MULLIGAN'S
The role of MWM in ankle injuries:

The science, the evidence & the art.

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ccre spine

centre of clinical research excellence

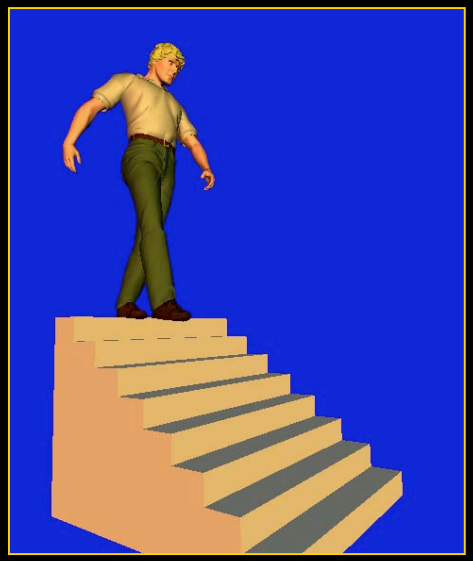
Spinal Pain, Injury & Health

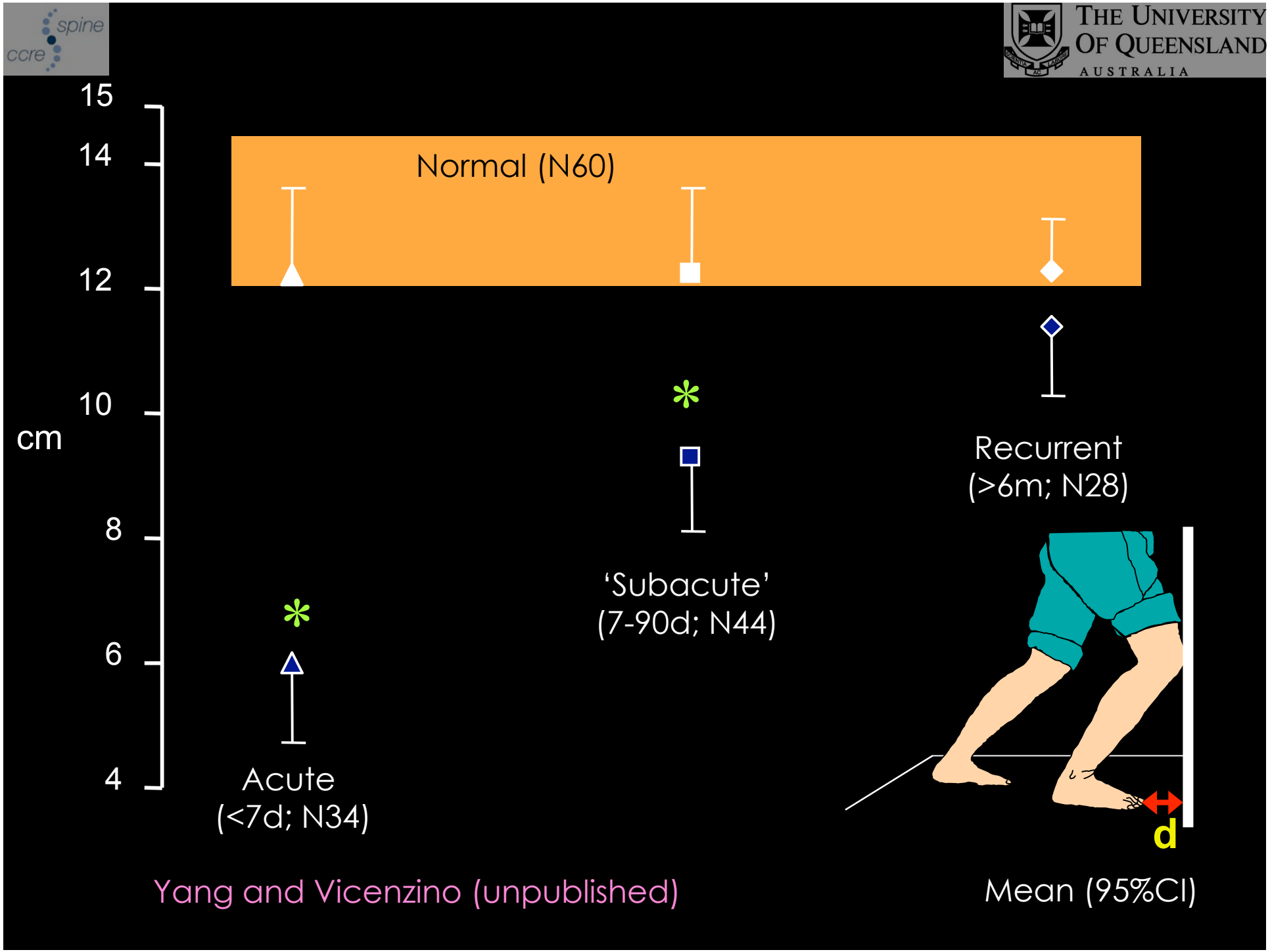
NHMRC funded centre

The University Of Queensland

AUSTRALIA

Yang and Vicenzino (unpublished)




