SELF-HELP TREATMENT FOR LOW BACK PAIN AND STRESS: A PILOT STUDY EMPLOYING A MYOFASCIAL MANIPULATION TOOL

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Introduction

A tool-assisted tissue manipulation was performed on the lower back, hip, upper leg and abdomen muscles as a form of a self-help treatment we term the interdisciplinary fascia therapy (IFT method).

Purpose/Aim

The aim of this study was to explore the practicality of this self-help modality and to assess the effectiveness of an instrument-based myofascial self-treatment technique, combined with a vibrational breath pace-maker training (heart rate variability HRV) on the solar plexus (diaphragm) to stimulate vagal tone.

Materials and Methods

15 participants were recruited in order to field test this novel tissue manipulation self-help device for treatment of the multifidi, quadriceps, iliotibial band bilaterally, and the abdominal muscles. The tool under investigation, the Fascia-ReleaZer, is designed to perform a myofascial release that is combined with a vibrational oscillator and a soft-tipped nosed tool. It is augmented by HRV deep breathing training induced with a vibrational pace-maker (Fascia-ReleaZer) on the solar plexus twice per day. The self-help treatment was performed for a period of three weeks three times per week.

The following parameters were measured, with lumbar position and posture held constant to ensure standardization, prior to treatment, immediately following treatment completion (3 weeks), and at a 3-month follow-up: stiffness, elasticity (MyotonPRO), indentometer-stiffness (modified indentometer algometer), range of movement ROM of the thoracic and lumbar spine (extension/flexion, lateral flexion, rotation measured with Mobee Med, an objective measurement based on the neutral zero method), pain intensity (Brief Pain Inventory BPI questionnaire), pain disability (Pain Disability Index PDI questionnaire), HRV vagal tone analysis (HRV Scanner Biosign) and a modified stress questionnaire MSQ (with ratings performed for 24 hours, 1 week, and 1 month sensitization of stress). Statistical analysis included paired t-tests and Cohen's d to gauge strength of effect. This study was undertaken in accordance with the Declaration of Helsinki.

Results

Analysis of the data shows improvements for nearly all parameters pre to post: A significant decrease in pain intensity ($p<0.001$) (BPI), pain disability ($p=.0013$) (BPI), stress sensitization ($p=.0287$) (MSQ), with a trend for pain reduction in the pain disability index (PDI). ROM of the thoracic and lumbar spine (Mobee Med) showed a significant increase for extension ($p=.001$), flexion ($p=.0125$), lateral flexion to left ($p=.004$), lateral flexion to right ($p=.0136$) and a trend to more left and right hand rotation. A HRV coherence baseline test (vagal tone, HRV Scanner Biosign) showed a trend to improvement, with a similar trend appearing for general pulse lowering. Cohen's d revealed medium to large effect sizes for nearly all significant primary measures of outcome. T-test has shown a significant change in the 3-month follow-up for pain intensity (BPI), pain disability (BPI), pain disability index (PDI) and stress sensitization (MSQ). Cohen's d for the 3-month follow-up revealed medium effect size for pain intensity, pain disability, stress sensitization, flexion, lateral flexion for both sides and large effect size for extension.

Conclusions

Application of self-help treatment with a muscle fascia tool resulted in clinically relevant improvements on all objective mechanical tissue properties. Pain reduction and range of movement improved significantly. Stress scores were also reduced significantly. Tool-assisted self-treatment with the IFT method is possibly an effective self-treatment modality for chronic low back pain. Our preliminary findings support the need for further research (more well-controlled trials, inclusion of larger sample sizes, more extended follow-up periods, among other aspects).

Keywords

Myofascial Self-help Therapy; Tool-Assisted Myofascial Manipulation, Fascia-ReleaZer, HRV training, vagal tone stimulation, IFT method.

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