

## Article in Press

# Transcutaneous Electrical Nerve Stimulation (TENS) reduces pain, fatigue, and hyperalgesia while restoring central inhibition in primary fibromyalgia

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## Abstract

Because TENS works by reducing central excitability and activating central inhibition pathways, we tested the hypothesis that TENS would reduce pain and fatigue and improve function and hyperalgesia in people with fibromyalgia who have enhanced central excitability and reduced inhibition. The current study used a double-blinded randomized, placebo controlled cross-over design to test effects of a single treatment of TENS in people with fibromyalgia. Three treatments were assessed in random order: active TENS, placebo TENS, no TENS. The following measures were assessed before and after each TENS treatment: pain and fatigue at rest and movement, pressure pain thresholds (PPTs), 6 minute walk test (6MWT), range of motion (ROM), five time sit to stand test (FTSTS), and single leg stance (SLS). Conditioned pain modulation (CPM) was completed at end of testing. There was a significant decrease in pain and fatigue with movement for active TENS compared to placebo and no TENS. PPTs increased at site of TENS (spine) and outside site of TENS (leg) when compared to placebo TENS or no TENS. During Active TENS CPM was significantly stronger compared to placebo TENS and no TENS. No changes in functional tasks were observed with TENS. Thus, the current study suggests TENS has short-term efficacy in relieving symptoms of fibromyalgia while the stimulator is active. Future clinical trials should examine the effects of repeated daily delivery of TENS, similar to how TENS is used clinically, on pain, fatigue, function and quality of life in individuals with fibromyalgia.

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## KEYWORDS:

Analgesia, Chronic widespread pain, Electrical stimulation, Fatigue, Fibromyalgia, Hyperalgesia, Pain, TENS