



Original article

Effects of individualised directional preference management versus advice for reducible discogenic pain: A pre-planned secondary analysis of a randomised controlled trial[☆]



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ABSTRACT

Background: Low back disorders are prevalent and directional preference management is a common treatment with mixed evidence for effectiveness.

Objectives: To determine the effectiveness of individualised directional preference management plus guideline-based advice versus advice alone in participants with reducible discogenic pain of 6-week to 6-month duration.

Design: Pre-planned secondary analysis of a multicentre, parallel group randomised controlled trial.

Methods: Participants were randomly allocated to receive a 10-week physiotherapy program of 10-sessions of individualised directional preference management plus guideline-based advice (n = 40) or 2-sessions of advice alone (n = 38). Primary outcomes were back pain, leg pain and activity limitation. Outcomes were taken at baseline and 5, 10, 26, and 52-weeks.

Results: Between-group differences significantly favoured directional preference management compared with advice for back pain at 5-weeks (1.28; 95% CI 0.34–2.23) and 10-weeks (1.45; 95% CI 0.51–2.40), and leg pain at 10-weeks (1.21; 95% CI 0.04–2.39). These short-term differences were not maintained. There were no significant differences between-groups for activity limitation. Secondary outcomes and responder analyses favoured directional preference management suggesting between-group differences were clinically important.

Conclusions: In people with reducible discogenic pain, individualised directional preference management plus guideline-based advice resulted in significant and rapid improvement in short-term back and leg pain compared with advice alone. These effects were not maintained at long-term and there were no differences in activity limitation. Individualised directional preference management could be considered for patients with reducible discogenic pain seeking rapid pain relief however further research is indicated.

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1. Introduction

Low back disorders (LBDs) are common and a significant cause of disability-adjusted life years, with a worldwide societal burden expected to rise (Murray et al., 2012). Previous research has suggested a favourable prognosis (Coste et al., 1994) however up to 71% of patients presenting for treatment of recent onset LBDs in primary care still report symptoms 12-months later (Itz et al., 2013). Identifying effective treatment is therefore a high research priority (Murray et al., 2012).

Advice encouraging people with LBDs to return to normal activities and providing reassurance regarding prognosis is

recommended in all clinical guidelines (Koes et al., 2010). It is commonly used, cost-effective (Gracey et al., 2002; Liddle et al., 2009) and effective for pain, activity limitation and work outcomes (Indahl et al., 1995; Van Tulder et al., 2006; Dahm et al., 2010). However given the complexity of some LBDs (Ford and Hahne, 2013) advice may not be suitable for all patients (Fersum et al., 2010; Hill et al., 2011).

The lumbar intervertebral disc has been identified as a common source of low back pain (Bogduk et al., 2013). Reducible discogenic pain is a potentially important subgroup of LBDs (Petersen et al., 2003; Ford et al., 2011) with specific clinical features including a positive response to mechanical loading strategies comprising repeated movements and sustained postures (McKenzie and May, 2003). The term ‘reducible’ refers to mechanical loading strategies reducing displaced and pain provoking material from the nucleus pulposus within the disc to a more central and less painful position (McKenzie, 1981; Petersen et al., 2003). A key feature of reducible discogenic pain is the presence of a directional preference that can result in centralisation and/or improvement in pain intensity and/or impaired spinal movement (McKenzie and May, 2003; Werneke, 2009; May and Aina, 2012).

Patients with reducible discogenic pain commonly receive directional preference management (Foster et al., 1999; Li and Bombardier, 2001; Spoto and Collins, 2008) that incorporates the therapeutic use of mechanical loading strategies (McKenzie, 1981). There is mixed evidence for the effectiveness of directional preference management however trial results more consistently support short-term benefit (Clare et al., 2004; Machado et al., 2006; Surkitt et al., 2012). Few randomised controlled trials have applied directional preference management combined with other individualised treatment that addresses relevant barriers to recovery such as altered motor control (Richardson et al., 2004). In addition, clinical decision making is rarely informed by pathoanatomical mechanisms despite evidence suggesting physiotherapy may have a positive response on disc healing (Adams et al., 2010).

