

# **Transcutaneous electrical nerve stimulation (TENS) can reduce postoperative analgesic consumption. A meta-analysis with assessment of optimal treatment parameters for postoperative pain.**

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AIM: We investigated the literature of randomised placebo-controlled trials to find out if transcutaneous electrical nerve stimulation (TENS) or acupuncture-like transcutaneous electrical nerve stimulation (ALTENS) can reduce analgesic consumption after surgery. RESULTS: Subgroup analysis for adequate treatment (pulse frequency: 1-8Hz [ALTENS] or 25-150Hz [TENS], current intensity: "strong, definite, subnoxious, maximal tolerable" or above 15mA, and electrode placement in the incision area) were performed. Twenty-one randomised, placebo-controlled trials with a total of 1350 patients were identified. For all trials, the mean reduction in analgesic consumption after TENS/ALTENS was 26.5% (range -6 to +51%) better than placebo. Eleven of the trials comprising 964 patients, had reports which stated that a strong, subnoxious electrical stimulation with adequate frequency was administered. They reported a mean weighted reduction in analgesic consumption of 35.5% (range 14-51%) better than placebo. In nine trials without explicit confirmation of sufficient current intensity and adequate frequency, the mean weighted analgesic consumption was 4.1% (range -10 to +29%) in favour of active treatment. The difference in analgesic consumption was significantly ( $p=0.0002$ ) in favour of adequate stimulation. The median frequencies used in trials with optimal treatment was 85Hz for TENS and 2Hz in the only trial that investigated ALTENS. CONCLUSION: TENS, administered with a strong, subnoxious intensity at an adequate frequency in the wound area, can significantly reduce analgesic consumption for postoperative pain.

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