupies the majority of the ulnocarpal space
  - Articular disc (triangular fibrocartilage)
  - Meniscal homologue
  - Dorsal RUL
  - Volar/Palmar RUL
  - Ulnotriquetral ligament
  - Ulnolunate ligament
  - UCL



# TFCC

- Additional stability is gained from
  - Pronator Quadratus
  - ECU tendon
  - Distal fibres of Interosseous membrane

# DRUJ: Pronation/Supination

You must appreciate that:

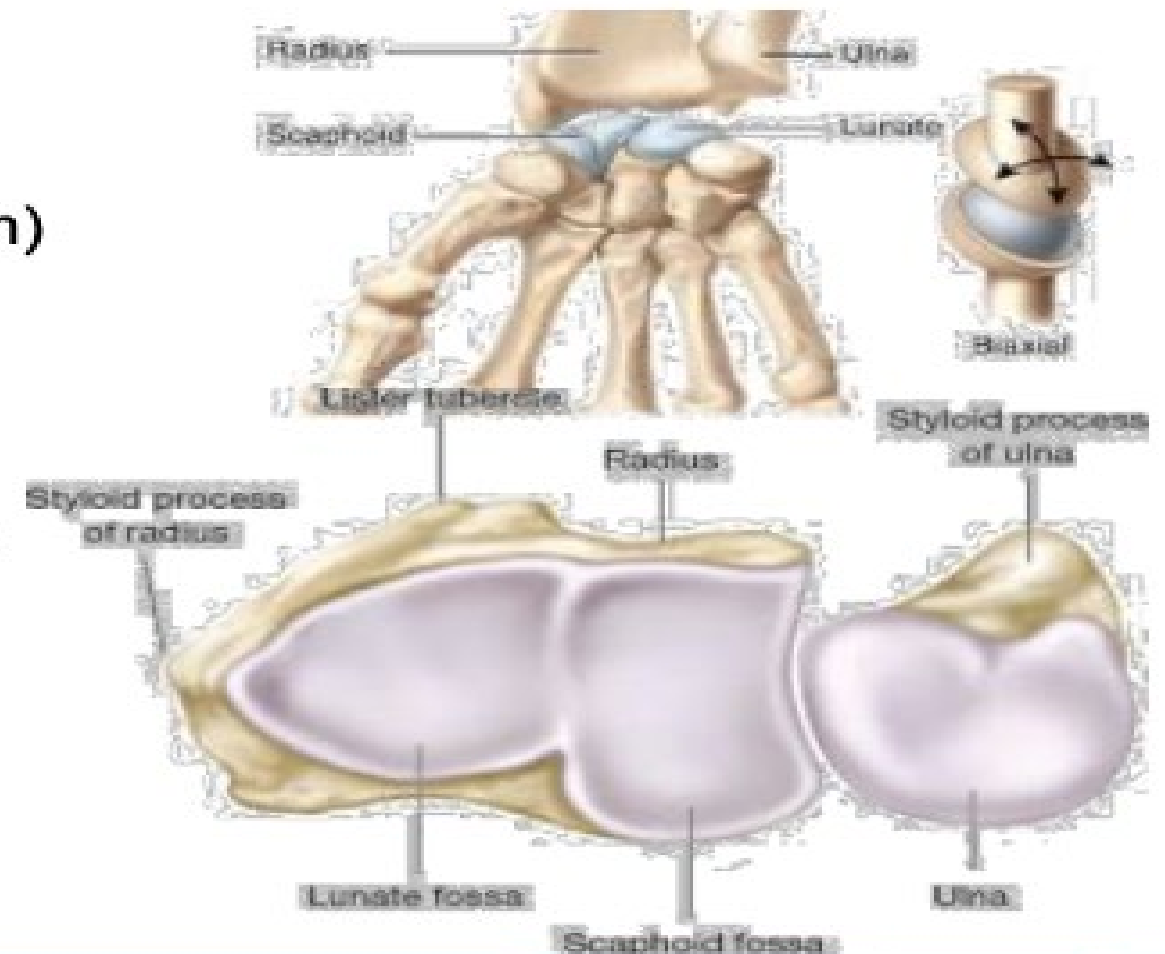
- The PRUJ is the main articulation responsible for pronation/supination!

