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Effect of percutaneous electrical nerve stimulation currents applied at different frequencies on post-needling soreness

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Abstract

Background and Aims Percutaneous Electrical Nerve Stimulation (PENS) is a type of current which is frequently used for post-needling soreness. However, to date, no studies have compared the different frequencies available for reducing post-needling soreness. The aim of this study was to research the immediate and short-term effects of the PENS current at 2 Hz frequency compared to PENS at 1000 Hz frequency applied after dry needling on post-needling soreness, disability associated with post-needling soreness and the pain pressure threshold (PPT) in latent myofascial trigger points (MTrPs) of the upper trapezius.

Material and Methods An experimental double-blind non-controlled study. In total, 23 subjects without pain and with latent MTrPs in the upper trapezius participated in the study. Dry needling was performed, until the disappearance of local twitch responses. After randomization, 11 subjects received PENS at 100 Hz, whereas 12 received PENS at 2 Hz. The current was applied during 15 minutes, the duration of the current pulse was 100 microseconds. The main variable used was the Visual Analog Scale (VAS) to evaluate post-needling pain. The Neck Disability Index (NDI) and the PPT were secondary variables. The patient completed a diary on post-needling soreness in the hours following the intervention. A follow-up of the study variables was performed at 24 hours, 72 hours and one week after performing the intervention.

Results Statistically significant differences were obtained between both groups in post-needling soreness immediately after the intervention ($P = 0.002$) and at 5 minutes ($P = 0.03$) in favor of the high frequency group. No differences were found in any of the follow-up periods and the pain disappeared in all subjects before 72 hours. Regarding the PPT, no significant differences were found between both groups. However, the group who received high frequency returned to their baseline conditions at 24 hours, whereas those who received low frequency returned to baseline conditions at 72 hours. All the subjects increased their PPT one week after receiving the intervention ($P < 0.05$), nonetheless, they did not reach the minimum detectable change. No significant differences were found between groups according to the NDI.

Conclusion The application of high frequency PENS after dry needling is more effective than low frequency PENS to reduce post-needling soreness in the short term in patients with latent MTrPs in the sample under study. No differences were found between groups regarding disability or the PPT. Our results are limited, future studies are required to establish the optimal frequency for reducing post-needling soreness.

Keywords
- trigger points
- neck pain
- TENS
- disability

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