Evidence-Based Chiropractic Care (EBCC) Scholarly Paper Series

Lay summary on:

The pathophysiologic mechanisms of spinal manipulative therapy in the management of chronic musculoskeletal pain

Ontario Chiropractic Association

Research summary of a peer-reviewed scientific paper

What is this research about?

Chronic musculoskeletal (MSK) pain is a leading cause of disability, presenting a significant social and economic burden. With a globally aging population, its impact is expected to grow. Yet, we don't fully understand why chronic MSK pain happens or how to best treat it.

Central sensitization (CS) – a process where the nervous system becomes more sensitive, amplifying pain signals and causing pain to occur more easily, last longer, or spread – is being increasingly studied for its role in chronic MSK pain. Likewise, Spinal Manipulative Therapy (SMT) has been widely studied for its potential in managing chronic MSK pain.

This paper was written to summarize this emerging research and explore how CS contributes to chronic MSK pain, examine how SMT might help reduce this pain, and inform future research at developing more targeted treatment strategies.

How was this research conducted?

The research team summarized the evolving research base connecting chronic MSK pain and CS. By analyzing current evidence, they identified proposed mechanisms and clinical insights to provide rationale of how SMT may help manage chronic MSK pain by targeting CS.

What does the existing research tell us?

CS

Central Sensitization:

- Is an increase in pain sensitivity, causing widespread and amplified pain.
- Involves changes in how the spinal cord and brain process pain signals.
- Presents in various chronic MSK pain conditions, such as osteoarthritis, fibromyalgia, and myofascial pain syndrome.

SMT

Spinal Manipulative Therapy

- May help reduce chronic MSK pain through both physical (biomechanical) and nervous system (neurophysiological) effects.
- May influence how nerves in the spine and brain respond to pain signals, helping reduce sensitivity and ease symptoms of chronic MSK pain.
- While more research is needed to fully understand how SMT may work, current studies suggest it may be an effective tool for managing chronic MSK pain related to CS.

What does this all mean?

Chronic MSK pain may partly arise from changes in how the nervous system processes pain, a phenomenon known as CS. The research suggests that SMT may help manage chronic MSK pain by influencing these CS-related processes.

Within the EBCC series, this paper supports Step 2 of the Clinical Decision Tool, which asks whether there is biological plausibility to proceed with care. By examining CS as a potential mechanism of chronic MSK pain, and how SMT may help modulate these mechanisms, this paper offers a concrete example of how biological plausibility can support clinical decision-making.

Vazic, O., Antony, N. T., Murray, J., Murphy, B., & Srbely, J. (2025). The pathophysiologic mechanisms of spinal manipulative therapy in the management of chronic musculoskeletal pain. *J Can Chiropr Assoc, 69*(3).

Definitions:

Spinal Manipulative Therapy/ Spinal Manipulation Therapy (SMT):

A widely recognized hands-on technique most commonly known as “an adjustment.” It is used by chiropractors for the treatment of chronic and acute MSK pain, among other conditions. SMT itself involves a high-velocity, low-amplitude thrust delivered to spinal joints in areas of dysfunctional motion.

Chronic Musculoskeletal (MSK) Pain: Persistent pain and discomfort in the muscles, bones, joints and other soft and connective tissue that lasts for an extended period (typically 3 months or longer).

For more information:

Visit the Ontario Chiropractic Association (OCA)’s Evidence-Based Chiropractic Care (EBCC) for more research findings in a paper series that explores how chiropractors can integrate research evidence, clinical expertise and patient preferences to deliver high-quality care.

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