Objective measurement of sedentary behavior and physical activity, and their effects on heart rate variability, in young adults that live in a moderate altitude

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Background: Physical exercise and aerobic resistance training have been associated with increased heart rate variability, while sedentary time has been associated with decreased heart rate variability.

Objective: To determine if heart rate variability measured at rest is related to sedentary time and time used in various intensities of physical activity, established through an objective method (accelerometry), in a group of healthy adults who live 2,600 meters above sea level.

Method: Accelerometer measurements were taken in 99 individuals during one week along with one measurement of heart rate variability at rest. Time was divided into sedentary time and time spent in light, moderate and vigorous physical activity. Time (NN interval, SDNN, RMSSD) and frequency (LF, HF, LF/HF) domain parameters were used to analyze heart rate variability. Using regression models, an association was sought between the physical activity and heart rate variability variables.

Results: There was a negative association between NN intervals, SDNN and sedentary time, as well as positive associations between the NN interval and light, moderate and vigorous physical activity, and between vigorous physical activity and LF and HF power. All the foregoing associations were significant ($p< 0.05$).

Conclusions: In young adults living 2,600 meters above sea level, sedentary time reduces heart rate variability, while vigorous physical activity increases this variability.

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