spine
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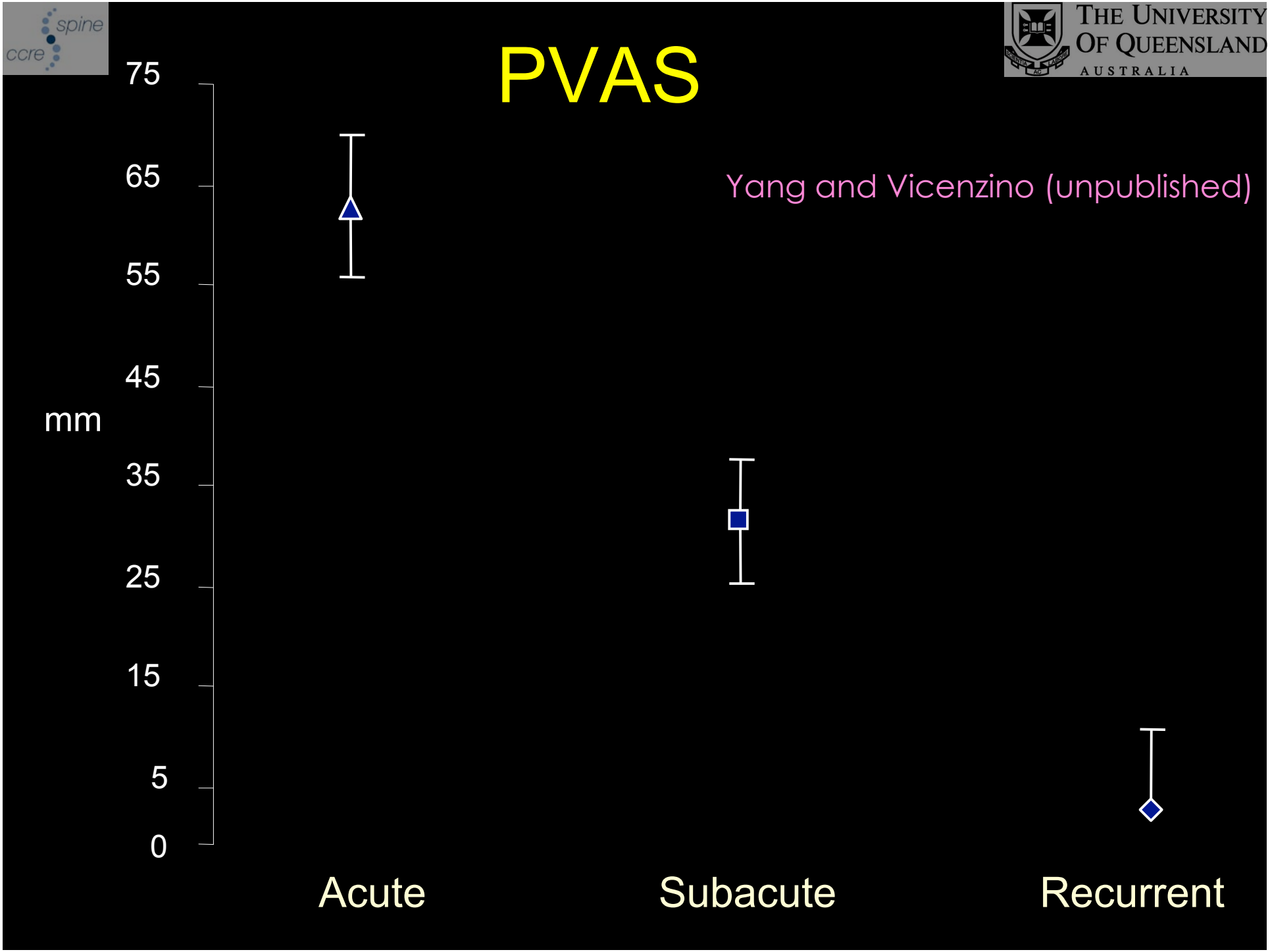
15
14
12
10
8
6
4
cm
Normal (N60)
*
*
Acute
(<7d; N34)
'Subacute'
(7-90d; N44)
Recurrent
(>6m; N28)
d
Yang and Vicenzino (unpublished)
Mean (95%CI)

PVAS



Yang and Vicenzino (unpublished)

Some Manual therapy components to consider:

- Anterior-Posterior talar glide (concave-convex)
- Dorsiflexion
- Weight bearing or non-weight bearing
- Traction (distraction)
- Active, Passive or Combined
- Slow to High Velocity

Techniques:

- *Passive* AP glide (non-WB)
- Mulligan MWM (WB or non-WB)
- High Velocity Thrust

Clinical effect of talar AP glide?

Passive Anterior-Posterior Glide

[Green et al (2001) Physical Therapy 81:984-94]

Green, Refshauge, Crosbie, Adams (2001) A RCT of a passive accessory joint mobilization on acute ankle inversion sprains Phys Ther 81:984-94

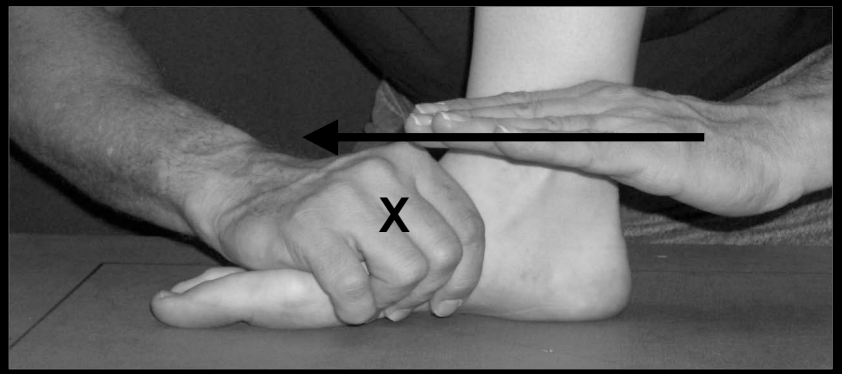
- Acute ankle sprain (<72 hrs); n = 38
- Random assignment to control (RICE) or AP mobs (no pain) + RICE. All had home program.
- Treatment every 2 days for max. 2 weeks or D/C.
- D/C criterion = no difference in DF side to side
- Outcomes = number of treatments, pain free dorsiflexion (nonWB), 3 gait variables (stride speed, step length and single support time)

