

A Randomised Placebo-controlled Study Investigating the Effects of Mobilisation Treatment Duration on Pain in Participants with Chronic Low Back Pain

Dr Clair Hebron, Prof Ann Moore, Dr Anne Jackson, Dr Kambiz Saber-Sheikh
University of Brighton, UK

Introduction

A common treatment used by physiotherapists for patients with low back pain is mobilisations. Therapists choose a specific dose of mobilisation for each patient, which includes a decision on the force and duration of treatment. There is tentative evidence utilising asymptomatic participants that mobilisations applied for longer than 3 minutes can result in greater reduction in pain (Pentelka et al., (2012).

Purpose

This research aimed to establish the immediate and short-term (24 hours after treatment) analgesic effects of different durations of lumbar mobilisation in participants with chronic LBP.

Participants

This study included 72 participants with LBP with or without associated leg pain. The mean duration of participants' symptoms was 9 years (range 3 months to 35 years).

Methods

A randomised placebo controlled trial was conducted to compare pressure pain threshold (PPT), verbal rating of pain (VRS) immediately after a placebo-control intervention and 2 minutes of mobilisation treatment, and immediately and 24-hours after 1 and 6 minutes of mobilisation treatment.

Methods

Short treatment duration group	Long treatment duration group
Baseline	Baseline
Measurements: {Verbal rating scale of resting pain Verbal rating scale of pain on movements of the lumbar spine Pressure Pain Thresholds}	Measurements: {Verbal rating scale of resting pain Verbal rating scale of pain on movements of the lumbar spine Pressure Pain Thresholds}
Treatment Period 1 Placebo-2 minutes sham mobilisation	Treatment Period 1 2 minutes mobilisation treatment
Measurements	Measurements
Treatment Period 2 1 minute of mobilisation: {30 seconds mobilisation 4 minutes rest period 30 seconds mobilisation}	Treatment Period 2 4 minute of mobilisation: {2 minutes mobilisation 1 minute rest period 2 minutes of mobilisation}
Measurements	Measurements
24 hour follow up	24 hour follow up
Measurements	Measurements

Figure 1. Chart depicting participants journey through the study

Results

There was no overall difference in PPT between treatment groups ($p > .05$). Verbal rating of pain on movement was significantly reduced after treatment but the difference between treatment groups failed to reach significance ($p > .05$). There was dissociation between patients rating of pain and PPT.

Cumulative portion of responders analysis suggested that immediately following mobilisation treatment fewer participants experienced a positive response to 6 minutes than to 1 minute of mobilisation treatment (Figure 2).

Results

Cumulative proportion of responders analysis graph. Symptomatic paravertebral PPT after 1 and 6 mins of mobilisation treatment

