

Effect of Low or High Intensity Aerobic Exercise and the Association to Cardiovascular Health Conditions for College-Aged Students

KENECHUKWU ONWUBUYA and ENRIQUE CASTILLO

Exercise Physiology Laboratory; Department of Athletic Training and Exercise Physiology; Midwestern State University; Wichita Falls, TX

Category: Masters

ABSTRACT

The purpose of this study was to compare the effects of low or high intensity aerobic exercise over a three-week intervention period, and the relationship to physiological responses before and after exercise for college aged students. Subjects included were male and female (n=7). Measures were the following: Height (cm), weight (kg), blood pressure (mmHg), heart rate ($b \cdot \text{min}^{-1}$) and maximal oxygen consumption ($\text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$). Subjects were classified as physically active or inactive college-aged students. The participants performed a volitional fatigue test on a treadmill ergometer for both the pre and post-test by utilizing the Bruce Protocol. Blood pressure (mmHg) was taken on the left arm with a table sphygmomanometer (Riester) and with medical stethoscopes (Riester). Oxygen consumption (VO_2) was measured with a metabolic heart (i.e., KORR™). The testing procedure for the pre and post-test was a volitional fatigue test with heart rate conducted every minute, and blood pressure measured before and after the exercise for each participant. The low intensity exercise included 3 sessions of aerobic exercise a week performed on a treadmill, with the duration of 20 minutes of exercise each session, and between 50-70% of the participant's maximal heart rate (obtained from the aforementioned maximal test). The high intensity exercise included 3 sessions of aerobic exercise a week performed on a treadmill, with the duration of 20 minutes of exercise each session, and between 75-90% of the participant's maximal heart rate. Statistical significance was set *a priori* at $p \leq 0.05$. Mean (SD) demographic measures were the following: age 19.6 (1.4) y; height 169 (5.4) cm; weight 76.2 (15.5) kg; Pre Max HR and Post Max HR had significant ($p < 0.05$) association with a correlation coefficient ($r = .86$), and a coefficient of determination ($r^2 = .74$). There were also a significant correlation among blood pressure from pre and post measures. Pre recovery SBP and post rest SBP were significantly associated with a correlation coefficient ($r = .90$), and a coefficient of determination ($r^2 = .81$). In conclusion, aerobic exercise exhibited influence on physiological responses. Specifically, pre recovery SBP response could act as a marker for chronic SBP response following an exercise intervention.