

Echographic study of the muscular fasciae

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Today there is a great interest about the muscular fasciae and their possible role in myofascialpain, but it is still unclear what are their main features in living. For example the thickness of the thoracolumbar fascia, that is probably the most studied fascia, varies from 0.37 mm [1] to 0.68 mm [2]. The lack of a standard value for the fascial thickness has a great clinical relevance, indeed it seems that their increased thickness could be related to myofascial pain or reduction of the range of motion. Therefore, the definition of standard values of fascial thickness is the first step to investigate fascial alterations that may play a role in myofascial pain. The fascial thickness was evaluated in 24 subjects with a mean age of 30.46 years ($SD \pm 9.241$). The mean BMI was of 22.08 ($SD \pm 3.696$), in particular women with an BMI of 20.30 and 25.08 for men. The measurement was performed with the portable ultrasound system of SonoSite®, linear probe of 15 Hz. For each subject 13 deep fasciae were analyzed, both in the trunk, superior and inferior limbs. The collected data showed that the average thickness of the fasciae ranges from 0.71 ± 0.15 mm (deep fascia of the anterior region of the arm) and 1.62 ± 0.39 mm (plantar fascia). The fasciae of the anterior compartments are thinner respect to the fasciae of the posterior ones (p value <0.001). There is also a variability among the different subjects, having a range from 0.76 ± 0.19 mm (25 year old woman) to 1.12 ± 0.43 mm (20 year old men). The fascial thickness shows also a significant difference among women (mean 0.99 mm ± 0.31 mm) and men (average 1.09 mm ± 0.32 mm) (p value <0.0001). we found also a moderate correlation (p value <0.05) between thickness and age, in particular comparing the subjects under 25 years old and over 35 years. Finally, there is a strong correlation between fascial thickness and BMI, above all if we compare the thickness of subjects with $BMI < 19$ and $BMI > 25$ (p value <0.001). Our study is the first to demonstrate a variability in the fascial thickness in living. These data have to be considered when the fasciae will be studied in patients.

References

- [1] Langevin et al. (2011) Reduced thoracolumbar fascia shear strain in human chronic low back pain. *BMC Musculoskelet Disord*; 19(12):203.
- [2] Benetazzo et al. (2011) 3D reconstruction of the crural and thoracolumbar fasciae. *Surg Radiol Anat*; 33: 855-62.

Keywords

Fascia; myofascial pain; ecography.