



Activator Methods Chiropractic Technique

Research Summary

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Reflex responses associated with Activator treatment. Bruce Symonsa, Walter Herzoga, Tim Leonarda and Hoa Nguyena.

Background: Previous studies have demonstrated the existence of a reflex response, measurable by surface electromyography (sEMG), following manually-delivered spinal manipulative therapy (SMT). This reflex response has been characterized as being consistent and reproducible within individual subjects, and is non-local in that it extends beyond the site of manipulation. However, the nature and magnitude of possible reflex responses in the paraspinal and proximal limb muscles elicited by non-manual SMT, such as with an Activator adjusting instrument, remain unknown.

Objective: To characterize the reflex responses associated with Activator-SMT using sEMG to record the responses of 16 muscles before, during and after treatment.

Study Design: The electromyographic responses of 16 paraspinal and proximal limb muscles in nine healthy, asymptomatic male volunteers were measured simultaneously by sEMG before, during and after chiropractic spinal manipulative therapy using an Activator adjusting instrument.

Methods: SMTs were delivered with an Activator II instrument to nine asymptomatic volunteers at six sites bilaterally (C3/4, T2/3, T6/8, T11/12, L2-4 and S1). Reflex responses were measured from 16 muscles using bipolar sEMG electrodes and were collected at 2000 Hz per channel with CODAS data acquisition software.

Results: Approximately 68% of the SMTs resulted in a detectable reflex response, as follows: cervical spine, 50%; thoracic spine, 59%; lumbar spine, 83%; and sacroiliacs, 94%. Treatments delivered to the thoracic spine elicited the largest responses, whereas the lumbar spine demonstrated the most heterogeneous responses. Whenever a reflex response was observed, it always occurred close to the treatment site ipsilaterally, and was detected in muscles that had either their origin or insertion into the vertebral level adjusted.

Conclusions: Based on the local nature, magnitude and characteristic shape of all reflex responses observed, we hypothesized that they were likely generated by a single proprioceptor. Furthermore, the temporal properties of this reflex response suggest they originated from the muscle spindles. In contrast to our previous observations on reflex responses following manual SMT, the Activator treatments elicited reflex responses that varied between subjects but were consistent within an individual and were local in nature. We conclude that Activator-delivered SMT results in a reflex response that is quantitatively and qualitatively different from manual SMT.

Key Indexing Terms: muscles; reflexes; chiropractic.

Chiropractic treatment of temporomandibular disorders using the Activator Adjusting Instrument - a prospective case series.

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Objective: To determine if there was basis for the treatment of temporomandibular disease (TMD) using the chiropractic protocol developed by Activator Methods, Inc.

Setting: Private, solo practice of an Activator advanced proficiency rated chiropractor with 15 years' experience.

Design: Prospective case series.

Participants: Nine adult volunteers with articular TMD recruited from the practice of the treating clinician.

Main outcome measures: Change from baseline to follow-up of visual analog scale (VAS) for temporomandibular joint (TMJ) pain and maximum active mouth opening without pain.

Interventions: Full spine and TMJ adjusting in accordance with the advanced protocol of Activator Methods. Participants were typically seen three times per week for two weeks and according to individual progress thereafter for six more weeks.

Results: Eight participants completed outcome assessments. The median VAS decrease was 45 mm (range of 21-71); all experienced improvement. The median increase of mouth-opening was 9 mm (range of 1-15); all showing improvement.

Conclusion: The results of this prospective case series indicated that the TMD symptoms of these participants improved following a course of treatment using the Activator protocol. Consequently, further investigation of this type of chiropractic treatment for patients with the articular type of TMJ is warranted.

Key indexing terms: Temporomandibular disorder; temporomandibular joint; chiropractic.

Title: The Force of the Activator® Adjusting Instrument

Reference: Duell ML. The Force of the Activator® Adjusting Instrument. Digest of Chiropractic Economics 1984 (DEC); 27 (3): 17-9

Abstract: The activator adjusting instrument is a hand-held device which can produce adjusting force. Four activator adjusting instruments were used to introduce a force into a measuring system. Surprisingly, the force decreased linearly after two or three revolutions of the adjustment knob. The adjustment knob allows greater anvil movement when the activator adjusting instrument produces a force. A model based on the physical mechanics of the activator adjusting instrument was able to explain 88 percent of the force variation. Similar data was available from meric and DNFT adjusting so they were compared with the activator adjusting instrument. The fixed energy of the activator adjusting instrument lead us to the hypothesis that significant movement of bone may not be necessary for the healing process to take place.

Title: Accuracy of Piezoelectric Accelerometers Measuring Displacement of a Spinal Adjusting Instrument.

Reference: Fuhr AW, Smith DB. Accuracy of Piezoelectric Accelerometers Measuring Displacement of a Spinal Adjusting Instrument. J Manipulative Physiol Ther 1986; 9(1); 15-21

Abstract: The accuracy and reproducibility of an electronic system to measure the displacement of a spring-loaded chiropractic adjusting instrument was examined. The electronic system included a piezoelectric force transducer, piezoelectric accelerometer transducers and a digital oscilloscope. Accuracy was studied by comparing electronic measurements with the expansion allowed by the mechanically limiting expansion-control knob of the instrument. The results suggested improvements for future accuracy verification checks and detected accuracy within about 10% of the expansion of the commonly used expansion-control knob revolutions. Preliminary experiments are presented to show application of the system to studies on thrusts into the spine. The impedance-head-equipped spring-loaded Activator chiropractic adjusting instrument had a low velocity when used on the patient and appeared to cause bone movement and a measurable EMG response. (J Manipulative Physiol Ther 1986; 9:15-21)

Key Words: Piezoelectric Transducer, Chiropractic Manipulative Therapy, Stretch Reflex, EMG, Mechanical Low-Pass Filter, Accelerometer.