

## FACT SHEET

### EFFECTS OF SPINAL MANIPULATION ON THALAMIC MECHANICAL RESPONSE THRESHOLD

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#### Research Project Summary

##### Project Complete

For almost 120 years' chiropractic has been based on the idea that chiropractic adjustments help people live healthier, happier more active lives by removing interference to the nervous system. Chiropractors have also placed a lot of emphasis on specificity – the idea that the line of drive of the adjustment and the amount of preload applied in setting up for the adjustment are incredibly important aspects of the art of the adjustment. This study aims to add to the understanding of these two ideas by measuring the effect of chiropractic adjustments to adjustments using different preload, force and line of drive.

Most recent theories on the mechanism of chiropractic adjustments emphasise the central role of the thalamus. Its function includes relaying sensation, spatial sense, and motor signals to the cerebral cortex, along with the regulation of consciousness, sleep, and alertness. Since the thalamus serves as an integration and relay site for neural messages sent from the rest of the body, it becomes an excellent location to study the sensory effects of the spinal adjustment.

This study will use electrophysiological recording techniques to record the response from neurons in the thalamus before and after a spinal adjustment has been given to a rat vertebra in the lower back.

#### Impact of Research

##### Publications

- Reed WR, Cranston JT, Onifer SM, Little JW, Sozio RS. Decreased spontaneous activity and altered evoked nociceptive responses of rat thalamic submedius neurons to lumbar vertebra thrust. *Experimental Brain Research* 2017; [Epub ahead of print] doi: 10.1007/s00221-017-5013-5.
- Reed WR, Sozio R, Pickar JG, Onifer SM. Effect of spinal manipulation thrust duration on trunk mechanical activation thresholds of nociceptive-specific lateral thalamic neurons. [Journal of Manipulative Physiological Therapeutics 37:552-60.](#)
- Reed WR, Pickar JG, Sozio RS, Long, CR. Effect of spinal manipulation thrust magnitude on trunk mechanical thresholds of lateral thalamic neurons. [Journal of Manipulative Physiological Therapeutics, 37:277-86.](#)

##### Presentations

- Reed WR, Cranston JT, Onifer SM, Sozio RS. Effect of spinal manipulation on spontaneous and evoked activity of thalamic submedius neurons (603.05). Society for Neuroscience, Oct. 17-21, 2015 Chicago, IL.
- Reed WR, Sozio R, Pickar J, Onifer SM. Effect of spinal manipulation thrust duration on trunk mechanical activation thresholds of nociceptive specific lateral thalamic neurons. International Research Congress on Integrative Health & Medicine, May 13-16, 2014 Miami, FL.
- Reed WR, Sozio RS, Pickar JG, Long CR. Spinal manipulation can increase trunk mechanical thresholds of lateral thalamic neurons.(Platform) Association of Chiropractic Colleges-Research Agenda Conference, March 20-22, 2014 Orlando FL.