

# ABSTRACT

## MANUAL THERAPY TECHNIQUES AFFECT PEAK FLOW MEASURE AND CHEST EXPANSION

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**PURPOSE:** To evaluate the effect of manual therapy techniques (MTT) upon lung function and Chest Expansion (CE).

**METHODS:** It was evaluated 30 Brazilian female volunteers (20yrs±1.9yrs) with normal lung function and no known disease. After ethical approval and with informed written consent, CE, Forced Vital Capacity (FVC), Forced Expiratory Volume in One Second (FEV1), FEV1/FVC ratio, Maximal Voluntary Ventilation and Expiratory Peak Flow (PF) were measured by a single blinded researcher utilizing a spirometer before and after the application of two consecutive MTT under stable conditions (temperature, time and humidity). Data were achieved according to the II Brazilian Consensus of Spirometry. CE was defined as the difference in thoraco-abdominal diameter from maximum inspiration to maximum expiration. Thoraco-abdominal diameter was measured using an inelastic measuring tape positioned at the levels of the axilla, xiphisternum and umbilicus with the volunteer in orthostatic position. The two MTT were applied consecutively by a different physical therapist researcher in random order separated by a three minute resting time. Maneuvers were a muscle energy technique to pectoralis maximus and minimus and a high-velocity thrust manipulative therapy maneuver of the 6<sup>th</sup> thoracic vertebrae level according to the precepts of Flynn. Paired Student's T-tests were used to compare the results before and after interventions ( $p < 0.05$ ).

**RESULTS:** Axillary expansion (fig.1) increased from  $5.5 \pm 1.4$ cm to  $6.3 \pm 1.5$ cm, xiphisternum expansion (Fig.2) increased from  $6.3 \pm 2.3$ cm to  $6.8 \pm 2.0$ cm, and abdominal expansion (Fig. 3) increased from  $3.6 \pm 1.3$ cm to  $4.1 \pm 1.5$ cm. PF (Fig.4) increased from  $5.3 \pm 1.9$ L/s to  $5.7 \pm 2.0$ L/s. No other differences were found in the other variables.

**CONCLUSIONS:** MTT are used to treat and prevent respiratory disorders<sup>1</sup>, however, there are few studies exploring their effectiveness. MTT and manipulations can be used to increase chest wall mobility and treat respiratory dysfunctions<sup>2, 3</sup>. This study suggests that MTT techniques can improve CE even in healthy individuals, therefore, in a chest restricted sample we might expect greater changes. This MTT protocol increased CE and peak flow. These findings may be related to changes in mechanical properties of the chest wall.

### REFERENCES:

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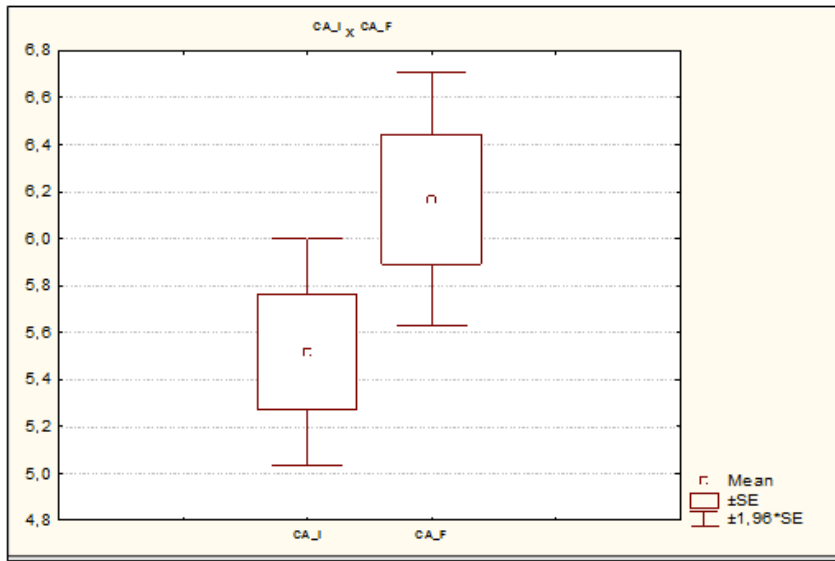


FIG. 01: Axillary Expansion before (CA\_I) and after (CA\_F) technique utilization.

