

CLINICAL EVIDENCE

THE EFFICACY OF ELECTRICAL NERVE STIMULATION FOR CHRONIC MUSCULOSKELETAL PAIN:

A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS



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SUMMARY

A large meta-analysis was performed to determine the efficacy of Electrical Nerve Stimulation for the treatment of chronic musculoskeletal pain of any anatomical origin. The study, which examined multiple types of electrical nerve stimulation such as transcutaneous (TENS) and percutaneous (PENS), entailed a review and comparison of multiple studies on 1227 patients. Analysis of the data revealed that ENS therapy provided significant pain relief compared to placebo and that, in fact, the average pain relief provided by electrical stimulation was nearly three times that produced by placebo. The size of the study provides appropriate statistical power to reliably demonstrate the utility of electrotherapy for pain management.

THE EFFICACY OF ELECTRICAL NERVE STIMULATION FOR CHRONIC MUSCULOSKELETAL PAIN:

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Michael Johnson and Melissa Martinson

PAIN (2007), in press.

PURPOSE

To determine the efficacy of electrical nerve stimulation for the treatment of chronic musculoskeletal pain.

BACKGROUND

- Although non-invasive electrical nerve stimulation (ENS) techniques have been used clinically for the management of chronic musculoskeletal pain for over 30 years, the literature surrounding its efficacy has produced mixed results.
- The vast majority of published studies on this subject have included relatively small numbers of patients, likely leading to underpowered research frequently yielding equivocal results.
- The present study examined multiple types of ENS (e.g., transcutaneous ENS (TENS) and percutaneous ENS (PENS)) used to treat musculoskeletal pain of any anatomical origin.

METHODOLOGY

- Literature databases (1976-2006) were searched for placebo-controlled studies employing ENS to treat chronic musculoskeletal pain.
- Randomized, placebo-controlled studies involving chronic (>3 months' duration) musculoskeletal pain were included.
- Data were extracted from 38 studies in 29 papers.

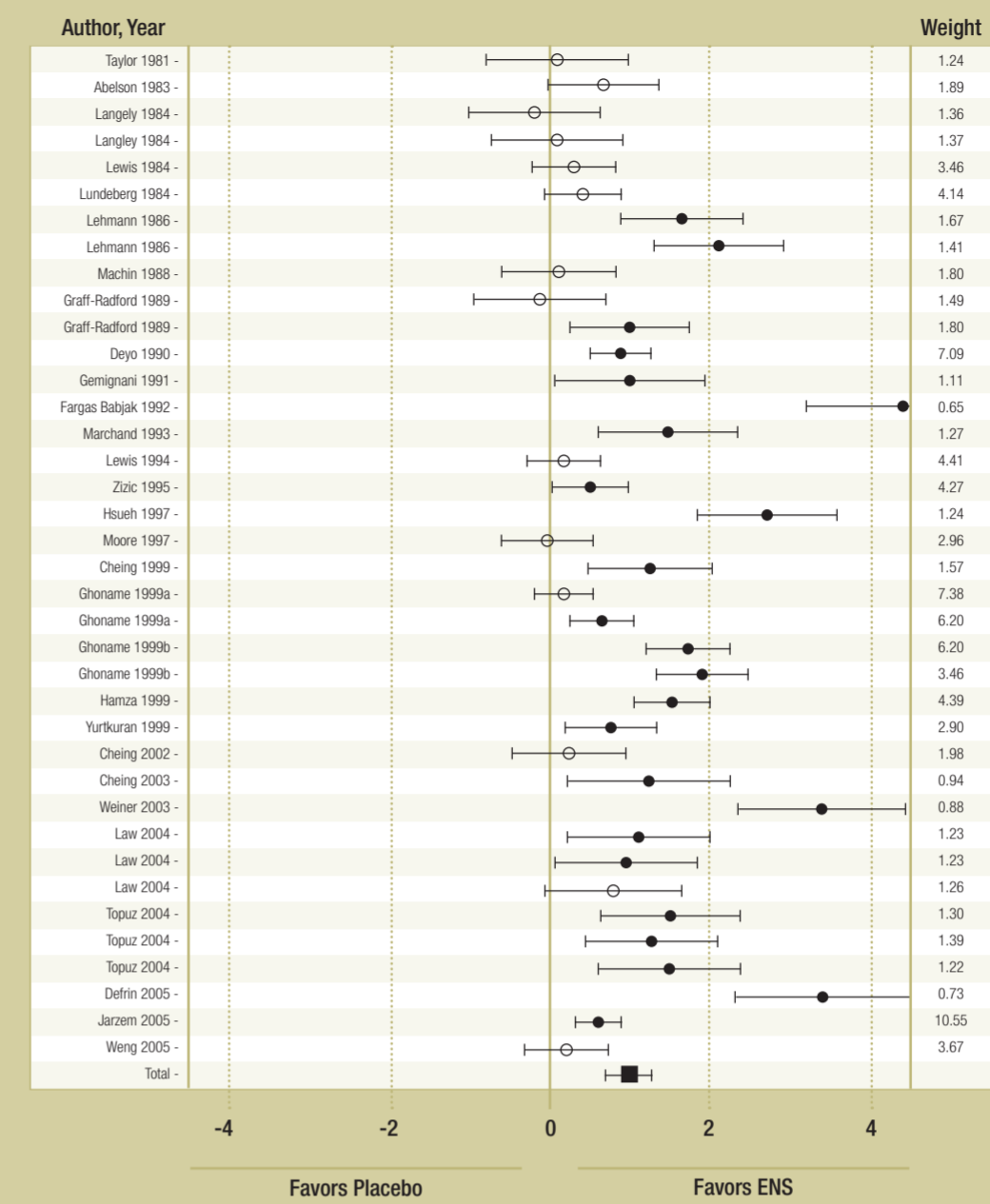
RESULTS

- A total of 335 placebo, 474 ENS and 418 cross-over patients were included in the analysis
- Overall ENS therapy provided significant pain relief compared with placebo ($P < 0.0005$).
- Of the 38 studies included, 35 favored ENS therapy over placebo, and 24 studies showed a significant effect of ENS therapy on pain scores.
- The average pain relief provided by ENS therapy was nearly three times that produced by placebo ENS.

CONCLUSIONS

- ENS therapy provides significant and clinically relevant relief of chronic musculoskeletal pain.
- This study is the largest meta-analysis on the efficacy of electrotherapy for pain management. The large number of patients (1227) included in this analysis allows for greater statistical power, which ultimately provides greater confidence in the validity of the results.
- The analysis includes studies of musculoskeletal pain of any anatomical origin. This demonstrates the broad applicability of electrotherapy for pain management.

Relative efficacy of ENS for the treatment of chronic musculoskeletal pain



Adapted from Johnson and Martinson (2007).