anaesthesia is optional. In contrast to the most commonly used semi-open needle biopsy technique described by Bergström, a small skin incision is not necessary. The main disadvantage of fine needle biopsy technique is the small sample size for biochemical, histochemical and histomorphometric muscle analyses. However, the amount of muscle tissue obtained by micro biopsy to study fibre type characteristics is acceptable and tissue sample quality is excellent. Moreover, the amount of muscle tissue can be increased by repeated sampling. The results obtained with the fine needle technique are similar compared to other biopsy techniques (e.g. Bergström needle, Evans needle and open biopsy).

Conclusions: The current study could not state any firm conclusions because the lack of high quality methodological studies. Although data extracted in this study, demonstrate the usefulness of the skeletal microbiopsy technique in determining contractile muscle characteristics. Moreover, the percutaneous fine needle technique appeared to be valid when compared to other muscle biopsy techniques.

Discussion: Although no literature was found on using the fine needle biopsy technique in patients with LBP, it is likely that this technique is suitable for lumbar paraspinal muscle biopsy sampling in LBP patients, because it is a minimally invasive biopsy technique which appeared to be valid in other populations.

Keywords: Fine needle biopsy, skeletal muscle microbiopsy, muscle fibre type, muscle contractile characteristics, low back pain

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P13 - ULTRASONOGRAPHY ANALYSIS OF THE THORACOLUMBAR FASCIA SHEARING MOVEMENT IN EXTENSION-FLEXION MOVEMENT IN HEALTHY ADULTS

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Introduction: The thoracolumbar fascia (TLF) has been under magnification for several decades. Also the movement of the TLF has been fascinating researchers and clinicians. Inspired by the work of Langevin et al, 2011 (1) we wanted to visualize how and which direction fascial layers move when performing a simple daily task, extending trunk. TLF has few layers the amount varies depending of author. In this study only the posterior layer of TLF (pTLF) has been evaluated.

Purpose/Aim: Purpose of this study is to measure which direction the pTLF has the biggest shearing movement in the sagittal plane movement (flex-ext) of the trunk. Movement patterns seems to be individual. Aim of this study is also to record this differences.

Materials and Methods: Subjects were 12 healthy female, without back-pain, age between 20-25 years. Setting of test was sitting position, active extension-flexion (from neutral position to maximal extension and return) movement against pulley with 10 kg resistance. Pulley was against the chest, no scapular movement allowed. Ultrasonography's probe was in the level of the L1. The probe was at first in vertical position, then 45°, horizontal and finally 135°. Both sides were tested on every subject. Shearing movement of each degrees was recorded to the video. Videos were analyzed and compared to each other.

Results: There were differences in pTLF shearing movements according to different angles. In 46%
of cases the biggest shearing movement occurred when the probe was inclined in 135°. In 37% of cases the biggest movement occurred when the probe was in vertical position. In 9% of subjects most mobile angle was in 45° and 8% of the cases probe was pointed horizontally.

**Conclusion:** The first assumption could be that when sagittal movement occur also the shearing movement would be biggest in same plane. In this study findings indicates something else, only 8% of cases had biggest movement in the sagittal plane. This study promotes the idea of individual movement solutions for the same task and remind researcher and clinicians that human body is three dimensional network where movements and their dysfunctions might occur in any planes despite of performed task.

**Keywords:** thoracolumbar fascia, shearing movement, fascia, individual movement pattern

**Reference:**