Title
Effects of manual Inter-Structural Release on gliding ability of the biceps brachii and brachialis during passive supination of the forearm

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Purpose / Background
Application of an inter-structural release (ISR) procedure to skeletal muscles is thought to attenuate adhesions between muscles. However, objective evidence demonstrating the effects of ISR on muscle behavior is limited. The purpose of this study is to clarify the effect of ISR on the gliding properties of the biceps brachii and brachialis in asymptomatic healthy young adults.

Method
Ten asymptomatic healthy young adults (age: 21.8 ± 0.4 years, height: 166.6 ± 8.5cm, body mass: 56.8 ± 6.2 kg) participated in this study and were allocated to either the ISR or stretching group. Ultrasonography was used to measure gliding excursion between the biceps brachii and brachialis before and after ISR or standard stretching. ISR was applied across the length of these muscles for 20 min. Using the thumb and index finger, ISR was applied to the superficial fascia followed by the deep fascia between the biceps and brachialis. On a different day, six sets of two standard stretches (60 seconds for each stretch) were performed for same muscles. These interventions were randomly assigned to the upper limbs.

To determine gliding distance, the elbow was passively moved by the Biodex dynamometer from 90° pronation to 90° supination at 30 deg/s during measurement. Two muscles were visualized on ultrasound images and the gliding distance was quantified using a custom software called Echolizer (GLAB).
**Result**
There were no significant differences detected between the groups. The most improved person in the ISR group showed an improvement of 4.4 cm, whereas the most improved person in the stretch group showed an improvement of 1.6 cm.

**Conclusion**
Neither ISR nor stretching achieved any significant difference in gliding distance between the biceps brachii and brachialis in asymptomatic healthy young adults. However, several subjects in the ISR group showed improvements in the gliding distance.