BUT - It can be limited by the DRUJ

- Pronator quadratus
- Biceps/Supinator mm.
- Palmar/Dorsal capsular ligaments
- Interosseous membrane

# Radiocarpal Joint

- Biaxial ellipsoid/condyloid joint
- Convex lunate/scaphoid/(triquetrium)
- Concave distal radius
- Loose pack
  - slight flexion with ulnar deviation
- Close pack
  - full extension



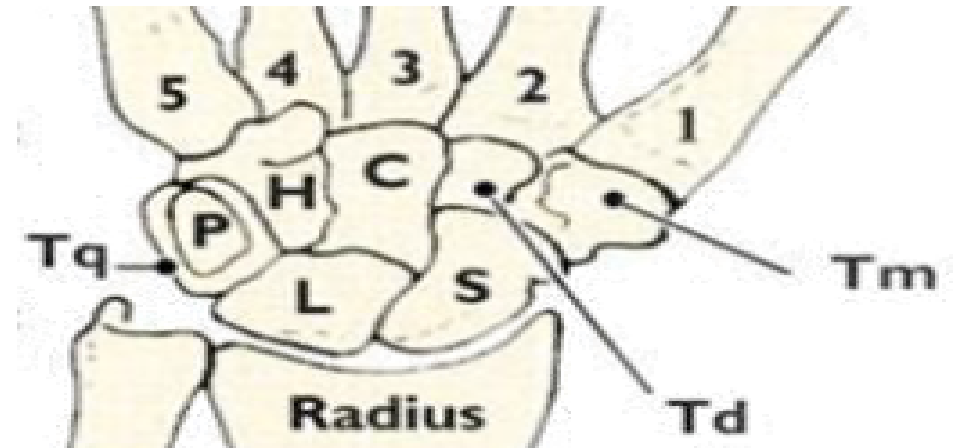
# Mid-Carpal Joint

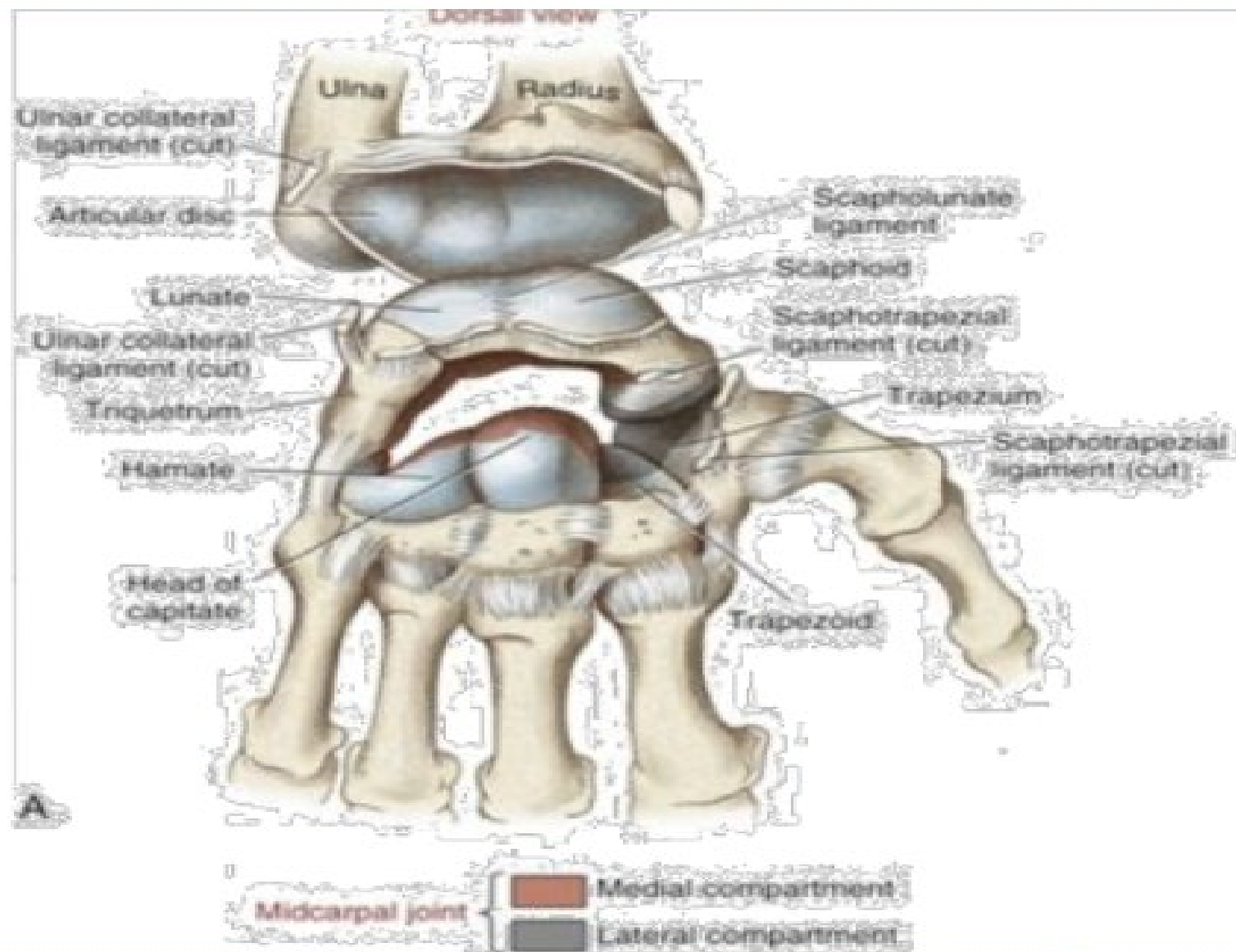
## Medial compartment

- Convex: Head of capitate/Apex of hamate