The aim of this study was to report the findings of a pre-planned secondary analysis to determine the effectiveness of individualised physiotherapy incorporating directional preference management and guideline-based advice versus advice alone in people with clinical features indicative of reducible discogenic pain.

2. Methods

This study was prospectively registered as a multi-centre, parallel group, randomised controlled trial (ACTRN12609000343202) and conducted at 16 private physiotherapy clinics across metropolitan Melbourne, Australia. Recruitment and treatment occurred concurrently with four other trials, with each separate trial targeting a different LBD subgroup. Following registration, a decision was made to merge all five trials into one, creating the Specific Treatment of Problems of the Spine (STOPS) trial, the protocol for which has previously been published (Hahne et al., 2011). The results for the STOPS trial have been reported previously (Ford et al., 2016). The present manuscript now reports the results obtained in the reducible discogenic pain subgroup as a pre-planned secondary analysis of the STOPS trial.

The trial protocol was approved by the La Trobe University Human Ethics Committee.

2.1. Participants

Volunteers were sought through the use of newspaper advertisements, public notices and referral from health practitioners. Eligible participants needed to have a current episode of low back pain \pm associated leg symptoms, a symptom duration of 6-weeks to

6-months, the ability to speak English, be aged 18–65 years, and meet the criteria for reducible discogenic pain defined as the presence of at least four out of nine clinical features indicative of discogenic pain (Table 1) (Hahne et al., 2011; Chan et al., 2013) and a directional preference in response to mechanical loading strategies of extension \pm lateral forces (McKenzie, 1981).

Potential participants were excluded if they had: clinical features indicating membership of one of the other four STOPS subgroups, back or leg symptoms attributable to other causes such as serious spinal pathology (e.g. cauda equina syndrome), a current LBD related compensation claim, undertaken spinal injections in the previous 6-weeks, a past history of lumbar spine surgery, a pain intensity score of <2 on a 0–10 numerical rating scale (NRS), minimal activity limitation (defined as an ability to walk, sit and stand for at least 1 h, and no sleep disturbance at night), received more than five treatments with a trial physiotherapist prior to enrolment or were pregnant/had given birth within the previous 6-months.

2.2. Randomisation and concealment

Informed consent was obtained before enrolment and eligible participants were randomised to receive either directional preference management plus guideline-based advice or advice alone. The randomisation schedule was prepared using a web-based program by a researcher not involved in participant screening, enrolment or allocation. Block randomisation (random block sizes) with stratification for treatment centre (16-levels) was employed. The allocation spreadsheet was held by an offsite administrative assistant with no involvement in recruitment, screening, assessment, enrolment or treatment of participants to ensure adequate allocation concealment (Moher et al., 2010) following participant enrolment. Blinding of participants and trial physiotherapists was not feasible however data were scored and entered by a researcher blinded to treatment allocation.

2.3. Interventions

Treatment was performed by 16 physiotherapists at 16 centres. Participants in the advice group attended two 30-minute sessions based on the work of Indahl (Indahl et al., 1995) involving a pathological explanation of the participant's pain, reassurance regarding favourable prognosis associated with their LBD, advice to remain active and instruction regarding correct lifting technique (Hahne et al., 2011).

Participants allocated to directional preference management attended 10 \times 30-minute sessions over 10-weeks. In addition to advice similar to the comparison group, treatment was individualised based on specific management of reducible discogenic pain as well as other identified barriers to recovery for each participant. Physiotherapists commonly use this method in clinical practice as it provides guidance regarding application of individualised

Table 1
Features of discogenic pain.

Features of discogenic low back pain
1 Back pain \pm leg symptoms
2 Sitting limited to at least 60 min
3 Forward bending at least somewhat difficult
4 Lifting at least somewhat difficult
5 Sit to stand at least somewhat difficult
6 Coughing or sneezing at least somewhat difficult
7 Symptoms much worse the next morning or day
8 History of working in a manual job
9 Incident associated with flexion/rotation and/or compression loading

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