Green, Refshauge, Crosbie, Adams (2001) A RCT of a passive accessory joint mobilization on acute ankle inversion sprains Phys Ther 81:984-94

- 13/19 (68%) subjects discharged at 4th treatment in PA mob group compared to 3/19
- DF improved earlier in treatment group (11° compared to 6° from baseline to treatment 2)
- Gait variable improvements tended to favour the treatment group

Talar AP speeds up recovery rate (less treatment & regain DF earlier)

What about MWM using talar AP glide?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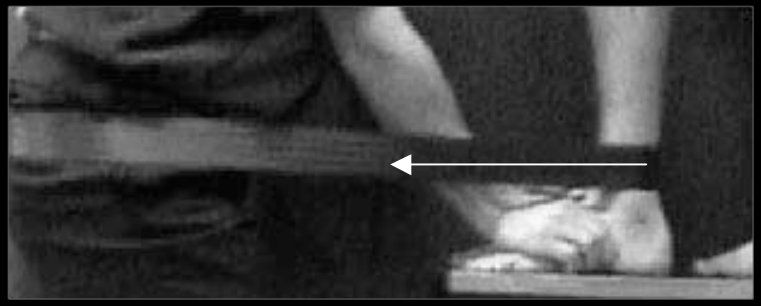
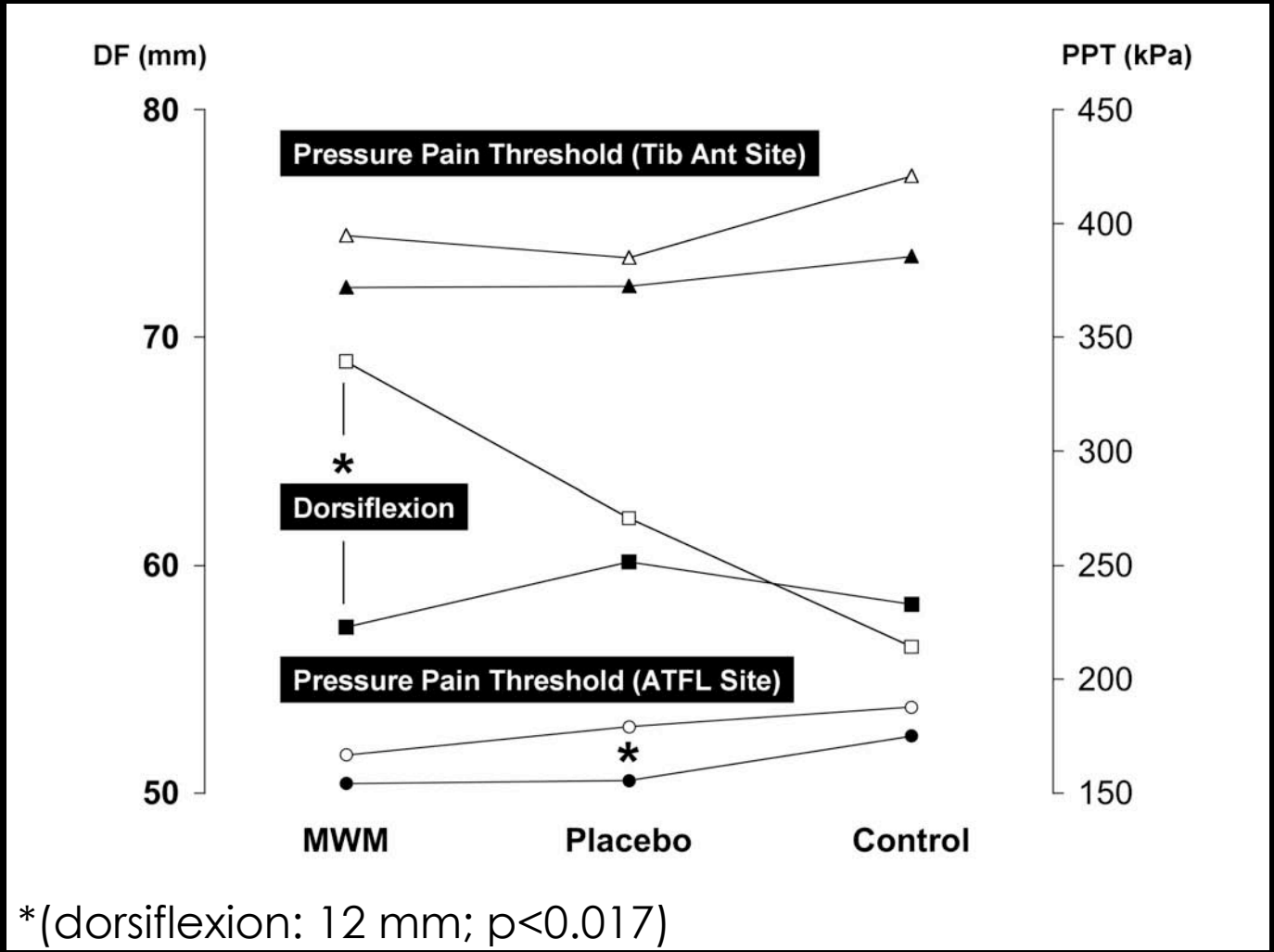


Collins N, Teys P, Vicenzino B, The Initial Effects of a Mulligan's MWM Technique on DF & Pain in Subacute Ankle Sprains, Manual Therapy (2004) 9: 77-82

- N = 14, grade II ankle sprain (40±24 days old)
- WB DF, PPT and TPT (heat and cold)
- Deficit only on:
  - WB DF = 42 mm
  - PPT (ATFL) = 58 kPa
- WB-MWM, Placebo, control

Collins N, Teys P, Vicenzino B, The Initial Effects of a Mulligan's MWM Technique on DF & Pain in Subacute Ankle Sprains, Manual Therapy (2004) 9: 77-82



*(dorsiflexion: 12 mm; p<0.017)

Talar AP speeds up recovery rate (less treatment & regain DF earlier)

WB-MWM influences ROM not pain

…but sub-acute condition treated not acute like Green.