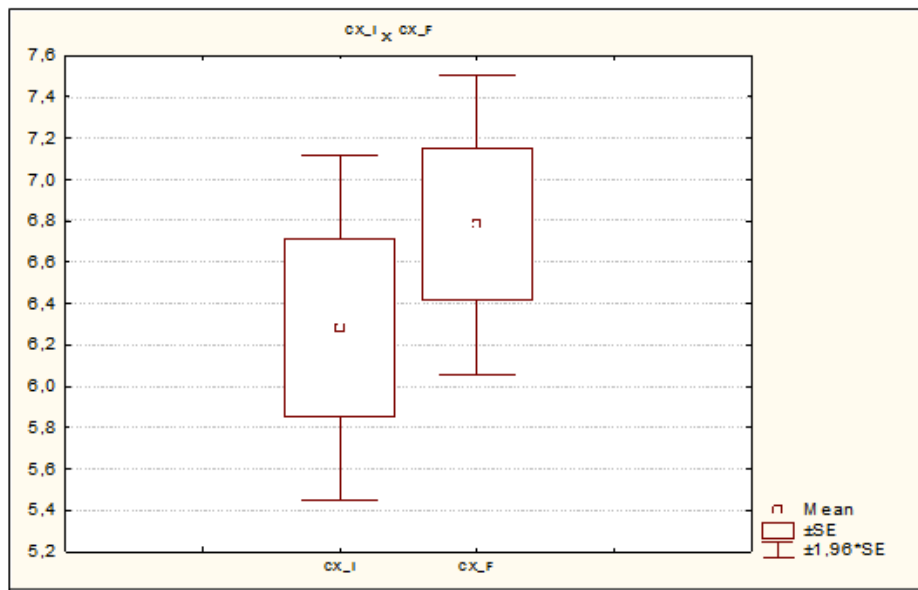


FIG. 02: Xiphisternum expansion before (CX\_I) and after (CX\_F) technique utilization.

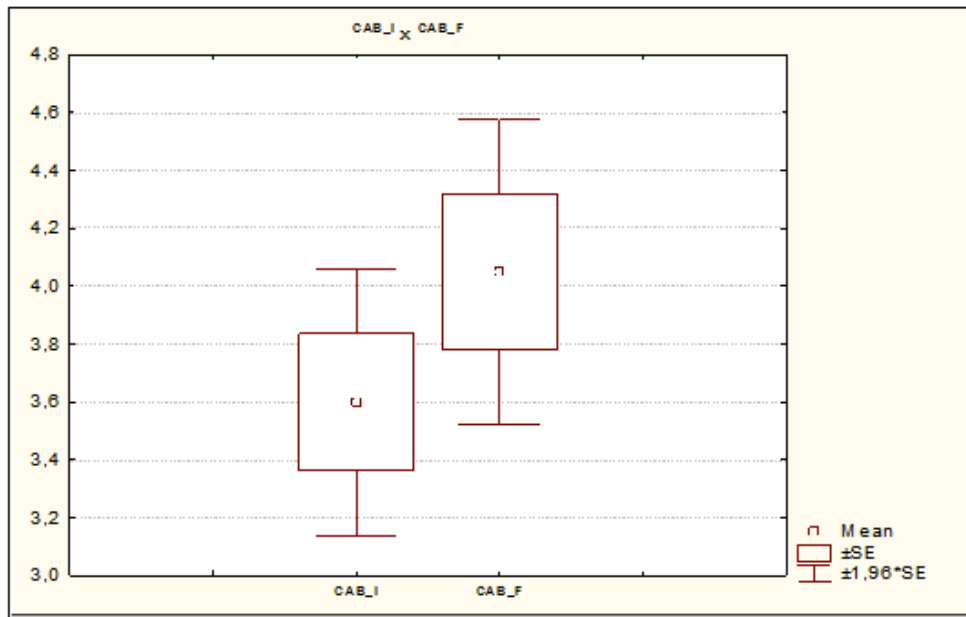


FIG. 03: Abdominal expansion before (CAB\_I) and after (CAB\_F) technique utilization.

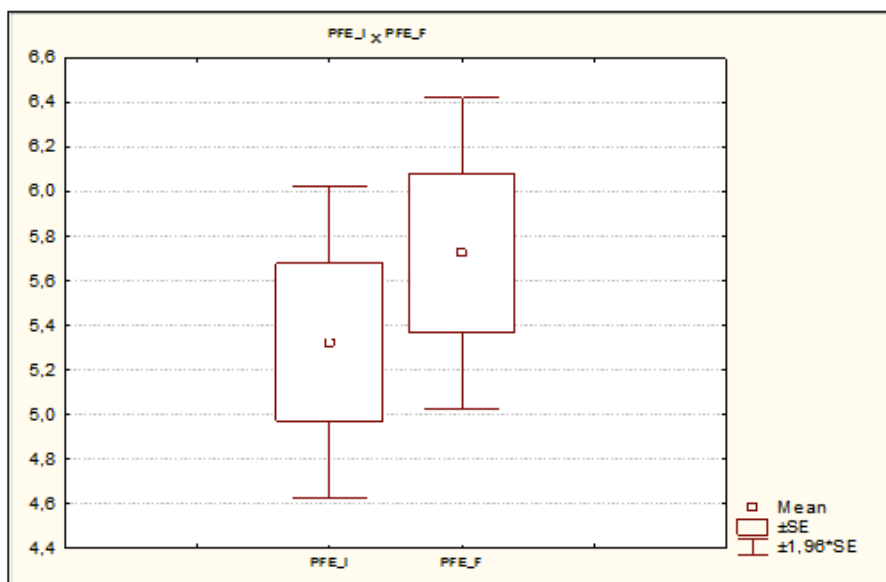


FIG. 04: Expiratory Peak Flow before (PFE\_I) and after (PFE\_F) technique utilization.