

Spinal Manipulation for Subacute and Chronic Lumbar Radiculopathy: A Randomized Controlled Trial

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The objective of this study was to evaluate the efficacy of spinal manipulation for the management of subacute and/or chronic lumbar radiculopathy.

44 patients, ages 25 to 60 years, with unilateral radicular low back pain lasting more than 4 weeks were randomly allocated to [manipulation + physiotherapy] and a control group [physiotherapy only].

The examination consisted of manual muscle testing, sensory testing, deep tendon reflexes, and Lasegue test. Participants were excluded if they had progressive neurological deficit causing weakness, incontinence, and any problem in heel and toe walking.

Patients were also excluded with bilateral or acute radiculopathy, spinal fracture, surgery, neoplasia, infection, significant malalignment or malformation, Cauda Equina, joint hypermobility, rheumatoid arthritis, inflammatory phase of ankylosing spondylitis, spondylolisthesis, severe osteoporosis, multiple myeloma, Paget disease, psoriatic arthritis, Reiter syndrome, current anticoagulation therapy or coagulation disorder, severe scoliosis, myopathy, diabetic neuropathy, a history of laminectomy, and spinal stenosis not attributable to a herniated disc.

The most common level of disc involvement was L4-L5 and L5-S1.

The outcome measures were:

- The intensity of the low back pain on a visual analog scale
- The Oswestry Disability Questionnaire score
- Spinal ranges of motion
- Straight-Leg-Raising test

All patients underwent physiotherapy, 5 sessions weekly for 2 weeks (10 sessions):

- A hot pack for 20 minutes
- Transcutaneous electrical stimulation for 20 minutes
- Ultrasound treatment with intensity of 1 W/cm² for 5 minutes
- Exercise for core stability, flexibility, strengthening, and aerobics

Manipulation was 3 sessions of 1 week apart using “high-velocity, low-amplitude thrust in the direction of freer permitted motion.”

The assessments were carried out at the baseline, immediately after intervention, and at 3 months' follow-up.

"We hypothesized that manipulation would affect the intensity of pain and disability in patients with subacute or chronic radiculopathy."

KEY POINTS FROM THIS ARTICLE:

- 1) The prevalence of lumbar radiculopathy is 3%-5% of the general population.
 - Radicular pain is "accompanied by the neurological manifestations of a compressive force along a particular nerve route."
 - "The force is commonly exerted by a bulging or herniating disc, a hypertrophied facet or ligament, spondylolisthesis, neoplastic disease, or an infectious process."
 - "A large number of lumbar radiculopathies persist for more than 4 weeks."
 - "If nonoperative treatment measures fail, surgical treatment is indicated."
- 2) "The safety of spinal manipulation, especially when compared with medical treatments, encourages its use for conservative treatment of lumbar disc herniation."
- 3) "Spinal manipulation has been reported to have a desirable effect on pain, straight leg raise test, range of motion, size of disc herniation, and neurological symptoms in lumbar radiculopathy." **[Important]**
 - A 2019 study showed that patients with subacute lumbar radiculopathy benefit from manipulation.
 - Manual therapy is more "effective for managing spondylosis with or without radicular pain than conventional physical therapy."
- 4) "Spinal manipulation for the treatment of lumbar disc herniation has been reported to be safe."
 - "The risk of manipulation causing a clinically worsened status of the properly selected patient has been estimated to be less than 1 in 3.7 million manipulations." **[Important]**
 - "Patient satisfaction has been demonstrated to increase in patients who receive spinal manipulation."
 - Manipulation may reduce a second lumbar spine surgery by two-thirds.

5) OUTCOMES:

- "There were significant differences in the patterns of pain and disability reduction between the manipulation and control groups during the study."
- Patients receiving physiotherapy alone did not experience the decrease in the Oswestry disability scores as in the manipulation group.
- "For the disability indices, the outcomes were better in the manipulation group post-intervention and at 3 months' follow-up."
- "Manipulation was better than non-manipulation strategy in increasing range of motion in all directions and maneuvers."
- The manipulation group sustained favorable outcomes in pain control.
- "There were statistically significant differences in the results of straight leg raise test in the manipulation group."
- "The manipulation group benefited from the treatment more than the control."
- "Manipulation was more successful in yielding favorable clinical outcomes and restoring function."
- "We did not find any important adverse effect or worsening of the manifestations in our patients receiving physiotherapy, exercise, or manipulation."
- "Our results showed that manipulation was more successful in pain palliation and disability reduction than non-manipulation strategy."
- "The manipulation group experienced better outcomes in increasing range of motion and improving the results of the straight leg raise test."
- "The favorable outcomes remained for at least 3 months following the conclusion of the treatment."
- "Our results are consistent with previous findings in the literature regarding the advantages of manual therapy for musculoskeletal disorders."

6) MECHANISMS:

- "Spinal manipulation promotes separation between the joint surfaces, improves smooth joint gliding, and increases joint gapping."

- "Pain decreases because of cytokine release, mechanoreceptor stimulation, and increase in blood flow."
- 7) "At the end of the study, it was evident that the intervention group had significantly greater improvement in pain, disability, and range of motion."
- "Some patients in the control group [physiotherapy only] informed us that they had not experienced a favorable improvement in the intensity of their symptoms."
- 8) "Spinal manipulation leads to more success in pain control and disability reduction for the management of subacute or chronic lumbar radiculopathy."
[Key Point]
- "We conclude that manipulation improved the results of physiotherapy over a period of 3 months for patients with subacute or chronic lumbar radiculopathy."
 - Results "showed significantly better outcomes for manipulation in all measurements."
- 9) "Spinal manipulation improves the results of physiotherapy over a period of 3 months for patients with subacute or chronic lumbar radiculopathy." **[Key Point]**
- 10) "Minimum side effects, ease of administration, and patient satisfaction are the expected benefits of manipulation." **[Important]**
- 11) "It would be a good idea to prescribe manipulation combined with other treatments for patients with nonacute lumbar radiculopathy."
- 12) CLINICAL SIGNIFICANCE FROM AUTHORS
- "Spinal manipulation is effective in pain control and disability reduction in patients with subacute or chronic lumbar radiculopathy."
 - "Spinal manipulation improves the outcome of the straight leg raise test."
 - "Benefits from spinal manipulation remain at least for 3 months."
 - "Spinal manipulation is a relatively safe and easily administered therapeutic measure for nonacute lumbar radiculopathy."