

**Outcomes of Acute and Chronic Patients with Magnetic Resonance Imaging–Confirmed Symptomatic Lumbar Disc Herniations Receiving High-Velocity, Low-Amplitude, Spinal Manipulative Therapy:
A Prospective Observational Cohort Study With One-Year Follow-Up**

**Journal of Manipulative and Physiological Therapeutics
March/April 2014; Vol. 37; No. 3; pp. 155-163**

Serafin Leemann, DC, Cynthia K. Peterson, RN, DC, MEd, Christof Schmid, DC, Bernard Anklin, DC, and B. Kim Humphreys, DC, PhD
The authors are from Zurich, Switzerland

KEY POINTS FROM THIS STUDY:

- 1) “Low-back pain (LBP) with associated leg pain due to a herniated intervertebral disc is one of the most severe and disabling forms of back pain.”
- 2) “The purposes of this study were to evaluate patients with low-back pain and leg pain due to magnetic resonance imaging–confirmed disc herniation who are treated with high-velocity, low-amplitude spinal manipulation in terms of their short-, medium-, and long-term outcomes of self-reported global impression of change and pain levels at various time points up to 1 year.”
 - “The purpose of this study was to document outcomes of patients with confirmed, symptomatic lumbar disc herniations and sciatica who were specifically treated with side posture high-velocity, low-amplitude, spinal manipulation to the level of the disc herniation. It is important to emphasize that all patients in this study had clear abnormal physical examination findings of radiculopathy... corresponding to their MRI abnormalities.”
 - Patients whose herniations had penetrated through the peripheral annular fibers, the posterior longitudinal ligament or were sequestered were not excluded from being treated with SMT.
- 3) This prospective study included 148 patients with low back pain, leg pain, and physical examination abnormalities with consistent with lumbar disc herniations. Their pain was rated using the numerical rating scale (NRS) and their disability was measured with the Oswestry questionnaire. Evaluations were performed at:
 - 2 weeks
 - 1 month
 - 3 months
 - 6 months
 - 12 months

- 4) All patients in this study had back pain and moderate to severe leg pain in a dermatomal pattern, a MRI proven lateral disc herniation at the corresponding symptomatic spinal segment, and at least one of the following:
- Decreased straight leg raise test
 - Deficit in detection of cold
 - Reduced response to pinprick
 - Decreased muscle strength in a corresponding myotome
 - Decreased/absent deep tendon reflex corresponding to the involved segment
- 5) All spinal manipulation procedures were high-velocity, low-amplitude side posture thrusts, with contact on either the mammillary or spinous process and involving a "kick." The mean number of spinal manipulations up to the 1-month data collection period was 11.20. [roughly 3X/wk for a month]

Substantial Improvement (rounded)

	2 weeks	1 month	3 months	6 months	12 months
Entire group	70%	80%	91%	89%	88%
Acute group	81%	85%	95%	91%	86%
Chronic group	47%	71%	82%	89%	89%

- 6) "The proportion of patients reporting clinically relevant improvement in this current study is surprisingly good, with nearly 70% of patients improved as early as 2 weeks after the start of treatment. By 3 months, this figure was up to 90.5% and then stabilized at 6 months and 1 year."
- 7) "A large percentage of acute and importantly chronic lumbar disc herniation patients treated with chiropractic spinal manipulation reported clinically relevant improvement."
- 8) "There were no adverse events reported."
- "No cases of cauda equina syndrome or other adverse events were reported."
 - "One topic that needs to be addressed is the often stated fear that spinal manipulative therapy applied to patients with disc herniation often causes cauda equina syndrome. No cases of cauda equina syndrome or other serious adverse events were reported in this current study."
- 9) The natural history of sciatica in acute disc herniation patients is normally quite favorable, with 36% reporting major improvement after 2 weeks and up to 73% having resolution of their leg pain by 12 weeks. "The acute patients in this current study reported more substantial improvement and improved more quickly than the chronic patients, with more than 80% reporting clinically relevant improvement as early as 2 weeks and 94.5% improved at 3 months. These results are better than the natural history figures cited above."

10) "Even the chronic patients in this study, with the mean duration of their symptoms being over 450 days, reported significant improvement, although this takes slightly longer." Importantly, in this study, no chronic patients reported a recurrence.

11) "A large percentage of acute and importantly chronic lumbar disc herniation patients treated with high-velocity, low-amplitude side posture spinal manipulative therapy reported clinically relevant 'improvement' with no serious adverse events."

12) "Spinal Manipulative therapy is a very safe and cost-effective option for treating symptomatic lumbar disc herniation."

COMMENTS FROM DAN MURPHY

This is an important study. In patients with proven lumbar intervertebral disc herniation with compressive neuropathology, this study has shown that traditional chiropractic side-posture manipulation is both safe and effective for patients who are both acute and chronic. The ultimate clinical effectiveness of about 90% is impressive when compared to any form of therapy, and with no reported serious side effects.

This study would suggest that all patients suffering from lumbar intervertebral disc herniation with compressive neuropathology should be treated with chiropractic spinal adjusting.