

ANALYSIS OF THE CONSTANT INCREASE OF CURRENT INTENSITY IN LOW AND MEDIUM FREQUENCIES ON THE SENSORY DISCOMFORT AND EVOKED TORQUE

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Introduction: Neuromuscular Electrical Stimulation (NMES) is an important therapeutic resource used in the rehabilitation in order to control pain, muscle reeducation and muscle atrophy. The effectiveness of NMES for strength gains is related to the interaction between the evoked torque and the level of perceived sensory discomfort. **Objectives:** To measure the effects and behavior of medium frequency currents and low frequency in terms of discomfort and evoked torque, with the constant increment of the intensity. **Methods:** It was a cross-over experiment, triple blind, randomizing NMES modalities. It was composed of twenty male, college students, physically active, aged 18 to 34. The Visual Analog Scale was used to measure discomfort, and was evaluated at each increment of intensity (10 in 10mA) until the maximum discomfort tolerated. Four currents were used: two medium frequency (Russian and Aussie) and two low frequency (FES1 and FES2). It was performed a familiarization session. After 7 days, the NMES protocol was started, each 7 days, 5 weeks in total. The research was approved by the Ethical Committee on Human Research within the College of Health Science, with protocol number 1.413.002, at the University of Brasília. We used parametric tests given that data were normally distributed (Shapiro-Wilk test). Repeated-measures analysis of variance (ANOVA) was conducted for evoked torque and discomfort. The Tukey post-hoc test was used. All analyses were carried out using Statistic 7 software. **Results:** Differences between the evoked torque were observed in the PC500 x Russian in 60% of the intensity ($p=0,042$), as PC 500 x PC 200 in 60% ($p<0,001$), 80% ($p<0,001$) and 100% ($p=0,017$); PC200 x Aussie in 40% ($p<0,001$), 60% ($p<0,001$), 80% ($p<0,001$); Aussie x Russa in 40% ($p=0,023$) and 60% ($p=0,012$). For VAS, differences were found between PC500 x Aussie in 40% of the intensity ($p<0,001$); PC500 x PC200 in 80% ($p=0,048$) and between Aussie and PC200 in 20% ($p=0,048$), 40% ($p=0,025$) and 100% ($p=0,057$). **Conclusion:** Differences were found amongst currents in terms of evoked torque and discomfort. Aussie and PC500 presented higher evoked torque, however the Aussie was the most uncomfortable current. However, the most tolerated current with the gradual increment of intensity was the PC200, but generated the lowest evoked torque.

Key-Words: Neuromuscular Electrical Stimulation, NMES, Quadriceps, evoked Torque, Sensory Discomfort.