Dynamics of the salivary cortisol level and some autonomic nervous system indexes under the biofeedback controlling motor-cognitive task at healthy volunteers

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The research is aimed at studying a 4-day course of biofeedback (BFB) training influence on saliva cortisol level and autonomic nervous system functional state of 25 20-22-year-old healthy male volunteers'. During the sessions, all subject alternately, both hands, for 60 seconds using the force applied to the power joystick placed on the stabilometric platform, was shifting the mark on the computer screen. The mark shifting corresponded to the force applied to the joystick, and the trajectory depended on objects randomly appearing on the screen with which the controlled mark must be combined. Before and after trainings background physiological values (saliva cortisol level, heart rate variability) were recorded.

The concentration of salivary cortisol was studied using an Anthos 2010 microplate photometer with filters (400-750 nm) and ADAP + (Biochrom Ltd, UK) on Salivary Cortisol Elisa SLV-2930 diagnostic kits (DRG, USA). The functional state of the volunteers autonomic nervous system was monitored using by of heart rate variability (HRV) metod using the complex "Omega-M" ("Dynamics", St. Petersburg ").

During the of the biofeedback controlling motor-cognitive task course on subjects was recording decrease of cortisol concentration from the third day of the study (by 18,37 $p< 0,05$). On the 4th day, the maximum decrease in this indicator values of by 36,41% (3,34 ± 0,1 m.mol /l) was recorded. The data obtained are confirmed by subjects heart rate variability increase (on the 5th day of the study, the values of total power of heart rate spectrum increased by 22,6% $p< 0,05$, the stress index decreased by 27,9% $p< 0,05$). Preliminary results of this study indicate, that the BFB training result can be associated to the salivary cortisol level decrease and their autonomic nervous system functional state changes.

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