1st CMC Joint Osteoarthritis

Surgical and Therapeutic Management

Mr Warwick Wright
Orthopaedic and Hand Surgeon

Nick Antoniou
Hand Therapist

Jennifer Mathias
Hand Therapist

1st CMC joint OA… in brief

- Most common hand OA (after DIPJs)
- 6:1 Female:Male (high as 10-15:1)
- Major cause of thumb & hand dysfunction

Signs & Symptoms of CMC joint OA

- Tenderness
- Deformity
- Stiffness
- Swelling
- Weak pinch and grip
- Poor function

CMC Joint OA Causes

Ligamentous Laxity

- AOL becomes lax with adjacent palmar degeneration of trapezium (or dorsoradial laxity and adjacent dorsal degeneration)

Joint Impingement

- Degeneration secondary to joint impingement during functional pinch (lateral pinch)
- High contact stresses through pinch initiate and/or exacerbate OA

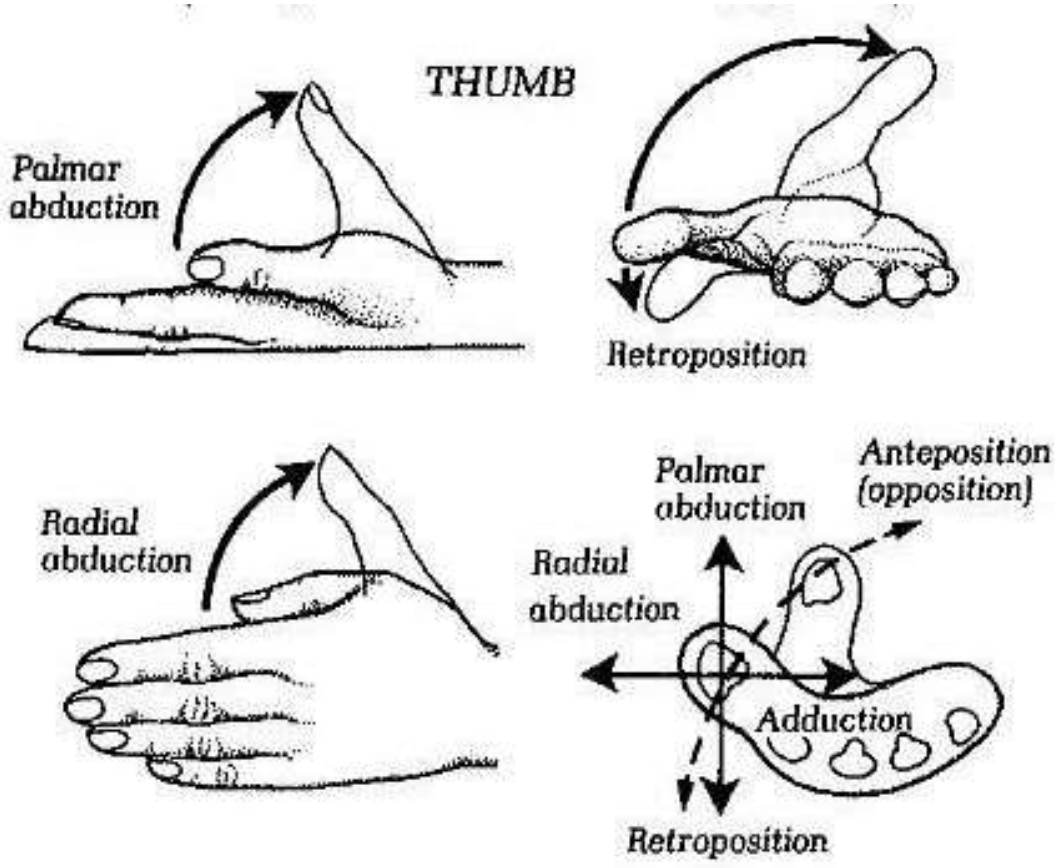
Moulton et al 2001, Bettinger et al 2000, Imaeda et al 1999
Kovler et al 2004, Koff et al 2003, Ateshian et al 1995

CMC Joint Basics…..

Thumb MC rests in plane perpendicular to palm – enabling functional pinch

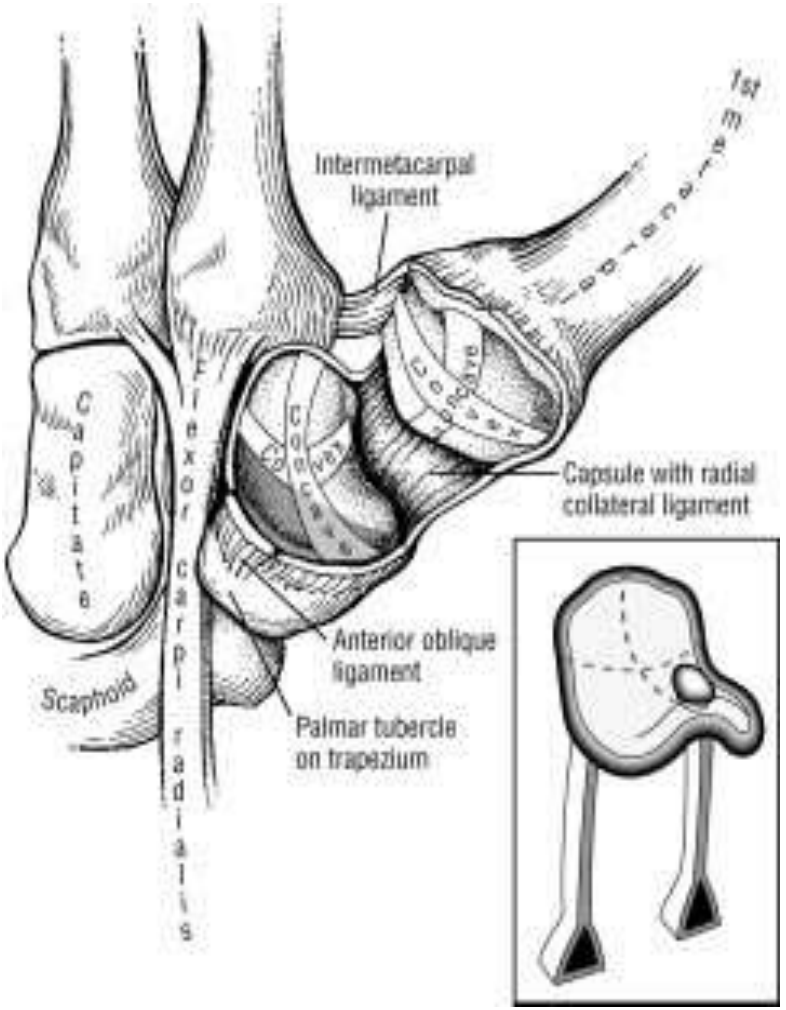
3 Planes of movement

- Flexion / Extension (RA)
- Abduction / Adduction
- Opposition / Retropulsion



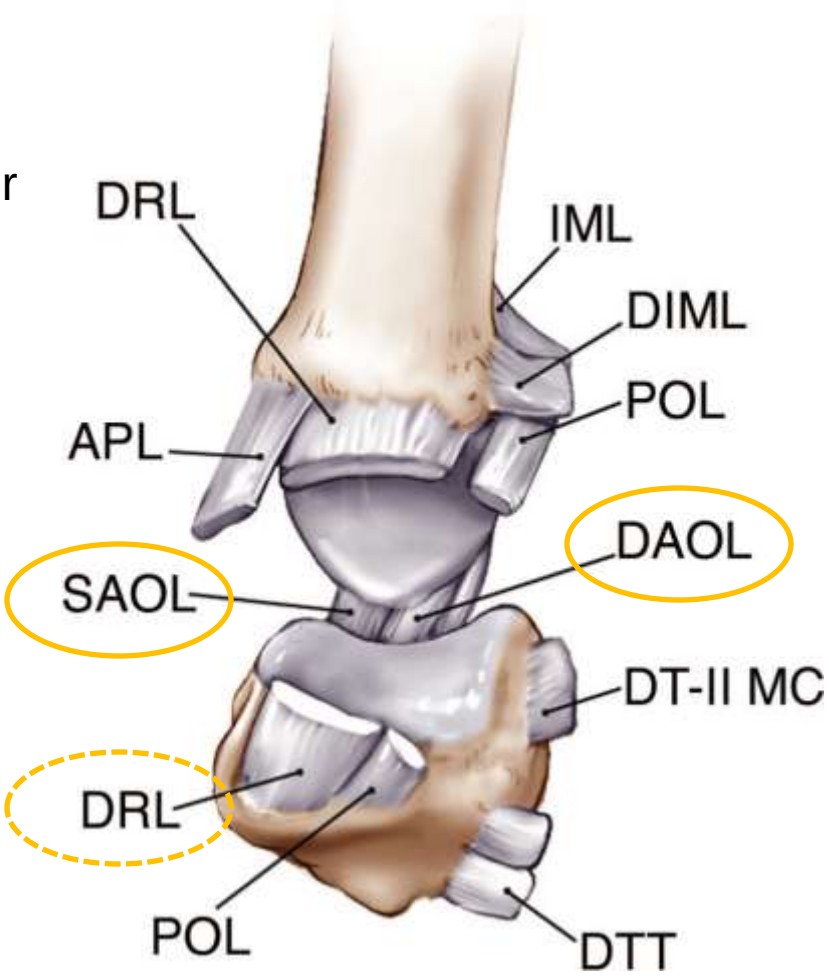
The Saddle Joint

- Bi concave / convex (imperfect)
- Shallow (bony congruity / stability poor)
- Stability largely from ligaments (16) and muscle tendon units (9)
- Large contact forces at CMCJ from tip pinch (factor of x 6 - 24 at CMCJ)
- Degeneration at volar-ulnar quadrant



