

SUMMARY

De Biase, M.E.M. **Evaluation of the change in amplitude of the electromyographic potential of the quadriceps through the biofeedback effect using surface electromyography in patients with spinal cord injury trauma** (Dissertação). São Paulo. Faculdade de Medicina, Universidade de São Paulo; 2005.

Our purpose was to evaluate the efficacy and effectiveness of biofeedback by means of electromyography using the Brucker method as neuromuscular therapy to help return or improve voluntary muscle control by means of visual and auditory biofeedback. Twenty patients were evaluated with mean age of 32.0 ± 8.2 years, 17 (80%) of whom males, with incomplete spinal cord injury and at least 2 years of illness. The extent of motor-sensory impairment was assessed using the ASIA normalized classification, and the extent of spasticity by means of the modified Asworth scale. The NeuroEDUCATOR II[®] was employed, together with surface electrodes longitudinally positioned on the left and right quadriceps muscles during knee extension, with the patient in a sitting position and in the transition from a sitting to an orthostatic position with support. The patients were subjected to a series of 50-minute sessions during four weeks, with a three-month interval, after which a second series of sessions was repeated for another 4 weeks. The evaluation of each patient was recorded on individual diskettes. The baseline (initial) values were recorded, as well as the peaks (maxima) from each muscle, according to the exercise and the series of sessions. The overall evaluation did not show any differences between the right and left sides. The electromyographic biofeedback provided patients with a significant increase in the maximum amplitude of the electromyographic potential (μV) of the quadriceps muscle with the two types of exercise in both series. The knee extension in the transition from a sitting to an orthostatic position presented a larger relative increase of the electromyographic potential. The results of the second series were superior to those of the first series. The grouping of results according to the ASIA and Asworth classifications of patients showed that the results of the general evaluation were maintained and it was proven that the improvement in the variation shown in the second series was superior in ASIA C patients and 2, 3 and 4 Asworth patients. A significant improvement in the baseline electromyographic potential was also proven between the first and the second series in the exercise of transition from a sitting to an orthostatic position in ASIA B patients, and in the sitting position in ASIA D patients. The efficacy and effectiveness of the therapy were proved.