Question: Is Strain-Counterstrain treatment combined with exercise therapy more effective than exercise alone in reducing levels of pain and disability in people with acute low back pain? 

Design: Randomised trial with concealed allocation, assessor blinding, and intention-to-treat analysis. Participants: 89 (55 female) participants between 18 and 55 years experiencing acute low back pain were randomised to experimental (n = 44) and control (n = 45) groups. Intervention: Participants attended four treatments in two weeks. The experimental group received Strain-Counterstrain treatment and review of standardised exercises (abdominal bracing, knee to chest, and lumbar rotation). The control group performed the standardised exercises under supervision. Following the intervention period, all participants received exercise progression, manual therapy, and advice.

Outcome measures: The primary outcome was the modified Oswestry low back pain disability questionnaire, measured at 2 weeks (ie, end of treatment), 6 weeks, and 28 weeks. Secondary outcome measures included the SF-36, visual analogue scale pain ratings, and a 7-point global rating of change. Results: The experimental intervention was not more effective than exercise alone in reducing levels of pain and disability. Mean between-group differences in change from baseline for the Oswestry Disability Index were 0 (95% CI –6 to 7) after treatment, –1 (95% CI –7 to 6) at 6 weeks, and 2 (95% CI –4 to 8) at 28 weeks. Other outcomes did not differ significantly between groups. Conclusion: There is no advantage in providing Strain-Counterstrain treatment to patients with acute low back pain, although further studies could examine whether a subset of these patients can benefit from the treatment. 


Key words: Strain-Counterstrain, Manual therapy, Spinal manipulative therapy, Exercise

Introduction

Low back pain remains a common disabling condition (Bogduk and McGuirk 2002, Walker et al 2004) that is immensely costly in Australia (Rahman et al 2005) and the United States of America (Luo et al 2004). There is evidence that many individuals with acute low back pain develop persistent or recurrent low back pain (Henschke et al 2008, Pengel et al 2003, Abbott and Mercer 2002). The cause of acute low back pain is ‘non-specific’ in approximately 95% of cases (Hollingworth et al 2002). Nevertheless, physiotherapists have developed various algorithms for diagnosis of the condition (Deyo 1993, Winkel et al 1996) and many clinical interventions have been proposed and are used for the treatment of acute low back pain (Deyo 1993, March et al 2004, Reid et al 2002).

Recent guidelines assert that there is ‘fair’ evidence that spinal manipulative therapy provides a small to moderate benefit (a 5 to 20 point reduction in Oswestry Disability Index score) in the treatment of acute low back pain (Chou et al 2007). However, most international guidelines for treatment of non-specific acute low back pain recommend spinal manipulative therapy as a second-line intervention after first-line treatment of simple analgesics and advice (van Tulder et al 2006, Koes et al 2001) and this position is supported by contemporaneous meta-analyses, which concluded that spinal manipulative therapy was not more effective than recommended first-line intervention for treatment of non-specific acute low back pain (Assendelft et al 2003, Ferreira et al 2003) and chronic low back pain (Assendelft et al 2003). However, many physiotherapists use spinal manipulative therapy simultaneously with recommended first-line intervention for treatment of non-specific acute low back pain (Reid et al 2002).

Strain-Counterstrain is a manual therapy intervention involving passive positioning of the body or limbs. It has been proposed as a treatment for musculoskeletal pain and dysfunction (Jones et al 1995). When used to treat acute low back pain, this intervention can be considered as a form of spinal manipulative therapy because the pelvis, sacrum, and lower limbs are used to position the lumbar and sacral regions passively in degrees of flexion, extension, lateral flexion, and rotation. The rationale for Strain-Counterstrain treatment is unclear. A proprioceptive model (Korr 1975), which has not been experimentally tested, provides the hypothetical basis for the Strain-Counterstrain assessment and treatment using digitally tender points (Jones et al 1995, Kusunose 1993). To our knowledge, there is no experimental evidence to support the use of Strain-Counterstrain for the treatment of acute low back pain, although reductions in pain and disability following Strain-Counterstrain treatment for low back pain have been reported in case studies (Lewis and Flynn 2001). This randomised trial was intended to
investigate the effect of Strain-Counterstrain treatment for acute low back pain in a clinical setting.

The research questions for this study were:
1. Is a combination of Strain-Counterstrain and exercise more effective than exercise alone in reducing levels of pain, disability, and dysfunction in participants with acute low back pain after 2 weeks?
2. Is there any residual effect of Strain-Counterstrain on levels of pain, disability, and dysfunction at 6 weeks (short term) and 28 weeks (medium term)?

