Joint Mobilization:
Elbow, Wrist, and Hand

Philadelphia Hand Meeting
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Small Joints of the Hand:
MCP, PIP, and DIP: distraction and glides (A/P or P/A)

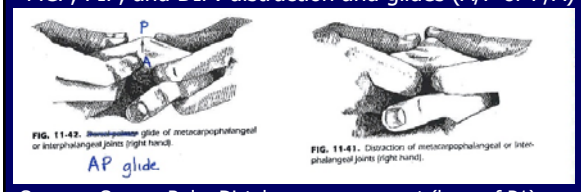
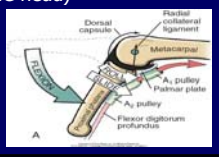


FIG. 11-42. ~~Dorsoplanar~~ glide of metacarpophalangeal or interphalangeal joints (right hand).

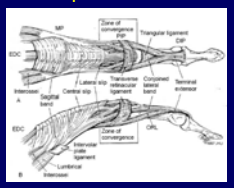
FIG. 11-41. Distraction of metacarpophalangeal or interphalangeal joints (right hand).

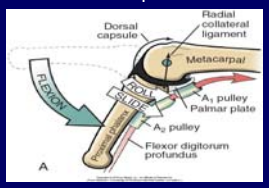
Concave-Convex Rule: Distal concave segment (base of P1) moves on proximal convex segment (MC head)
Roll and Slide are in same direction
Posterior glides to increase extension
Anterior glides to increase flexion



Small Joints of the Hand:
MCP, PIP, and DIP: distraction and glides (A/P or P/A)

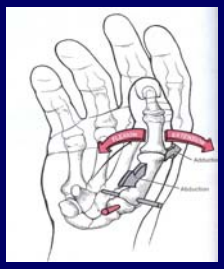
Practical Tip #1: Perform both directions to improve MCP flexion

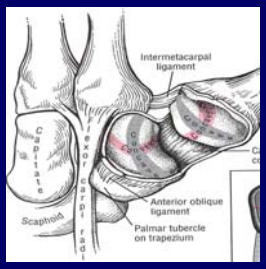




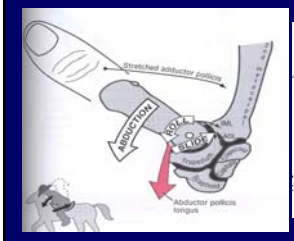
Practical Tip #2: Not best choice for PIP flexion contractures or profound small joint stiffness; value heat/stretch & LLPS.
Practical Tip #3: radial/ulnar glides; just cause you can doesn't mean it has benefit; "positional faults" likely rare.
Practical Tip #4: may not be best option for pain modulation; handling can be uncomfortable; tissue interface may be needed.

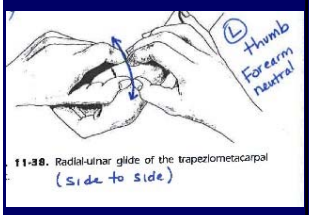
1st CMC or Basal or Trapeziometacarpal (TM) Joint
Joint mobilization primarily for pain modulation





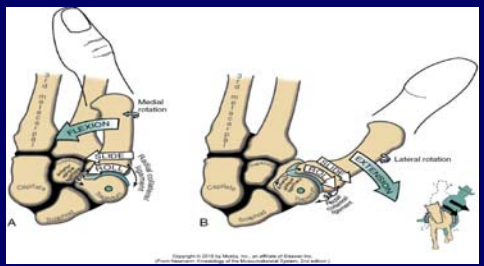
CMC Abduction: convex MC on concave trapezium
roll anterior, slide posterior
roll radial deviation, slide ulnar deviation



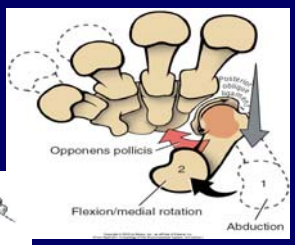


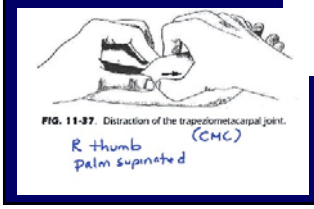
11-38. Radial-ulnar glide of the trapeziometacarpal (side to side)

CMC Flex/Ext: concave MC on convex trapezium
roll and slide in same direction like other small joints
Posterior glides to increase extension
Anterior glides to increase flexion



Distraction: to facilitate long axis rotation essential for pad to pad pinch



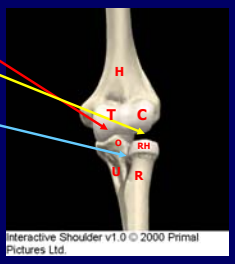


"Skull Rock"

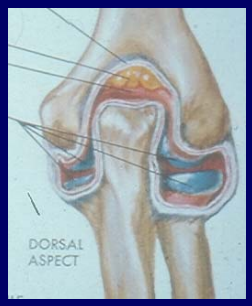
Introduced by Jan Albrecht, OT, CHT more than a decade ago as a self-mob option for CMC joint pain. Long axis distraction combined with active sensory input.

