The Bottom Line

The Bottom Line is a translation of study findings for application to clinical practice. It is not intended to substitute for a critical reading of the research article.

[Bialosky JE, Bishop MD, Robinson ME, Zeppieri Jr G, George SZ. Spinal Manipulative Therapy Has an Immediate Effect on Thermal Pain Sensitivity in People With Low Back Pain: A Randomized Controlled Trial. *Phys Ther*. 2009;89:1292–1303.]

What problems did the researchers set out to study, and why?

Spinal manipulative therapy (SMT) has been demonstrated to improve outcomes in patients with low back pain. However, the mechanisms by which SMT acts to reduce pain remain unclear. Previous research has demonstrated that SMT resulted in decreased pain perception in a group of asymptomatic individuals. It was hypothesized that this effect occurred through a reduction in temporal summation, a behavioral measure of dorsal horn cell central sensitization mediated by C-fiber afferents. The researchers in this study set out to examine the immediate effects of SMT on pain perception in a group of individuals with low back pain, as well as to examine the psychological influences on pain perception and whether the observed effect was local or regional.

Who participated in this study?

Thirty-six individuals currently experiencing low back pain were included in the study. The subjects were excluded if they demonstrated signs of nerve root compression or had previous back surgery.

What new information does this study offer?

Reduction in temporal summation was observed only in patients receiving SMT, indicating a modulation of dorsal horn excitability. This effect was observed primarily in the lumbar innervated region and was not related to psychological factors.

What new information does this study offer for patients?

This study provides preliminary support to a mechanism that explains the effects of SMT. This information may help clinicians decide when best to use SMT as an intervention to prevent individuals with acute low back pain from developing chronic low back pain by affecting the way their central nervous system processes pain.

How did the researchers go about this study?

Baseline demographic and psychological data were obtained, followed by testing of sensory perception using one protocol to determine Aδ fiber–mediated pain perception and another to determine temporal summation–mediated pain perception. Assessment of pain perception was conducted in both the upper extremity and lower extremity. Subjects were then randomly assigned to groups receiving SMT, riding a stationary bicycle, or performing spinal extension exercises. Follow-up measurements were taken.

How might the results be applied to physical therapist practice?

This study provides preliminary evidence in support of a centrally mediated mechanism of SMT through an alteration of central sensitization. This evidence has clinical implications as providers make decisions about when to select SMT as an intervention. This evidence supports the use of SMT as an intervention to reduce or prevent central sensitization, a key component to the development and persistence of chronic low back pain.

What are the limitations of the study, and what further research is needed?

Only immediate effects of temporal summation were assessed, and the research design did not allow a correlation of changes in temporal summation to clinical changes in pain or outcomes. Further research is still required to expand upon this preliminary evidence supporting a centrally mediated mechanism of SMT.

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