Method

Design
A single-centre, randomised controlled trial was conducted at the physiotherapy outpatient department of a rural public hospital in Australia. Participants were referred by public and private medical practitioners for treatment of acute low back pain or were recruited through posted notices and advertisement in local papers. Randomisation was achieved by having the participant select one of 100 sealed opaque envelopes, each containing a group allocation, which had been prepared and shuffled by an independent investigator. The experimental group received a combination of Strain-Counterstrain and exercise, while the control group received only the exercises. The interventions were provided at four visits occurring over two weeks. Measurements were recorded at baseline, at 2 weeks (immediately after the intervention), at 6 weeks, and at 28 weeks. The 28-week follow-up was expected to capture the majority of participants who would develop persistent low back pain or recurrence of low back pain within 12 months (Philips and Grant 1991, Von Korff and Saunders 1996).

Participants
People entering the trial had to meet the following inclusion criteria: aged between 18 and 55 years; experiencing pain in the lumbar and/or sacral regions (Merskey 1994) that had been present for less than three months following a period of a month without pain in that region; able to lie either prone or supine for up to 10 minutes; and displaying a minimum of 4 digitally tender points at examined sites (Kusunose and Wendorff 1990) at their initial assessment. The exclusion criteria were: Oswestry Disability Index score less than 10, history of spinal surgery or fracture or diagnosis with an inflammatory disorder or fibromyalgia. Patients were also excluded if assessment suggested that they were experiencing lumbar radiculopathy (Wilk 2004).

Intervention
All participants were given the same general advice, which was to continue using medication as prescribed by their medical practitioner and to remain active (March et al 2004), but to avoid activities that aggravated their low back pain. All participants were instructed in a standardised exercise program and issued with a printed handout to reinforce the verbal instructions. The handout is available as an e-addendum (see Appendix 1). The exercise program consisted of three exercises that are commonly prescribed by physiotherapists for clients with low back pain: side-lying abdominal bracing (intended to activate deep abdominal stabilisers) (Richardson et al 1999), alternate knee-to-chest holds (Nicholas et al 2007), and side-to-side lumbar rotation (Olson 2007). Correct performance of side-lying abdominal bracing was assessed clinically by observing for a slight drawing-in of the lower abdominal wall below the umbilicus which is consistent with activation of the transversus abdominis muscle (Richardson et al 1999). Participants were asked to perform the exercises in a range that did not increase their pain, twice a day during the intervention period. The exercises were not progressed during the intervention period.

Participants in the experimental group attended twice a week for two consecutive weeks and received Strain-Counterstrain treatment and review of the standardised exercises. Strain-Counterstrain treatment involved passive positioning of a participant, with varying degrees of spinal flexion/extension, lateral flexion and rotation, such that there was a two-thirds reduction in tenderness at a monitored digitally tender point (Jones et al 1995). This was determined by having participants rate their tenderness to palpation at digitally tender points on a numerical pain scale where 0 represented initial tenderness and 10 no tenderness. In addition to reported tenderness with intermittent probing, perceived tissue tension was used to guide the experimenter to the appropriate passive position (Jones et al 1995). The participant was passively maintained at this point by the experimenter for approximately 90 seconds, with intermittent probing at 30-second intervals to ensure correct positioning, before being slowly and passively returned to a neutral position (Jones et al 1995, Kusunose and Wendorff 1990, Kusunose 1993). Treatment of a digitally tender point was considered successful if tenderness reduced by 70% or more (Kusunose 1993, Kusunose and Wendorff 1990).

Participants in the control group also attended twice a week for two consecutive weeks for revision and supervised performance of the standardised exercises. After the intervention period, both experimental and control group participants received similar additional interventions deemed appropriate by the treating physiotherapist with neither group receiving Strain-Counterstrain treatment. These included progression of home exercise program, ergonomic instruction, soft-tissue mobilisation, and joint mobilisation.

Outcome measures
The primary outcome was disability measured by the modified Oswestry low back pain disability questionnaire (Fritz and Irrgang 2001). This measure has been shown to be valid and reliable (Fairbank et al 1980) and its properties have been studied rigorously (Beurskens et al 1996, Fritz and Irrgang 2001, Davidson and Keating 2002). The secondary outcomes included quality of life, pain, interference with work, satisfaction with symptoms, satisfaction with the intervention, a global rating of change, and the number of treatments post-intervention and adverse events.