Elbow: 3 Articulations

- Ulnohumeral
- Radiohumeral
- Superior or Proximal Radioulnar Joint



"Lock and Key" Configuration Primary to Stability



Articular Configuration Adds to Stability and Creates Very Little Joint Play

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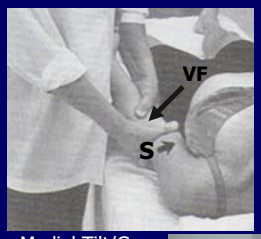
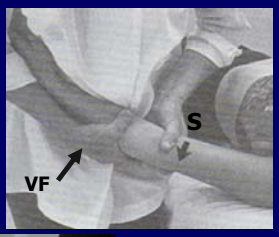
Distraction

Ulnohumeral

Radiohumeral

Medial or Lateral Tilt of Ulnohumeral Joint





Medial Tilt/Gap
VF = valgus force

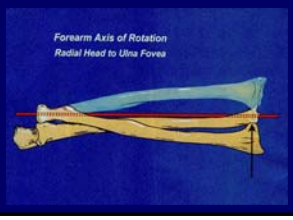
Lateral Tilt/Gap
VF = varus force

Practical Tips for Elbow

- Vigorous technique may create problems.
  - Nerve Irritability
  - Tissue Reactivity
- Stiffness best treated with LLPS.
- May not be enough "play" to modulate pain.
- When using LLPS for cement elbows, joint play likely to return before physiologic motion; use gap or tilt to assess.

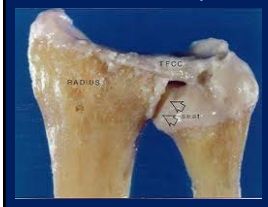
Proximal or Superior Radioulnar Joint

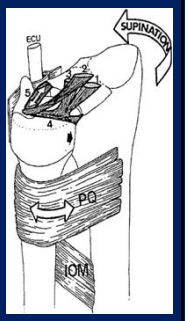
- Pronation/Supination
- Ulna is the stable bone
- Radius rotates about the ulna
- Radius rotates at HR jt



Distal or Inferior Radioulnar Joint

- Radius rotates about ulna
- Ulnar head glides within sigmoid or ulnar notch
  - Glides Palmar w/ Supination
  - Glides Dorsal w/ Pronation

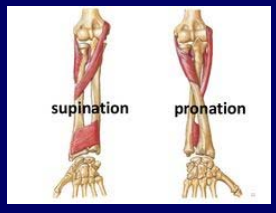


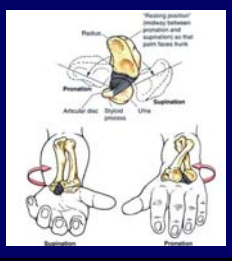


Ulnar Notch articulation is more often flat than concave; seat more often flat than convex

Forearm Rotation

- Neutral position
  - 60% of ulnar notch in contact with radius
- At extremes of motion
  - 10% of the ulnar notch in contact with radius

