

A Comparative Study of Cervical Hysteresis Characteristics after Various Osteopathic Manipulative Treatment (OMT) Modalities

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BACKGROUND: Despite apparent clinical benefits, few objective tissue texture or myofascial measurements exist documenting post-OMT change. A durometer which imparted a single consistent piezoelectric impulse of 4lbs (Spineliner[®]; Sigma Instruments; Pittsburg, PA USA) into the myofascial structures overlying the spine was employed to quantifiably measure the hysteresis characteristics and to document tissue texture and fascial changes post-OMT. The four components used to calculate a durometer, *motoricity* (area under the curve), *mobility* (time to peak/total time), *frequency* (length of the curve) and *fixation* (peak of the curve) were analyzed to document the change in cervical hysteresis after OMT.

HYPOTHESIS: Cervical tissues will show a quantifiable change in *fixation*, *frequency*, *mobility*, and *motoricity* after OMT with no objective changes in Sham treatment.

MATERIALS & METHODS: A total of 240 subjects were recruited. The first 200 subjects were equally and randomly assigned to receive Sham or single-segmental Muscle Energy (ME), Counterstrain (CS), Balanced Ligamentous Tension (BLT), or High-Velocity Low-Amplitude (HVLA) OMT directed to the cervical segment considered to have the most somatic dysfunction. 40 additional subjects were evenly distributed to receive ME or HVLA. All subjects were objectively measured using the Spineliner[®], treated with cervical OMT, and then remeasured with the Spineliner[®].

RESULTS: A change from baseline derived from the median values regardless of treatment was displayed in motoricity, fixation, and frequency except for Sham in which no change was noted. Mobility also showed a change from base line with ME, CS, and BLT; however, a slight change in sham and no change in HVLA were observed. But, the most significant post OMT changes occur in the motoricity component with CS (p-value 0.04). A similar trend in mobility is also noted in CS (p-value 0.12).

CONCLUSION: When comparing treated to untreated cervical spines using comparable myofascial tissue loads, the most significant changes occur with CS post OMT and an appreciable objective change is noted in all four Spineliner[®] components post OMT and no change in Sham. Although a slight change in Sham was noted in regards to mobility; overall, it is evident that not only does a subjective change in the fascia occur post-OMT, but a quantifiable objective change transpires as well.

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