



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

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ABSTRACT

- Due to decreased quality of life, most adults with EIB lead sedentary lifestyles
- EIB may be present along with asthma but also may be present without a diagnosis of asthma
- EIB is often associated with children but affects all populations regardless of age, sex, or fitness level
- EIB can be controlled moderately well by inhaled short-acting β_2 -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
- Participants (N=30) of this study completed an 8-week aerobic training program during autumn
- Data collected include the time of symptom appearance, the numerical rating of symptom severity, and initial and final VO₂max (ml/kg/min)

INTRODUCTION & REVIEW OF LITERATURE

- EIB is a tightening of the airway, which may also be referred to as bronchospasm
- 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 assist 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
- Abdelbasset, Alsubaie, Tantawy, Abo Elyazed, 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)

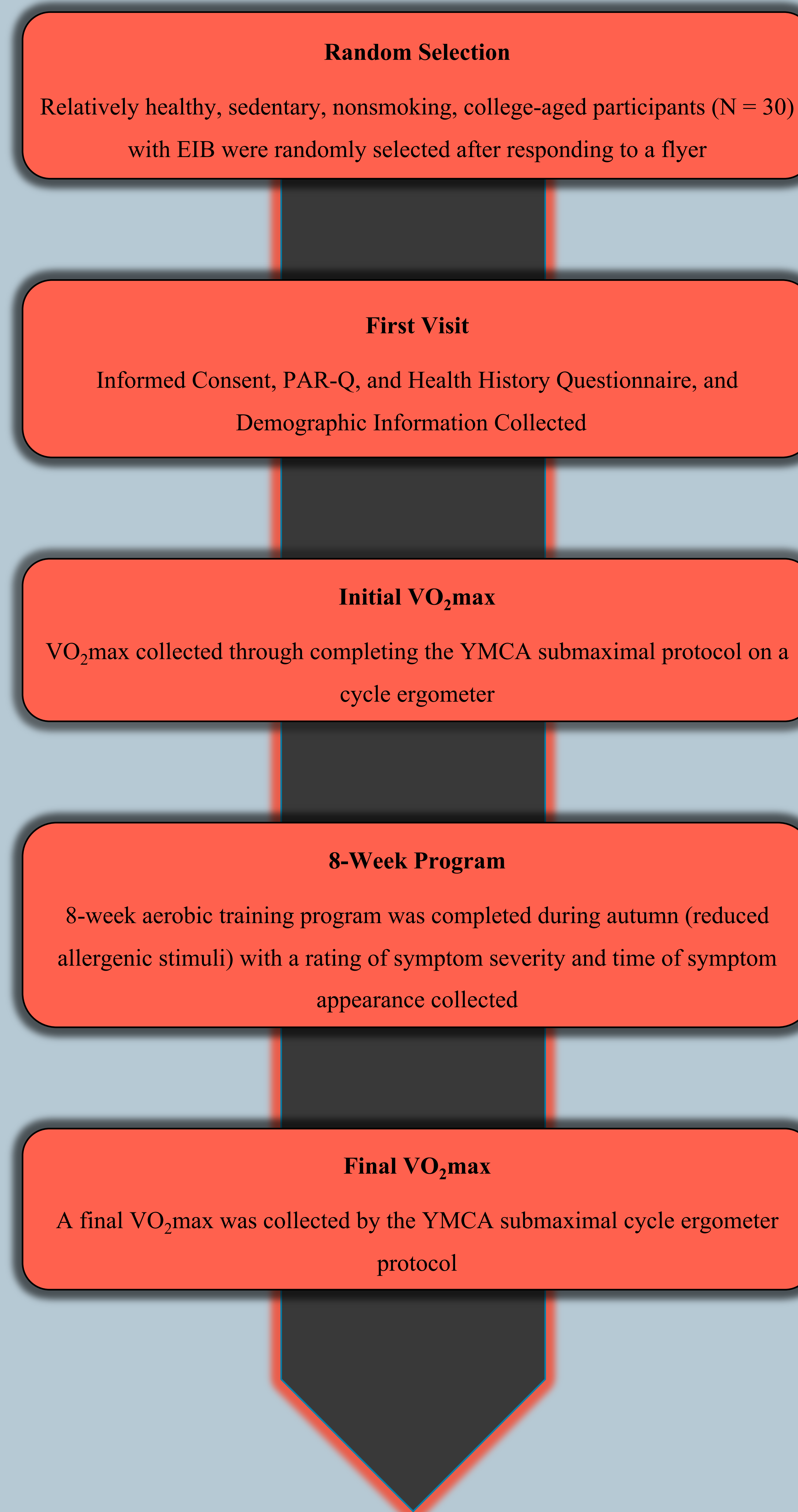
PURPOSE STATEMENT

- 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 severity, 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 $p < 0.05$

METHODS



METHODS

Operational Definitions:

- Time of Symptom Appearance:
 - Researcher kept time using a stopwatch, which was started when the workout began
 - Symptom appearance: the time EIB symptoms arose while performing aerobic exercise
- Numerical Rating of Symptom Severity:
 - 0-4 scale developed by the researchers that determined extent of EIB symptoms and measure improvements during 8-week program
- Initial and Final Relative VO₂max (ml/kg/min):
 - Maximal oxygen consumption measured by YMCA submaximal cycle ergometer protocol

8-Week Aerobic Training Program:

- 60 minute supervised sessions, 3 days / week
- Weeks 1-4: Exercised at 65% of VO₂max
- Weeks 5-8: Exercised at 75% of VO₂max
- 15 Minute Warm-Up: dynamic stretches, walk (2.5 mph) on treadmill
- 30 Minute Circuit: step-ups on 6-inch platform, cycle ergometer training, and treadmill jog/run
- 15 Minute Cool-Down: static stretches, walk at slow pace (2.0 mph) on treadmill

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 Gardner-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

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References:

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- Refaat, A., & Gawish, M. (2015). Effect of physical training on health-related quality of life in patients with moderate and severe asthma. *Egyptian Journal of Chest Diseases and Tuberculosis*, 64(4), 761-766. doi: 10.1016/j.ejcdt.2015.07.004