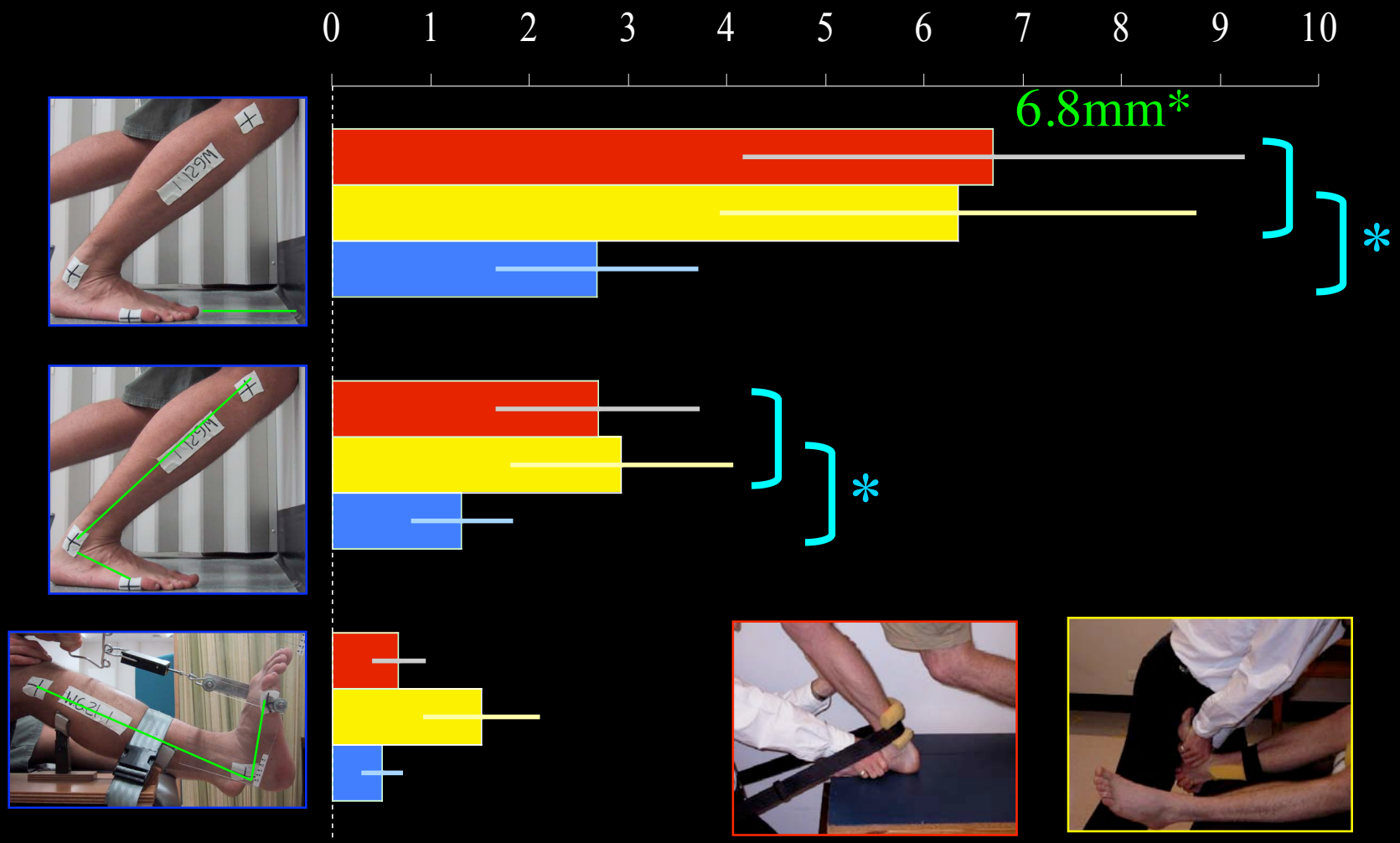
Is there a difference between WB and non-WB MWM?

Initial effect of Mulligan MWM on ankle DF in normals: Weight bearing versus non-weight bearing techniques. Vicenzino B, Prangley I, Martin D

(SMA website)

