THE ROLE OF SPINAL MANIPULATION AS A MODERATOR OF CERVICAL SPINE POSITION ON SHOULDER ROTATION STRENGTH

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Background: Emerging data shows that altering the cervical spine’s position may negatively impact shoulder rotation strength. This may be problematic in populations that require strenuous use of their shoulders. Because spinal manipulations result in acute increases in cervical spine range of motion and extremity strength, there is reason to believe spinal manipulation may mitigate the deleterious effects of a rotated cervical spine on shoulder rotation strength.

Purpose: To assess spinal manipulation as a moderator of cervical spine rotation on shoulder rotation strength.

Study Design: This was a randomized control trial.

Methods: Fifty-one participants (170±10 cm, 73±18 kg) underwent concentric shoulder internal and external rotation strength testing on an isokinetic dynamometer. The shoulder was tested through a 90° arc at 60°/s with the shoulder elevated 90° in the frontal and 45° anterior to the frontal plane (scapular plane). Tests were performed with the participant’s cervical spine in neutral, maximally rotated contralaterally in the frontal plane, and maximally rotated ipsilaterally with the shoulder in the scapular plane. Testing order was randomized. Participants received either cervicothoracic spinal manipulation or a sham manipulation then were tested with the same protocol following, and 30 minutes following treatment. Multi-level regression models were used to compare peak torque.

Results: In both the frontal and scapular plane, the level 2 explanatory model was superior to the model including a group*time*position interaction, indicating spinal manipulation did not positively affect shoulder internal or external rotation strength. Time consistently had a negative coefficient, indicating both groups decreased strength over time.

Discussion/Conclusion: Current data do not suggest a thrust manipulation mitigates the effects of an altered cervical spine position on shoulder rotation strength. However, when identical models were run splitting the groups by joint cavitation rather than manipulation, models including the group*time*cavitation interaction were superior to level 2 explanatory models, with interaction estimates being positive. This provides weak evidence that cavitations may play a role in moderating shoulder rotation strength, but further research is needed.

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