

Abdominal muscle feedforward activation in patients with chronic low back pain is largely unaffected by 8 weeks of core stability training

- [Garry T. Allison](#)
 - Faculty of Health Sciences, Curtin Health Innovation Research Institute, Australia
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Synopsis

Summary of

Vasseljen O et al (2012) Effect of core stability exercises on feedforward activation of deep abdominal muscles in chronic low back pain: a randomized controlled trial *Spine* 37: 1101–1108. [Prepared by Margreth Grotle and Kåre B Hagen, CAP Editors.]

Question

Does timing of abdominal muscle activation in response to rapid shoulder flexion change after 8 weeks with low-load core stability exercises (CSE), high-load sling exercises (SE), or general exercises (GE) in chronic nonspecific low back pain (LBP) patients?

Design

A randomised, controlled trial with concealed allocation.

Setting

Patients were recruited from general practitioners, physiotherapists, or by advertising at a regional hospital in Norway.

Participants

Men and women, aged 18–60 years, with chronic nonspecific LBP for 3 months or more, and pain score of 2 or more on a 0–10 numeric rating scale were included. Key exclusion criteria

included radiating pain below the knee or neurological signs from nerve root compression, and former back surgery. Randomisation of 109 participants allocated 36 to CSE, 36 to SE, and 37 to GE.

Interventions

Patients in the three groups attended treatment once a week for 8 weeks, supervised by a physiotherapist. All were encouraged to stay active and received an information booklet with general information on LBP. The CSE were individualised according to protocols focusing on isolated activation of transversus abdominis during an abdominal drawing-in manoeuvre in supine hook-lying position with ultrasound feedback. Written instructions to carry out the drawing-in exercise (10 × 10 seconds 2–3 times per day) at home were also provided. The SE maintained the lumbar spine stable in neutral position throughout a range of leg/arm positions and movements, using elastic bands attached to the pelvis to help the patient maintain a neutral spine position. The SE was performed for 40 minutes in a physiotherapy clinic. The GE group received generalised trunk strengthening and stretching exercises supervised by a physiotherapist at a fitness centre.

Outcome measures

Primary outcome was change in onset of the deep abdominal muscles in response to rapid shoulder flexion.

Results

102 participants completed the study. No or small changes were found in onset after treatment. Baseline adjusted between-group differences showed a 15 milliseconds (95% CI 1 to 28) and a 19 millisecond (95% CI 5 to 33) improvement with SE relative to CSE and GE, respectively, but on one side only. There was no association between changes in pain and onset over the intervention period ($R^2 \leq 0.02$).

Conclusion

Abdominal muscle onset was largely unaffected by 8 weeks of exercises in chronic LBP patients with changes in onset of less than 20 milliseconds between groups.

There are no figures or tables for this document.