Ligaments x 16

- Anterior Oblique Ligament (AOL) the major (static) stabilising structure – limits dorso-radial translation of the MC on the trapezium in pinch
- Dorso-Radial Ligament (DRL) is now considered to be just as important a stabiliser – taut during MC dorsoradial subluxing forces
- AOL attenuation causes degeneration to the adjacent volar / ulnar aspect of the trapezium
- Lateral (key) pinch causes concentrated forces in same zone

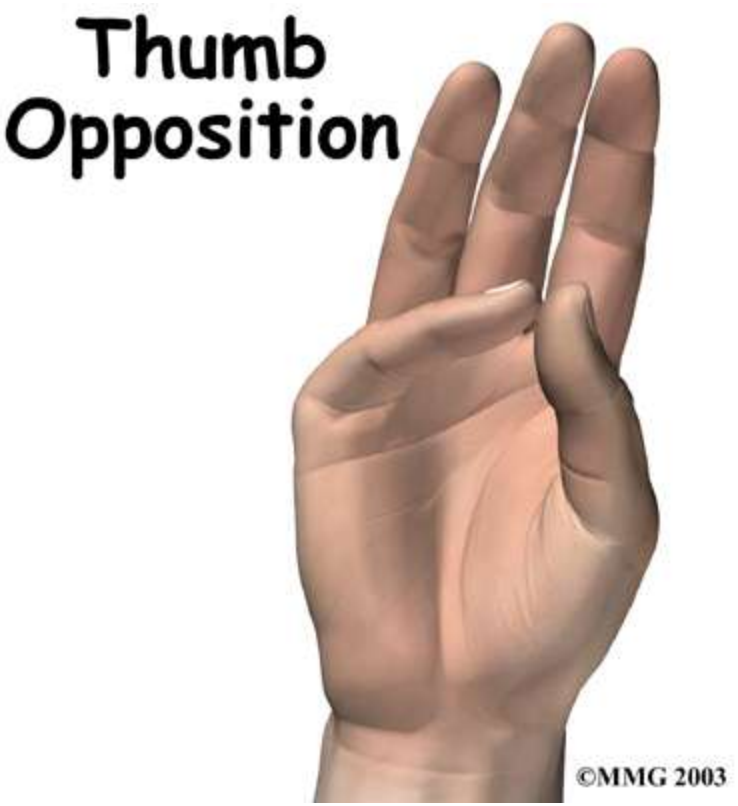


Bettinger 2001,

Functional Biomechanics

- Maximal contact area between Trapezium and Metacarpal (53%) during **opposition** (abduction, flexion and pronation)
- Ligaments taut in this position
- Most stable “close packed” position is opposition

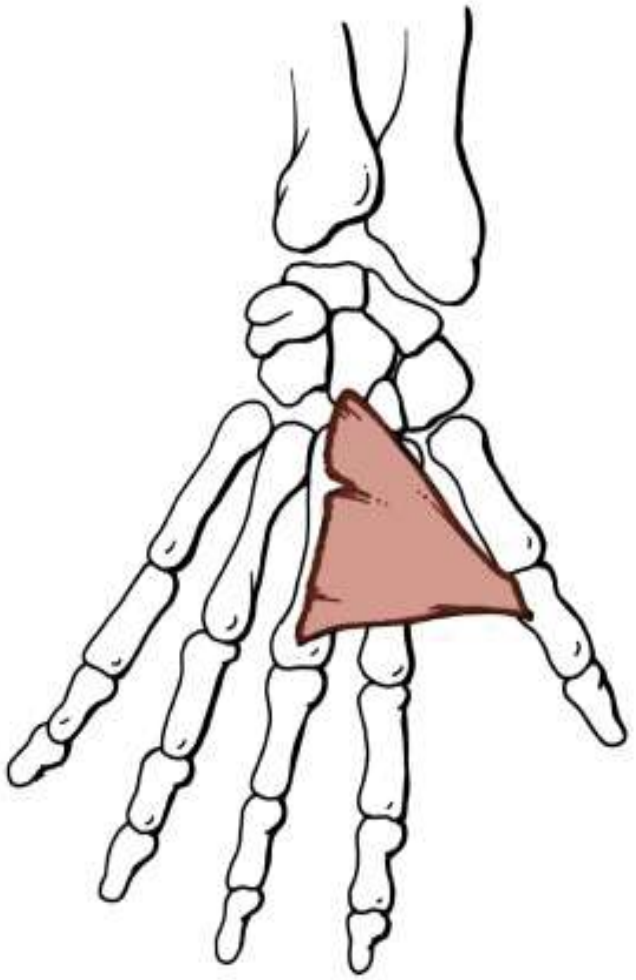
  “***screw-home-torque position”***



Neumann and Bielefield 2003

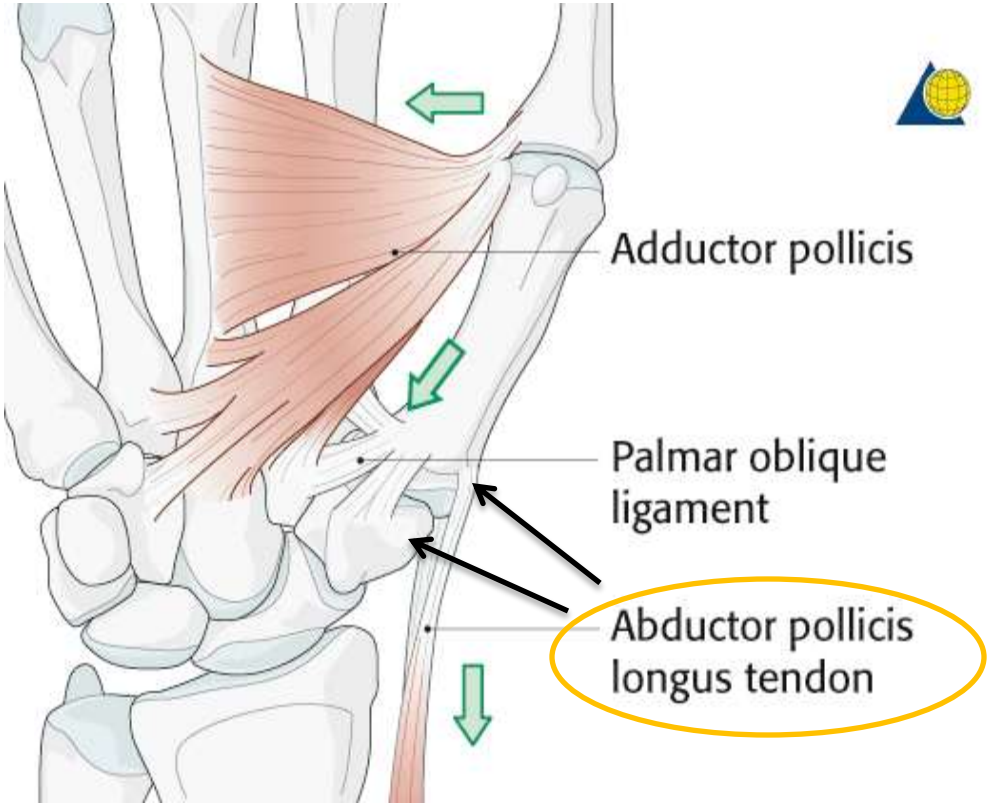
Adductor Pollicus

- Strong thumb adductor (flexor and supinator)
- Transverse and Oblique heads
- Strong in lateral (key) pinch
- Significant contributor to thumb OA deformity (adduction contracture)

