

Abstract

Purpose: Self-mobilization is frequently advocated by physical therapists as a modality to increase thoracic extension. However, there is a lack of research linking self-mobilization to increased extension in the thoracic spine. The researchers chose to isolate the thoracic spine to test self-joint mobilization techniques due to the high incidence of hypomobility observed within the student population. The aim of this study was to determine the effect of thoracic self-joint mobilization on active thoracic extension using a high density foam roller. Thoracic extension was defined by the distance between C7 and T12.

Methods: Twenty-three healthy college students participated in the study. Subjects were pre-tested for maximum thoracic extension. Subjects were randomly assigned to one of two groups, the intervention group (n=14, age 19.4 ± 1.5 , height 171.75 ± 30.48 , weight 74.71 ± 1.5 12.55), or the control group (n=9, age 20.4 ± 1.1 , height 179.66 ± 6.63 , weight 82.89 ± 11.01). The intervention group was instructed on the prescribed self-mobilization technique prior to initiating the protocol. The protocol consisted of two self-mobilization sessions each day for 14 days using a high density foam roller. Following completion of the protocol, both groups were again measured for maximum thoracic extension. The difference between groups was measured to determine if there was a significant increase in thoracic extension.

Results: An independent t-test was conducted to analyze the difference between pre and post thoracic extension measurements. Results revealed significant increase in thoracic extension for the intervention group after the 14 day protocol (from 2.36cm \pm 0.98 to 3.31cm \pm 1.19 for an increase of $0.95 \text{cm} \pm 0.65 \text{ (p} = 0.010)$).

Conclusion: The prescribed self-mobilization protocol significantly increased thoracic extension. Increased extension in the thoracic spine has several benefits which include increased shoulder flexion, and decreased neck-shoulder pain. The present results suggest that the utilized self-mobilization protocol is a viable method for increasing thoracic range of motion (ROM). The protocol provides a possible method of obtaining the benefits of increased thoracic extension through a self-administered mobilization.

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The Effects of Self-Joint Mobilization on Thoracic Extension Utilizing a High Density Foam Roller

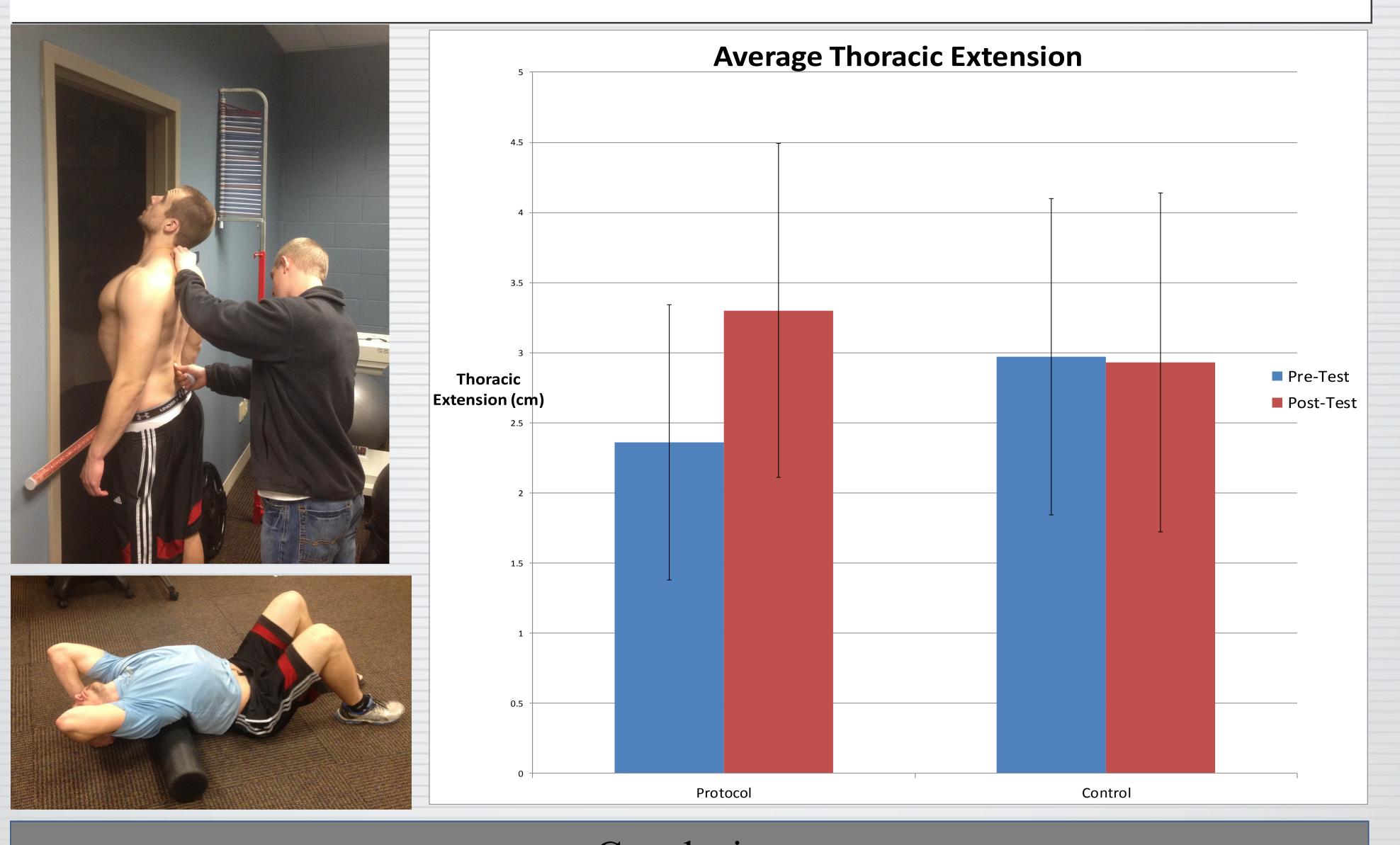
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Introduction

