

ORIGINAL RESEARCH

DEFORMATION RESPONSE OF THE ILIOTIBIAL BAND-TENSOR FASCIA LATA COMPLEX TO CLINICAL-GRADE LONGITUDINAL TENSION LOADING *IN-VITRO*

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ABSTRACT

Background: Iliotibial Band (ITB) syndrome is a troublesome condition with prevalence as high as 12% in runners. Stretching has been utilized as a conservative treatment. However, there is limited evidence supporting ITB elongation in response to a stretching force.

Purpose/Hypotheses: The purpose of this study was to describe the iliotibial band tensor fascia lata complex (ITBTFLC) tissue elongation response to a simulated clinical stretch *in-vitro*. The authors hypothesized that the ITBTFLC would undergo statistically significant elongation when exposed to a clinical-grade stretching regimen, with the majority of the elongation occurring within the proximal ITBTFLC region.

Study Design: Within subjects repeated measures *in-vitro* design.

Methods: The strain response of six un-embalmed ITBTFLCs to a simulated clinical stretch of 2.75% elongation was assessed. Four sets of array marks were placed along the length of the ITBTFLC. Photographic images were taken in resting position (with 1.0% *in-situ* elongation) and with an additional 2.75% elongation. Tissue elongation was compared between proximal, middle, and distal ITBTFLC regions.

Results: A paired samples *t-test* demonstrated a significantly longer ITBTFLC in the “stretched” versus resting condition ($p=0.001$). Significant elongation was observed in the proximal (3.96mm (SD = 1.35); $p=0.001$), middle (2.12mm (SD = 1.49); $p=0.018$) and distal (2.25mm (SD = 1.37); $p=0.01$) regions during the “stretched” versus the resting condition. A one-way ANOVA demonstrated a significant main effect for region ($p=0.002$). The proximal region exhibited significantly greater elongation versus the middle ($p=0.003$) and distal ($p=0.007$) regions, with no significant difference between the middle and distal regions ($p=0.932$).

Conclusion: The results of this study demonstrate that the ITBTFLC is capable of elongation in response to a clinically simulated stretch. The proximal ITB region underwent significantly greater elongation than the middle and distal regions and may be more likely to respond to “stretching” in clinical situations. Future investigation should assess the ITBTFLC load/deformation properties to determine whether a short-term clinically available stretch translates into permanent tissue elongation.

Key Words: Iliotibial band, iliotibial band syndrome, stretch, tensor fascia lata

Level of Evidence: III

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