Quality of life was measured with the SF-36 questionnaire and calculated using all subscales (Ware and Sherbourne 1992). This health-related quality of life questionnaire has been studied with low back pain populations and shown to have good validity, reliability, and responsiveness for most subscales (Taylor et al 2001) and has sufficient scale width to detect change in most people with low back pain (Davidson and Keating 2002).

Pain was rated by participants on a 10-cm visual analogue scale, which has been shown to be valid and reliable (Price

et al 1983, Duncan et al 1989, Price et al 1994). Each participant’s pain was summarised as the mean of three ratings on the visual analogue scale: minimum pain in the last 24 hours, current pain, and maximum in the last 24 hours.

The degree to which pain interfered with normal work, including both work outside the home and housework, was rated from 1 (not at all) to 5 (extremely). The degree to which the participant would be satisfied to spend the rest of their lives with their current symptoms was rated from 1 (very dissatisfied) to 5 (very satisfied). The participants’ satisfaction with their overall physiotherapy care during the period of intervention was also rated from 1 (very dissatisfied) to 5 (very satisfied). These outcomes have been recommended for low back pain research by an international group of researchers (Deyo et al 1998).

Participants provided a ‘global-rating-of-change’ following the initial two-week intervention period, on a 7-point scale where response 1 = ‘completely gone’, 2 = ‘much better’, 3 = ‘better’, 4 = ‘a little better’, 5 = ‘about the same’, 6 = ‘a little worse’ and 7 = ‘much worse’ (Patrick et al 1995). A global-rating-of-change response of 3 or less was considered to represent improvement (Patrick et al 1995).

The number of treatments received after the 2-week allocated intervention period, the number of adverse events, and the number of participants using medication for low back pain at Week 2 and Week 6 were recorded from patient records.

Data analysis

We sought to power the study to identify a between-group difference of 6 points on the modified Oswestry scale, because this corresponds to the threshold at which people with low back pain typically rate the change in their condition as ‘moderately’ different, as opposed to ‘hardly’, ‘a little’, or ‘somewhat’ different (Fritz and Irrgang 2001, Jaeschke et al 1989). We considered that a ‘moderate’ improvement would be enough for typical patients to consider that the intervention in this study is worthwhile.

A total of 90 participants would provide 80% power to detect a difference between groups of 6 points on the modified Oswestry scale as significant at a two-sided significance level, assuming a standard deviation of 10 points (Fritz et al 2005, Childs et al 2004). To allow for some loss to follow-up, we increased the original sample to 100. However, since initial loss to follow-up was very low, study recruitment was closed at 89 participants.

Analyses were conducted using the intention-to-treat principle including data from all randomised participants wherever it could be obtained. Significance for analyses was set at \( p < 0.05 \). Data samples were examined for normality using the Kolmogorov-Smirnov test and Q-Q plots. Repeated measures ANOVA was used to examine for differences between groups for Oswestry Disability Index score, VAS, SF-36, and ratings of interference with work and satisfaction with life, with Bonferroni adjustment used for multiple comparisons. Student t-tests were used to compare global rating of change and satisfaction with the intervention between treatment and control groups. The Wilcoxon signed ranks test was used to compare the number of physiotherapy treatments following the intervention period between groups. Pearson’s chi-square test was used to compare groups for the number of participants who were able to manage their acute low back pain without the need to take medication.

Results

Flow of participants and therapists through the trial

Between January 2009 and April 2010, 101 volunteers were screened for eligibility. Of these 89 were deemed eligible, gave informed consent, and were randomised: 44 to the experimental group and 45 to the control group. The flow of participants through the trial, including reasons for exclusion and loss to follow-up, is presented in Figure 1.

The baseline characteristics of participants are shown in Table 1 and the first two columns of Table 2. No important differences in these characteristics were noted between the experimental and control groups. A single physiotherapist with a postgraduate degree in manual therapy and 15 years of experience using Strain-Counterstrain treatment provided all interventions to both experimental and control groups and remained blind to primary and secondary outcome measures throughout the trial.