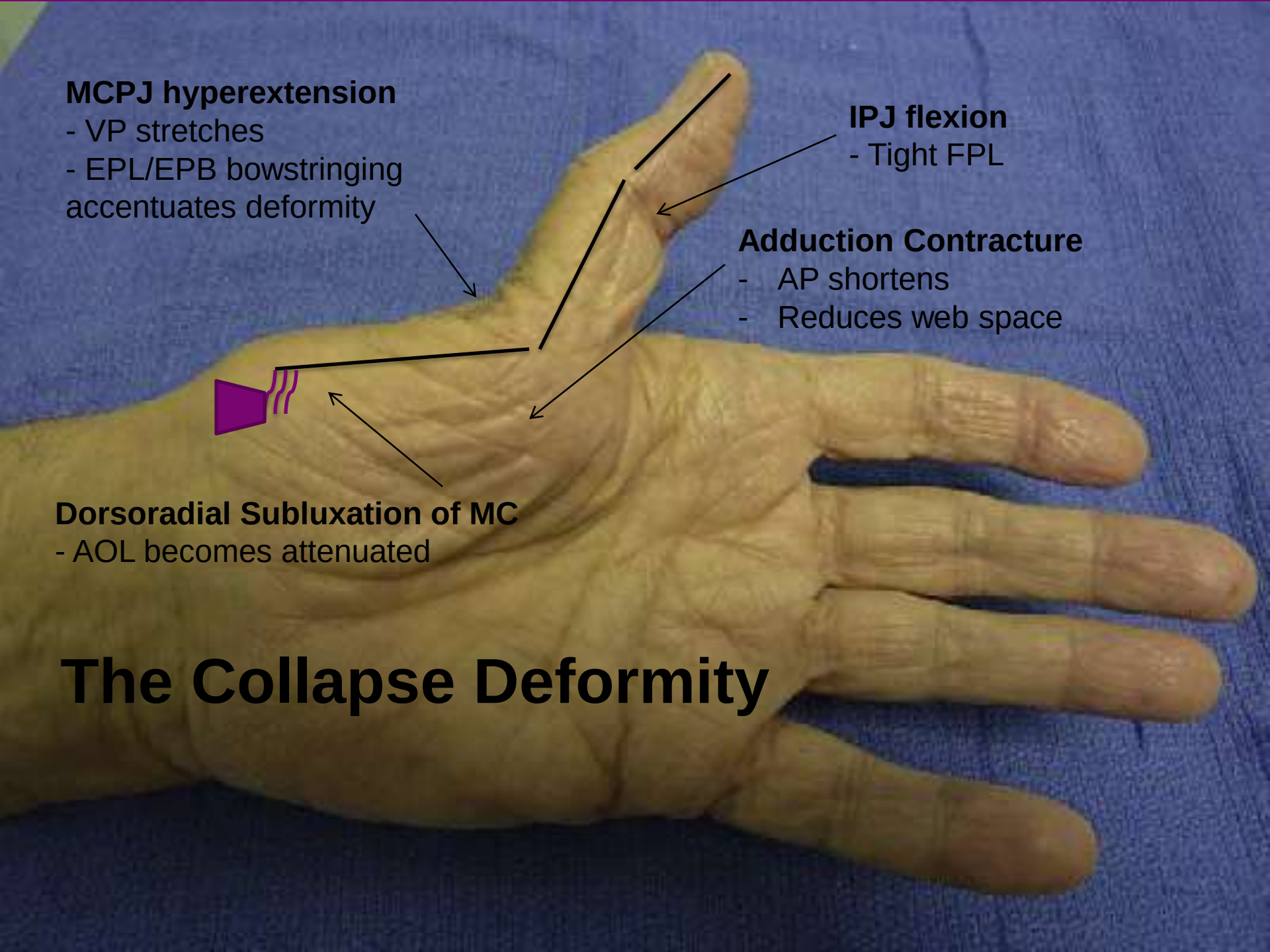


What about the APL?

- Serves as an important CMCJ stabiliser (counteracts action of AP)
- Aberrent accesory tendons of APL (Metacarpal + *Trapezium*)
- ? minimises OA prevalence as pull of APL on *both* Metacarpal and Trapezium causes concurrent pulling (less shear)
- No correlation found



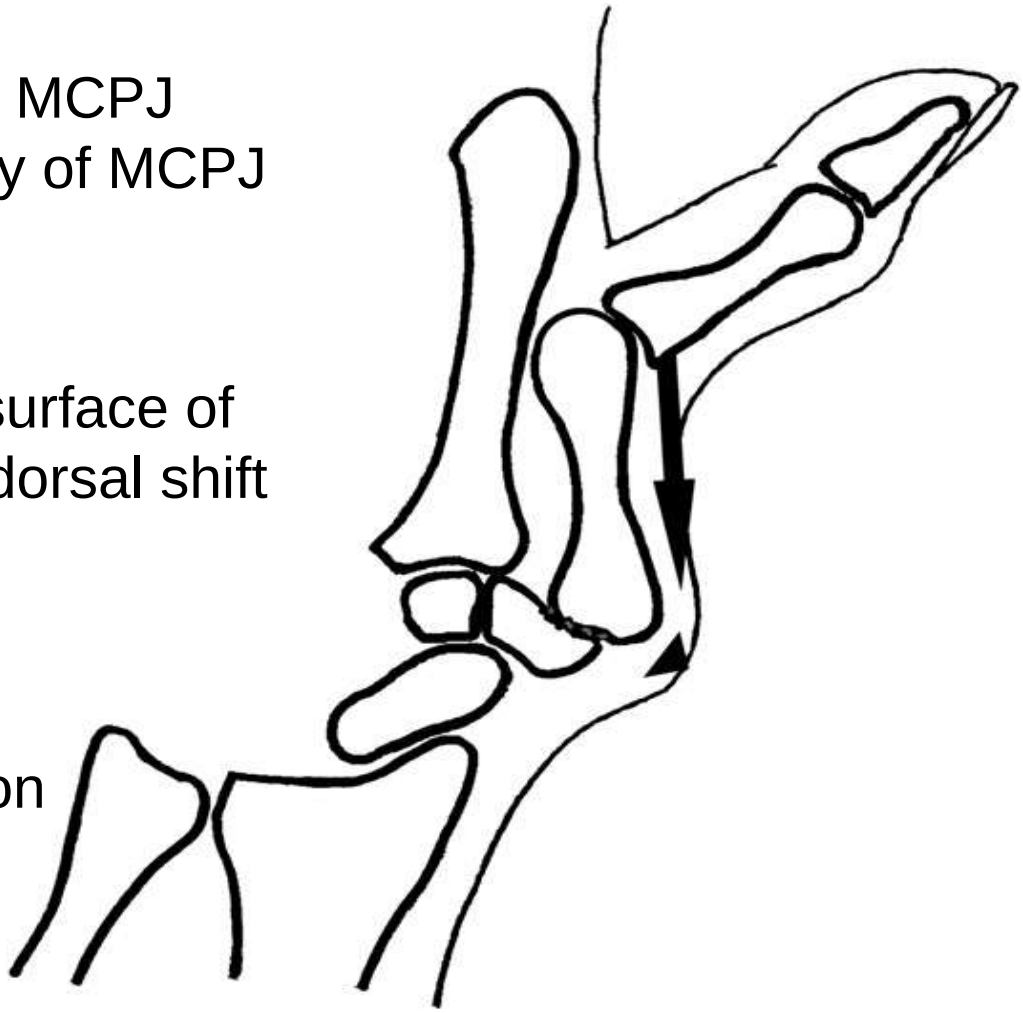
Roush et al 2005, Schultz et al 2002, Roh et al 2002



The Collapse Deformity

Is the MCP joint relevant?

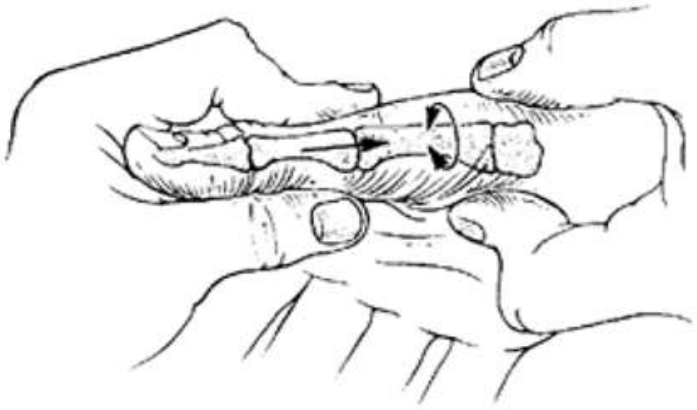
- CMCJ instability causative of MCPJ deformity but divergent theory of MCPJ being causative
- MCPJ flexion unloads volar surface of trapezium (30° causes 60% dorsal shift of contact along trapezium)
- CMCJ congruence facilitated in MCPJ position of 30° flexion



Ambruster & Tan 2008, Moulton et al 2001, Johnson et al 1996

CMC joint Clinical Assessment

- X-rays
- Patient history of pain and dysfunction
- Clinical assessment
  - shoulder sign / deformity
  - palpation
  - grind test



Outcome Measures

- Pain
- Function

  DASH / PRWHE / AUSCAN
- Thumb AROM

  CMC / MCP / IP / composite
  eg. Kapandji
- Strength (Pinch and Grip)

The AUSCAN – a more valid OM?

15 items scored on 5 point scale 0 (none) to 4 (extreme)

- Pain (5 items)

  (at rest, gripping, lifting, turning, squeezing)
- Stiffness (1 item)

  (on waking)
- Physical Function (9 items)

  (turning taps/faucets on, turning a round doorknob or handle, doing up buttons, fastening jewellery, opening a new jar, carrying a full pot with one hand, peeling vegetables/fruits, picking up large heavy objects, wringing out wash cloths)

Conservative Rx of CMCJ OA

- Rest
- Splinting
- Heat
- Exercise
- NSAIDS
- CSIs
- Activity Modification and JPE
- Assistive devices

Exercise…

Exercise…

Aims:

- Maximise (painfree) functional ROM
- Maximise functional strength and endurance
- Maintain stability of the CMCJ
- Reduce pain
- Avoid fixed deformities

Kjeken 2011, Neumann and Bielefeld 2003, Felson 2000

But which approach?

