



Scholars Research Library

Annals of Biological Research, 2012, 3 (5):2205-2207
(<http://scholarsresearchlibrary.com/archive.html>)



Effect of aerobic exercise program on Asthma and aerobic capacity in women

¹Gholamreza Esmaeili Chamanabadi, ¹Mona Matin Nejati, ¹Zahra Hashemi Ghorbanloo, ¹Abdorrezza Eghbalmoghanlou, ¹Ali Armaghan Gojebeigloo and ²Khadijeh Ebrahimi

¹Department of Physical Education, Central Tehran Branch, Islamic Azad University, Tehran, Iran

²Department of Physical Education, Marand Branch, Islamic Azad University, Marand, Iran

ABSTRACT

A number of studies have demonstrated that exercise programs and motor and respiratory physiotherapy improve aerobic capacity, breathing pattern, and muscle strength in senior citizens. The purpose of this study was effect of aerobic exercise program on Asthma and aerobic capacity in women asthmatically people. 22 young asthmatically people were selected voluntarily and divided into 2 groups. The experimental group (age = 22.1 ± 2.23 years, height = 169.4 ± 1.8 cm; weight = 68.7 ± 3.4 kg) performed a selected aerobic physical activity for 4 month (5 days a week, 20 – 30 minute ergometry with 60 – 85% max HR) and their Asthma and aerobic capacity were measured before and after protocol. The control group (age = 23.1 ± 2.9 years, height = 167.3 ± 2.4 cm; weight = 67.4 ± 3 kg) had no any exercise activity during this study and they only had daily activity. Analyzing the data showed that the protocols had a significant effect on Asthma and aerobic capacity in experimental group ($P = 0.001$, $P = 0.001$, respectively). In conclusion, anaerobic exercise program effect on Asthma in women and increased aerobic capacity. Therefore, anaerobic exercise program could be included in the therapeutic approach in women with asthma.

Key Words: Asthma, aerobic exercise program, aerobic capacity.

INTRODUCTION

Asthma is an ancient, multi factorial, and complex chronic inflammatory disease with high prevalence worldwide and significant associated morbidity[1]. A number of studies have demonstrated that exercise programs and motor and respiratory physiotherapy improve aerobic capacity, breathing pattern, muscle strength, and quality of life in senior citizens[2]. Exercise programs tailored for asthmatic patients have a positive effect both on physical, physiological, and psychological parameters and on social and personal relationships[3]. However, these interventions have not been evaluated in asthmatic senior citizens. Respiratory muscle strength can be directly measured through the following static pressures: the maximum expiratory pressure (P_{emax}), and the maximum inspiratory pressure (P_{imax}). Dynamic maneuvers, such as maximum voluntary ventilation, are also used to estimate respiratory muscle strength. These measures play an important role in the diagnosis and prognosis of various pulmonary and neuromuscular disorders and have also been associated with fitness, morbidity, and mortality in general [4]. Physical training programs have been designed for patients with asthma with the aim of improving physical fitness, neuromuscular coordination, and self confidence. Subjectively, many patients report that they are symptomatically better when fit, but the physiological basis of this perception has not been systematically investigated. A possible mechanism is that an increase in regular physical activity of sufficient intensity to increase aerobic fitness will raise the ventilator threshold, thereby lowering the minute ventilation during midland moderate exercise. Consequently breathlessness and the likelihood of provoking exercise induced asthma will both be reduced. Exercise training may also reduce the perception of breathlessness through other mechanisms including strengthening of the respiratory muscles [5]. Subjects with asthma have a unique response to physical activity which has clinically important consequences for both their asthma and their general health. On the one hand, exercise can

provoke an increase in airways resistance in most asthmatics leading to exercise-induced asthma (EIA). On the other hand, regular physical activity and participation in sports are considered to be important components in the overall management of asthma, especially in children and adolescents. In people with asthma, physical training can improve cardiopulmonary fitness without changing lung function. This appeared to be a normal training effect and not due to an improvement in resting lung function. It is not known whether improved fitness is translated into improved quality of life. It is comforting to note that physical training does not have an adverse effect on lung function and wheeze in patients with asthma. Therefore, there is no reason why patients with asthma are not able to participate in regular physical activities. When training asthmatic subjects, it would be appropriate to give them guidance about the prevention and treatment of exercise-induced asthma.[6].

