**Article Full Title**

Comparison of general exercise, motor control exercise and spinal manipulative therapy for chronic low back pain: A randomized trial

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**Paper Abstract**

Practice guidelines recommend various types of exercise and manipulative therapy for chronic back pain but there have been few head-to-head comparisons of these interventions. We conducted a randomized controlled trial to compare effects of general exercise, motor control exercise and manipulative therapy on function and perceived effect of intervention in patients with chronic back pain. Two hundred and forty adults with non-specific low back pain ≥3 months were allocated to groups that received 8 weeks of general exercise, motor control exercise or spinal manipulative therapy. General exercise included strengthening, stretching and aerobic exercises. Motor control exercise involved retraining specific trunk muscles using ultrasound feedback. Spinal manipulative therapy included joint mobilization and manipulation. Primary outcomes were patient-specific function (PSFS, 3–30) and global perceived effect (GPE, −5 to 5) at 8 weeks. These outcomes were also measured at 6 and 12 months. Follow-up was 93% at 8 weeks and 88% at 6 and 12 months. The motor control exercise group had slightly better outcomes than the general exercise group at 8 weeks (between-group difference: PSFS 2.9, 95% CI: 0.9–4.8; GPE 1.7, 95% CI: 0.9–2.4), as did the spinal manipulative therapy group (PSFS 2.3, 95% CI: 0.4–4.2; GPE 1.2, 95% CI: 0.4–2.0). The groups had similar outcomes at 6 and 12 months. Motor control exercise and spinal manipulative therapy produce slightly better short-term function and perceptions of effect than general exercise, but not better medium or long-term effects, in patients with chronic non-specific back pain.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

**Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

Yes

**Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Yes

**Was the treatment allocation concealed (so that assignments could not be predicted)?**

Yes

**Were study participants and providers blinded to treatment group assignment?**

Yes

**Were the people assessing the outcomes blinded to the participants' group assignments?**

Yes

**Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

Yes

**Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Yes

**Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Yes

**Was there high adherence to the intervention protocols for each treatment group?**

Yes

**Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

Yes

**Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

**Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

Yes

**Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Yes

**Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

Both the spinal manipulative therapy and motor control exercise groups had better short-term function and short-term perceptions of global effect of treatment than the general exercise group.

**Key Finding #2**

Spinal manipulative therapy did not give better medium- or long-term effects than general exercise.

**Key Finding #3**

Treatment was not controlled after the first eight weeks. Participants may have had better long-term effects in the exercise group due to subsequent co-interventions sought out following the first eight weeks.

**Key Finding #4**

**Please provide your summary of the paper**

This is a randomized controlled trial to differentiate which package of therapy (spinal manipulative therapy (SMT), motor control exercises, and general exercise) are most effective in a population with non-specific chronic low back pain lasting greater than 3 months. The double-blind trial found that general exercise is not as effective in short-term function and perceptions of global effect of treatment compared to the SMT, and motor control groups. However, general exercise was more effective than the other groups in medium and long-term effects. The was a yearlong study with follow ups at 8 weeks, 6 months, and 12 months. After the first 8 weeks, patients were not required to follow protocol for their group and could find alternative methods of treatment if they so wished.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

This article builds upon the concept that SMT is potentially more useful in treatment of chronic low-back pain as a stand-alone option than general exercise for short-term function and perceptions of global effect of treatment. However, it also shows that it has a smaller effect on the long-term compared to just general exercise alone. The authors admit that because they did not “package” SMT with a home exercise program (HEP) like the other groups were, that the study may have underestimated the effect of SMT. I think that this just goes to show that if we “package” manual therapy with an effective HEP, we may gain better medium and long-term effects for this population.