Traditional

(Flexibility and Strengthening)

CMC Stability Approach

(Abductor / Extensor Strengthening)

Dynamic Stability Approach

(Kinematic Functional Approach)

Traditional

Aims

- Encourage joint motion and tissue elasticity
  (cartilage nutrition and joint lubrication)
- Restore web space
- Maintain functional strength for pinch and grasp
- Condition muscles to absorb damaging impact loads

Principles

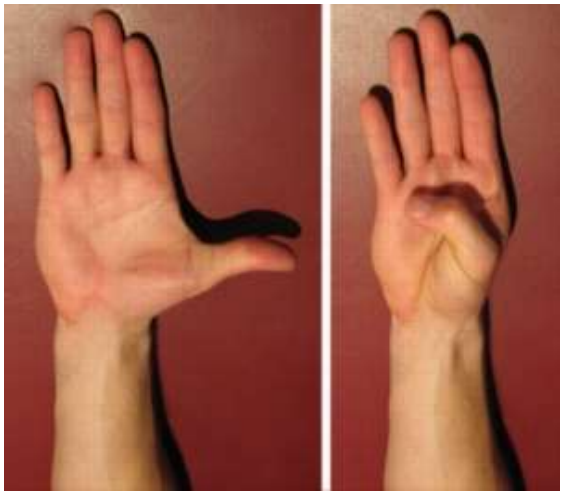
- A/PROM (all planes) as well as conventional strengthening for functional pinch and grasp

Felson 2000, Neumann and Bielefeld 2003

Traditional

A/PROM

- CMCJ Abduction/Adduction/ Flexion/Extension/ Opposition/Retropulsion/ Composite
- “Place and Hold”



Resistance

- Pinch (Lateral / Tip)
- Grip
- Isometrics / Putty / etc

Garfinkel et al 1994, Lefler & Armstrong 2004, Wajon & Ada 2005, Rogers & Wilder 2009, Boustedt et al 2009

Evidence (Systematic R/Vs)

Kjeken et al (2011)

may reduce pain and increase ROM and strength

Ye et al (2011)

exercise has no effect on hand pain / dysfunction although may be able to improve hand strength

Valdes and Marik (2010)

moderate evidence to support hand exercises for increasing grip, improving function, ROM and pain reduction

Not specific to thumb OA / thumb exercises

A word on Evidence…

Sackett et al (2000) Scale

Level of Evidence / Type of Study	
1a	Systematic reviews of RCTs
1b	Individual RCTs with narrow confidence interval
2a	Systematic reviews of cohort studies
2b	Individual cohort studies and low-quality RCTs
3a	Systematic reviews of case-control studies
3b	Case-controlled studies
4	Case series, cohort and case control studies
5	Expert opinion

Evidence (specific studies)

Rogers & Wilder (2009)

Study Type: Crossover trial (level 2b), n=46 with hand OA in 1 joint

Program:

16 week program for each (16 week washout in between)

Exercise vs Sham (hand cream daily)

Exercises: x 1 daily, 10 reps → 20 reps over 16 weeks

AROM - table top / hook / full fist / opposition all digits / finger spread / thumb flexion

Strengthening - Theraband Ball - grip / lat pinch / tip pinch

High attrition rate – 40% (n=30), mostly in exercise group

No change in AUSCAN or dexterity but significant improvement in grip and key pinch

Evidence (specific studies)

Lefler & Armstrong (2004)

Study Type: RCT (level 1b), n=19 with hand OA in 1 joint

Program:

6 week program of strengthening x 3 p/week –

- 10 reps isometric (6s) at 40-60% maximum
- 10-15 rep isotonic 40% maximum and 6-8 rep isotonic 60% maximum

Exercises:

(1) Rice grabs, (2) 5 finger pinch grip lifting (sand bags) / wrist rolls with PVC pipe attached to 250g sand bag

Sig improvement in grip and ROM but not pain or pinch strength

Evidence (specific studies)

Wajon & Ada (2005)

Study Type: RCT (level 2b), n=40 with thumb OA

Program:

4 week program, 5-10 reps

(and increasing as pain allows) x 3 p/day

Exercises:

Thumb abduction against gravity (and thumb strap splint)

vs foam block finger tip pinch (and short opponens splint)

High bias risk – differing splints (major confounding variable)

No significant difference between the 2 programs

CMC Stability Approach

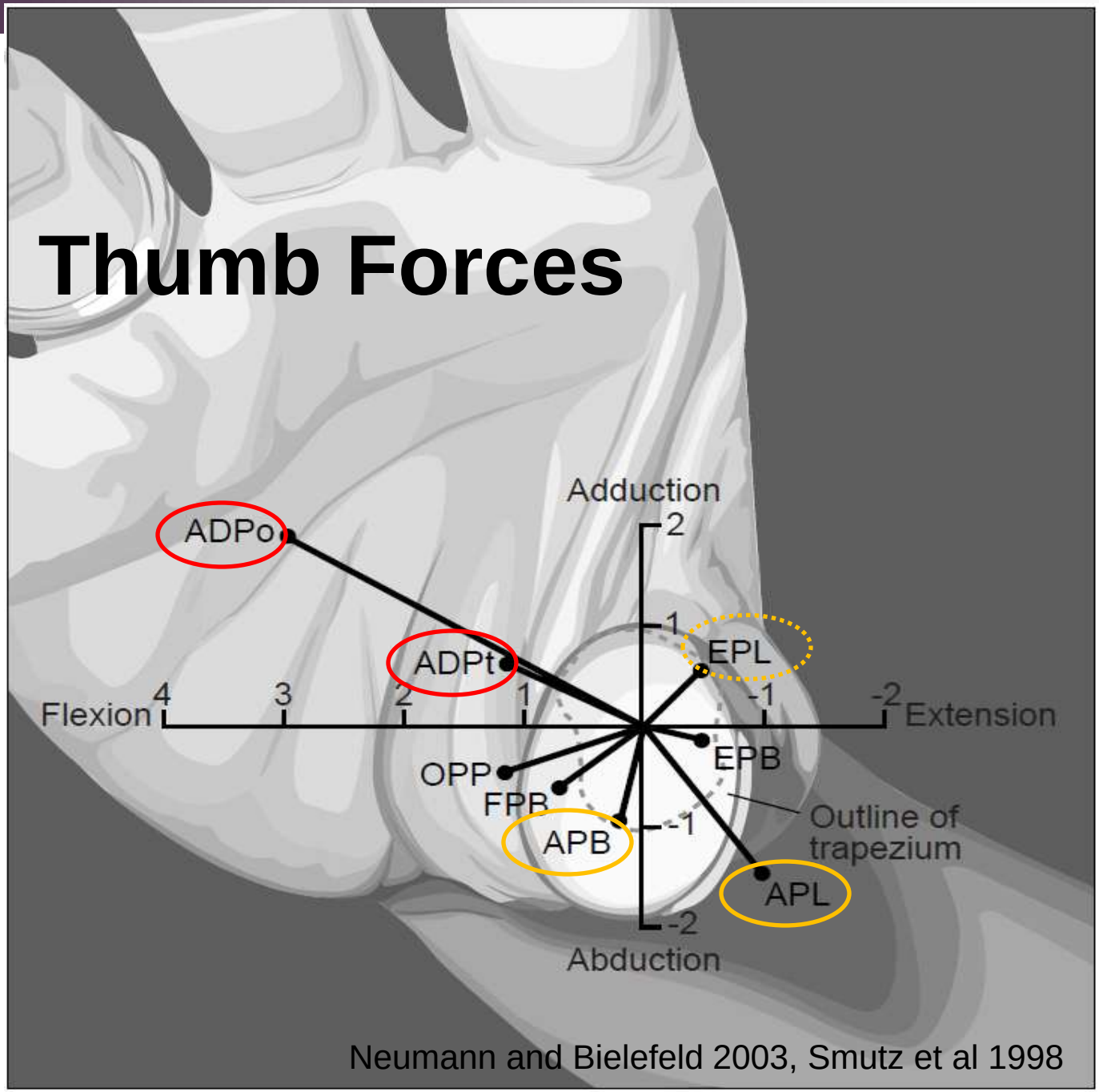
Aims

- promote muscular (dynamic) stability of the CMCJ
- maintain first web space (limit adduction deformity)

- **APB** – small & weak but positions thumb for pinch and palmarly abducts and pronates (screwing action) – puts CMC joint in maximal stability (bony and ligamentous)
- **APL** – strong muscle that abducts thumb and pulls MC radially. Opposes the powerful adductors of the thumb and limits dorso-radial collapse of MC and narrowing of 1st web space.
- **EPL** - not desirable as acts as adductor. Use sparingly to maintain flexibility in absence of established deformity

