

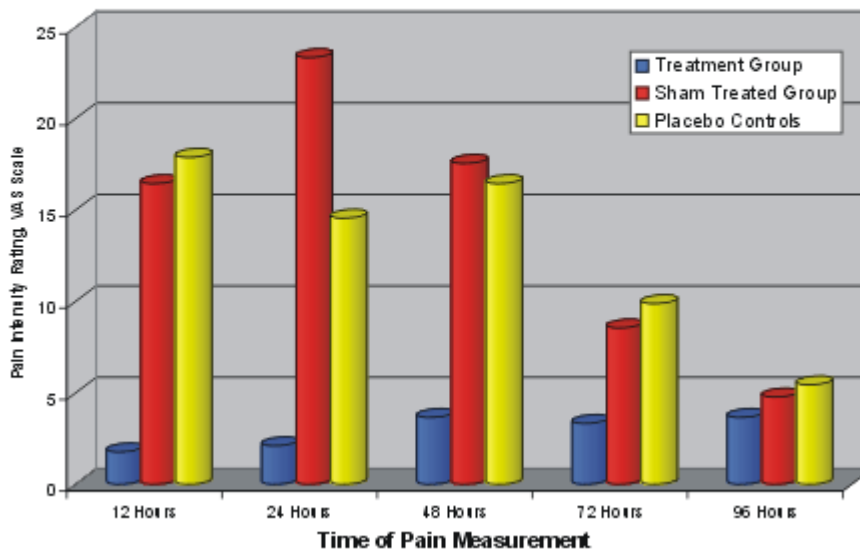
**Roth, Peter M., & William James Thrash (1986). Effect of transcutaneous electrical nerve stimulation for controlling pain associated with orthodontic tooth movement. *American Journal of Orthodontics* 90(2):132-138.**

45 adult subjects, 27 men and 18 women, between 22 and 41 years old (mean of 28 years) were randomly assigned to an Alpha-Stim (TENS) group, a placebo group, and a control group following the signing of an institutionally approved consent form at Baylor College of Dentistry in Dallas, Texas. They were further subdivided into 18 seconds intraoral stimulation of 50 µA at 0.5 Hz, and 20 minutes of extraoral stimulation of 500 µA at 0.5 Hz, and 1, 2, and 3 day treatment duration groups. In each subject Unitek S-1 elastic orthodontic separators were placed mesial and distal to the upper first molars, bilaterally. Subjects were asked to rate their discomfort every 12 hours for 4 days with a 10 cm visual analogue scale (VAS) ranging from no pain to severe pain.

In the control group post-separation tooth pain began between 0 and 12 hours, and lasted between 60 and 72 hours, confirming previous published reports. There was a significant interaction between treatment modality and measurement period. Those subjects receiving Alpha-Stim treatment reported significantly ( $P < .001$ ) lower VAS scores than those receiving placebo at the 24, 36, and 48 hour assessment periods. The total Alpha-Stim group VAS means dropped from 14.6 at 12 hours to 6.72 at 60 hours, while the placebo means changed from 13.33 to 12.89, and the control group from 17.88 to 18.00. The effects of treatment location and applications were not significant, there was no significant effect of treatment schedule on reported pain levels as a single application of Alpha-Stim was shown to be effective in reducing pain for more than 48 hours and was as effective as 2 or 3 treatments. Nor was there any significant difference between the placebo and control groups at any time.

The authors noted that the clinical application of their findings is significant. They describe possible mechanisms of action, many potential benefits to dental patients, and suggest that perhaps a reduction in the pain experienced during orthodontics would lead to better patient compliance.

**The Effect of One, 20 Minute Microcurrent Stimulation on Dental Pain**



The graph shows that the one, 20-minute Alpha-Stim treatment reduced pain to the level that would be achieved in all three groups at the end of the four day rating period when all mouths were essentially healed. Though the 24 hour period ratings seemed to indicate a placebo effect from the sham treated patients when compared with the placebo controls, there was no significant difference found on testing of the means. In fact, there were no statistically significant differences in the sham treated and placebo control patients at any rating period, showing that while the actual treatment was significantly effective in eliminating periodontal pain in these patients, there was no placebo effect from the treatment condition.