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Title (type in CAPITAL LETTERS)	INFLUENCE OF FES PARAMETERS ON URETHRAL PRESSURE

Introduction: In patients with stress incontinence FES is applied to practise peri- and paraurethral muscles with a view to restoring urethral tone. In the literature various FES parameters have been used to achieve this goal (1-2).

Methods: In the present study different pulse durations (100-1000 μ s) and frequencies (25-100 Hz) in 2 intracorporeal applications have been investigated and correlated with maximal urethral pressure assessed with a microtip catheter. In addition, the current intensity at the sensory and motor threshold has been studied with the various parameters and measured in a frequency-current intensity and pulse duration-current intensity curve. Twenty continent nulliparous volunteers between 19 and 25 years of age participated in the study. They were randomly assigned to two groups; 10 were stimulated intravaginally and 10 intra-anally. A repeated measures analysis of variance was used to analyse the percentual maximal urethral pressure with different pulse durations and frequencies for the two modes of application.

Results: Sensory excitation preceded motor excitation with both anal and vaginal stimulation at different frequencies and pulse durations; current intensity decreased with increasing pulse durations. Only the sensory threshold showed a correlation between current intensity and frequency. For the first and third motor tolerance limit, the different frequencies were found to have no influence on the various current intensity. Motor tolerance could be significantly increased to 3 stimulation sessions. The current intensity ratio of the third motor tolerance level to the sensory threshold was 2 and 2.6 for respectively vaginal and anal stimulation. Vaginal stimulation produced a higher maximal urethral pressure compared to anal stimulation. Submaximal urethral pressure was achieved at a pulse duration of 400-600 μ s and a frequency of 25-50 Hz.

Conclusion: Since the lowest frequency and shortest pulse duration are aimed at, a pulse duration of 400-600 μ s and a frequency of 25Hz are recommended for FES designed for peri- and paraurethral muscle practising in e.g. stress-incontinent patients. With these parameters a urethral pressure amounting to 50 % of the maximal voluntary pressure can be obtained.

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