Wajon & Ada 2005, Neumann and Bielefeld 2003, Poole & Pellegrini 2001

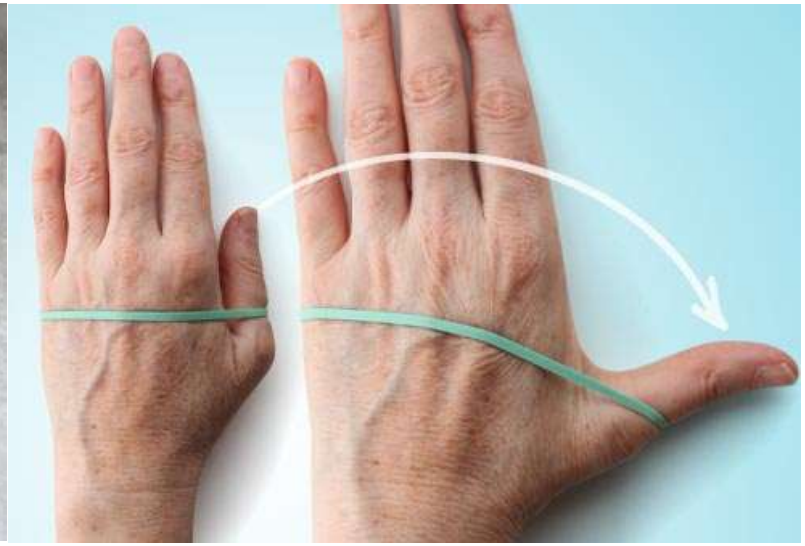
Thumb Forces



Neumann and Bielefeld 2003, Smutz et al 1998

APB / APL Strengthening

- Isometrics
- Rubber band
- Theraputty



CMC Stability– Dosing?

- early stages, as later can destabilising and contribute to subluxation (eg. EPL)
- painfree (non-inflammed) state
- close packed position or end range
- active or resisted (isometrics less traumatic alternative)
- pain following performance < 2 hours acceptable

Poole & Pellegrini 2001

Dynamic Stability Approach

(O'Brien & Giveans, 2013, JHT)

- Based on Jan Albrecht's approach *"Caring for the painful thumb; more than a splint…"*
- Use of thumb muscles during function to stabilise the CMCJ to reduce / prevent subluxating shear forces.
- Functional kinematic approach superior to traditional strengthening
- Entire set of muscles around joint to centralise / restore function
- Concept of "pertubation" training

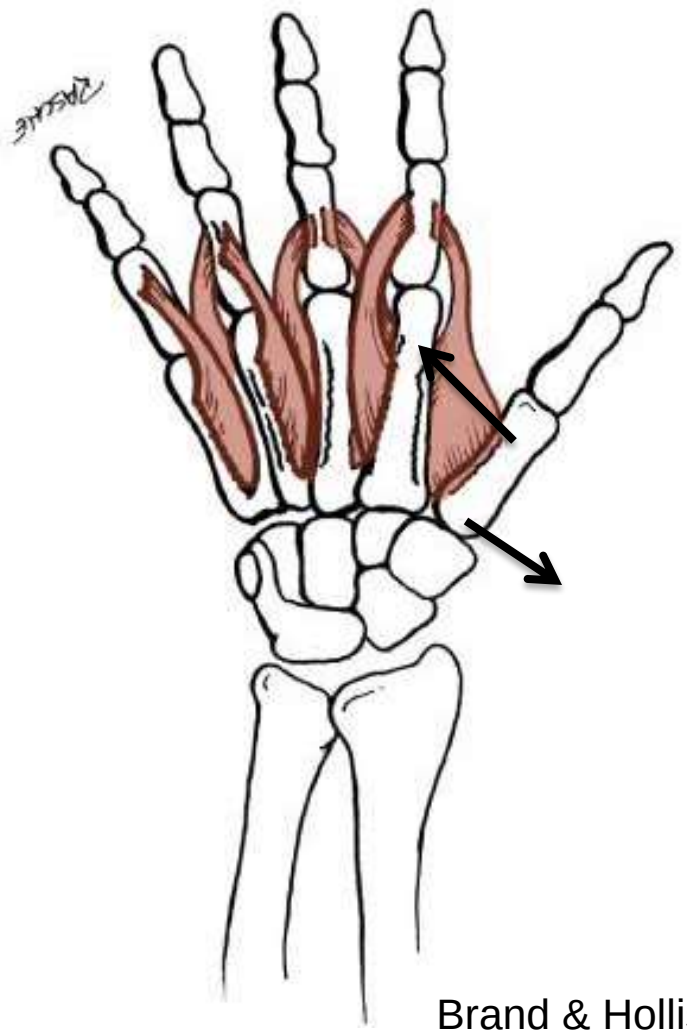
Dynamic Stability Approach

In Summary:

- Indicated for painful thumbs (irrespective of stage / pathology)
- Restoration of thumb web space
- Re-education of intrinsics / extrinsics (esp FDI, OP and abductors and extensors)
- Joint mobilisation techniques
- Strengthening to reinforce muscle patterns for joint stability (restore order & strength of muscle recruitment through full ROM)
- Combined interventions (Splintage / JPE / Adaptive equip)
- Order of intervention a clinical decision

First Dorsal Interosseous

- “lateral thenar muscle”
- distal / ulnar forces of FDI counteract the dorso-radial forces of lateral pinch and grip
- causes distraction rather than compression of CMCJ



Brand & Hollister 1993

Dynamic Stability Approach

Study

Retrospective, n=35, (Level 4)

Unstructured JPE / splintage intervention

QuickDASH scores x 2 (initial / last)

Results

Pain score reduced 17.9% (significant)

Function score improved 19.3% (significant) (DASH MCID of 15%)

Positive results achieved at 2nd visit over 6 weeks

Poor study design, retrospective and confounders (splintage / JPE)

Radiographic subluxation change not measured (only DASH)

Their Program…

Splinting:

Pain -

- At rest (with / out splint)
- During activity (with / out splint)

Splint weaned when fx pinch painfree

Exercises:

- Opposition
- AP myofascial release
  (contract / relax)
- “Web space comparison”
  CMC joint extension

Their Program…

Joint Mobilisation

- Distraction of joint using other hand. Behind back or in front
- Dorsal subluxation reduction – roll thumb column atop head for 1-3 mins
- Retroposition – hold 1-3 mins

Their Program…

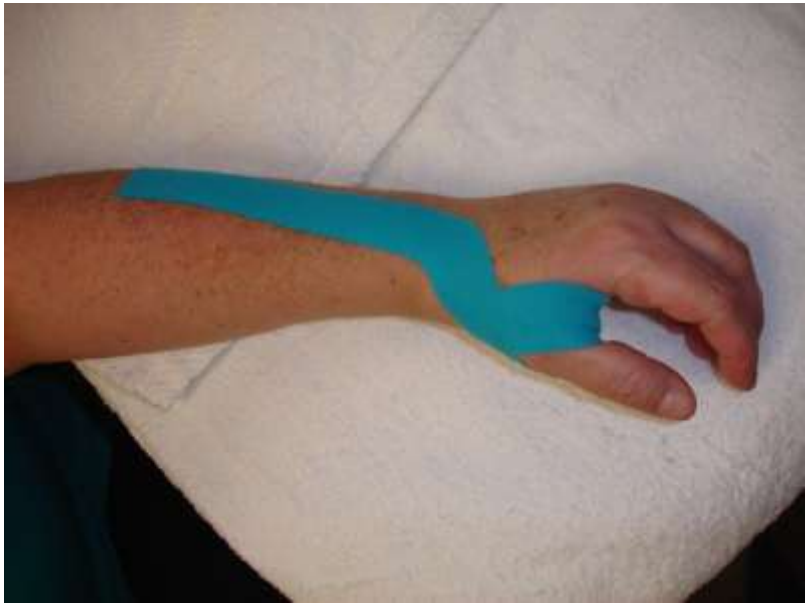
Strengthening

- FDI (AROM → resistance)
  10-15 x 3 → 1 p/day
- APB / EPB / OP “C” position
- Oppositional pinch P+H
  (support MC collapse)

Their Program…

Taping

- Proprioceptive taping day and night



JPE / Adaptive Equipment

- As needed

Dosage? – ACSM Recommendations

(Valdes and Heyde, 2012, JHT)

- Based on the American College of Sports Medicine (ACSM) recommendations for *"developing muscular strength and flexibility in older frail adults"*

- Explored exercise **dosage** (not specifically goal of exercise)

- Dosage parameters

  (load, reps/set, sets, sets/day, duration, max or painfree)