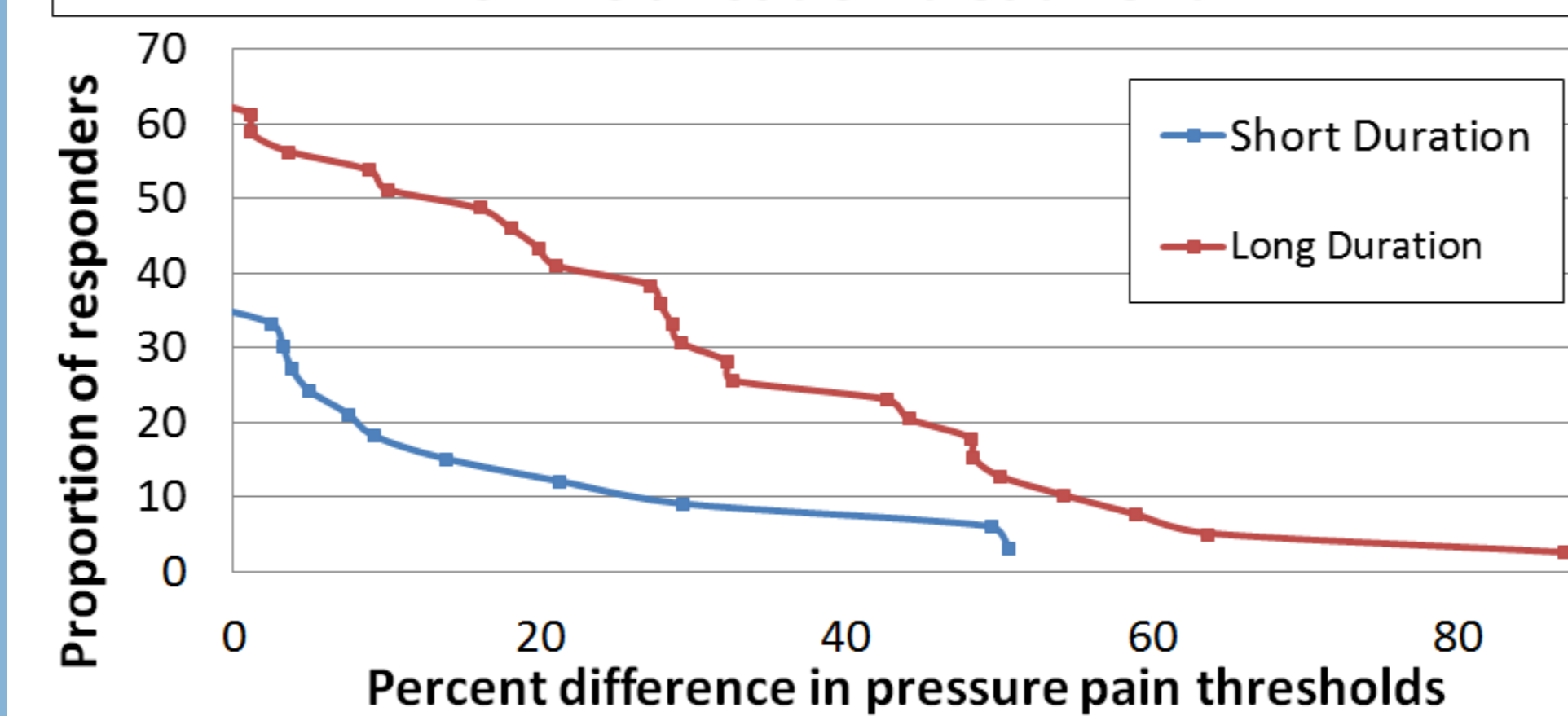


Figure 2.

Chi-squared analysis of treatment responders demonstrated that significantly more participants receiving longer duration of treatment experienced a reduction in PPT local to the site of treatment ($\chi^2(1)=11.60, p=.001$).

Treatment force had a significant mediating effect on pain, with greater treatment forces resulting in greater pain reduction, for both PPT ($F_{1,69}=8.32, p=.005$; Figure 3) and verbal rating of pain on movement ($F_{1,69}=10.38, p=.002$).

The mediating effect of force on change in PPT at the symptomatic level after treatment period 2

