Effects of Mulligan MWM and taping techniques on the temporal and spatial parameters of gait: a pilot study.

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Introduction

- Inversion ankle sprain: calcaneous thrust into excessive varus causing injury to the lateral ligament complex.
- Brian Mulligan's theory
  - Positional fault vs. ligamentous injury
- Taping guidelines
  - Correct positional fault
  - Application ASAP
  - No Fx
  - Grade of sprain insignificant

Mulligan Taping technique

Purpose

- To determine if the application of Mulligan's mobilization with motion and taping technique improves ankle joint dynamic function as reflected by the spatial and temporal parameters of gait in subjects within 72 hours of sustaining an inversion ankle sprain.

Background Information

- Grading (I, II, III)
- Stages (**acute**, subacute, chronic)
- Tests (Ottawa Ankle Rules, Anterior Drawer, Talar Tilt)
- Taping

Methods/ Procedures

- Informed Consent
- Physical Examination
  - Ottawa ankle rules, palpation, observation, stress tests
- Ankle Joint Function Assessment Test (AJFAT)
  - 12 item subjective survey
  - Prior to initial gait analysis
  - 3 days post initial taping
- GAITRite
  - temporal parameters (step time, single leg support time, & double leg support time)
  - spatial parameters (step length and base of support)

Subject Population

- 4 participants
- Inclusion criteria
  - Inversion ankle sprain within 72 hours
  - Ambulate without assistive device
- Exclusion criteria
  - No history of surgery either LE
  - No current bony deformities in LE altering gait

Walk trials

Data analysis

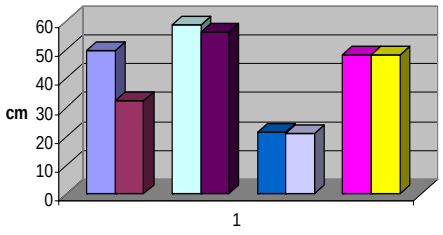
(Extra Special Thanks to Mike Biderman!)

- Excel & SPSS
- Paired t-test
  - AJFAT
- Two-way Repeated measures ANOVA
- Alpha (“p” value) of <0.05

Results

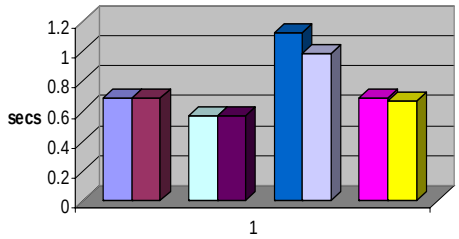
- No statistical significance found
  - Temporal parameters
    - F 0.048 – 5.147 (p = 0.108 – 0.841)
  - Spatial parameters
    - F 0.019 – 9.425 (p = 0.055 – 0.898)
  - Toe in/ out
    - F 0.749 – 2.449 (p = 0.216 – 0.450)
  - AJFAT
    - (p = 0.333)

Changes in step length of the uninvolved LE pre and post taping



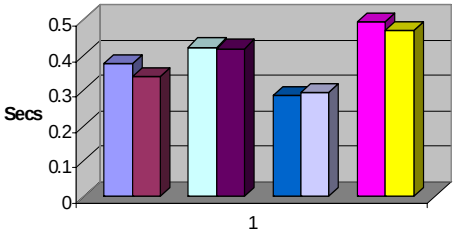
Subjects 1 - 4

Changes in step time of the involved LE pre and post taping



Subjects 1 - 4

Changes in single support time of the involved LE pre and post taping

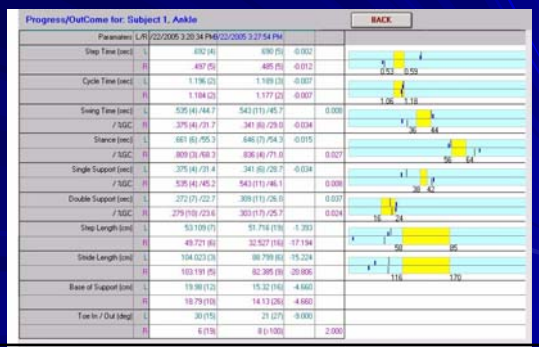


Subjects 1 - 4

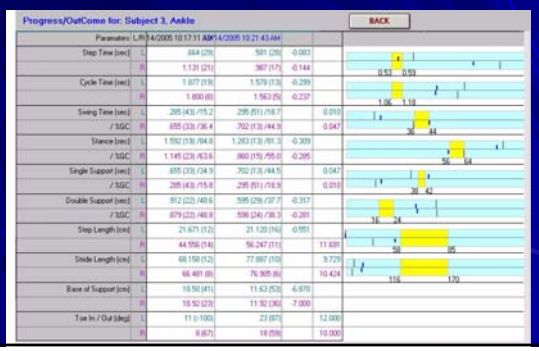
Discussion & Conclusion

- No statistical significance
  - Low Statistical Power
    - Small sample size
    - 72 hour criteria
- Control Subject's Activity Level
- AJFAT compliancy

Normalized values Subject 1



Normalized values Subject 3



Conclusions

- One study (Kavanaugh J) on positional fault at distal tibiofibular joint
- One study (Collins N, Teys P, Vincenzo B) on Mulligan's MWM effects on DF & pain
- One manuscript (Ogston J, Crowell R; unpublished) on effect of Mulligan taping on stabilometric measures in chronically unstable ankle

Recommendations

- Eliminate non-essential parameters.
- Consider adding "functional" parameters.
- Normalized subjects?
- Begin data collection earlier in year.

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QUESTIONS?