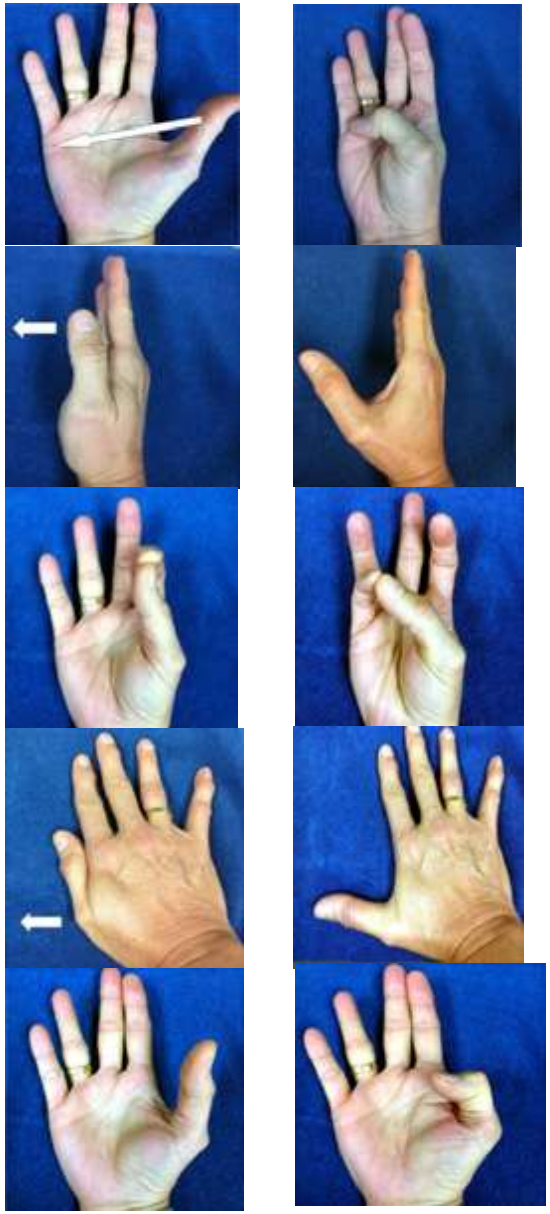
Dosage? – ACSM Recommendations

General Principles

- Strengthening should be 40-50% of 1 rep max effort.
- LP strengthening avoided in advanced OA (III and IV) (contributes to joint subluxation and pain)
- Given x 6-24 factor of load at CMC, consider these loads when performing pinch and grip exercise
- Painfree Principle
- Pain to not exceed > 2 hrs after activity
- Heat or low intensity aerobic exercise beforehand
- Minimum 12 weeks

Flexibility – A/PROM

- Composite thumb flexion to base of LF
- Abduction + Opposition
- Isolated IP and MCP joint flexion
- CMC extension (watch MCPJ hyperextn)



Flexibility – A/PROM

Principles

- 2-4 reps and > 2-3 days p/week – but daily is best
- Stretch to point of tightness or slight discomfort
  (+/- assisted stretch of 10-30 secs)
- 10-30 secs hold static stretch but 30-60 secs in older persons
- Heat beforehand

Strengthening

All thenar intrinsics (except AP), extrinisc thumb extensors, abductors and wrist extensors

- thumb extension and abduction against resistance (rubber band, velcroboard, putty)
- Isometrics
- Pinch (if appropriate) using putty / pegs
- Grip using putty / hand grippers / foam wedge squeeze

Strengthening

Principles

- Lateral (key) pinch avoided in advanced OA or presence of instability / deformity
- Each muscle group trained x 2-3 p/week
- 10-15 reps x 1 set (minimum) with 2-3 mins rest between
- > 48 hrs rest between sessions

Exercise Summary

- Minimal evidence available overall and especially of thumb
- Dynamic stability of thumb CMC joint through targeted muscle strengthening considered to be important – no evidence as yet to prove this
  - Avoidance of AP strengthening
  - Avoidance of LP strengthening
- Some guidelines for dosage now established
  - Flexibility, daily performance and to point of stretch discomfort
  - Strengthening, x 2-3 per week – painfree principle
  - At least 12 weeks (?indefinately)

Splint goals

Prevent first webspace contracture

Decrease pain

Assess the severity of the symptoms

Minimise deformities

Decrease inflammation

Provide support for increased function

Decrease stress to the joints

Prevent adduction of the metacarpal head into the palm & dorsoradial subluxation of the MC base on the trapezium

Increase stability

Reduce mechanical stress that may cause instability

Assist with joint stability

Gives the therapist time to develop a therapeutic rapport with the pt

Splints – which one?

Considerations

Splint design features	Type of Splint	Custom / Prefabricated
	Material	Rigid / Soft / Combination
	Joints Immobilised	CMCJ / wrist / MCPJ
Wearing regime	Wearing regime	Continuously (rest & function) Vs Intermittently (function)
Goal of splint	• Pain reduction • To increase function • Maintenance of webspace • Involving the MCP to unload the palmer compartment of the CMC joint	Type of splint / material used / wearing regime

Review of articles

Gomes Carreira, A, Jones A and Natour J. Assessment of the Effectiveness of a Functional Splint for Osteoarthritis of the Trapeziometacarpal Joint of the Dominant Hand: A Randomized Controlled Study. *J Rehabil Med.* 2010; 42: 469-474

Design	**No. of subjects**	**Type of splint**	**Splint wear**	**Length of study**	**Results**
Low-quality RCT (2b)	40 patients	Thermoplastic splint to stabilise the CMC, IP joint free, functional position	Rx group – Splint for ADL's for 180 days Control group – Splint for the Ax's, then ADL's for 90 days.	180 days **Outcome measures** VAS pain scale DASH questionnaire Grip strength (Jamar) Pinch strength (pinch guage) UL dexterity test	No improvement in function in both groups. No change in grip strength in both groups. Pinch strength reduced in both groups following splinting. No change in dexterity with both groups. Pain reduced in the treatment group (from the first evaluation at 45 days) and the control group once they commenced wearing the splint at day 90.

Weiss S, LaStayo P, Mills A, Bramlet D. Prospective Analysis Of Splinting The First Carpometacarpal Joint: An Objective, Subjective And Radiographic Assessment. *Journal of Hand Therapy.* 2000: 13: 218-26

Design	No. of subjects	Type of splint	Splint wear	Length of study	Results
Cross over 2b	26 subjects	1) CMC splint 2) CMC splint and MCP splint	Wear splints whenever symptoms are felt (day or night)	2 weeks Each splint was used for one week. **Outcome measures** VAS pain scale Tip pinch guage CMC subluxation (X-rays) ADL self rated scale	Both splint groups had a reduction of pain, but there was no significant difference between the 2 groups. No change in pinch strength or in reducing pain during pinch with both groups. Both splints reduce CMC subluxation. Pts with grades 1 and 2 had better stabilisation of the first CMC joint with each splint than did pts with grade 3 or 4. CMC splint was the preferred splint

Weiss, S, LaStayo P, Mills A and Bramlet D. Splinting the Degenerative Basal Joint: Custom-made or Prefabricated Neoprene? *Journal of Hand Therapy*; Oct-Dec 2004: 17,4: 401-406

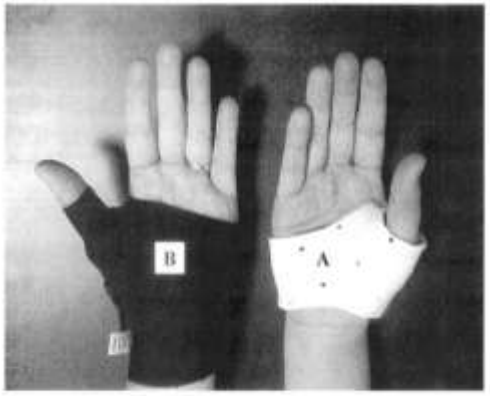


FIGURE 1. Custom-made thermoplastic short opponens splint (A) and prefabricated neoprene short splint (B).

Design	No. of subjects	Type of splint	Splint wear	Length of study	Results
Cross over (2b)	25 subjects	1) Custom-made short opponens thermoplastic splint 2) Prefabricated neoprene splint	Pts instructed to wear splint whenever they felt symptoms (day or night) Wear splint 1 for one week, then swap to splint 2 for one week.	2 weeks Each splint was used for one week. **Outcome measures** VAS pain scale CMC subluxation (X-rays) Pinch strength (with pinch meter) VAS splint satisfaction Self rated scale of ADL's	Thumb pain decreased after wearing each of the splints. Pain was significantly less when wearing neoprene splint. Pain at rest and pain during pinch improved more significantly in the neoprene group compared to thermoplastic group. Tip pinch strength (splint on) improved more significantly in the neoprene group. Neoprene group more satisfied with the splint vs thermoplastic group The CMC joint subluxation was more significantly reduced in the thermoplastic group compared to the neoprene group.

Rannou F, Dimet J, Boutron I, Baron G, Fayed F, et al. Splint for Base-of-Thumb Osteoarthritis. *Annals of Internal Medicine.* 2009, 150: 10: 661-669

Design	No. of subjects	Type of splint	Splint wear	Length of study	Results
RCT (1b)	112 subjects	1) Custom-made splint 2) Usual care	Wear at night only	One year **Outcome measures** VAS pain scale VAS pts perceived disability Cochin Hand Functional Scale Pt global assessment Pinch strength (dynamometer) ROM (kapandji score) X-rays	At 1 month no difference between the 2 groups in all areas measured. At 12 months there was a significant improvement in pain and function in the splinted group compared to the control group. The splint had no effect on the radiographic progression of OA.

