Muscle Reflex Latencies During Trunk Perturbations

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Introduction

Manipulative treatment has been speculated to increase range of motion and relieve pain through modulation of excitability of the sensory and motor portions of the nervous system (Roland, 1991). Systemic investigations pertaining to pain reduction through a combination of sensory and spinal reflex properties have been lacking. We hypothesize that spinal and peripheral system excitability may be modulated by manipulation, which may lead to pain modulation. Accordingly, we systematically examined the effect of joint manipulation on both cortical and spinal reflex properties. Our main objective was to determine if modifying cortical and spinal reflex properties would provide a mechanistic basis for pain modulation.

Methods

Data Collection

Movements of the forearm, humerus, trunk, pelvis, thigh, and shank were recorded using the center of the innervation zone and the distal tendon. Surface electrodes were placed on the center of the innervation zone and the distal tendon. Surface electrodes were placed at an area halfway between the center of the innervation zone and the distal tendon. Recordings were used. The electrodes were placed at an area halfway between the center of the innervation zone and the distal tendon. Recordings were used. The electrodes were placed at an area halfway between the center of the innervation zone and the distal tendon. Recordings were used. The electrodes were placed at an area halfway between the center of the innervation zone and the distal tendon. Recordings were used.

Electromyography: The muscle activity was pre-amplified at the recording site and amplified before transmission to the computer. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected. The onset, peak amplitude, and average amplitude was collected.

Results

Presented are descriptive data including presence of a specific trunk muscle activation and the trunk latency reflex discharge. Reaction times between gender, joint position, and intervention. In healthy control and LBP subjects, expected a right lateral flexion perturbation did not consistently activate R Lateral Flexion Perturbation. Right rotation perturbations generally showed expected. Extension perturbations did not activate the R ERS and L ERS. HVLA was not consistently recruited during right rotation perturbations. HVLA was not consistently recruited during right rotation perturbations. HVLA was not consistently recruited during right rotation perturbations. HVLA was not consistently recruited during right rotation perturbations. HVLA was not consistently recruited during right rotation perturbations.

Conclusions

The findings indicate that subjects utilize a variety of muscle recruitment strategies during perturbations. The results also show that healthy control and LBP subjects respond similarly to MANIPULATION. An unexpected finding was that manipulation did not have an affect on the subjects. Other studies have shown that MANIPULATION has resulted in changes in LBP populations. Other studies have shown that MANIPULATION has resulted in changes in LBP populations. Other studies have shown that MANIPULATION has resulted in changes in LBP populations. Other studies have shown that MANIPULATION has resulted in changes in LBP populations.

Future Directions

• We seek to determine the magnitude of the effect that a universal load had on the data in this study by normalizing the load in future studies based on percentage of the subject’s weight.

• In this study, only one manipulative thrust was delivered to the lumbar spine of the S2-L1 vertebral level. Other studies have shown that a combination of thrusts may be more effective.

• Future studies will include fine-needle EMG analysis of the multifidus and the latissimus dorsi muscles.

• We seek to determine if the current findings hold true for individuals with a higher level of impairment.