GNYACSM Abstract

Intermittent Hypoxic Breathing with Exercise Mimics Hypoxic Training SpO_2 and Improves Waist Circumference and RMR in Obese Women

GINA BRINDISI[1], AJ FISHER[2], ADRIENNE REID[2], ADRIENNE HERRENBRUCK[2], JESSIE HIRSCH[3], ALEXANDER ROTHSTEIN[1]

[1] New York Institute of Technology, Interdisciplinary Health Sciences, Old Westbury, NY
[2] American Public University, Department of Sport and Health Science, Charlestown, WV
[3] Allied Health Kinesiology; Hofstra University; Hempstead, NY

Category: Undergraduate

Advisor / Mentor: Rothstein, Alexander (arothste@nyit.edu)

ABSTRACT

INTRODUCTION: The obesity epidemic is currently overwhelming our healthcare system. Nutrition and exercise therapy are two suggested strategies to manage obesity, but do not always provide a reliable situation for all affected. Increasing exercise efficacy while decreasing the impact and volume of exercise may reduce the risk of injury in obese individuals. **PURPOSE:** This study aimed to investigate the effects of utilizing a hypoxic breathing protocol, including the impact on body composition, skeletal muscle strength, resting metabolic rate, and blood oxygen (SpO2) values, in obese women (ages 40-65) in order to add evidence to support the use of an alternative exercise variable to provide a low-impact, injury preventative alternative for improving results for those struggling with the poor health consequences of obesity. **METHODS:** Fourteen obese women (ages 40-65) were randomized into either the experimental hypoxic breathing exercise group (HYP) (n=3) or the control group without hypoxic breathing during exercise (NOR) (n=2). Both groups were instructed to perform 12 weeks of exercise at a frequency of 4 times per week. Several muscle groups were exercised, performing a combination of mobility, plyometrics, and compound strength exercises using resistance bands and a Pilates mini-ball. Muscle endurance was evaluated using the standard National Academy of Sports Medicine strength assessment protocol for both squats and push-ups. The *p*-value was set at ≤ 0.05. **RESULTS:** Primary findings showed SpO2 levels reflecting statistically significant decreases to values typically seen in a traditional hypoxic group (96.54% +2.4). Training protocol in the HYP group (88.73% ≤ 9.8) vs. the NOR group (96.54% +2.4). Statistical significance was found in waist circumference decrease and RMR increase in the HYP group. **CONCLUSION:** Resistance training with an intermittent hypoxic breathing protocol using hypoventilation decreases SpO2 levels and waist circumference and increases RMR more than traditional training with normoxic SpO2 levels in obese women. These findings have the potential to lay the groundwork for a methodology that increases training efficacy while minimizing risk of injury for the those suffering with obesity.