Compliance with the trial method

In each group, all participants attended two 30-min intervention sessions per week for two consecutive weeks. All participants received the study intervention as originally allocated. By 28 weeks, 3 (7%) participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Randomised (n = 89)</th>
<th>Lost to follow-up (n = 5)</th>
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<tbody>
<tr>
<td></td>
<td>Exp (n = 44)</td>
<td>Con (n = 45)</td>
</tr>
<tr>
<td>Gender, n female (%)</td>
<td>25 (57)</td>
<td>30 (67)</td>
</tr>
<tr>
<td>Age (yr), mean (SD)</td>
<td>40 (10)</td>
<td>40 (11)</td>
</tr>
<tr>
<td>Height (m), mean (SD)</td>
<td>1.70 (0.09)</td>
<td>1.69 (0.11)</td>
</tr>
<tr>
<td>Weight (kg), mean (SD)</td>
<td>78 (18)</td>
<td>80 (18)</td>
</tr>
<tr>
<td>Duration of low back pain (wk), mean (SD)</td>
<td>4.2 (3.5)</td>
<td>4.3 (3.8)</td>
</tr>
<tr>
<td>Using medication for low back pain, n (%)</td>
<td>22 (50)</td>
<td>16 (36)</td>
</tr>
</tbody>
</table>

Exp = experimental group, Con = control group

Table 1. Baseline characteristics of participants.
Volunteers with acute low back pain completed screening questionnaires (n = 101)

Excluded (n = 4)
- Oswestry score less than 10 (n = 3)
- unable to attend scheduled visits (n = 1)

Volunteers with acute low back pain screened physically (n = 97)

Excluded (n = 8)
- less than 4 digitally tender points (n = 6)
- radicular signs and symptoms (n = 2)

Measured disability, quality of life, pain, interference with work, satisfaction with life, and use of medication for low back pain

Randomised (n = 89)

(n = 44) (n = 45)

Week 0

Experimental group
- 4 x 30-min sessions in 2 weeks
- 3 exercises with handout
- Strain-Counterstrain
- advice to use analgesia as prescribed, remain active and avoid aggravating activities

Control group
- 4 x 30-min sessions in 2 weeks
- 3 exercises with handout
- supervision of exercises
- advice to use analgesia as prescribed, remain active and avoid aggravating activities

Lost to follow up
- family reasons (n = 1)

Week 2

Measured disability, quality of life, pain, interference with work, satisfaction with life, satisfaction with treatment, global rating of change and medication use

(n = 43) (n = 44)

Lost to follow up
- unreturned forms (n = 1)

Week 6

Measured disability, quality of life, pain, interference with work, satisfaction with life, and medication use

(n = 42) (n = 43)

Lost to follow up
- unreturned forms (n = 1)

Week 28

Measured disability, quality of life, pain, interference with work, satisfaction with life, and adverse events

(n = 41) (n = 43)

Lost to follow up
- unreturned forms (n = 1)

Figure 1. Design and flow of participants through the trial.
The table below shows the mean (SD) for outcomes reported at all study visits for each group, mean (SD) difference within groups, and mean (95% CI) difference between groups. The table includes data for various outcomes such as global rating of change, work interference, life satisfaction, and SF-36 scores, among others. The data is presented for different time points, including Week 0, Week 2, Week 6, Week 28, and Week 28 minus Week 0. The experimental group (Exp) and control group (Con) are compared, with differences in scores reported for the modified Oswestry Disability Index, VAS, and other relevant measures.

### Table 2

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Week 0</th>
<th>Week 2</th>
<th>Week 6</th>
<th>Week 28</th>
<th>Week 2 minus Week 0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Con</strong></td>
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<td><strong>SF-36</strong> (0–100)</td>
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<td><strong>VAS (–6 to 7)</strong></td>
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<tr>
<td><strong>Percentage of patients with pain</strong></td>
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</table>

### Discussion

This study was the first to examine the treatment of acute low back pain using Strain-Counterstrain techniques. Adding the Strain-Counterstrain intervention did not substantially improve outcomes over exercise therapy alone. The best estimates of the effect of the intervention at the three outcome assessment points were only 2 points or less on a 100-point scale. However, the upper limits of the 95% CIs around these estimates still included the pre-specified minimum clinically important difference of 6 points. Therefore it is possible, although unlikely, that further research could identify a clinically worthwhile difference by further refining these estimates.