Wajon, A and Ada L. No Difference Between Two Splint And Exercise Regimes For People With Osteoarthritis Of The Thumb: A Randomised Controlled Trial. Australian *Journal of Physiotherapy.* 2005 51: 245-249

Design	No. of subjects	Type of splint	Splint wear	Length of study	Results
2b (RCT)	40	1) Treatment group: Thumb strap splint and abduction ex 2) Control group: Short opponens splint and pinch grip ex	Splint full time	2 weeks of splinting alone (either thumb strap or short opponens splint) Then exercises were introduced at 2 weeks, (and splinting continued) **Outcome measures** VAS pain scale Pinch strength (pinch guage) Sollermann hand function test	At week 2 and week 6, no differences in VAS scores, tip pinch strength or Sollerman Test of Hand Function scores between the 2 groups. However, both groups improved in regards to pain, tip pinch strength and function.

Swigart CR, Eaton RG, Glickel SZ, Johnson C. Splinting In The Treatment Of Arthritis Of The First Carpometacarpal Joint. *Journal of Hand Surgery Am.* 1999; 24; 86-91

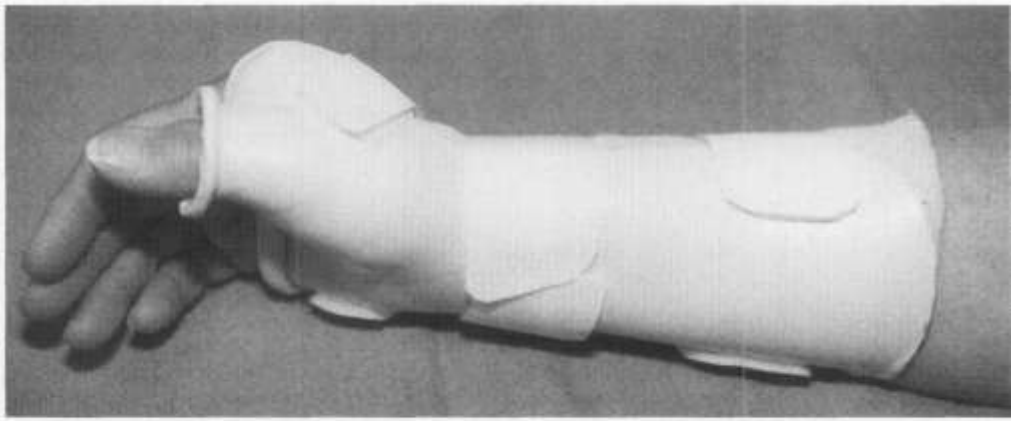


Figure 1. Long opponens splint holding the thumb in abduction.

Design	No. of subjects	Type of splint	Splint wear	Length of study	Results
3 (Cohort study)	130 subjects	Long opponens splint incl. wrist	Full time wear for 3-4 weeks, then weaning period of 3-4 weeks.	6 months **Outcome measures** X-ray to Ax stage Questionnaire	Reduction in the severity of symptoms, allowing function without significant pain.



Buurke JH, Grady JH, de Vries J, Baten CT. Usability Of Thenar Eminence Orthoses: Report Of A Comparative Study. *Clin Rehabil.* 1999: 13: 288-94

Design	**No. of subjects**	**Type of splint**	**Splint wear**	**Length of study**	**Results**
Randomised cross over (2b)	10 subjects	1) Semi-rigid 2) Firm elastic 3) Supple elastic	No instruction	12 weeks Each splint used for 4 weeks **Outcome measures** VAS pain scale Pinch test (guage) Hand function in hand grips (Green test) VAS hand function VAS cosmesis of splint	Better hand function in gripping with soft splint and better tolerated No difference between the 3 groups with pain.

Sillem H, Backman C, Miller W, Li L. Comparison Of Two Carpometacarpal Stabilizing Splints For Individuals With Thumb Osteoarthritis. *Journal of Hand Therapy.* 2011 July – Sep 216-226

Design	No. of subjects	Type of splint	Splint wear	Length of study	Results
2b (cross over trial)	56 subjects	1) Hybrid splint 2) Comfort cool CMC splint	Wear in the day when symptomatic and at night as desired	9 weeks 4 weeks wearing one splint One week off 4 weeks wearing the other splint **Outcome measures** AUSCAN Grip strength (Jamar) Pinch strength (pinch meter) Scale re: preference with fit, appearance, convenience, and durability	Comfort cool was the preferred splint Hybrid splint group had a significant reduction in pain than those in comfort cool group Both groups reported improved hand function

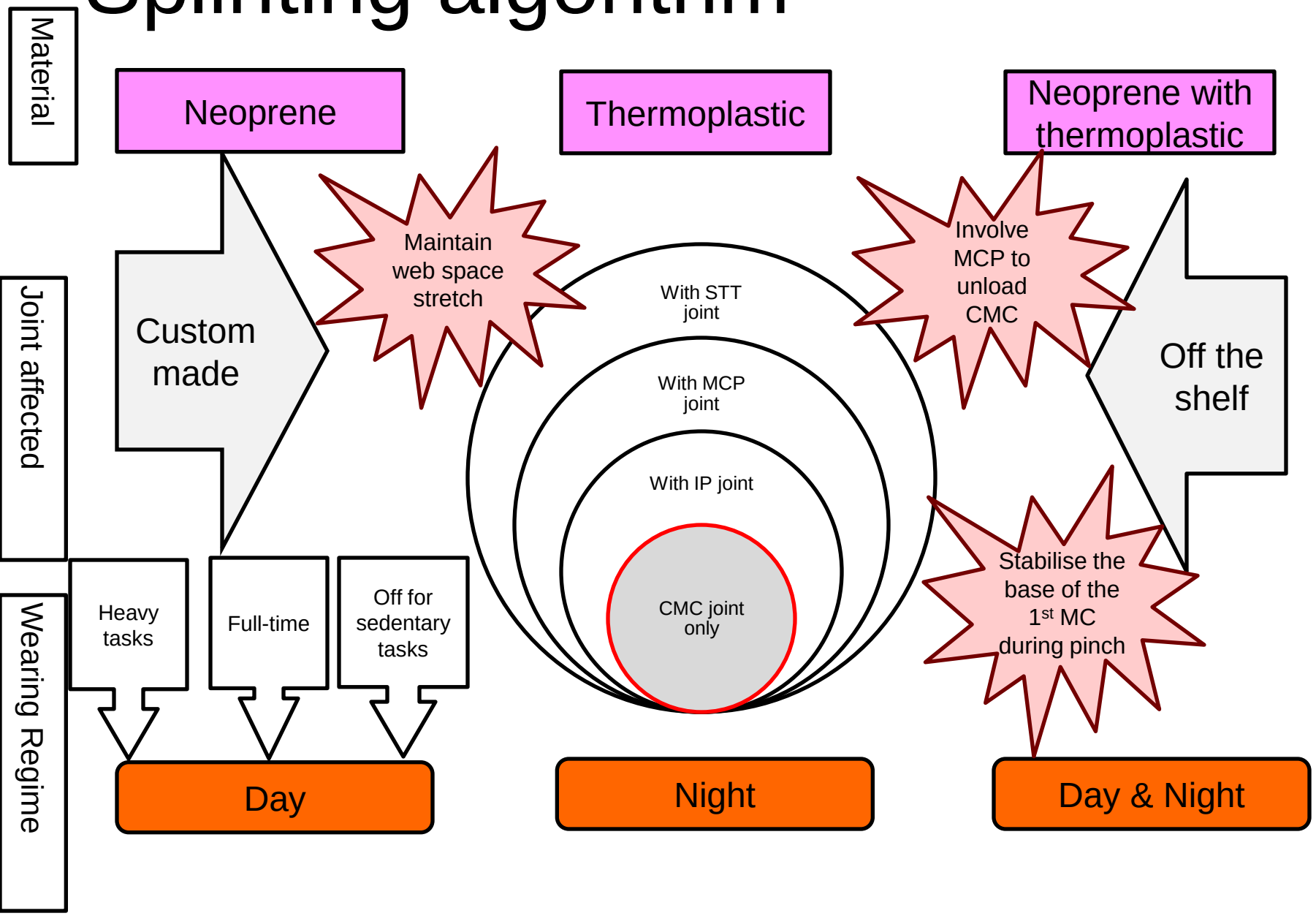
Conclusion of literature review

- Splint wear does seem to decrease pain
- Splint wear does appear to decrease subluxation on pinch for pts with stage 1 and 2 CMC joint OA (Weiss et al 2000)
- Splint wear does not appear to decrease the eventual need for surgery (Berggren et al 2001, Swigart et al 1999)
- Choice of short vs long opponens is purely based on pts preference (Buurke et al 1999, Weiss et al 2000)
- Different splint have different characteristics that make them better choices

