

# **The Feasibility of High Intensity Interval Exercise in Obese Adolescents**

A. Murphy, C. Kist, A. Gier, H. Pitner, N. Edwards, R. Siegel

Cincinnati Children's Hospital Medical Center, Heart Institute, Center for Better Health and Nutrition  
Medical Student Summer Research Program, University of Cincinnati, College of Medicine

## **Introduction:**

To mitigate the comorbidities of obesity, many children are enrolled in exercise programs targeted at weight loss and improvement of health. Continuous aerobic exercise is the current standard of care however several studies in adults show high-intensity interval exercise (HIIE) to be more efficient at improving fitness and health. With HIIE, the individual uses heart rate targets to exercise vigorously for one minute followed by a two minute period of active recovery. In obese children, a comprehensive comparison of HIIE to aerobic exercise is lacking.

## **Methods:**

This pilot study was a four week HIIE intervention in obese adolescents demonstrating feasibility of clinical trials of this type on a larger scale and its application in pediatric weight loss programs. Subjects attended structured 50 minute exercise three days a week and were incentivized for attendance. Before and after the intervention measures of fitness and health were recorded. Subjects also completed a post-intervention satisfaction survey.

## **Results:**

Ten subjects were recruited, nine were consented, and seven continued participation in the intervention. Six out of seven subjects attended every required session of exercise. In the post-intervention survey, 100% of subjects reported they would "recommend this type of exercise program to a friend." Six out of seven participants responded they desired "to continue with the [same] type of exercise program." When asked "overall, how would you rate" the four-week exercise program on a scale from 0-100, the average response was 85 out of 100. No significant changes were found between pre and post VO<sub>2</sub>max and BMI values. However, 100% of subjects had increased VO<sub>2</sub>max and five of seven had improved submaximal VO<sub>2</sub> values.

## **Conclusions:**

Importantly, the use of HIIE exercise classes in obese teens was shown to be structured, realistic, and highly desired. Retention was highly satisfactory and reflected the appeal of the HIIE class environment and content. Significant physiologic change in four weeks was not expected; more substantial intervention periods are necessary to facilitate further changes in fitness and body composition.

This study is a crucial step in better understanding what type of care obese and overweight children should receive from the medical community. Next steps include a comparison of the standard of care using a similar patient population and data collection protocol. Studies using more subjects and a longer intervention are also required.

## **Acknowledgements:**

This study was supported by the CCHMC Heart Institute and MSSRP (NIH grant T35 DK 60444).