- Concave: lunate, scaphoid and triquetrum
- More movement

## Lateral compartment

- Slightly convex: scaphoid
- Slightly concave: trapezium and trapezoid





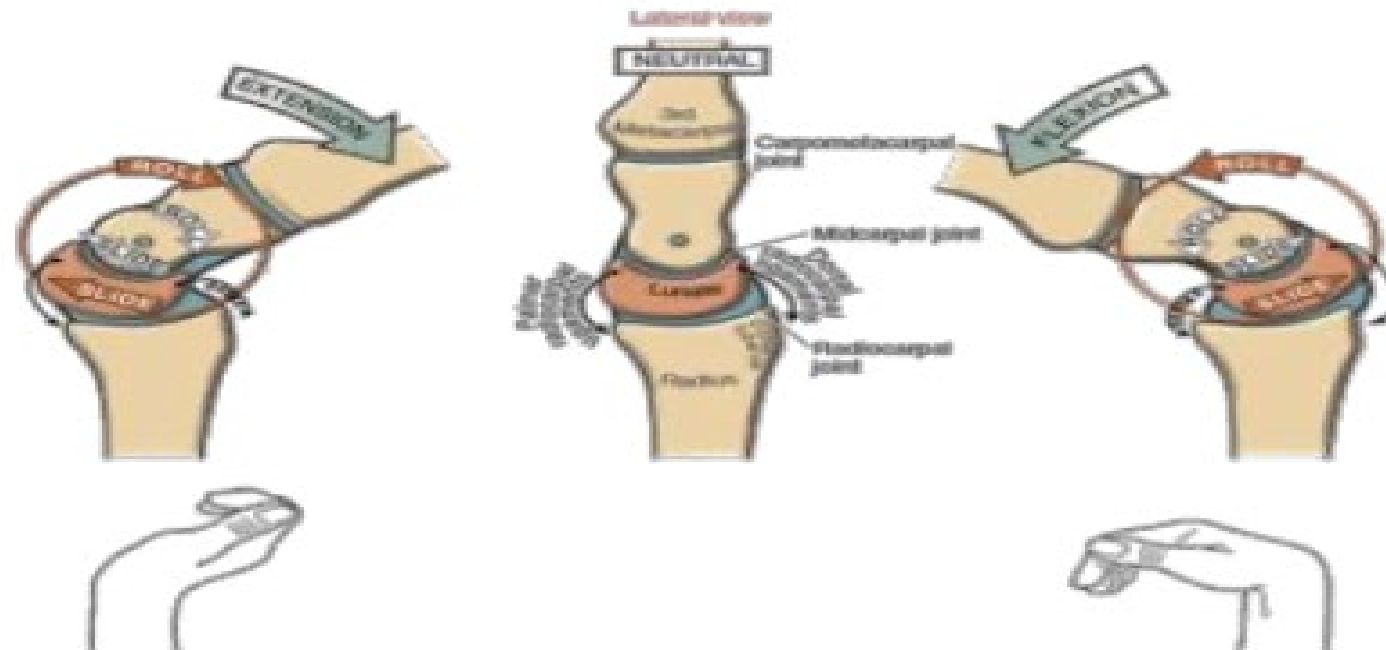
# Mid-Carpal Joint

## Flexion and Extension

- Contributes ~60 ° of total wrist flexion
- 40% due to scaphoid and lunate moving on radius
- Contributes ~30° wrist extension
- Scaphoid:
  - Moves with proximal carpals during flexion
  - Moves with distal carpals during extension

