Abstract

Title of diploma thesis: Tactile discrimination and excitability of alpha motoneurons

Objectives: The aim of this thesis is to detect whether tactile discrimination tasks affect the excitability of the alpha motoneurons.

Methods: Seven volunteers aged between 20 and 26 years participated in this study. The H reflex, (M wave) were recorded during three control and three experimental conditions. The control conditions preceded each experimental condition. By stimulating the tibialis nerve in the popliteal fossa the H reflex was elicited and its amplitude and latency measured at rest (control) and during tactile discrimination tasks (experimental).

As tactile discrimination tasks, three separate tasks were chosen-tactile stimulation, escape reaction to tactile stimulation, and two-point discrimination.

We used an EMG stimulator with a constant voltage output and monophasic squared pulses, with a 0,5 ms interval. The stimulation was switched on manually every 3-5 seconds. To detect the electrical potential of the soleus muscle, we used a surface EMG device, a GrassTelefactor, with galvanic isolation complying with EU standards. The parameters measured were the latency and amplitude of the H reflex and M wave during the tactile discrimination tasks and these were then compared to the values at rest. The results were statistically evaluated and analyzed.

Results: The mean value of the H reflex amplitude during all tactile discrimination tasks was significantly different compared to the previous rest values. We also detected statistically significant difference of the H reflex latency during the escape reaction to the tactile stimulation task and two-point discrimination task was also found to be significantly different compared to the rest value at the beginning of measurements There was no statistically significant difference in M wave latency and amplitude during tactile discrimination tasks compared to the rest values.

Key words: H reflex, M wave tactile discrimination excitability, motoneuron

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Year: 2012