Abstract

OBJECTIVE: To investigate autonomic modulation of the sinus node, by analyzing heart rate variability (HRV) among young and middle-aged individuals, and to assess the effect of an endurance strength training program on this modulation among middle-aged individuals. METHOD: Thirty-two healthy nonsmoking men with sedentary lifestyles, of whom 10 were young (22.2 ± 1.5 years) and 22 were middle-aged (49.3 ± 5.3 years), underwent electrocardiogram signal acquisition for time-domain HRV analysis. The middle-aged individuals were divided into two groups: experimental (n= 12) and control (n= 10). The individuals in the experimental group were enrolled in a strength training program lasting three months. The data analysis was carried out using the Wilcoxon and Mann-Whitney tests (p< 0.05). RESULTS: The middle-aged group presented significant reductions (in relation to the young group) for all the variables used in investigating HRV (SDNN= 33.4 vs. 49.7 ms; RMSSD= 29.9 vs. 49.5 ms; pNN50= 6.5 vs. 27%). The training caused a significant increase in muscle strength and endurance for all muscular groups and non-significant increases in the variables SDNN (33.4 vs. 37.6 ms), RMSSD (30.2 vs. 31.3 ms) and pNN50 (7.5 vs. 11.4%). CONCLUSIONS: The findings from this study confirm that increased age causes alteration to the autonomic modulation of the sinus node, as demonstrated by reduced HRV in middle-aged individuals, which was not significantly modified by the type of physical training studied.

Keywords

autonomic nervous system, physical exercise, heart rate, middle age.