2D07-3 Measurement of CNV to badminton video clip

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Purpose: Contingent Negative Variation (CNV) is well known to be a long-latency electroencephalography (EEG) surface negative potential that can be observed between a warning signal (S1) and a response signal (S2). The CNV is thought to be associated with motor preparation and/or response anticipation. Simple visual or auditory signals have been adopted as the S1 and S2 in previous studies. In this study, we evaluated CNV by using badminton video clips as the signal. **Methods:** The badminton video clip (BVC) was displayed on a computer screen, and it featured one player on the right side serving to an opponent on the left side. In response to the serve, the opponent on the left made one of the following flights: clear, drop, or smash. The server on the right then received the shuttlecock. While they were attached to EEG electrodes located at 5 positions (Fz, C3, Cz, C4, Pz), 6 badminton experts and 6 novices were asked to push a button when the server received the opponent's shots in the BVC. We also made another video clip as a control signal (CVC) in which a circle moves at the same time the shuttlecock moves back and forth in the BVC. **Results and Discussion:** The surface negative potential was observed before the participants pushed the button under both situations of watching the BVC and CVC. Since the scalp distribution of the area of this surface negative variation was Cz dominant, we considered this variation a CNV. The CNV areas were larger when each participant responded to the BVC than to the CVC in the event of a drop flight and a smash flight. The CNV areas were larger in the experts than they were in the novices for the drop flights, and the CNV in the experts began to shift earlier than it did in the novices for the drop flight. We therefore suggest that the nature of the video clips (BVC versus CVC) and the groups (experts versus novices) affected the CNV.

Key words: CNV, Badminton video clip, EEG

2D07-4 Response of soleus muscle M- and F-wave to various types of muscle stretching.

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Purpose: The purpose of this study was to investigate the effect of muscle stretching on the soleus muscle M- and F-waves. **Method:** Six young males volunteered to participate in this study. Subjects were tested under three randomly administered conditions as followers: static stretching (SS) condition, passive stretching (PS) condition and dynamic stretching (DS) condition. The stretching experiment consisted of five sets of stretching of the triceps surae for 30 s at inter-set intervals of 30 s. The maximum M-wave (M_{max}) and the F-wave of the soleus muscle was measured before stretching, immediately after each set, and at 5 and 10 minutes. The amplitude and latent time of M_{max} and F-wave occurrence rate were then measured. **Results and Discussion:** With attempts of the stretching, the latent time of M_{max} was significantly shorted in the DS-condition and delayed in the PS-condition ($P<0.05$). These data significantly observed in the both conditions ($P<0.05$). The F-wave occurrence rate did not significantly differ among the three conditions, but was the highest under DS-condition. These data suggest that the dynamic stretching has possibilities to increase theα-motoneuron excitability of spinal cord.

Key words: α-motoneuron excitability of spinal cord, muscle stretching, F-wave