

## Appendix: What's New in Orthopaedic Rehabilitation

### Low Back Pain

**Brooks C, Kennedy S, Marshall PW.** Specific trunk and general exercise elicit similar changes in anticipatory postural adjustments in patients with chronic low back pain: a randomized controlled trial. *Spine (Phila Pa 1976)*. 2012 Dec 1;37(25):E1543-50.

Brooks et al. conducted a randomized controlled trial in which they compared changes in self-rated disability, pain, and anticipatory postural adjustments among patients with chronic low back pain who performed either specific trunk exercise or general exercise. The study included sixty-four patients, eighteen to fifty years of age, who had ongoing recurrent low back pain for greater than twelve weeks and who were randomized to either the specific trunk exercise group, with exercises including skilled cognitive activation of the trunk muscles and specialized exercises, or a general exercise group, in which only seated cycling exercises were performed. The study found that disability was significantly lower in the specific trunk exercise group ( $d = 0.62$ ,  $p = 0.018$ ). Pain was reduced in both groups after training but was lower for those in the specific trunk exercise group ( $p < 0.05$ ). The study is important because its findings suggest that, compared with general exercise, specific trunk exercise is more effective at reducing disability and pain. Prior to this study, there had been no conclusive evidence to suggest that any one mode of exercise for chronic, nonspecific low back pain is superior to another (van Middelkoop M, Rubinstein SM, Kuijpers T, Verhagen AP, Ostelo R, Koes BW, van Tulder MW. A systematic review on the effectiveness of physical and rehabilitation interventions for chronic non-specific low back pain. *Eur Spine J*. 2011 Jan;20(1):19-39. Epub 2010 Jul 18).

### Hamstring Injury Rehabilitation

**Mason DL, Dickens VA, Vail A.** Rehabilitation for hamstring injuries. *Cochrane Database Syst Rev*. 2012 Dec 12;12:CD004575.

Mason et al. conducted a review of randomized trials to evaluate the effectiveness of all rehabilitation used to promote the return to full strength, range of movement, and function of patients presenting with all forms of hamstring injury, regardless of site, severity, onset, or level of chronicity. Two trials, with a total of 104 participants, were included. The first trial assessed stretching four times a day compared with once-daily stretching and found that additional stretching could reduce the time to return to full activity (mean difference,  $-1.8$  days; 95% confidence interval [CI],  $-2.1$  to  $-1.5$ ;  $p < 0.001$ ). The second trial assessed exercise for movement dysfunction compared with stretching and strengthening and did not find conclusive evidence of a reduction in time to full activity but did find a reduction in the reinjury rate in the group who performed exercise for movement dysfunction compared with the group who performed stretching and strengthening (8% compared with 64%; odds ratio [OR], 0.05; 95% CI, 0.00 to 0.52;  $p = 0.01$ ). The study suggests that there is evidence of a benefit from increased intensity of stretching in terms of time to return to full activity for elite athletes, but this should be considered in the context that there were no other randomized controlled trials comparing different methods of rehabilitation, and neither study reported on pain or patient satisfaction.

### Rehabilitation Following Spinal Stenosis Decompression

**McGregor AH, Probyn K, Cro S, Doré CJ, Burton AK, Balagué F, Pincus T, Fairbank J.** Rehabilitation following surgery for lumbar spinal stenosis. A Cochrane review. *Spine (Phila Pa 1976)*. 2014 Jun 1;39(13):1044-54.

McGregor et al. conducted a systematic review of randomized controlled trials to determine the effect of active rehabilitation on functional outcome after lumbar spinal stenosis surgery when compared with typical postoperative care. Active rehabilitation included all forms of group or therapist-led exercise or stabilization training involving muscle-strengthening exercises and flexibility training. Typical postoperative care ranged from the limited advice to stay active postoperatively to a brief general program of exercises, with the primary aim of preventing deep vein thrombosis. The review included a total of 373 participants from three studies. The results provided moderate evidence suggesting that active rehabilitation was more effective than typical care in improving short and long-term functional status after surgery, reducing short-term low back pain, and reducing both long-term low back pain and leg pain. Additional research is required to validate these findings, given the small number of studies included and the fact that only one of the three studies included a cost-benefit analysis. At the moment, little consensus has been reached on what constitutes an appropriate active rehabilitation program and when it should be delivered.

### Symptom Relief from Lower-Extremity Ischemia

**Ubbink DT, Vermeulen H.** Spinal cord stimulation for non-reconstructable chronic critical leg ischaemia. *Cochrane Database Syst Rev*. 2013 Feb 28;2:CD004001.

Ubbink and Vermeulen conducted a review of randomized controlled trials to find evidence of improvement in terms of limb salvage, pain relief, and the clinical situation through the use of spinal cord stimulation compared with conservative treatment alone for patients with nonreconstructable chronic leg ischemia. Six studies that included a total of 444 patients over eighteen years of age who had atherosclerotic nonreconstructable chronic leg ischemia were included. The results showed that, after three and twelve months, the spinal cord stimulation group had better pain relief and required fewer analgesics ( $p = 0.0004$  and  $p < 0.01$ ,

respectively). The overall risk of complications with additional spinal cord stimulation treatment was 17% (95% CI, 12% to 22%). The study suggests that spinal cord stimulation is better than conservative treatment alone in achieving amputation risk reduction, pain relief, and improvement of the clinical situation in this patient population. However, with a higher complication rate, it should be reserved for specialized centers with facilities and expertise to provide it. The low inclusion rate of studies also necessitates the performance of additional randomized controlled trials to establish the benefit of spinal cord stimulation therapy. ■