

**Is there an immediate effect on pectoralis minor length
after performing a prone scapular retraction exercise
using typical sets and repetitions in pain free
participants?**

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Study Protocol with SAP

Brief Summary

Subacromial impingement is a common shoulder pathology. Participants with subacromial impingement have been shown to have decreased upward rotation, decreased posterior tipping and increased internal rotation of the scapula when compared to those with asymptomatic shoulders during arm elevation. One hypothesis for these differences in scapular kinematics is a shortened pectoralis minor. The objective of this study is to determine if there is an immediate length change of the Pectoralis Minor (PM) muscle after performing a prone scapular retraction exercise in normal participants.

Detailed Description

A convenience sample comprised of 50 healthy participants with no current shoulder pathologies will be studied. The Dependent variable will be PM length as measured by calipers in standing.

Recruited participants will fill out a consent form and then a medical history form to ensure they do not violate the exclusion criteria. Participants will then demonstrate shoulder elevation ROM to ensure they have at least 130 degrees of shoulder elevation. Participants will then receive a brief shoulder evaluation to further rule out shoulder pathology. Participants will then have their standing height measured in centimeters with a tape measure fixed against a wall. Participants will then step away from the wall and be asked to stand in their resting position. A mark will then be placed on the most medial-inferior aspect of the coracoid process and a second mark on the anterior-inferior edge of the fourth rib one index finger's width lateral to the sternum. Then a

caliper will be used to measure the distance between these marks as the participant holds a normal exhalation. This caliper will then be set aside for measurement recording once all PM measurements have been collected in order to keep the tester blinded.

The participant will then lie prone on a treatment plinth with a small towel roll under their forehead. The participant will form fists with their hands and place them on the plinth just superior to their head, fists touching the crown of their head, with their thumbs up and the ulnar side of the hand resting on the plinth with their arms relaxed so their elbows remain on the plinth. The participant will then lift their elbows off the plinth as high as possible while keeping the hands remaining on the plinth. The participant will repeat this motion for 10 repetitions, performing 3 sets of this exercise with 30 seconds rest in between each set. The participant will be instructed to not hold the end range position and be monitored throughout the exercise to make sure they are performing the exercise correctly.

The participant will then stand up and a second caliper will be used to once again measure PM length in resting standing position as above by the same tester using the same marks. Only then will the two caliper measurements be recorded and Pectoralis Minor Index (PMI) be calculated. This will conclude the testing procedure and the participant's involvement in the study.

A Paired T test will be used to analyze PM length and PMI pre-exercise versus PM length and PMI post-exercise using SPSS. The Standard error of measurement (SEM) and the minimum detectable change (MDC) will also be analyzed.