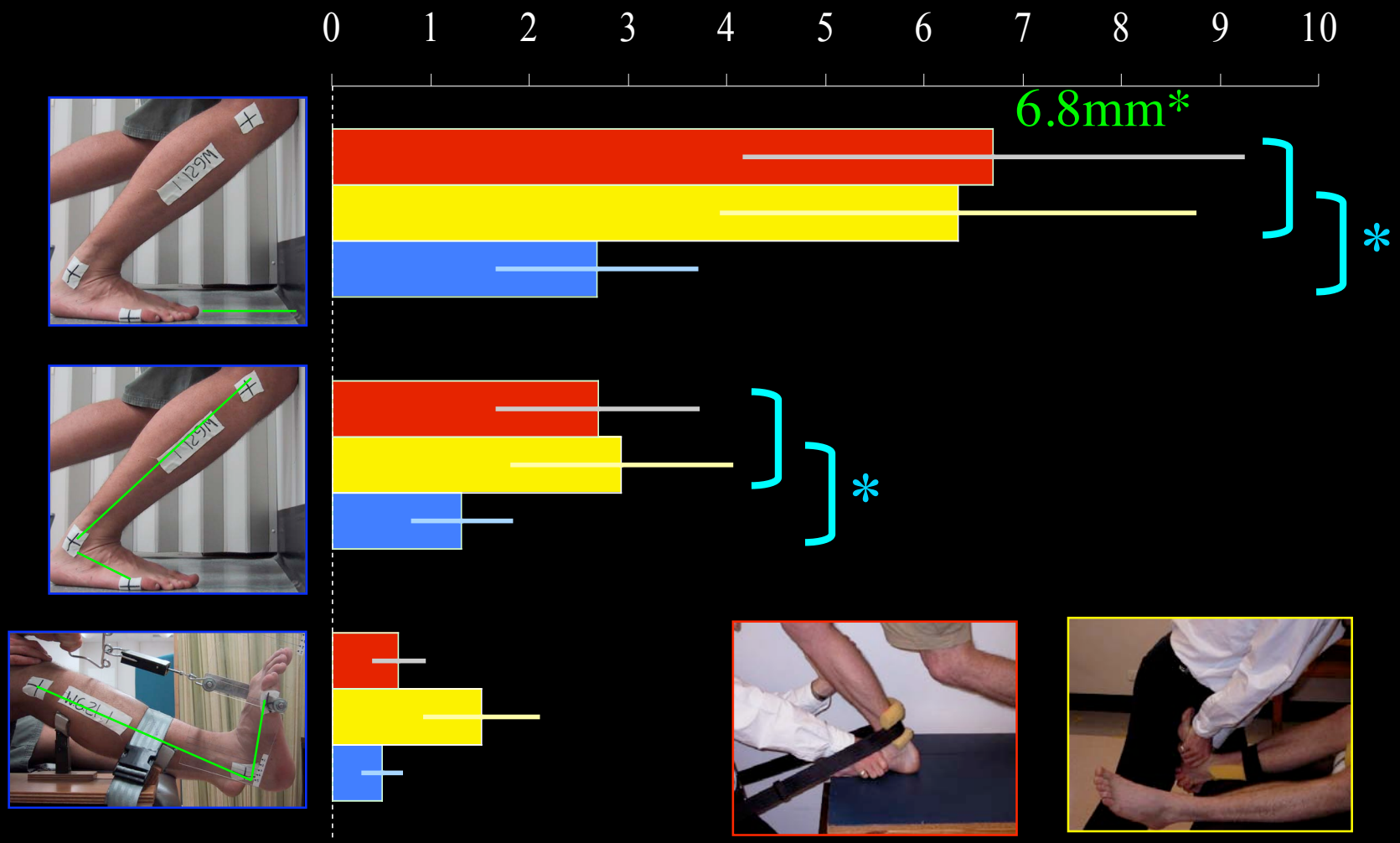
[N=27 (18-27yr)]

% Dorsiflexion Improvement



* Reliability: 80% <5.7 mm; ICC 0.99; SEM 0.355

% Dorsiflexion Improvement



* Deficit at baseline: 18.7 ± 5.6mm (15%) compared to:
(a) Collins (42 mm), & (b) Green 40% deficit

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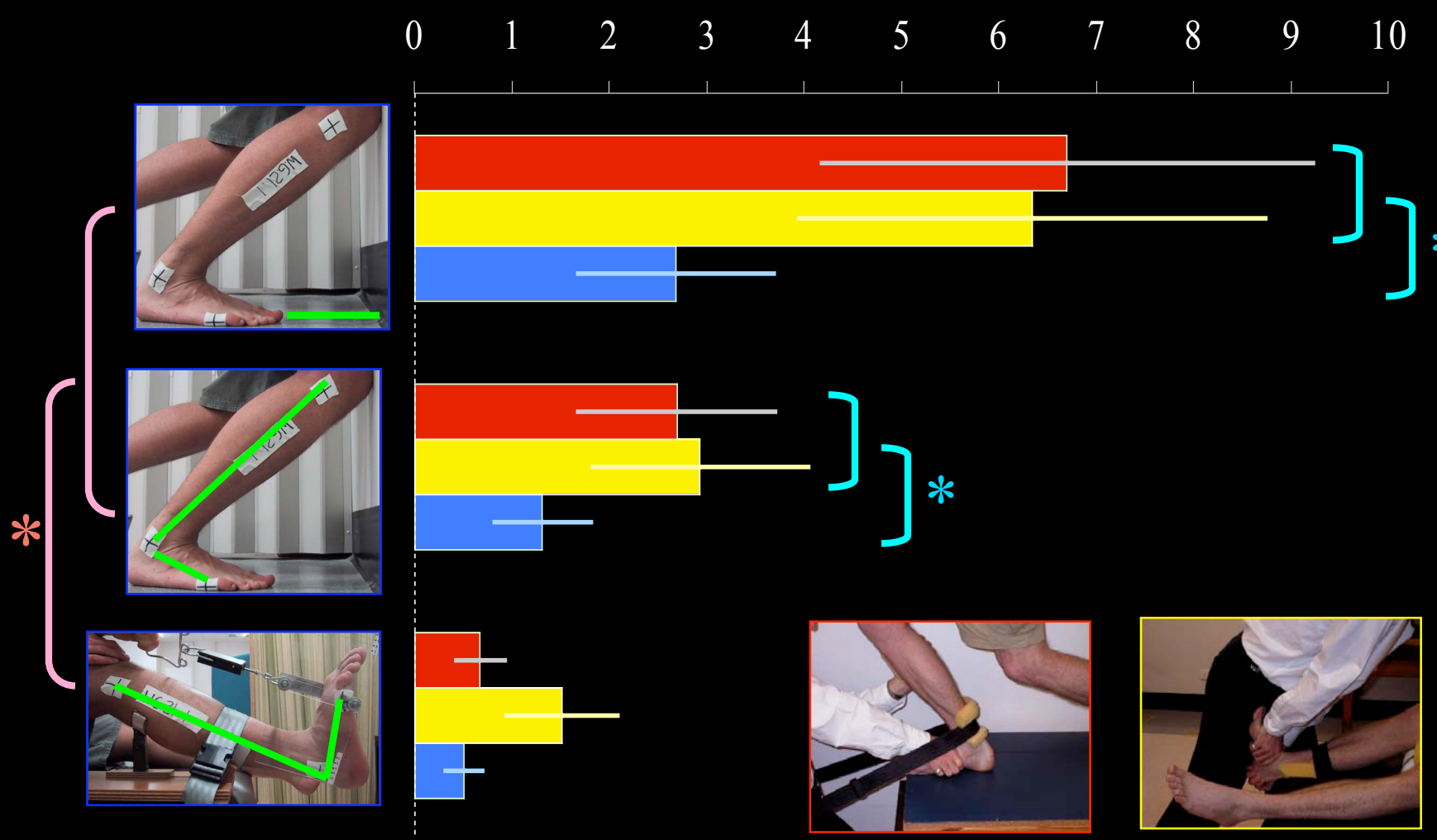
% Dorsiflexion Improvement