We consider Strain-Counterstrain to be a form of spinal manipulative therapy, because the pelvis, sacrum, and lower limbs are used to position the lumbar and sacral regions passively in degrees of flexion, extension, lateral flexion, and rotation. A systematic review of spinal manipulative therapy, which the reviewers defined as both joint mobilisation and high velocity thrust techniques, found that it was not more effective for the treatment of acute low back pain than ‘physical therapy exercise’ (Assendelft et al 2003). Therefore, acknowledging the differences in the definition of spinal manipulative therapy, our findings are consistent with the results of this review.
more than 4 but less than 10 digitally tender points identified

more than one previous episode of acute low back pain;

might include: recent and sudden onset of symptoms; no

algorithm, factors favouring Strain-Counterstrain treatment

2004). Personal clinical experience suggests that for such an

subacute low back pain (Brennan et al 2006, Childs et al

been shown to improve outcomes for non-specific acute/

treatment, to identify individuals more likely to respond

sample heterogeneity in future studies assessing Strain-

it is likely that the source of acute low back pain varied

identified using Strain-Counterstrain procedures, this

in this study had a minimum of 4 digitally tender points

al 2006, Kent and Keating 2004). While all participants

providing adequate analgesia and advice knowing that they

such as Strain-Counterstrain from these individuals while

clinically, it would be

low back pain treatments, it may be necessary to exclude

additional treatments such as Strain-Counterstrain and other

may also have clinical implications for provision of spinal

manipulative therapy to patients with acute low back pain.

For trials to demonstrate substantial effect sizes for acute

low back pain treatments, it may be necessary to exclude

participants in both intervention groups received the same

assistant who was blind to group allocation. Additionally,

outcome measures, which were administered by the same

same experienced physiotherapist who remained blind to

control groups. Also, interventions were provided by the

participants were assigned randomly to experimental and

analysed using the intention-to-treat principle and that

This study had several strengths, including that it was

Our findings should be considered within the context of the

limitations of the study design. Since this trial was conducted

in a clinical setting with the majority of participants referred

by medical practitioners for physiotherapy treatment, it was

not possible to incorporate a control group that did not receive

physiotherapy intervention. Consequently, we were unable to
determine the degree to which significant improvements

in outcome measures for both experimental and control

groups were due to the natural history of acute low back

pain. Due to the type of intervention, it was not possible

to blind the physiotherapist who provided interventions.

Because no sham-experimental intervention was included

in the study design, it was not possible to determine the
degree to which the manual contact in the experimental
group influenced outcome measures. No attempt was made
to control for medications taken by participants, which

included opioid and non-opioid analgesics and non-steroidal

anti-inflammatory drugs. However, medication use was

similar at baseline and no significant difference was found

between the groups for number of participants who were

managing their pain with medication immediately after

the 2-week intervention or at 6 weeks. This suggests that

medication use was unlikely to be a confounding factor for

our comparisons between intervention groups.

This study had several strengths, including that it was

analysed using the intention-to-treat principle and that

participants were assigned randomly to experimental and

control groups. Also, interventions were provided by the

same experienced physiotherapist who remained blind to

outcome measures, which were administered by the same

assistant who was blind to group allocation. Additionally,

participants in both intervention groups received the same

number of interventions and had comparable contact
time with the physiotherapist who provided interventions.

A further merit of the study was the high follow-up rate

(95% CI). Difference between groups.

Table 3. Mean (SD) for outcomes reported at one study visit for each group, mean (SD) difference within groups, and mean

Outcome Groups Difference between groups

Global rating of change at Week 2 (0–7 scale)

Exp (n = 43) Con (n = 45) Exp minus Con

Global rating of change at Week 2 (0–7 scale)

2.9 (1.1) 3.5 (1.4) –0.6 (–1.1 to –0.1)

Patient satisfaction with the intervention at Week 2 (1–5 scale)

Exp (n = 42) Con (n = 44)

1.7 (1.2) 1.9 (1.2) –0.2 (–0.7 to 0.3)

Treatments received after the intervention and before Week 28 (number/participant)

Exp (n = 45) Con (n = 44)

2.5 (3.1) 2.3 (2.5) 0.2 (–1.0 to 1.4)

Adverse events by Week 28 (number/participant)

Exp (n = 43) Con (n = 45)

0 (0) 0 (0) —

Exp = experimental group, Con = control group

The finding that those provided with Strain-Counterstrain
treatment registered a significantly greater improvement in

global rating of change at the end of the intervention period

is unlikely to be clinically relevant because the difference

between groups was only 0.5.