Hypomobility of the thoracic spine has been linked to decreased shoulder flexion,² increased neck and shoulder pain,¹ as well as overuse injuries in the cervical and lumbar spine.⁵ One method commonly used by physical therapists to treat hypomobility is joint mobilization.³ Joint mobilizations are passive movements of a skeletal joint with the aim of increasing range of motion (ROM) by stretching joint capsules, surrounding connective tissue and soft tissue.⁶ Physical therapists often prescribe joint mobilizations as self-exercises for patients to perform between appointments.³

Research has shown that mobilizations can be used as an intervention for increasing mobility in hypomobile joints⁴. However, little research has been done to test the effectiveness of self-mobilization without additional mobilizations. The aim of this study was to determine the effect of thoracic self-joint mobilization on active thoracic extension using a high density foam roller.



Conclusion

The self-mobilization protocol in the present study significantly increased thoracic extension. The results suggest that the protocol increased overall thoracic extension by stretching joint capsules, surrounding connective tissue and soft tissue of the thoracic spine. This was accomplished through the self-mobilizations performed on the three target areas. Increased extension in the thoracic spine has several benefits which include increased shoulder flexion, decreased neck-shoulder pain, and decreased risk of overuse injuries in the cervical and lumbar spine. The present results suggest that the utilized self-mobilization protocol is a viable method for increasing thoracic ROM. The protocol provides a possible method of obtaining the benefits of increased thoracic extension through a self-administered mobilization.

Subjects began each session with a warm-up. They were instructed to lie on their backs, placing the foam roller underneath their scapulae, perpendicular to the spine. Hips and buttocks rested on the floor, and knees were bent at 90 degrees. The head was supported by the hands in a neutral position with elbows in the sagittal plane and the back straight. The subjects then lifted their hips and buttocks off the floor into a neutral position, and rolled on the foam roller from T1 to T12 and back to T1. For interpretational purposes participants were instructed to roll from the base of their neck to the bottom of their rib cage. This was performed12 times.

The participants were then instructed to again lie on their backs, placing the foam roller underneath them perpendicular to the spine. Hips and buttocks were kept on the floor and the knees were bent at 90 degrees. The head was supported by the hands in a neutral position with elbows in the sagittal plane and the back straight. Subjects then began the segmental approach. Three areas of the thoracic spine were targeted with the foam rollers; the midpoint between the superior and inferior angles of the scapulae along the medial border, the inferior angle of the scapulae, and six inches below the inferior angle of the scapula.

At each location, the participants were instructed to exhale as they extended over the foam roller. They were told to pause at the end ROM for five seconds. They would then inhale while maintaining position. As they exhaled the second time, they would attempt to fall farther into extension and pause at the new end ROM for five seconds. The repetition was completed by inhaling as they returned to the starting position. Two repetitions were done at each of the three locations to complete one session. Twenty-eight total session were performed by completing two sessions per day for 14 days.

- Congress.

- McGraw-Hill.



Methods

References

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