Effects of High Intensity Interval Training versus Moderate Continuous Aerobic Exercise on Sedentary College Students

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Abstract

Purpose: Several recent studies have suggested high-intensity interval training (HIIT) may have advantages over more traditional high-volume moderate-intensity programs. Though greater physical stress could be a drawback, potential advantages include novelty, excitement, and shorter overall time commitment. The aim of this study was to compare two training protocols and their effects on the following health variables: aerobic capacity, body composition, and power, in sedentary college students ages 18-24. Methods: Fifteen subjects were randomized to a HIIT or moderate training group three times per week for five weeks. The HIIT group completed six to eight 50 meter sprints, each followed by 150 meters of active recovery. Moderate training consisted of 30 minutes jogging or walking at 50-60% of their maximum ability. Results: Baseline to post-intervention improvements were seen in select variables of interest; however, no significant statistical improvements were observed. Conclusion: Further research should be conducted to determine if HIIT training can elicit similar health benefits as traditional exercise programs.

Background

Cardiorespiratory fitness, adiposity and power are negatively impacted by the presence of a physically inactive lifestyle and will likely lead to increased risks of chronic diseases.

Recent research has begun to look at a timesaving form of exercise, HIIT, described by Gibala et al. (2012) as brief intermittent bouts of vigorous activity followed by a period of active recovery or rest.

Interest to adapt new or alternative forms of training which elicit similar results as moderate continuous exercise with less time commitment has spurred the current research.

HIIT may be a time-efficient strategy to combat the physical inactivity epidemic and promote adherence in college-aged sedentary populations that currently struggle to find time to commit to exercise.

Experimental Aim

The primary aim of this study was to compare the effects of HIIT and continuous moderate exercise (MOD) on body composition, aerobic capacity, and power in sedentary college students. It was hypothesized that both HIIT and MOD would have positive effects on the aforementioned variables. It was proposed that HIIT would show greater improvement in aerobic capacity and power, while MOD would have a greater effect on body composition.

Subjects

18 UWEC male and female students were recruited to participate in the study (4 males, 12 females).

Due to exclusion criteria, injury, and lack of interest 7 subjects did not complete the study.

Mean age of participants was 21 years (range = 18-22 yr.)

Training Protocol & Procedures

Subjects were randomized into one of two training groups: HIIT or MOD.

HIIT group performed the exercise protocol on an indoor track. Participants walked or jogged 150 meters, then during the last 50 meters increased their RPE to a level of 8-9.

MOD group was instructed to determine a walking or jogging pace that could be maintained for a total of 30 minutes. RPE, HR, and TIME were recorded during each training session.

Results

Shuttle Run

Both groups significantly decreased their shuttle run scores (p = .052).

Mile Run

Decreased mile run times suggest improvements in both groups; however, it was not significant.

Summary & Conclusion

There were no significant differences seen as a result of the different protocols on the examined variables.

Shuttle run time significantly decreased in both groups.

There was a trend of decreasing mile run times in both groups.

Future research should be conducted to determine if there is a difference in long term effects of HIIT versus MOD training.

Statistical Analysis

Descriptive statistics were performed on all data. Independent sample T-tests were used to determine any differences in baseline characteristics between the HIIT and MOD groups. Two-factor mixed ANOVAs were used to examine the effects of the treatments on the variables of body composition, power, and aerobic capacity.

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