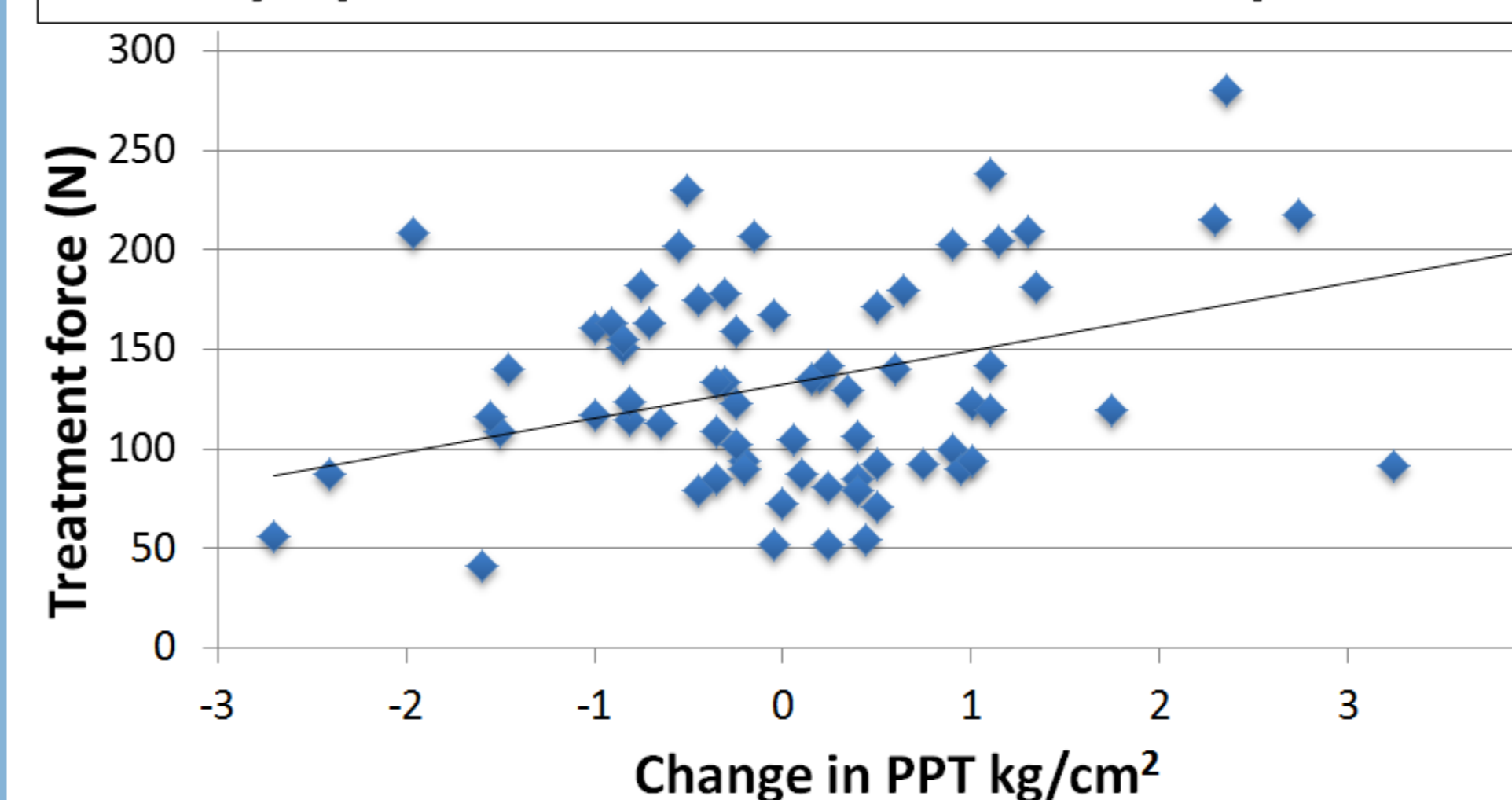


Figure 3.

Discussion & Conclusions

This study highlighted the varying response of participants to lumbar mobilisation treatment and demonstrated that, in terms of immediate change in PPT, more participants respond to longer durations of mobilisation treatment. This study also found that higher treatment force is associated with a greater analgesic response. The dissociation between PPT and verbal rating of pain in this study suggests mediation by different underlying neurobiological mechanisms. Therefore when investigating the analgesic effects of treatment it may be important to incorporate a number of pain measures in order to gain wide appreciation of change in pain appreciated by patients.

Recommendations

These findings suggest that where pain allows applying mobilisations for longer and with greater force may result in a greater analgesic effect.

References

Pentelka, L., Hebron, C., Shapleski, R., Goldshtein, I. 2012. The effect of increasing sets (within one treatment session) and different set durations (between treatment sessions) of lumbar spine posteroanterior mobilisations on pressure pain thresholds. *Manual Therapy* 17(6): 526-530.

Acknowledgements

This study was approved by the University of Brighton Faculty of Health Research and Governance Committee. The Musculoskeletal Association of Chartered Physiotherapists (MACP). Presented at the WCPT Congress 2015, Singapore.

Contact details

c.l.hebron@brighton.ac.uk
Twitter: @c_hebron