Talar AP speeds up recovery rate (less treatment & regain DF earlier)

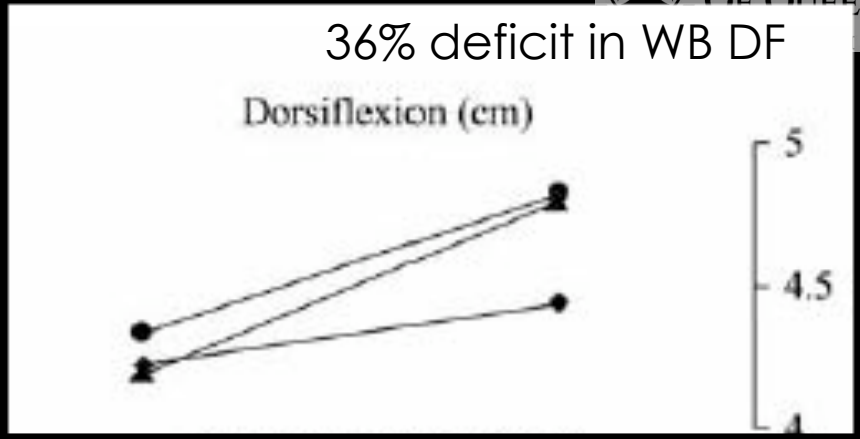
MWM using a talar AP glide improves DF in WB

WB-MWM = NWB-MWM

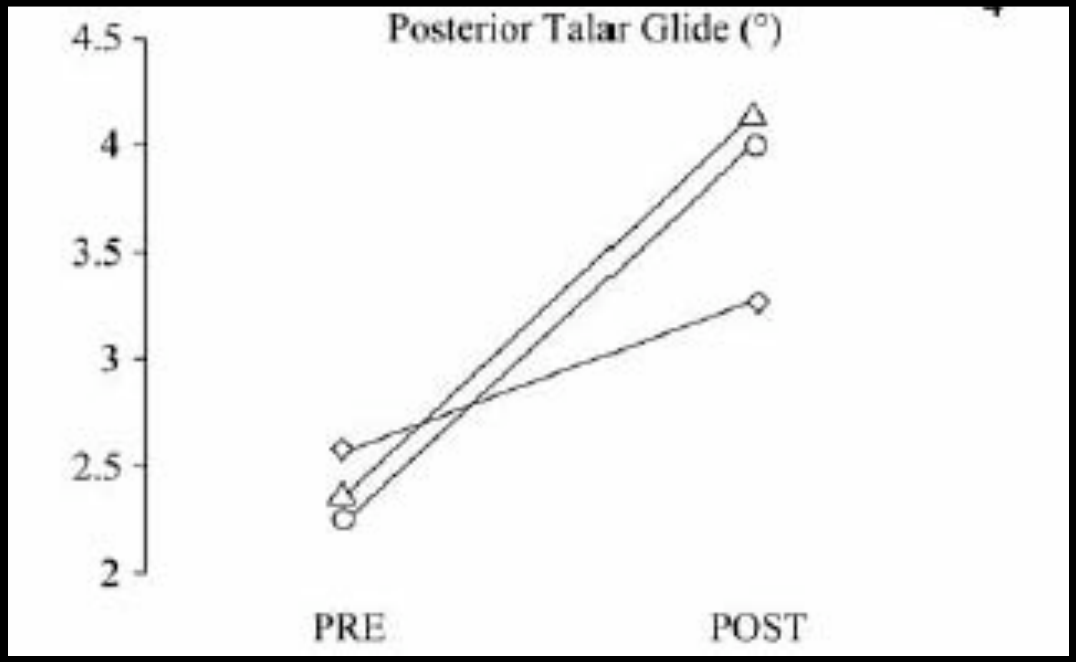
Does it change posterior glide (AP) of the talus?

