**Article Full Title**

Comparative Clinical Effectiveness of Nonsurgical Treatment Methods in patients with Lumbar Spinal Stenosis: A Randomized Clinical Trial

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**Paper Abstract**

Objective: To explore the comparative clinical effectiveness of 3 nonsurgical interventions for patients with LSS. Design, Setting, and Participants: Three-arm randomized clinical trial of 3 years’ duration (November 2013 to June 2016). Analysis began in August 2016. All interventions were delivered during 6 weeks with follow-up at 2 months and 6 months at an outpatient research clinic. Patients older than 60 years with LSS were recruited from the general public. Eligibility required anatomical evidence of central canal and/or lateral recess stenosis (magnetic resonance imaging/computed tomography) and clinical symptoms associated with LSS (neurogenic claudication; less symptoms with flexion). Analysis was intention to treat. Results A total of 259 participants (mean [SD] age, 72.4 [7.8] years; 137 women [52.9%]) were allocated to medical care (88 [34.0%]), group exercise (84 [32.4%]), or manual therapy/individualized exercise (87 [33.6%]). Adjusted between-group analyses at 2 months showed manual therapy/individualized exercise had greater improvement of symptoms and physical function compared with medical care (−2.0; 95% CI, −3.6 to −0.4) or group exercise (−2.4; 95% CI, −4.1 to −0.8). Manual therapy/individualized exercise had a greater proportion of responders (≥30% improvement) in symptoms and physical function (20%) and walking capacity (65.3%) at 2 months compared with medical care (7.6% and 48.7%, respectively) or group exercise (3.0% and 46.2%, respectively). At 6 months, there were no between-group differences in mean outcome scores or responder rates.. Conclusions and Relevance A combination of manual therapy/individualized exercise provides greater short-term improvement in symptoms and physical function and walking capacity than medical care or group exercises, although all 3 interventions were associated with improvements in long-term walking capacity. Trial Registration ClinicalTrials.gov Identifier: NCT01943435

**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?**

Cannot Determine, Not Reported, or Not Applicable

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

No

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

No

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

Cannot Determine, Not Reported, or Not Applicable

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

Cannot Determine, Not Reported, or Not Applicable

**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)?**

No

**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?**

No

**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**

Chiropractic/physical therapy intervention had better short-term outcomes at 2 months, but none of the interventions were superior to each other at 6 months.

**Key Finding #2**

All groups showed clinically important improvement in their walking distance, which was sustained at 6 months.

**Please provide your summary of the paper**

The authors note that one of the purposes of this study was to help the evidence gap of nonsurgical options for patients with Lumbar spinal stenosis (LSS), as LSS is one of the most common reasons for spine surgery in older US adults. Three nonsurgical interventions for patients with LSS are explored in this article to compare clinical effectiveness. The interventions consisted of medical care (medications and/or epidural injections), group exercises classes (supervised by fitness instructors in senior community centers), and manual therapy/individualized exercises (spinal mobilization, stretches, and strength training provided by chiropractors and physical therapists). At 2 months, manual therapy/individualized exercise had greater improvement than the other two intervention groups, but at 6 months there were no between group differences in scores, though all 3 interventions were associated with improvements in long term walking capacity.

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

Spinal surgery procedures lead to significant costs, risks, and complications. The decision to undergo spinal surgery should not be taken lightly. As reduced walking performance is a dominant physical impairment cited by patients in this population, the option of nonsurgical treatment with manual therapy and physical therapy should be discussed with patients. With these findings, a clinician can help confidently advise a patient that manual therapy with individualized exercise is a valid, non-surgical option for their symptoms, while still gaining improvements in long-term walking capacity and function.