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CONSEQUENCE OF INTENSITY CONTROLLED AEROBIC DANCE ON PULMONARY FUNCTION

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Abstract

Breathing is one of the critical bodily function which the lungs deliver vital oxygen to the blood, and expire carbon dioxide out of the body. Dance training can help to strengthen and make this system more efficient. The objective of this study was to find out the intensity controlled aerobic dance training on pulmonary function. To achieve the purpose thirty (N=30) women students were randomly selected from Jaffna, Sri Lanka as subjects and their mean age were 17 ± 1.3 years. They were practice aerobic dance 60 ± 10 min / day for 3 days / week over the period of twelve weeks. The intensity of the exercise was design according to the dancers maximum heart rate (Harvonen formula) and 5% intensity was progressively increased every two weeks from 60% - 85%. Data were collected on their Forced Vital Capacity (FVC), Forced Expiratory Volume (FEV₁), Peak Expiratory Flow (PEF) by PC based USB Spirometer before and after the training period. The collected data were statistically treated by using paired sample 't' test, 0.01 level of confidence was fixed to test the significance. The results shows that, Aerobic dance training significantly improve FVC, FEV₁ and PEF. FVC shows better improvement (48.16 %), FEV₁ (18.22 %) and PEF (24.17%). Hence it was concluded that, aerobic dance training optimistically influence on pulmonary function.

Keywords: Aerobic Dance, FVC, FEV₁, PEF

Introduction

Dance involves the body, emotion and mind: it is both physical activity and a means of expression and communication. Dance may also be regarded as a form of nonverbal communication between humans. Gymnastics, figure skating and synchronized swimming are sport that incorporate dance, while martial arts karate are often compared to dances. Motion in ordinarily inanimate objects may also be described as dances (the leaves danced in the wind). The variety and style of the dance and musical accompaniment provide to the people tastes and performing them.

The physiological response to dance is dependent on the intensity, duration and frequency of the exercise as well as the environmental conditions. During dance practice, requirements for oxygen and substrate in skeletal muscle are increased, as are the removal of metabolites and carbon dioxide. Chemical, mechanical and thermal stimuli affect alterations in metabolic, cardiovascular and ventilatory function in order to meet these increased demands. Pulmonary functions are generally determined by respiratory muscle strength, compliance of the lung and thoracic cavity, airway resistance and elastic recoil of the lungs (1).

Movement is necessary individual characteristic. It is occurred everywhere all the times; it is a fundamental fact of life. Dance is a unique form of movement people's that inspires creativity, motivation, self-will, and self-awareness. Further it is aesthetic and more than a physical movement. Dance execution transformed into a practiced action that combination of physical, emotional components. So dancer must have good balance during the body movement, neuromuscular coordination, proprioception awareness, and endurance is essential to continued existence of prolonged dance performance to develop fatigue free expression, accurate rhythm, and perfect positive reception of music. Particularly in aerobic dance, the dancer must be able to project movement clearly and make expression clear to the audience. Aerobic dancers are physically beauty because of body's structure and movement gracefulness.

In the early 70's, a fitness program developed known as aerobic dance, which was designed to improve cardiovascular endurance (2). It involves choreographed routines made up from various dance steps and other movements including walking, running and skipping. It also involves muscle conditioning exercises for the abdominal, legs and arms (3). Aerobic dance is appropriate for the general public since skill and technique are not emphasized (4). The ACSM defines aerobic exercise as "any activity that uses large muscle groups, can be maintained continuously, and is rhythmic in nature. It is a type of exercise that overloads the heart and lungs and causes them to work harder than at rest (5)

A good dancer must also possess great coordination, a highly developed kinesthetic awareness, control over weight and balance in motion, and endurance is essential to continued existence of prolonged dance performance to develop awareness of space, a strong sense of rhythm, and an

appreciation of music. Hence the purpose of the study was to find out the intensity controlled aerobic dance on pulmonary function.

Methodology

To achieve the purpose thirty (N=30) women students were randomly selected from Jaffna, Sri Lanka as subjects and their mean age were 17 ± 1.3 years. They were practice aerobic dance 60 ± 10 min / day for 3 days / week over the period of twelve weeks. The intensity of the exercise was design according to the dancers maximum heart rate (Harvonen formula) and 5% intensity was progressively increased every two weeks from 60% - 85%. Data were collected on their Forced Vital Capacity (FVC), Forced Expiratory Volume (FEV₁), Peak Expiratory Flow (PEF) by PC based USB Spirometer before and after the training period. The collected data were statistically treated by using paired sample 't' test, 0.01 level of confidence was fixed to test the significances

Results

EFFECT OF AEROBIC DANCE ON PULMONARY FUNCTION.

Variable		mean	S.D	S.E	'r'	't'	Percentage Of improvement
FVC (Lt)	Pre	3.23	0.14	0.02	0.25	21.23*	48.16%
	Post	2.18	0.20	0.03			
FEV1 (Lt)	Pre	2.40	0.08	0.01	0.19	11.83*	18.22%
	Post	2.03	0.16	0.03			
PEF (Lt)	Pre	4.88	0.20	0.03	0.15	13.14*	24.17%
	Post	3.93	0.37	0.06			

*Significant at .01 level of confidence. with df (1, 29) is 2.75

The results shows that, Aerobic dance training significantly improve FVC, FEV₁ and PEF. However FVC shows better improvement (48.16 %) than FEV₁(18.22 %) and PEF (24.17 %).

Discussions

Aerobic dance is a mainly sporadic type of exercise also very demanding and energetic physical movement. Physical inactivity and low cardio-respiratory fitness are recognized as important causes of morbidity and mortality (6). In the present study, FVC, FEV₁ and PEF increased significantly in the experimental group after twelve weeks of aerobic dance training.

Cardio-respiratory fitness significantly improved and breathlessness decreased over a wide range of work corresponding to activities of daily living (7). FVC, FEV₁ and PEF in healthy people; and thus provides further support for the dance training being an important component of pulmonary function. It is generally accepted that people with higher levels of physical activity tend to have higher levels of fitness and that physical activity can improve cardio-respiratory fitness and pulmonary function (9, 10, 8).

Aerobic exercise improves pulmonary function and alters exercise breathing pattern in children (11). This study also correlates with the above findings and showed that the aerobic dancers were able to have more powerful and more effective inspiration and expiration.

Conclusion

Dancers have to prepare physiologically and intensity based dance training will help to improve their theatre performance and minimize injury ratio.

Recommendation

To break fitness barriers the dancers have to barrow supplementary fitness trainings from fitness trainers.

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