MULLIGAN’S
The role of MWM in ankle injuries:
The science, the evidence & the art.

Bill Vicenzino
Professor in Sports Physiotherapy
Head of Division of Physiotherapy

ccre spine
centre of clinical research excellence

Spinal Pain, Injury & Health
NHMRC funded centre
Yang and Vicenzino (unpublished)

- **Acute** (<7d; N34)
- **Subacute** (7-90d; N44)
- **Recurrent** (>6m; N28)

Normal (N60)
Mean (95%CI)

Acute (<7d; N34)  
Recurrent (>6m; N28)  
'Subacute' (7-90d; N44)

Normal (N60)

Yang and Vicenzino (unpublished)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


• 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)

- 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?

- 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

*(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

0 1 2 3 4 5 6 7 8 9 10

6.8mm*

* Reliability: 80% <5.7 mm; ICC 0.99; SEM 0.355
* Deficit at baseline: 18.7 ± 5.6mm (15%) compared to: (a) Collins (42 mm), & (b) Green 40% deficit

% Dorsiflexion Improvement

0 1 2 3 4 5 6 7 8 9 10

6.8mm*
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?

N = 17
Recurrent ankle sprain

WB_MWM (circle)
NWB_MWM (triangle)
Control (diamond)
%MPE = \frac{\text{post-pre/aff-unaf}}{\text{X 100}}

Approx. 26% imp. WBDF

TG & DF improvement highly correlated (r=.9) for WB and moderate for NWB (r=.4)

- 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

• 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

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


- 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

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):

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

Longitudinal thrust techniques - value of HVT used in isolation?