Vicenzino B, Branjerdporn M, Teys P, Jordan K, Initial changes in posterior talar glide and DF after MWM in CAI. JOSPT 2006: 36: 464-71

36% deficit in WB DF



71% deficit in posterior talar glide



N = 17

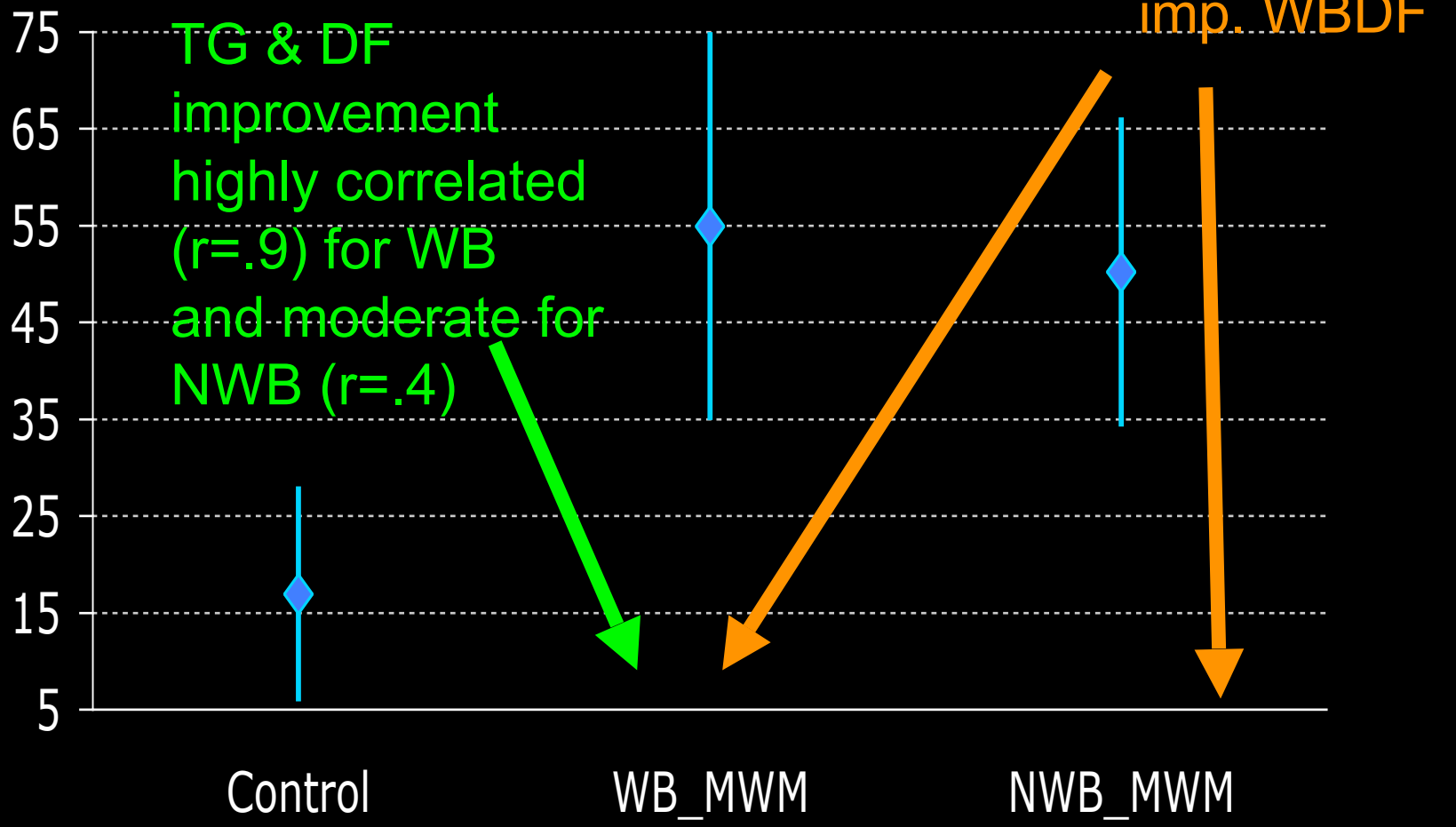
Recurrent ankle sprain

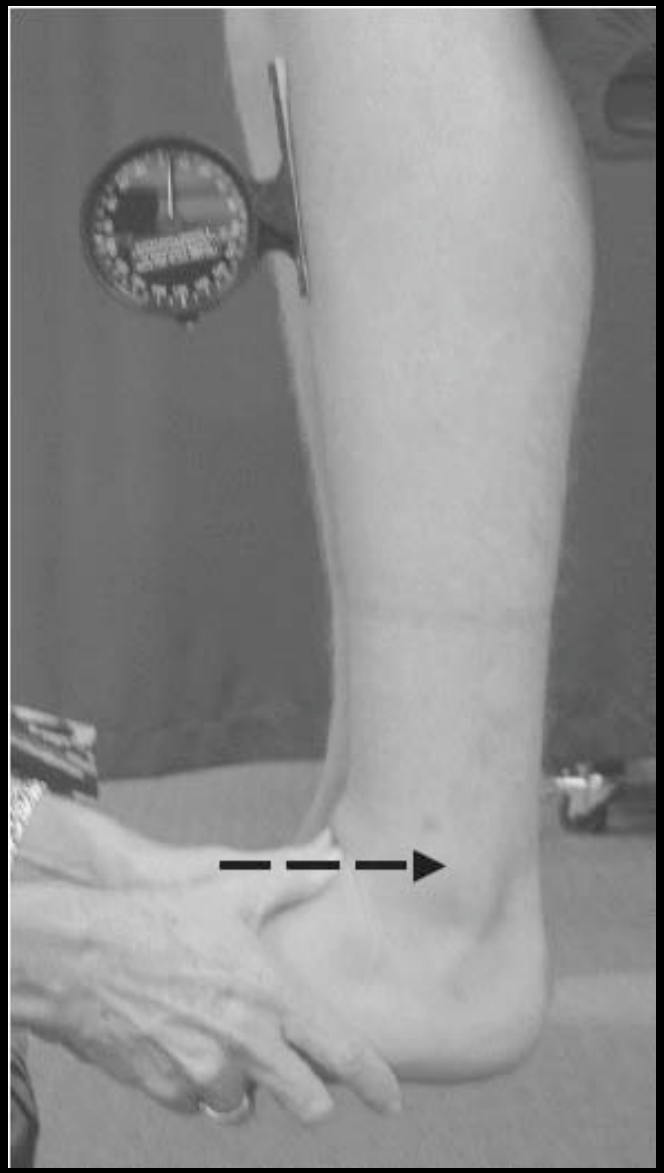
WB_MWM (circle)

