

ANZMUSC and Chiropractic Australia/COCA

PhD RESEARCH PROJECT TOPIC SUBMISSION

Complete all sections or indicate 'same as above' where applicable

Project title: Effectiveness of Multimodal Management of Chronic Low Back Pain and Mild Leg Length Discrepancy Using Chiropractic Care and Heel Lifts Compared to Usual Chiropractic Care: Optimisation of Methods and A Randomised Controlled Trial

Primary Supervisor (s)

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N/A

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Project description: In 200-250 words (or less), please provide a synopsis of the project, highlighting the main features of the project (including the potential research question, aim, rationale).

Rationale:

Low back pain (LBP) is a leading cause of disability in the world [1]. Approximately ninety percent of LBP is known as non-specific [2, 3] and is thought to be due to functional musculoskeletal conditions [4, 5]. Many treatments for chronic LBP including chiropractic methods have been shown to be of only mild to moderate effectiveness when used alone [6]. There is recent evidence from a systematic review showing that a combination of therapies is more beneficial than a single modality approach for this condition [7]. For this reason in treating mechanical low back pain, chiropractors and other therapists often include treatment of functional conditions of the lower extremity [8]. While a systematic review in 2010 [9] reported that there was a lack of evidence for the use of insoles in mechanical low back pain, a more recent 2013 double-blinded RCT by our collaborators, Castro-Mendez and colleagues, has reported a significant positive effect [10]. Leg length discrepancy (LLD) is a very common lower extremity condition that involves abnormal loading of lumbar joints [11, 12]. Importantly, we have found that mild LLD correlates with degenerative changes in the hip joints and lumbar spine in chiropractic patients, the majority of whom present with LBP [13]. We therefore propose a randomised controlled trial to assess the effectiveness of a combined approach in this particular subpopulation of chronic LBP patients.

Research Question: Does equalisation of leg length discrepancy by heel lifts improve the effectiveness of chiropractic therapy for chronic mechanical low back pain?

References

1. Maher, C., M. Underwood, and R. Buchbinder, *Non-specific low back pain*. Lancet, 2016.
2. Al-Eisa, E., et al., *Effects of pelvic skeletal asymmetry on trunk movement: three-dimensional analysis in healthy individuals versus patients with mechanical low back pain*. Spine (Phila Pa 1976), 2006. **31**(3): p. E71-9.

3. van Tulder, M., B. Koes, and C. Bombardier, *Low back pain*. Best Pract Res Clin Rheumatol, 2002. **16**(5): p. 761-75.
4. Cohen, S.P., C.E. Argoff, and E.J. Carragee, *Management of low back pain*. BMJ, 2008. **337**: p. a2718.
5. Krismer, M. and M. van Tulder, *Strategies for prevention and management of musculoskeletal conditions. Low back pain (non-specific)*. Best Pract Res Clin Rheumatol, 2007. **21**(1): p. 77-91.
6. Bronfort, G., et al., *Effectiveness of manual therapies: the UK evidence report*. Chiropr Osteopat, 2010. **18**: p. 3.
7. Kizhakkeveetil, A., K. Rose, and G.E. Kadar, *Integrative therapies for low back pain that include complementary and alternative medicine care: a systematic review*. Glob Adv Health Med, 2014. **3**(5): p. 49-64.
8. Ball, K.A. and M.J. Afheldt, *Evolution of foot orthotics--part 1: coherent theory or coherent practice?* J Manipulative Physiol Ther, 2002. **25**(2): p. 116-24.
9. Sahar, T., et al., *Insoles for prevention and treatment of back pain*. Cochrane Database Syst Rev, 2007(4): p. CD005275.
10. Castro-Mendez, A., P.V. Munuera, and M. Albornoz-Cabello, *The short-term effect of custom-made foot orthoses in subjects with excessive foot pronation and lower back pain: A randomized, double-blinded, clinical trial*. Prosthet Orthot Int, 2013.
11. Lawrence, D., *Lateralization of weight in the presence of structural short leg: a preliminary report*. J Manipulative Physiol Ther, 1984. **7**(2): p. 105-8.
12. Murray, K.J. and M.F. Azari, *Leg length discrepancy and osteoarthritis in the knee, hip and lumbar spine*. J Can Chiropr Assoc, 2015. **59**(3): p. 226-37.
13. Murray, K.J., et al., *Mild Leg Length Discrepancy Correlates with Degenerative Changes in the Hip Joint and Lumbar Spine*. J Man Manip Ther, 2017. **Accepted for Publication**.

Methodological approach: In 200-250 words (or less) describe the main methodological approach to be undertaken (quantitative or qualitative). Also detail the proposed type of data collection the student will be required to undertake. If the project uses existing data, clarify how this project will be unique.

Optimisation of Methods of Detection of LLD

Optimisation and validation of the LASER-Ultrasound method of detection of LLD against the radiographic 'gold standard' will be done to devise a non-invasive method of screening for LLD that may be used in public health programs.

Clinical trial methods

Using randomisation in a two arm parallel study examining usual chiropractic care against usual chiropractic care plus heel lifts to correct LLD. Inclusion criteria to constitute adult chronic low back pain (more than 3 months' duration) with radiographically-detected (or detected by an equally valid and reliable method) LLD between 5 and 20mm. Exclusion criteria to constitute contraindications to chiropractic care. Eight weeks of treatment with six months' follow-up. Outcome measures to include NRS-11 for pain, Oswestry questionnaire for disability and a scale for Satisfaction with Treatment. Qualitative data about expectations of treatment effect and also outcomes of treatment on functional status and lifestyle will also be captured.

Statistical Methods

Student's t-tests will be done to investigate between group differences. Repeated-measures ANOVA will be used to examine progression of pain and disability for data of Gaussian distribution and Mann-Whitney test for data demonstrating a skewed distribution.

Necessary skills/knowledge: Outline the main skills and knowledge the student will need to undertake the project.

The student will need to be an experienced chiropractor who is capable of providing the treatments. The student will also need to have undertaken a clinical research Honour's degree.

Ethics Approval (please tick appropriate answer)

Yes _____

No

If No: date of expected submission: 30th of February 2017

Main site of project

RMIT University Health Sciences Clinic, University Hill, Bundoora Victoria

Number of students supervised to completion by supervisor (s)

Supervisor 1 ___ **Two** ___

Supervisor 2 ___ N/A ___

Supervisor 3 ___ N/A ___

Supervisors Availability [hours pw]

25 Hours per week - Dedicated to Research

A/Supervisors availability [hours per week]

N/A

Research Timeframe:

Expected start date is **January 2017**.