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Chapter 56

THE EFFECTS OF AURICULAR NEUROMODULATION ON HEART RATE VARIABILITY OF HEALTHY ADULTS

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Introduction: Nowadays, scientific evidences highlight the relationship between cognition, inflammation and stress. On the other hand, vagus nerve stimulation may reverse such negative effect, minimizing body response to stress. Moreover, vagal activity can be assessed by heart rate variability (HRV) which is also an important physiological parameter related to neurovisceral integration and involving cognitive, affective and autonomic regulation. The main goals of our group are to develop an effective protocol of vagal stimulation in order to use it as a potencial clinical therapy and investigate HRV as an important variable related to the integrative function of movement and cognition. For those reasons we have started to evaluate vagal nerve activity by studying heart rate variability of healthy adults submitted to auricular stimulus. Methods: Thirteen healthy individuals (10 males and 3 females,

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$\bar{X}$ = 37.5 ± 2.1 years) had their HRV determined by using a portable system composed by wristband heart tracker (Polar7) and cell phone applicative (Heart Rate Variability Logger App). Inclusion criterion for the study was a rate between low heart frequency (LF) and high heart frequency (HF) higher than 2 at time 0. Exclusion criteria were presence of cardiac or neurological diseases and daily use of cardiac rate-modifying medications. The experimental intervention was defined as an electrically stimulation (Digital Electrostimulator PierenkemperGmbH – Deutschland) of the Shenmen point and the Zero point bilaterally with a frequency of 4 Hz for 2 minutes. Student's T test with $p < 0,05$ was used for determining statistical signifficance. Results: Our results are summarized in the table below. Results of heart rate frequency instants pre and post test. Statistically significant with p value of 0,001 Low/High Frequency pre – mean 3.353 ± 0.786; Low/High Frequency pos - 2.015 ± 1.046; Student's t test 0.001. Conclusion: Obtained data may suggest the possibility of relaxation response development after auricular stimulation and perhaps a possible decrease of general stress and arousal. It is also possible to speculate some positive effect of that stimulation for balancing HRV in athletes and healthy persons.