Remote effects of lower limb stretching: evidence for myofascial connectivity?

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BACKGROUND Recent studies have demonstrated that fascial tissues connect the skeletal muscles forming a body-wide web of myofascial meridians [1]. As fascia is able to modify its tensional state, strain transmission along the meridians might occur in response to changes of muscle activity. However, this has not yet been investigated in vivo. The present study aimed to evaluate the remote effects of lower limb stretching on cervical range of motion (ROM).
METHODS The superficial back line (myofascial meridian consisting of plantar fascia, gastrocnemius, hamstrings and erector spinae) was selected in order to investigate its significance as a myofascial pathway [2]. Twenty-six healthy subjects (16 males, 30.3±6.2 yrs.) participated in the study. The intervention group (n=13) performed three consecutive 30s bouts of static stretching for both the gastrocnemius muscle and the hamstrings respectively. For the duration of the stretching exercises, an age and sex matched control group (n=13) remained inactive. Prior and post intervention, maximal cervical ROM in flexion/extension was assessed in both groups using an ultrasonic 3D movement analysis system. A repeated measures ANOVA and, in case of significance, post hoc paired t-tests with sidak-holm correction were computed to detect potential differences between groups and measurements.
RESULTS Analysis of variance and post hoc testing revealed significant differences between groups ($p<.05$). In the intervention group, cervical ROM increased from 143.3±13.9 to 148.2±14° ($p<.05$). ROM remained unchanged in the control group (144.6±16.8 to 143.3±16.8°; $p>.05$).
CONCLUSION Lower extremity stretching induces improvements of cervical range of motion. Our findings confirm results from recent cadaveric trials and point towards existence of strain transfer along the course of myofascial meridians. Building on these pilot data, further randomized controlled studies on conditions, factors and magnitude of tensile transmission are warranted.

REFERENCES

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