Muscle relaxation by transcutaneous electric nerve stimulation (TENS) in bruxism. An electromyographic study.

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In recent years transcutaneous electrical neuromuscular stimulation (TENS) has become increasingly more common in the treatment of functional diseases of the masticatory muscles and currently the practitioners can choose among a variety of stimulators. In an electromyographic study of 17 adults suffering from nocturnal bruxism and of a control group consisting of 18 adults without any functional disturbances of the masticatory muscles, the effect of this kind of neuromuscular stimulation on the temporal and masseter was examined. The myoelectric signals were registered before and after TENS treatment in 3 different positions of the mandible. Each person was treated 3 times with both the Myo-Monitor (Myo-Tronics, Seattle) and the TNS SM2 MF stimulator (schwa-medico, Giessen). The different effects of the continuous low frequency and intermittent high frequency muscular stimulation were studied simultaneously. Muscular activity was determined by computer aided integration of the electrographically measured raw signals. A fourier analysis of the power spectrum yielded information on the frequency behavior of the studied muscles resulting from the TENS treatment. A statistical analysis of the results led to the following significant conclusions: 1. TENS treatment decreased the values of the registered signals on all test persons, however, the treatment increased in median frequency and the mean power frequency (MPF). Since this effect is contrary to muscle fatigue, these electromyographic results can be interpreted as providing objective proof of a relaxation in the treated muscles. 2. The electromyographic changes after TENS treatment were similar when using either the Myo-Monitor or the TNS SM2 MF stimulator. In addition, the 2 different types of stimulation (high or low frequency) showed the same effects. 3. Compared to the persons in the control group, there was no significant increased muscular activity in patients with nocturnal bruxism. Following TENS treatment both groups showed the same alterations in the electromyograms. The result of the study provide further evidence that TENS treatment is an adequate supportive procedure in the treatment of nocturnal bruxism.