## Mid-Carpal Joint

- Flexion and Extension



# Mid-Carpal Joint

## Radial and Ulnar Deviation:

- Proximal row of carpals glide over distal row



# Carpal Tunnel

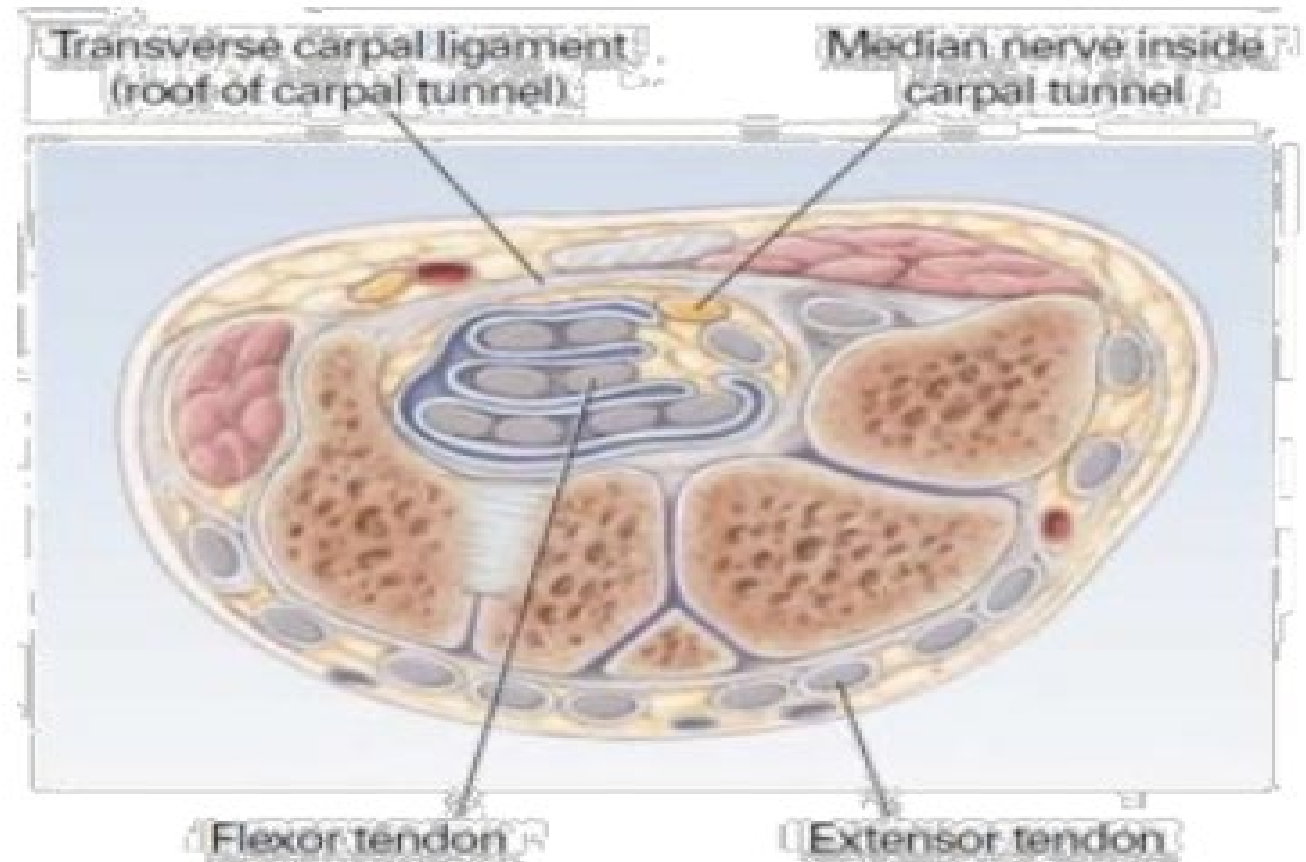
Concave carpal bones

Transverse carpal ligament

- Pisiform, hook of hamate
- Scaphoid and trapezium
- Primary attachment site

Form a tunnel

- Median nerve
- Extrinsic finger flexors



# Carpal Tunnel

Contains 10 tendons + 1 nerve

- Flexor tendon Digitorum Profundus (4 tendons)
- Flexor Digitorum Superficialis (4 tendons)
- Flexor Pollucis Longus
- Flexor Carpi Radialis
- Median Nerve
  - In between FDP & FDS