



## THE EFFECTIVENESS OF 'MOBILISATIONS WITH MOVEMENT' WITH AND WITHOUT AN AUTO-MOBILISATION PROGRAMME IN CHRONIC LATERAL EPICONDYLALGIA: A SINGLE CASE STUDY.

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### Chronic Tennis Elbow (TE) / Lateral Epicondylalgia (LE) Prevalence & Pathology

- Idiopathic or work related conditions (Boyer & Hastings 1999)
- Affects up to 3% of the general population & up to 15% of workers in at risk industries (Bisset et al, 2006)
- Little evidence of inflammatory markers found at surgery – instead degenerative changes have been reported – tendonosis (Verhaar et al, 1993; Kraushaur & Nirch, 1999; Alfredson et al, 2000; Connell, 2001)
- Systematic review: Little consensus on management with a lack of long term studies (Bisset et al, 2005)

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### Application of MWM to LE (research)

#### Vicenzino & Wright (1995)

- Single case study - ABC design, where B phase = MWM + Tape + Self MWM, C phase – self exercises (part single blinded).
- Intervention of MWM = 6 repetitions.
- Improvements occurred in Pain Free Grip Strength (PFGS), pain and VAS function over 10 weeks.

#### Bisset et al (2006)

- RCT: Physiotherapy (MWM's + self MWM + excs), corticosteroids, wait and see.
- Physiotherapy was superior to steroid injection at 1 year.

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### Application of MWM to LE (research).

#### Vicenzino et al (2001)

- Randomised, double blind, placebo controlled repeated measures study.
- Intervention: MWM - 6 repetitions.
- Significant & immediate increase in PFGS (58%), less so PPT (10%).
- Changes occurred on the affected arm only.

#### Kochar & Dogra (2002)

- RCT: ultrasound + exercises: US + MWM + exercises: control.
- The addition of MWM to Ultrasound and progressive exercises resulted in increased and faster recovery over a 12 week period.

#### Paungmali et al (2003)

- Repeated measures study.
- 6 sessions MWM (10 reps) , 48 hour interval between sessions.
- PFGS increased significantly with repeated applications on days 4-6.

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### Purpose of the current study

- The purpose of the study was to examine the effects of the MWM alone and how the addition of self mobilisation affected the outcome measures
- MSc project
- NHS based

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## Design

### Design:

ABAC single subject experimental design over 80 days with application of treatment & measurement completed over equal lengths of time.

### Subject:

31 year old female, right handed, 2 year history, right sided LE of gradual onset. No previous treatment.



## Design

### Inclusion criteria:

Pain on:

- Palpation of the lateral epicondyle } (Haker '93; Stratford et al '93)
- Resisted wrist extension } (Haker '93; Stratford et al '93)
- Passive stretching of the extensor group } (Haker '93; Stratford et al '93)
- Gripping which was then relieved by applying the MWM lateral glide (Mulligan 2004)

### Exclusion criteria:

- Steroid injection for the tennis elbow (Paungmali et al 2003, Kochar and Dogra 2002)
- Pain killers for the preceding six hours to measurements (Paungmali et al 2003)
- Current or previous physiotherapy intervention for the tennis elbow (Vicenzino et al 2001)
- Current treatment for tennis elbow by the subjects GP
- Cervical spine pain and/or neurological involvement (Vicenzino et al 2001)

Ethics: Ethical approval granted by the University of Hertfordshire's Ethics Board.



- MWM was applied with the investigator's hands whilst the patient gripped the Jamar dynamometer.
- 6 Repetitions (pain free) with 15 second rest between repetitions (Vicenzino, 2001; Vicenzino & Wright 2005).



## Self mobilisation:

The number of repetitions was ten three times a day. The subject was instructed that the exercise should not induce pain.



## Outcome Measures

### • Pain Free Grip Strength:

#### – Jamar dynamometer

(Mathiowetz et al, 1984; Stratford et al, 1987; Hamilton, 1994; Paungmali et al, 2003)

### • Pain Numerical Rating Scale (NRS)

(Jenson et al, 1999; Salaffi et al, 2004)

N.B. Intra tester reliability of assistant's recording was high.



### • Pain Diary:

– Average pain (NRS) for the previous 24hrs and relevant comments re function

(Follock, 1984; van Korf et al, 2000)

## Treatment Protocol

### Phase A1 : Baseline measurements (days 1 to 20)

- The subject scored current pain (NRS)
- 3 readings of PFGS were taken with a fifteen second break between each reading.
- An assistant recorded the PFGS. Subject & investigator blinded to readings.

### Phase B: Therapist delivered MWM intervention (days 21 to 40)

- The subject scored current pain (NRS)
- Three pre-glide PFGS measures were taken fifteen seconds apart
- Six repetitions of MWM applied – with PFGS readings taken.
- After sixty seconds, 3 post glide PFGS were performed fifteen seconds apart
- The subject then scored their post glide pain NRS at rest.

A2 (days 41 to 60): As for Phase A1.

### Phase C : Therapist delivered MWM + Self MWM (days 61 to 80)

- Replicated phase B but with the subject performing the self mobilisation at home (3x10 reps a day pain free)

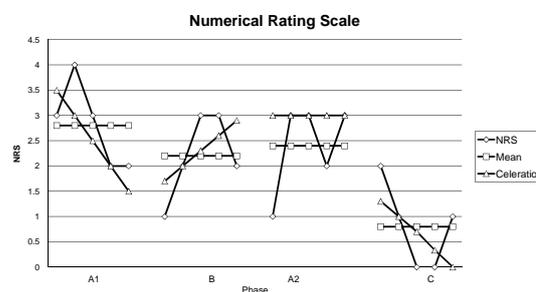


## Analysis

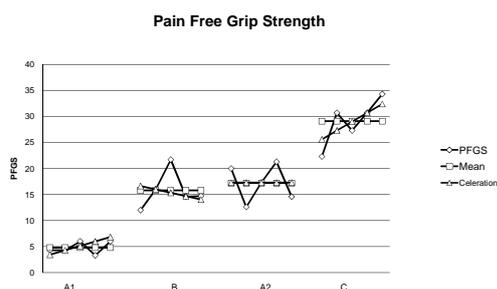
- The three PFGS scores were averaged  
(Vicenzino et al, 2001; Bisset et al, 2006)
- Statistics were descriptively analysed and represented graphically  
(Roddoch & Lennon, 1994)
- Split middle analysis/celeration lines  
(Kazdin, 1982; Stock & Williams 1995; Fulk 2004; Normand & Bailey 2006)



## Results: Numerical Pain Rating Scale



## Results – Pain Free Grip Strength (post intervention B & C)



## Limitations

- A single subject experimental design.
- Phase A1 data showed a trend of improving NRS and to a lesser extent PFGS.
- Limited number of data collection points per phase.



## Conclusion & Clinical Implications

- Evidence of a short term hypoalgesic effect and trends for an increasing PFGS with the application of therapist delivered MWM's alone to a subject with chronic lateral epicondylagia.
- Additional use of self-mobilisations resulted in improvement in the subject's ability to control their own symptoms, pain relief and measures of PFGS.
- Clinicians should be encouraged to prescribe Mulligan's self mobilisation to assist patients in managing their own pain.



## Areas to Consider & Future Research

- An increase in the number of therapist administered MWM's and use of a belt.
- An A3 phase – to assess whether there were accumulative effects.
- Future research could concentrate on the effects of the self mobilisation alone.
- Larger studies and long term effects.



## Any Questions?



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