Exploring the effect of osteopathic manipulative treatment on cognitive-motor integration post-concussion
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Introduction: Sustaining an acquired brain injury (ABI) can radically alter one’s life. This form of brain injury occurs after birth and results in a constellation of physical, cognitive, emotional and behavioral changes. Though many forms of ABI exist, concussion is a significant public health concern: concussion is the most common form of traumatic brain injury (TBI), which is a leading cause of ABI.¹ Concussion is a perplexing condition: its symptoms are nonspecific and though most concussed individuals fully recover within the first 3 months of injury, up to 43% can continue experiencing persistent symptoms after this window.² These symptoms interfere with one’s quality of life and lead to disability. The importance of treating concussion is evident, yet an evidence-based standard rehabilitation program does not exist.

The current project explores the effect of osteopathic manual treatment (OMT) on cognitive-motor integration (CMI), participant recovery from concussion symptoms, and physiological measure changes pre- and post-intervention. Previous findings have shown that CMI impairments persist in individuals with a history of concussion up to two years post-injury. This research will investigate evidence that such a program may augment neuroplastic changes in the brains of individuals with concussion, potentially leading to functional recovery and improved quality of life.

Methods: Participants included 28 individuals of all activity levels, 14 of which were healthy controls and 14 were symptomatic and between 10-90 days post-injury. To assess CMI performance, participants were tested on 2 visuomotor tasks where reach and gaze were increasingly spatially dissociated using two linked touchscreens. These tasks included a standard condition requiring direct interaction with visual targets, and one dissociated non-standard conditions requiring CMI (visual feedback reversal and plane-change). Heart Rate Variability (HRV) and the Sport Concussion Assessment Tool – 5th Edition (SCAT5) were also assessed pre-treatment. Participants were then provided with 2 separate OMT sessions, two-weeks apart. In the third and final session, CMI, HRV, and SCAT5 were assessed and no manual therapy was provided.

Hypothesis and Predicted Results: We hypothesize that osteopathic manual intervention therapy will improve cognitive-motor integration performance, and with it functional skilled performance, in individuals who continue to be affected by concussion.