

# **Tensile Load Down-regulated CTGF and TGF- $\beta$ 1 Expression in Rat Subcutaneous Fascia**

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**PURPOSE** To investigate the effect of mechanical tensile load on Type-1 procollagen, Type-3 procollagen, connective tissue growth factor (CTGF) and transforming growth factor- $\beta$ 1 (TGF- $\beta$ 1) expressions in rat subcutaneous fascia.

**METHODS** Thirty male Sprague–Dawley rats were randomized into control group (A), insertion without rotation group (B) and acupuncture with rotation group (C). The rats in group B and C were subjected to mechanical tensile stimulation on the midpoint of the inguinal groove with an acupuncture needle, which was repeated twisting and insertion-extraction of the acupuncture needle (B). The subcutaneous tissue was sampled after 14 days of treatment, and the expression levels of Type-1 procollagen, Type-3 procollagen, CTGF and TGF- $\beta$ 1 mRNA were assessed using RT-PCR.

**RESULTS** Tensile stimulations resulted in significantly down-regulated expressions of the CTGF and TGF- $\beta$ 1 genes, but there were no significant differences between the twisting group and insertion-extraction group. Tensile microinjury resulted in no significant difference in Type-1 procollagen and Type-3 procollagen levels among the three groups (Figure).

**CONCLUSIONS** Fascia was involved in the response to tensile load, which enhance cell proliferation and cause changes in the CTGF and TGF- $\beta$ 1 gene transcription. These results have potential relevance to the mechanisms of treatments applying brief mechanical stretch to tissues.