Inspiration muscle training may be a helpful adjunct to asthma management that has the potential to improve participation and adherence to exercise training in this group. However, the perception of breathlessness are also an important signal of bronchia constriction, and thus, caution should be exercised if this symptom is abnormally low [7]. Asthma symptoms reduce patients' daily activities, impair their health-related quality of life (HRQoL), and increase their reports of anxiety and depression, all of which seem to be related to a decrease in asthma control. Aerobic exercise training is known to improve aerobic fitness and reduce dyspnea in asthmatics; however, its effect in reducing psychological distress and symptoms remains poorly understood. We evaluated the role of an aerobic training program in improving HRQoL (primary aim) and reducing psychological distress and asthma symptoms (secondary aims) for patients with moderate or severe persistent asthma. Our results suggest that aerobic training can play an important role in the clinical management of patients with persistent asthma. Further, they may be especially useful for patients with higher degrees of psychosocial distress. Adults with asthma who are bothered by the symptoms report impairment in daily activities. As a result, they feel irritated or frustrated and report limitations in their social life and deterioration in psychological well being, all of which lead to impairments in health-related quality of life. In addition, increased anxiety and depression levels have been associated with decreased asthma control and adherence to medication and increased rates of the diagnosis of severe asthma.[8]. In the study of Ogee nine patients completed the exercise program. Mean age is 71 +/- 7, with seven males and 2 females. Pre-training lung function studies showed mild to moderate airflow obstruction. Anthropometric measurements revealed normal body mass indexes. There were significant increases in the right arm and left thigh circumference with mean difference of 1.3cm +/- 0.32cm and 1.14 cm +/- 0.28 respectively. There was marginal improvement in lung function which is not significant. Six minute walk test improved to 631 m +/- 148 m with significant mean difference of 218 meters post exercise training. Improvement in the quality of life showed significant change in the grading of patients from moderate grade to no impairment at all in performing their activities of daily living [9]. Therefore, the purpose of this study was effect of aerobic exercise program on asthma, aerobic capacity, in asthmatically women.

MATERIALS AND METHODS

22 young asthmatically women were selected voluntarily and divided into 2 groups. The experimental group (age = 22.1 ± 2.23 years, height = 169.4 ± 1.8 cm; weight = 68.7 ± 3.4 kg) performed a selected aerobic physical activity for 4 month (5 days a week, 20 – 30 minute ergometry with 60 – 85% max HR) and their asthma and aerobic capacity were measured before and after protocol. The control group (age = 22.1 ± 2.23 years, height = 169.4 ± 1.8 cm; weight = 68.7 ± 3.4 kg) had no any exercise activity during this study and they had daily activity. Aerobic capacity was estimated with using Astrand bicycle. Therefore, maximal oxygen uptake test done according this program: 100 wat load on 1 kg, 80 rpm, during first 2 minute adjusted by heart rate, after stable heart rate recorded the test for 1 minute.

RESULTS AND DISCUSSION

Analyzing the data showed that the protocols had a significant effect on asthma and aerobic capacity in experimental group (P = 0.001, P = 0.001, respectively).

Variables Groups	Asthma (L) Mean±SD	aerobic capacity (VO _{2max}) L/min Mean±SD
experimental group	3.2± 0.05	2.2 ± 0.03
control group	2.8± 0.06	2.1 ± 0.04
P value	0.001*	0.001*

*= significant

CONCLUSION

In recent years, asthma treatment has been focused on pharmacological protocols designed to control asthma and the inflammatory process of the disease, and other therapeutic approaches to help control asthma have been neglected[10]. Studies on physical exercises, breathing exercises, and physiotherapeutic approaches have been performed to determine the clinical and physical benefits of these interventions[4].

Aerobic capacity increased with aerobic exercise program. This shows that the response of subjects with asthma to aerobic exercise program is similar to that of healthy people. Therefore the advantages of an increase in cardio-respiratory status are also accessible to them. This results is similar the Ludmila, 2011.

In conclusion, an aerobic exercise program effect on asthma in asthmatically women and increased aerobic capacity. Therefore, an aerobic exercise program could be included in the therapeutic approach in women with asthma problems.

REFERENCES

- [1]. Gina. www.ginasthma.com American. **2010**.
- [2]. College of Sports Medicine. *Med Sci Sports Exerc.* **2004**;36:1997-2003.
- [3]. Strunk RC, Mascia AV, Lipkowitz MA, Wolf SI. *J Allergy Clin. Immunol.* **1991**, 87:601-11.
- [4]. LudmilaTaisYazbekGomieiro; AndréiaNascimento; Luciana KaseTanno; RosanaAgondiI; Jorge Kalil; Pedro Giavina-Bianchi. *CLINICS*, **2011** ;66 (7):1165-1169.
- [5]. Felix S FRam, Stewart M Robinson, Peter N Black. *Br J Sports Med* **2000**; 34:162±167.
- [6]. Orenstein DM, Reed ME, Grogan Jr. FT, Crawford LV. *J. of Pediatrics*; **1996**, 106:556-60.
- [7]. Turner LA, Mickleborough TD, McConnell AK, Stager JM, Tecklenburg-Lund S, Lindley MR. *Med Sci Sports Exerc.* **2011** Nov;43(11):2031-8.
- [8]. Mendes FA, Gonçalves RC, Nunes MP, Saraiva-Romanholo BM, Cukier A, Stelmach R, Jacob-Filho W, Martins MA, Carvalho CR. *Chest.* **2010**, Aug;138(2):331-7.
- [9]. Ogee Mer A. Panlaqui, MD*, Teresita O. Aquino, MD and Celestino S. Dalisay, MD. American College of Chest Physicians. **2005**.
- [10]. Giavina-Bianchi P, Aun MV, Bisaccioni C, Agondi R, Kalil J. *Clinics*; **2010**, 65:905-18.