Approximately 40% of individuals with acute low back pain

are likely to recover rapidly without intervention or with first-line intervention of simple analgesia and advice (Pengel et al 2003). This may be one reason for the small effects of additional treatments such as Strain-Counterstrain and other spinal manipulative therapies (Hancock et al 2008). This may also have clinical implications for provision of spinal manipulative therapy to patients with acute low back pain. For trials to demonstrate substantial effect sizes for acute low back pain treatments, it may be necessary to exclude individuals with a highly favourable prognosis regardless of treatment (Hancock et al 2008). Clinically, it would be reasonable to withhold relatively expensive treatments such as Strain-Counterstrain from these individuals while providing adequate analgesia and advice knowing that they are likely to recover quickly (Hancock et al 2008).

Another consideration for sampling in studies of treatments

for non-specific acute low back pain is that the condition

is unlikely to be homogenous within a sample (Brennan et al 2006, Kent and Keating 2004). While all participants

in this study had a minimum of 4 digitally tender points

identified using Strain-Counterstrain procedures, this
does not confirm that they were a homogenous sample and it is likely that the source of acute low back pain varied among the participants. A possible strategy to manage sample heterogeneity in future studies assessing Strain-Counterstrain treatment for acute low back pain would be to develop an algorithm, specifically for Strain-Counterstrain treatment, to identify individuals more likely to respond to this form of treatment. Such algorithms have previously been shown to improve outcomes for non-specific acute/subacute low back pain (Brennan et al 2006, Childs et al 2004). Personal clinical experience suggests that for such an algorithm, factors favouring Strain-Counterstrain treatment might include: recent and sudden onset of symptoms; no more than one previous episode of acute low back pain; more than 4 but less than 10 digitally tender points identified at anterior and posterior sites claimed to be associated with low back pain; pain localised to the lumbosacral region; and less than 45 years of age.

Our findings should be considered within the context of the

limitations of the study design. Since this trial was conducted

in a clinical setting with the majority of participants referred

by medical practitioners for physiotherapy treatment, it was

not possible to incorporate a control group that did not receive physiotherapy intervention. Consequently, we were unable to
determine the degree to which significant improvements in outcome measures for both experimental and control

groups were due to the natural history of acute low back

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to blind the physiotherapist who provided interventions.

Because no sham-experimental intervention was included

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our comparisons between intervention groups.

This study had several strengths, including that it was

analysed using the intention-to-treat principle and that

participants were assigned randomly to experimental and

control groups. Also, interventions were provided by the

same experienced physiotherapist who remained blind to

outcome measures, which were administered by the same

assistant who was blind to group allocation. Additionally,

participants in both intervention groups received the same

number of interventions and had comparable contact
time with the physiotherapist who provided interventions.

A further merit of the study was the high follow-up rate

(greater than 90%).

Several features of the study design mean that the findings

of this study are immediately relevant to the clinical use
of Strain-Counterstrain treatment for acute low back pain. Approximately 60% of the participants were referred by medical practitioners to the physiotherapy department for treatment of acute low back pain. The single treating physiotherapist had 15 years of experience providing Strain-Counterstrain treatment and was able to treat freely monitoring anterior and posterior digitally tender points according to clinical protocols (Jones et al 1995, Kusunose 1993). The exercises chosen for the study are commonly used by physiotherapists for treatment of low back pain (Nicholas et al 2007, Olson, 2007, Richardson et al 1999) and were reinforced with a detailed written hand-out. Although it could be argued that exercise therapy is not supported for treatment of acute low back pain (Hayden et al 2005, van Tulder et al 2000) and therefore represents minimal or no treatment, it can be justified as a valid clinical intervention in our study since many of our participants had experienced their low back pain for more than 6 weeks (for both groups the average was over 4 weeks) and the optimal time to start exercise therapy after the onset of symptoms of low back pain is unclear (Chou et al 2007). Interventions were provided over 30 minutes twice a week for two consecutive weeks, which is likely to correspond to typical physiotherapy intervention for acute low back pain.

In summary, for non-specific acute low back pain there does not appear to be any short-term or medium-term advantage from the addition of Strain-Counterstrain treatment to appropriate analgesic medication, advice, range of motion exercises, and transversus abdominis exercises. Further studies could examine whether a subgroup of individuals with non-specific acute low back pain are more likely to benefit from Strain-Counterstrain treatment.

eAddenda: Table 4 and Appendix 1 available at: jop.physiotherapy.asn.au

Ethis: Ethical approval for the study was given by the Toowoomba and Darling Downs Health Service District Human Research Ethics Committee and The University of Queensland Medical Research Ethics Committee. All participants gave written informed consent before data collection began.

Competing interests: None declared.

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