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Title

Tactile acuity, body schema and motor control and clinical outcome measures – A comparison study of adults with chronic low back pain and matched controls

Background

Chronic low back pain (CLBP) is common, often lacks discernible aetiology and contributes to morbidity and low quality of life. Treatments often focus on pain relief and improving motor function but outcomes remain moderate and many experience ongoing pain.

In Complex Regional Pain Syndrome and Phantom Limb Pain, the cortical neurophysiology and specific sensory outputs are altered. Interventions to reverse these impairments coincide with a reduction in pain intensity. Sharing similar neurophysiological characteristics, it's plausible that similar approaches may improve CLBP outcomes so identification of similar features in this group is needed.

We conducted a systematic review regarding the questions: *Are two-point discrimination threshold (TPDT) and body schema (BS) altered in adults with CLBP and do they relate to impaired lumbopelvic motor control (LMC)?*

This review initiated stage two; data collection to investigate TPDT, BS, LMC, back-perception, disability, kinesiophobia and clinical outcome measures in adults with CLBP and matched controls.

Aim

Following a systematic review to guide our study, we aimed to identify differences in tactile acuity, body schema, lumbopelvic motor function and association with clinical outcome measures when measured in adults with chronic low back pain and matched controls.

Methods

Using a systematic search strategy, a literature search of 12 bibliographic databases, grey literature, Google Scholar and the reference lists of included articles was undertaken over 5 months to Feb 2016. Studies involving adults aged 18 or older with CLBP longer than 3 months duration were included. Pregnancy, 6 months post-partum, central neurological conditions and nerve root pathologies were exclusion criteria. Two independent reviewers'

assessed for quality using an adapted Downs and Black Quality Index Score. Studies of high (≥70%) or medium (60-69%) quality involving adults with CLBP ≥3 month's duration were included. Varied research designs led to a narrative data synthesis.

In stage two, data collection was undertaken in two matched groups (CLBP and control) using established measures of TPDT and tactile threshold on the low back and finger-tip of dominant hand, low back laterality discrimination, lumbopelvic motor control and outcome measures such as disability, kinesiophobia, back-perception and pain.

Results

The review identified 335 studies. Following inclusion and exclusion screening, nine met the selection criteria and were included in the data extraction process. Assessment revealed similar quality strengths with eight of high and one of medium quality. Only one reported power. Sample sizes ranged from six to 51 with a total of 398 participants. All included male and female participants with a mean age of 44.2 years. The studies utilised different techniques and populations to explore tactile discrimination, body schema and motor function but critically; none explored all three.

Stage two data collection has been completed in 62 adults (31 per group) and data analysis is underway. Preliminary results reveal significant between group differences for TPDT, disability, kinesiophobia, back-perception and motor-function. Lateral discrimination and associations have yet to be analysed and results will be presented in the final poster as; a) differences between groups and b) relationships to outcome measures.

Conclusion

Our systematic review revealed TPDT to be altered in those with CLBP and is related to altered LMC. Body schema tasks may also be altered but the evidence is limited.

The relationship between BS and LMC remains unknown and the relationships to other clinical measures are unclear.

Data analysis is underway and some of our results correspond with the systematic review (TPDT, LMC) but others do not (BS). Association analysis continue and further results and conclusions will be presented on the poster once complete.

Declare any conflicts of interest

None of the authors have any conflicts of interest to declare