



## Combined neuromuscular electrical stimulation and transcutaneous electrical nerve stimulation for treatment of chronic back pain: a double-blind, repeated measures comparison.

Moore SR, Shurman J.

Arch Phys Med Rehabil. 1997 Jan;78(1):55-60.

Center for Neurologic Study, San Diego, CA 92121, USA.

### OBJECTIVES:

A preliminary examination of NMES and combined NMES/TENS for the management of chronic back pain.

### DESIGN:

Double-blind, placebo-controlled, randomized repeated measures.

### SUBJECTS AND SETTING:

Consecutive sample of 24 chronic back pain patients (16 women and 8 men) attending an outpatient pain clinic (mean age 51.67 years, mean pain duration 3.83 years). All treatments were administered at home.

### INTERVENTIONS:

Subjects self-administered NMES, combined NMES/TENS, TENS, and placebo treatments. Each treatment had a duration of 5 consecutive hours per day over 2 consecutive days, with a 2-day hiatus between treatments to minimize carryover effects.

### MAIN OUTCOME MEASURES:

Pain reduction was assessed through pretreatment to posttreatment differences on the Present Pain Intensity (PPI) scale, and a visual analogue scale of Pain Intensity (VAS-I). Posttreatment pain relief was assessed using a visual analogue scale of Pain Relief (VAS-R).

### RESULTS:

Combined treatment, NMES, and TENS each produced significant pretreatment to posttreatment reductions in pain intensity as measured by both the PPI and VAS-I ( $p < .05$ ). Combined treatment was superior to placebo on pain reduction ( $p = .001$ ,  $p = .016$ ) as well as pain relief ( $p < .001$ ). Combined treatment was also superior to both TENS and NMES for pain reduction and pain relief ( $p < .01$ ). NMES and TENS were superior only to placebo for pain relief ( $p < .001$ ).

### CONCLUSIONS:

Combined NMES/TENS treatment consistently produced greater pain reduction and pain relief than placebo, TENS, or NMES. NMES alone, although less effective, did produce as much pain relief as TENS. Although preliminary, this pattern of results suggests that combined NMES/TENS may be a valuable adjunct in the management of chronic back pain. Further research investigating the effectiveness of both NMES and combined NMES/TENS seems warranted.

PMID: 9014958 [PubMed - indexed for MEDLINE]