NWB_MWM (triangle)

Control (diamond)

%MPE = post-pre/aff-unaf X 100





Denegar et al (2002)

Denegar et al (2002) The effect of lateral ankle sprain on dorsiflexion range of motion, posterior talar glide and joint laxity, JOSPT 32(4): 166-173

- 12 athletes with unilateral ankle sprain in past 6 months and had now returned to sport
- Measurements of non-WB DF, anterior laxity and posterior talar glide were taken
- Reported:
  - Reduced posterior talar glide
  - Increased laxity on injured side
  - No side to side difference with non-WB DF

Hubbard TJ, Olmsted-Kramer LC, Hertel J, Sherbondy, (2006) Anterior-posterior mobility of the talus in subjects with chronic ankle instability. Physical Therapy in Sport. 6: 146–152

- Evaluated anterior-posterior mobility of the talus.
- Unilateral CAI (n = 15) & Non-injured (n = 15)
- Anterior laxity assessed manual anterior drawer test and stress X-rays.
- Posterior mobility (anterior positional fault?)

Results:

- CAI had greater anterior laxity (bilaterally!), but only on X-ray not manual testing
- Posterior mobility not different form side to side or compared to control

Talar AP speeds up recovery rate (less treatment & regain DF earlier)

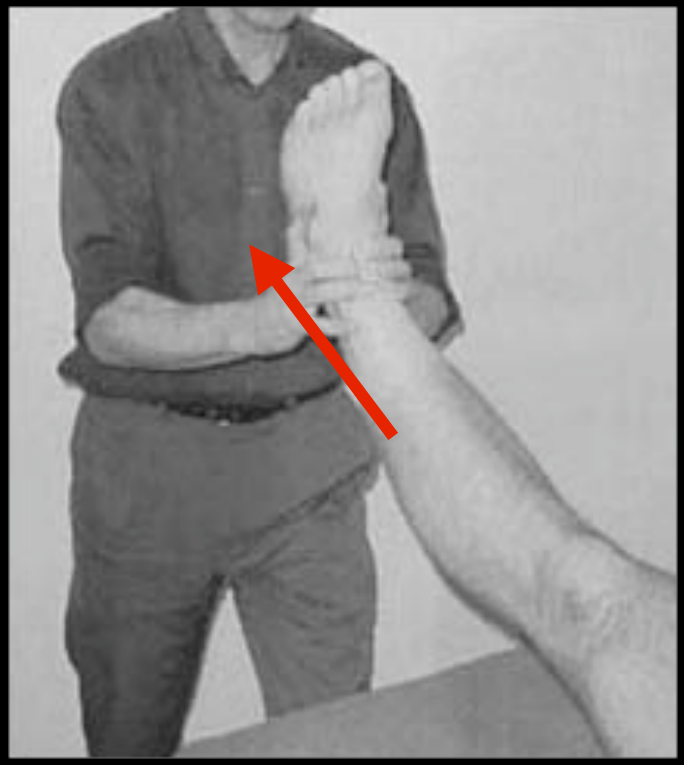
MWM using a talar AP glide improves DF in WB

WB-MWM = NWB-MWM

Improves posterior glide of talus.

Inconsistent results with posterior glide testing
…hence positional fault hypothesis is not confirmed or refuted @ T/C joint.

High Velocity Thrust



[Fryer et al (2002) JMP&T 25:384-90]

Traction manipulation of T/C joint did not significantly change dorsiflexion in normal non-injured ankles.

Fryer et al (2002) The effect of TC joint manipulation on ROM at the ankle, J Manip & Physiol Ther 25:384-90

Nield et al (1993) Effect of manipulation on range of movement at the ankle joint. Scandinavian J Rehab Med 25(4): 161-6

Pellow and Brantingham (2001) The efficacy of adjusting the ankle in the treatment of subacute and chronic grade I and II ankle inversion injuries,J Manip & Physiol Ther 24:17-24

- 30 subacute and chronic grade I & II ankle sprains
- 15 traction manipulation
- 15 underwent 5' detuned ultrasound
- 8 treatments over 4 weeks were allowed
- 1 month follow up

Pellow and Brantingham (2001) The efficacy of adjusting the ankle in the treatment of subacute and chronic grade I and II ankle inversion injuries,J Manip & Physiol Ther 24:17-24

Results:

- Improvements in goniometrically measured non-WB DF for both HVT (7-8°) and sham-US (2°)
  - *No indication of the precision of the goniometer measurement of non-WB DF (usually approx. 5-10°)*

- Manipulated group required 6.13 treatments and detuned US 7.8

Manual therapy options:

There is some evidence to support the use of the following to improve dorsiflexion (especially when performed in clients with larger deficits in dorsiflexion):

- o *Passive* AP glide (non-WB)
- o Mulligan MWM (WB or non-WB)

Longitudinal thrust techniques - value of HVT used in isolation?