

Comparison of Effects over the Autonomic Nervous System When Using Force Training and Interval Training in Indoor Cycling with University Students

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Abstract : In the last decade interval training (IT) has gained importance when is compare with strength training (ST). However, there are few studies analyzing the impact of these training over the autonomic nervous system (ANS). This work has aimed to compare the activity of the autonomic nervous system, when is expose to an IT or ST indoor cycling mode. After approval by the ethics committee, a cross-over clinical trial with 22 healthy participants (age 21 ± 3 years) was implemented. The selection of participants for the groups with sequence force-interval (F-I) and interval-force (I-F) was made randomly with assignation of 11 participants for each group. The temporal series of heart rate was obtained before and after each training using the POLAR TEAM® heart monitor. The evaluation of the ANS was performed with spectral analysis of the heart rate variability (HRV) using the fast Fourier transform (Kubios software). A training of 8 weeks in each sequence (4 weeks with each training) with an intermediate period of two weeks of washout was implemented for each group. The power parameter of the HRV in the low frequency band (LF = 0.04-0.15Hz related to the sympathetic nervous system), high frequency (HF = 0.15-0.4Hz, related to the parasympathetic) and LF/HF (with reference to a modulation of parasympathetic over the sympathetic), were calculated. Afterward, the difference between the parameters before and after was realized. Then, to evaluate statistical differences between each training was implemented the method of Wellek (Wellek and Blettner, 2012, Medicine, 109 (15), 276-81). To determine the difference of effect over parasympathetic when FT and IT are used, the T test is implemented obtaining a T value of 0.73 with p-value ≤ 0.1 . For the sympathetic was obtained a T of 0.33 with $p \leq 0.1$ and for LF/HF the T was 1.44 with a $p \geq 0.1$. Then, the carry over effect was evaluated and was not present. Significant changes over autonomic activity with strength or interval training were not observed. However, a modulation of the parasympathetic over the sympathetic can be observed. Probably, these findings should be explained because the sample is little and/or the time of training was insufficient to generate changes.

Keywords : autonomic nervous, force training, indoor cycling, interval training

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