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2011

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Recommended Citation

Wand, B. M., O'Connell, N. E., Di Pietro, F., & Bulsara, M. (2011). *Treating chronic nonspecific low back pain with a sensorimotor retraining approach: An exploratory multiple-baseline study of 3 participants*. **Poster presented at the Australian Pain Society 31st Annual Scientific Meeting. Darwin, NT.**

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TREATING CHRONIC NONSPECIFIC LOW BACK PAIN WITH A SENSORIMOTOR RETRAINING APPROACH: AN EXPLORATORY MULTIPLE-BASELINE STUDY OF 3 PARTICIPANTS

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Background and aims: Chronic nonspecific low back pain (CNSLBP) is a common healthcare problem for which current interventions are only moderately successful [1]. There is growing evidence of extensive cortical reorganisation and perceptual disturbances which may contribute to the condition [2]. The aim of this study was to test whether a graded sensorimotor retraining program, aimed at influencing cortical representation, would reduce pain intensity, interference of pain on daily life and self reported disability.

Methods: Participants were recruited on the basis of disabling CNSLBP for at least 12 months. Exclusion criteria were nerve root pain, specific spinal pathology (eg malignancy, fracture, infection or inflammatory disease), and any contraindications to exercise. The Brief Pain Inventory was used to measure pain intensity and pain's interference with daily life. Disability was measured via the Roland-Morris Disability Questionnaire. Participants were assessed weekly throughout a no-treatment baseline phase, a ten week graded sensorimotor retraining programme performed both in the clinic and at home, and finally for one month after the conclusion of formal treatment (A_1-B-A_2 design). Examples of retraining tasks included graphaesthesia training and movements increasing in range.

A combined person-period data set was constructed to evaluate outcomes over time. A parametric linear mixed-model quantified the relationship between pain intensity, pain interference and disability with phase of the programme (the fixed-effect parameter).

Results: 3 participants were eligible for inclusion into the study. There was a significant difference between pre- and post-treatment values in all three outcome measures; pain intensity (mean difference 3.92 on a 0-10 point scale, 95% confidence interval (CI) 1.56 to 6.27); pain interference (mean difference 4.33 on a 0-10 point scale, 95% CI 1.80 to 6.87); and disability (mean difference 9.66 on a 0-24 point scale, 95% CI 4.23 to 15.04).

Conclusion: This is the first report of a graded sensorimotor retraining programme in CNSLBP. The positive outcomes seen here, together with previous findings suggesting the effectiveness of treatments targeted at cortical function in other chronic and complex disorders [3], warrant further investigation into this approach with more robust designs.

[1] van Tulder MW, et al. 2006. Eur Spine J. 15: S64-S81.
[2] Lotze M, et al. 2007. Curr Rheumatol Rep. 9: 488-496.
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