Aerobic Training Effects on Symptoms of Exercise-Induced Bronchoconstriction During Exercise in Young Sedentary Adults

Savannah Hollifield | Gardener-Webb University | EXSI 432

ABSTRACT

- Due to decreased quality of life, most adults with EIB lead sedentary lifestyles
- EIB can be controlled moderately well by inhaling short-acting β₂-agonist prior to exercise, but research has shown that participating in regular exercise training can improve pulmonary function and reduce the need for EIB medication
- A majority of research on EIB improvements has been performed on children under 16 years of age, adults over 25 years of age, and young adults athletes (most often 16-21 years of age)
- Additionally, most of the research has focused on pulmonary function and daily quality of life as opposed to improvements in an individual’s symptoms over the course of an aerobic training program

METHODS

- Random Selection
  Relatively healthy, sedentary, nonsmoking, college-aged participants (N = 30) with EIB were randomly selected after responding to a flyer

- First Visit
  Informed Consent, PAR-Q, and Health History Questionnaire, and Demographic Information Collected

- Initial VO₂max
  VO₂max collected through completing the YMCA submaximal protocol on a cycle ergometer

- 8-Week Program
  An 8-week aerobic training program was completed during autumn (reduced allergenic stimuli) with a rating of symptom severity and time of symptom appearance collected

- Final VO₂max
  A final VO₂max was collected by the YMCA submaximal cycle ergometer protocol

INTRODUCTION & REVIEW OF LITERATURE

- EIB is a tightening of the airway, which may also be referred to as bronchoconstriction
- Symptoms of EIB (chest tightness, cough, wheezing, dyspnea, etc.) arise during or within 15 minutes following exercise
- Over 50% of people clinically diagnosed with EIB exhibit poor management of the condition, which may result in the lack of physical activity
- Aerobic training has been shown to improve pulmonary function
- Refaat and Gawish (2015) employed a 8-week aerobic circuit training program to investigate how a training program affected quality of life and pulmonary function in asthmatic, sedentary adults (25 to 65 years of age) who exhibited symptoms of EIB
  - Conclusion: an aerobic training program improved quality of life and pulmonary function in sedentary adults with EIB
- Abdelhussien, Alsubaie, Tantawy, Abi Elyazied, and Kamel (2018) performed a study on asthmatic children with EIB to determine if an aerobic training program affects quality of life and pulmonary function
  - Conclusion: quality of life and pulmonary function were improved following aerobic exercise training in asthmatic children with EIB
- Lack of research on effects of aerobic training on EIB of sedentary college-aged (18-22 years of age)

PURPOSE STATEMENT

- The aim of this study was to determine how an aerobic training program influenced the symptoms of EIB in the college-aged population
- Hypothesis: the 8-week aerobic training program will decrease the severity of EIB, increase the amount of exercise time before symptom appearance, and improve VO₂max

DATA ANALYSIS

- Results analyzed using SPSS software
- Paired-sample t test examined the difference in initial and final VO₂max
- Pearson product moment correlation used to determine any correlations between the independent and dependent variables with the significance level set at p < 0.05

DISCUSSION

- Implications:
  - The results of this study may indicate a regular aerobic training program will improve EIB symptoms and should be adopted by the EIB population.
  - Additionally, the need for EIB care in the form of medication may decrease if a training program is implemented.
- Limitations:
  - Small sample size (N=30)
  - Duration of study was limited to the season of autumn
  - Limited research on the reliability of study variables
  - Self-reported data – reporting of symptom appearance and severity
  - Convenience sample – participants were students at Gardener-Webb University

Future Research Suggestions:
Include larger sample sizes from the sedentary college-aged population and perform the study for a longer duration to determine how aerobic training can influence EIB symptoms through a seasonal cycle

ACKNOWLEDGMENT

I would like to thank my writing fellow, Anna Henderson; my peer reviewer, Jordan Vitale; and Dr. Hartman for providing feedback on my research proposal. Additionally, I would like to thank the AV department in the library for printing this poster. I want to thank the researchers included in the references for how they have provided the medical world with further knowledge of aerobic training on EIB.

References: