Calories burned during HIIT exercise vs moderate exercise

Abstract
Purpose: The aim of this study was to determine if High Intensity Interval Training (HIIT) results in a higher energy expenditure and is more enjoyable when compared to moderate exercise. Methods: On two different days, ten college age men and women exercised on a treadmill at either 50% of their maximum heart rate for 20 consecutive minutes or 90% of their maximum heart rate for one minute, alternated by one minute of recovery walking, which was repeated 10 times for a total of 20 minutes of exercise. Heart rate and calories burned were assessed with a heart rate monitors. Assessment were continued during a 30-minute recovery period as participants sat quietly in a chair. PACES, a survey based on enjoyment of the exercise was also completed. Results: Moderate exercise burned an average of 139±40 calories while exercising and 64±15 calories during recovery. HIIT burned an average of 204±40 calories while exercising and 117±47 calories during recovery. The PACES score for moderate exercise was 94.1±14.2 while HIIT was 91.8±12.5, which was not statistically different and indicates no difference in enjoyment between the conditions. Conclusion: HIIT is the more effective way to burn more calories during exercise and after exercise given the same time period as moderate exercise.

Purpose
High Intensity Interval Training has become a very popular type of exercise because it can be done in a shorter time period with still burning as many calories as doing moderate exercise for a longer time period.

The purpose of this study was to see if doing high intensity interval training (HIIT) would result in a higher energy expenditure both during and after exercising and if it is more enjoyable when compared to exercising at a moderate intensity.

Methods
10 college age participants (5 women and 5 men) ages 18-26 years old participated in this study at State Gym. The participants did a survey called the International Physical Activity Questionnaire based on their last seven days of physical activity. The participants ranged from inactive to health-enhancing physical activity (HEPA) active.

They each had to perform two tests on the treadmill while their heart rate and calories were tracked using a heart rate monitor. Both tests had a five minute warm up and then 20 minutes of the designated test followed by a 5 minute cool down. The designated tests were exercising at 50% of their maximum heart rate (HR_{max}) or exercising at 90% of their HR_{max}. When exercising at 50% of their HR_{max} they exercised continuously at one speed for twenty minutes. When exercising at 90% of their HR_{max} they increased their speed for one minute and then went back down to the warm up pace for one minute. This was done for a total of ten times during the twenty minutes of exercise. After minutes 5, 15, and 25 during each test, the participant was asked their Rating of Perceived Exertion (RPE) based on the Borg Scale. After the exercise test, the participants’ heart rate and calories were monitored for 30 minutes. After that, each participant did a survey based on enjoyment called Physical Activity Enjoyment Scale (PACES).

Results

As you can see from figure 1 and 2, the PACES score for moderate exercise was 94.1±14.2 while HIIT was 91.8±12.5. These scores were not statistically different and indicates no difference in enjoyment between the conditions. Figure 3 shows that HIIT was perceived to be the harder test overall. In figure 4 you can see that moderate exercise burned an average of 139±40 calories while exercising and HIT burned an average of 204±40 calories. During recovery, moderate exercise burned an average of 64±15 calories during recovery while HIIT burned an average of 117±47 calories during recovery. Overall, HIIT burned more calories when compared to moderate exercise.

Conclusion
• HIIT is more effective for burning calories during exercise.
• HIIT is more effective for burning calories for the thirty minutes post-exercise.
• HIIT overall burns more calories compared to moderate exercise when exercising for the same amount of time.
• For this study, there was no statistical difference for enjoyment when comparing moderate exercise and HIIT.