

## **Self-Myofascial Release for Chronic Low Back Pain and Stress: A Controlled Clinical Trial**

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**INTRODUCTION:** A tool-assisted tissue manipulation was performed as a form of self-help treatment, termed the Interdisciplinary Fascia Therapy (IFT-Method).

**PURPOSE/AIM:** The aim of this study was to assess the efficacy of an instrument-based myofascial release self-treatment technique, combined with a vibrational breath-pacemaker training (heart rate variability HRV) on the lower ribs to stimulate vagal tone. The self-treatment combines vibrational oscillation, leverage, and shearing effect.

**MATERIAL AND METHODS:** 30 participants were recruited and divided into two groups (female 20, male 10; age 45; BMI 23.5). The manipulation was performed on lower back, hip, upper leg and abdomen muscles. The treatment was performed three times per week for a period of three weeks (both groups). It is augmented by HRV deep-breathing twice per day. Thereafter, group 1 stopped the treatment as a control, group 2 continued the treatment two times per week, the HRV training once a day for further three months. Training load reduced due to compliance. Following parameters were measured prior the treatment, post 3 weeks, post 3 months: stiffness, elasticity (MyotonPRO), indentometer-stiffness (modified indentometer-algometer), range of movement ROM (Mobeemed), pain intensity (Brief Pain Inventory), pain disability (Pain Disability Index), HRV vagal tone analysis (HRV-Scanner Biosign), modified stress questionnaire. Statistical analysis included paired t-tests, ANOVA and Cohen's d.

**RESULTS:** 3 weeks: Analysis for both groups shows a significant decrease in nearly all subjective pain and stress measurement parameters ( $p < .001$ ). ROM showed a significant increase in all parameters ( $p < .001$ - $p = .02$ ). HRV showed significant improvement in E-I Diff ( $p = .05$ ) and reduction in biological age ( $p = .01$ ) (vagal tone increase). Indentometer-stiffness showed significant decrease ( $p = .03$  and  $p = .007$ ). Cohen's d revealed small to large effect sizes for nearly all significant primary measures of outcome between 8.6-53.5% improvement, effect size  $d = .27$ - $1.25$ . No significant changes in HRV parameters PNN50, rMSSD, HRV Rhythm, and stiffness of MyotonPRO. 3 months: T-test has shown a significant reduction for both groups in nearly all subjective parameters of pain and stress resilience ( $p < .001$ - $p = .04$ ). Group 2 shows stronger improvements and higher significances compared to Group 1 with percentage differences between 10.5-25%. Group 2 has significant changes for indentometer-stiffness ( $p < .001$ ), HRV biological age ( $p = .01$ ) and ROM ( $p < .001$ ). Cohen's d revealed medium to large effect sizes for all significant parameters for group 2 between 8.8-67.3% improvement ( $d = .84$ - $2.37$ ). Cohen's d in comparison of both groups show small to large effect sizes. No significant changes in stiffness and elasticity of MyotonPRO.

**CONCLUSION:** Application of self-treatment with a muscle fascia tool resulted in clinically relevant improvements on pain reduction and on objective mechanical tissue properties. Tool-assisted self-treatment with the IFT-Method is possibly an effective self-treatment modality for CLBP. Our preliminary findings support the need for further research.

**KEYWORDS:** Self-Myofascial Release, Self-Treatment, Tool-Assisted Myofascial Manipulation, Fascia-ReleaZer, Vagal Tone Stimulation