

**Reliability of the Upper trapezius Muscle and Fascia Thickness and Strain Ratio
Measurements by Ultrasonography Imaging and Sonoelastography in Subjects with
Myofascial Pain Syndrome**

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Objective: To assess the within and between intra- and inter-examiner reliability of the upper trapezius muscle and fascia thickness measured by ultrasonography Imaging (USI) and strain ratio by sonoelastography (SE) in subjects with myofascial pain syndrome (MPS).

Methods: 32 upper trapezius muscles of 22 MPS subjects were assessed. Two examiners measured the upper trapezius thickness and strain ratio three times by USI and ES independently. The examiners measured the upper trapezius thickness and strain ratio 6-8 days apart.

Results: 87.5 % of subjects had trigger points on the right side and 22.5 % of those on the left side. For test session, the average upper trapezius thickness, fascia thickness and strain ratio measured by examiner 1 and 2, were 11.86 mm and 11.56 mm; 1.23 mm and 1.25 mm; 0.94 and 0.99, respectively. For retest session, the above-mentioned parameters by examiner 1 and 2, were 11.76 mm and 11.39 mm; 1.27 mm and 1.29 mm; 0.96 and 0.99, respectively. The ICC values showed good to excellent reliability for both within and between intra-examiner measurements. (0.78-0.96; 0.75-0.98). Also, the ICC and SEM of inter-examiner reliability ranged between 0.88 to 0.93 and 0.05 to 0.44 for both muscle and fascia thickness, and 0.70 to 0.75 and 0.04 to 0.20 for strain ratio of upper trapezius.

Conclusion: The upper trapezius thickness measurements by USI and Strain ratio by ES are reliable methods in subjects with MPS.

Key Words: Trigger Points; Stiffness; Reproducibility; Elasticity Imaging Techniques; Thickness Measurement