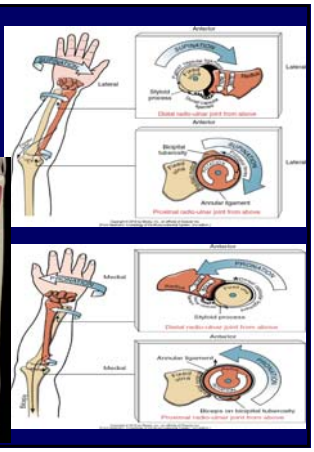




DRUJ Stabilizers

Supination
Palmar ligaments taut
PQ taut

Pronation
Dorsal ligaments taut
IOM slack
PQ slack



Forearm Rotation

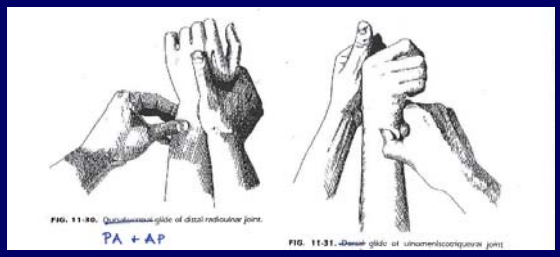
- Fovea of radial head spins @ radiohumeral jt
- Ulna is fixed at PRUJ, but not at DRUJ
- PRUJ arthrokinematics
  - Radial Head glides in radial notch (on ulna)
  - Glides Anterior w/ Supination
  - Glides Posterior w/ Pronation
- DRUJ arthrokinematics
  - Ulnar head glides in sigmoid/ulnar notch (radius)
  - Glides Palmar w/ Supination
  - Glides Dorsal w/ Pronation

Joint Play: Anterior/Posterior Glide of Radial Head

Posterior Glide

Anterior Glide

Joint Play: DRUJ

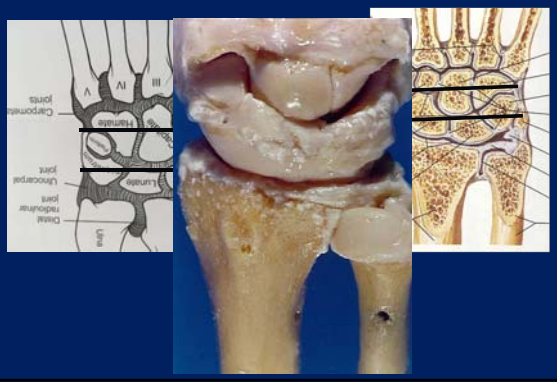


Lateral Glide MWM for Lateral Elbow Tendinopathy

LET CPG: Strong Evidence (A)

- Use local elbow joint mobilization techniques to reduce pain and increase pain free grip strength in patients with LET.
- Seems to have a positive effect as a stand-alone or adjunctive treatment in improving outcomes in the short term.

Articulations of the Wrist



Articulations of the

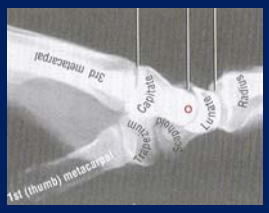
Location of Movement: RC vs.MC

Author	Flexion	Extension	Radial Deviation	Ulnar Deviation
Kapandji	RC>MC	MC>RC	RC=MC	RC=MC
Ruby	MC=RC	MC=RC	MC>RC	MC>RC
Saraffian	MC>RC	RC>MC		

- **Wrist motion occurs at both MC and RC joints**
- **About 50/50 split between MC and RC**

Kinematics: Flexion/Extension

- DCR and PCR move in concert
- DCR follows hand; PCR follows DCR
- To achieve full wrist extension, radius and ulna separate slightly



Kinematics: Ulnar Deviation

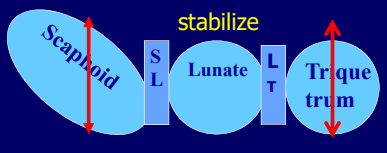
- Carpal rows behave differently
- During UD, the PCR moves radially, extends, and pronates
- DCR moves opposite PCR

Kinematics: Radial Deviation

- During RD, the PCR moves ulnarly, flexes, and supinates
- DCR moves opposite PCR
- *Scaphoid Tubercle Check!*

Proximal Row Isolated Mobilizations

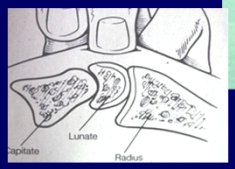
Same as Shear or Ballottement Testing



Practical Tips to Screen for Hypermobility
Scaphoid tubercle check
Screen intervals for pain/tenderness
Palpate carpal bones

Central Dorsal Zone

- Lister's Tubercle
- Lunate
- S-L interval
- Capitate

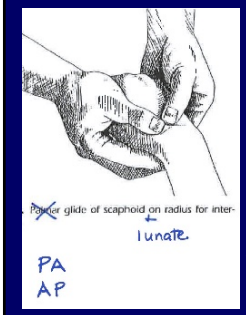


Ulnar Dorsal Zone

- Hamate
- Triquetrum
- L-T interval
- DRUJ

Joint Play: Radiocarpal Distraction

Individual Carpal Bone Mobilization



Posterior glides increases wrist flexion
Anterior glides increase wrist extension
Use angular motion to restore RD/UD

Select References

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