Conclusion of literature review

- Pts should be offered a course of splinting for pain relief (Swigart et al 1999, Weiss et al 2000, 2004)
- Pts should be instructed to wear their splint during heavy or painful activities and may wear them for longer periods during the day and at night for the first 3-4 weeks. (Berggren et al 2001, Buurke et al 1999, Swigart et al 1999, Weiss et al 2000)
- Individuals with stage 1&2 arthritis should be enc to wear their splints during activities promoting CMC joint subluxation (Weiss et al 2000, 2004)
- Patients should splint to maintain the first webspace (Poole & Pelligrini 2000)

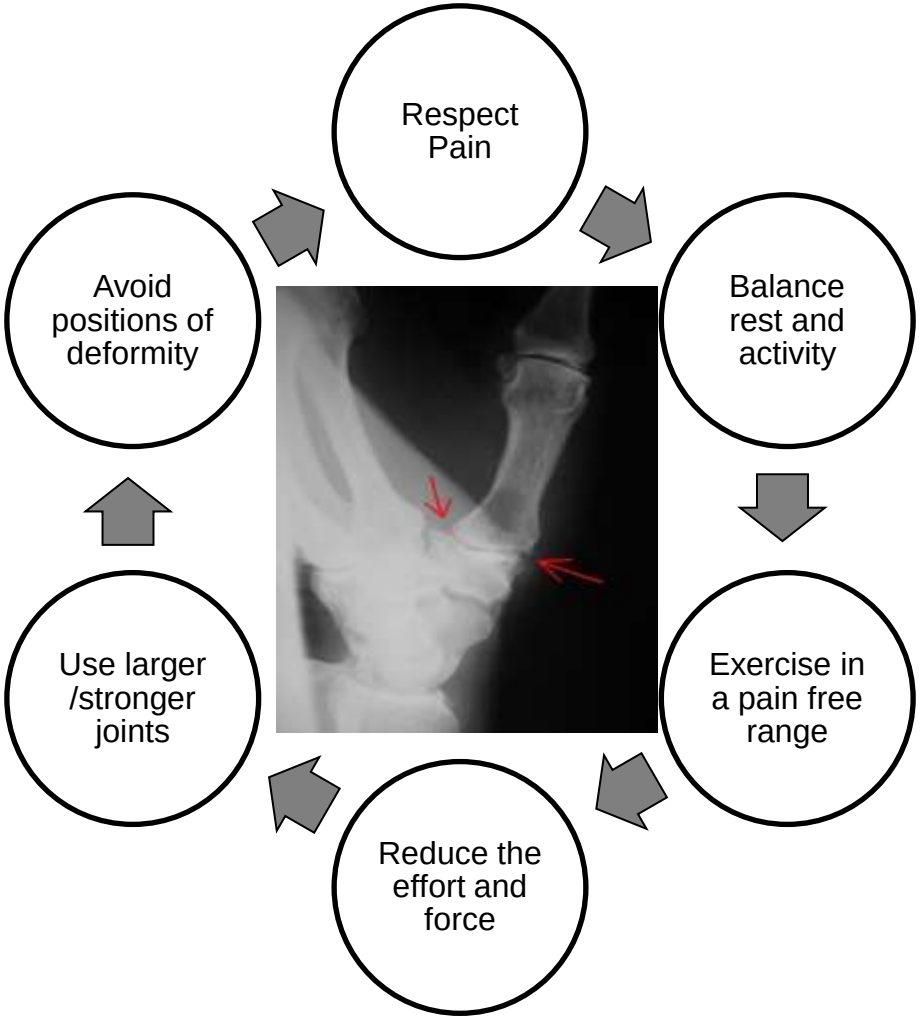
Splinting algorithm

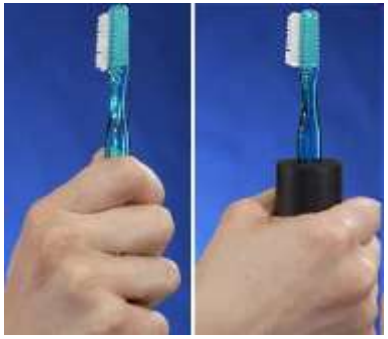


General joint protection principles


Incorrect


Correct






Incorrect


Correct

Beasley J. Osteoarthritis and Rheumatoid Arthritis: Conservative Therapeutic Management. *Journal of Hand Therapy.* April – June 2012

Conservative management

Heat

Susan Michlovitz, PhD, PT, et al. Continuous Low-Level Heat Wrap Therapy Is Effective For Treating Wrist Pain. *Archives of Physical Medicine and Rehabilitation*. September 2004. Vol. 85. No. 9. Pp. 1409-1416.

The authors conclude that low-level continuous heat wraps can help in the treatment of OA. It's likely that the heat increases blood flow to the area.
Blood helps remove cells of inflammation in the area of tissue injury. The collagen tissue and muscles then become more flexible.

Wax baths

In the Cochrane review 2010 = there is weak evidence to support the use of paraffin wax for pain reduction, ROM and improved hand function
Moderate evidence to support the use of continuous heat packs for pain reduction and increased grip strength

CMC Joint Procedures…

- Ligament Reconstruction (LR)
- MC osteotomy
- TMCJ arthrodesis
- Denervation
- TMCJ replacement
- Trapeziectomy +/- LR or TI or LRTI
- Trapeziectomy (complete/partial) + interpositional arthroplasty

Demystifying the language…

Interposition = any material / tissue interposed between the thumb MC and scaphoid or thumb MC and trapezium (in partial trapeziectomy)

Arthroplasty = any procedure where the joint is reconstructed (partially or completely)

Trapeziectomy – any procedure where the complete or partial removal of the trapezium bone is performed

Partial trapeziectomy = Hemiarthroplasty / Resurfacing arthroplasty

Ligament reconstruction (LR) = reconstructing the AOL, with tendon graft – not always performed

Suspensionplasty = technical variation using the APL tendon to suspend the first MC through its base and to the IF MC to minimise collapse during pinch

What does evidence say?

So which procedure is best?

Cochrane Review:

Wajon et al, (2009), Surgery for Osteoarthritis of the Thumb

"…although no one procedure produces greater benefit in terms of pain and physical function, there was insufficient evidence to be conclusive. Trapeziectomy has fewer complications than trapeziectomy with LRTI."

Post-op Management…

- Varies, depending on procedure, surgeon and therapist

- Main considerations/parameters:
  - Period of immobilisation (1-6 weeks)
  - Spica cast removal timing (1-6 weeks)
  - Short or Long opponens splint
  - Position of thumb in splint (encourage/discourage fx pinch)
  - Splint weaning process (rigid splint / soft splint)
  - Time to mobilise thumb base (limited arc or limited motions)
  - Time to strengthen (grip / pinch)
  - Time to resume ADLs

Protocols – literature search

Scant Evidence!

- EBSCOHost (Cinahl/Medline)
  - Various MeSH search terms and strategies used
  - Protocols enmeshed in trials where dependent variable was sx technique, not therapeutic mx

- Google search
  - 1 trial in progress: (Postoperative Rehabilitation Following Trapeziectomy and Ligament Reconstruction Tendon Interposition). Comparing casting vs splint and mobilisation)
  - Various protocols (from different facilities)

Post-op Management…

ROTH / ROTHAUE (For LRTI)

0-4 weeks	- Thumb Spica Cast
4-8 weeks	- Thumb Spica Splint (removed for AROM only) - AROM all except thumb CMC - PROM thumb CMC into abduction and extension
week 8	- Add active thumb abduction, opposition and circumduction - Thenar isometrics (palmar abduction)
week 12	- Non-isometric thumb strengthening (inc pinch) - Splint off light ADLs
13-16 weeks	- Cease Splint - RTW light duties, moderate duties elsewhere
16-24 weeks	- Resume unrestricted ADLs and work

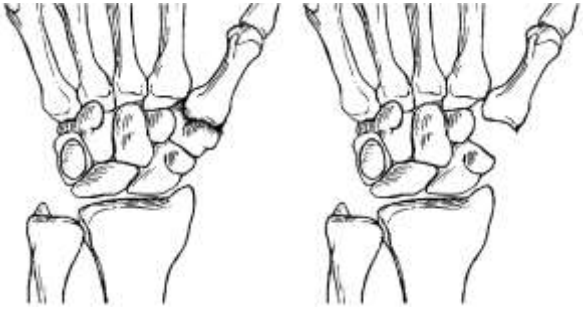
Post-op Management…

Hand Clinics (Pyrocarbon disc)

0-2 weeks	- Thumb Spica Cast
week 2	- ROS and ROM free joints
Weeks 6-12	- Thumb Spica Splint - AROM of thumb (all jts) and wrist - Scar mx

Post-op Management…

Belcher Protocol – Simple Trapeziectomy



0-2 weeks	- Thumb Spica Cast
week 2	- Thumb Spica Splint - Gentle AROM at thumb and wrist
week 4	- Splint off for light ADLs - Formal ROM with HT

Post-op Management…

Bellemere et al (2011) – Pyrocardan TMC implant / spacer

0-15 days	- Thumb Spica Cast immobilisation
16-30 days	- Mobilisation and discretional splinting

Questions?