

RESTING HEART RATE AND VO₂ MAX BETWEEN ARTIST AND ATHLETES

Dr. S. Sabaanath

Sports Science Unit, University of Jaffna, Sri Lanka.

ABSTRACT

Exercise has a huge potential for everyone in contributing to healthier lifestyles and impact positively on physical and physiological performance. The purpose of this study was to compare physiological parameters such as Resting Heart Rate (RHR) and VO₂ max between artists and athletes. Sixty (N=60), (age 19-23) (BMI 24 ± 1.5) female athletes and dancers were selected from Jaffna, Sri Lanka, and classified in to Artists group [(n=30, practice bharathanatyam 90 to 120 min / day for 2 to 3 day / week over the period of minimum 5 years)] and Athlete group (n=30, practice sports and games 90 to 120 min / day/ 2 to 3 day / week over the period of minimum 5 years)] were selected as subjects. They were measured Resting Heart Rate (RHR) using Palpating the radial artery for full one minute for each subject and VO₂ max assessed by Queen's step test. The resting heart rate was taken during early morning hours the collected data were statistically treated by using independent 't' test , 0.05 level of confidence was fixed to test the significance. The results of the study shows that athletes were had lesser Resting Heart Rate (RHR) (mean 68.47), and higher VO₂ max (mean 46.67) than Dancers [RHR (mean 77.93), and VO₂ max (mean 44.33)]. Hence it was concluded that, athletic type of Exercise positively influence on physiological parameters in respect of RHR and VO₂ max than dancers. In the brightness and unpacked of the study reveals that dance is an art form which help to improve health status. And for professional dancers need to undergo additional fitness to tolerate theatre load.

Key words: Bharathanatyam, VO₂ max, Resting Heart Rate.

INTRODUCTION

Physical fitness leads to better sports performance. Everyone knew that, exercise promote health as well as fitness. But amount and mode of exercise is still unclear. Sports performance seems to depend on complex physical and psychological factors. The research suggests that physical fitness promote human performance.

Dance is an art form which provides fitness as well. 'Creating dance provides people with the opportunity to make individual responses to their world' and its expressive and creative nature. (NDTA. 2004). Moreover, as a physical activity, dance may also impact positively on fitness, health and wellbeing. Much research in sport suggests that physical activity can have a positive effect on physical fitness (Blair SN et.al. 2001, Strong WB.et.al. 2005)

Resting heart rate is best predictor of cardiovascular fitness and Long-term exercise can help to make the heart and circulatory system more efficient. Aerobic exercise increase the amount of expansion of chest to breathe in more air with each breath and increase number of capillaries around the

alveoli, or air sacs, enabling to absorb oxygen in the blood quicker. This results in being able to exercise longer period of time.

Although there is evidence that exercise can be of benefit to health, it must be regular if these benefits are to be attained/maintained. It is important that regular physical activity is encouraged and that appropriate exercise sessions are promoted.

However, the mode of exercise must be acceptable to the target population—that is, the participants must find the activity enjoyable and be able to participate regularly and it may be necessary to show that the exercise prescription is effective in improving fitness levels. The concept of "a little exercise is better than nothing" has been promoted. (Mutrie. N, et-al. 1993)

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.

Bharatanatyam: very popular dance form in South India, and oldest of all classical dance forms. The general etymology of Bharathanatyam is *BHava* (expression) + *Raga* (music) + *Tala*(rhythm) + *NATTAM*(dance). The variety and style of the dance and musical accompaniment provide to the people tastes and performing them. In India the earliest book discussing dance, the *Natya-sastra* still survives. This work, which is sacred in Indian culture, codifies dance into a series of rules determining the gestures used to depict different themes and emotions. The Bharathanatyam, a classical dance form based on this treatise. In the modern day scenario it is performed by both male and female artists. Many learn as a hobby and few make it as a profession. Whether taken as a hobby or a profession it certainly needs lot of practice, concentration and dedication.

Despite the fact that the time of motor activity is relatively long in its training sessions (classes), curiously the competitive presentations are performed with intense physical pace and last only three to seven minutes. This usual practice could be considered as a physiological failure, because it probably infringes the specificity of training principle (Flouris et al., 2004).

One single fitness measurement unable to predict success in dance, that will clearly vary depending on numerous variables including age, sex and level of performance. Hence the purpose of the study was to compare resting heart rate and VO_2 max between artist and athletes.

RESEARCH PROBLEM

Myth of the dancers would be, 'Physical exercises indirectly weaken aesthetic appearance of the dancers' and Most of the bharathanatyam dancers are practice dance as a traditional form and does not need additional fitness. This may demolish the dancers prolonged theatre performance and leads to injuries. So understanding of different mode of exercise training is important factor for trainers, choreographers and dancers. So research on modern and science based fitness training towards

enhancement of theatre settings have been the persistent research problem. Thus, analyze the essentials of fitness foundation for bharathanatyam dance is useful research objectives to attain extreme dance science research in future. Therefore the present study intend to assess the values and the difference between athletes and artists on resting heart rate and VO_2 max. Hence the present scientific study is one of the pioneer attempts to disseminate the need of additional fitness through an accurate scientific training method for the improvement of physical and physiological parameter of dancers.

OBJECTIVE OF THE STUDY

Bharathanatyam dancers are not well understood the need of the additional fitness for the superior theatre performance. Therefore the present study intends to assess the difference between artist and athlete and the study will guide the dancers, dance teachers, choreographer and the curriculum designers to include additional fitness within regular curriculum. Hence the objective of this study was to compare physiological parameters between athletes and bharathanatyam dancers.

METHODS

The purpose of this study was to compare physiological parameters such as Resting Heart Rate (RHR) and VO_2 max between artists and athletes. Sixty [(N=60), (age 19-23) (BMI 24 ± 1.5)] female athletes and dancers were selected from Jaffna, Sri Lanka, and classified in to Artists group [(n=30, practice bharathanatyam 90 to 120 min / day for 2 to 3 day / week over the period of minimum 5 years)] and Athlete group (n=30, practice sports and games 90 to 120 min / day/ 2 to 3 day / week over the period of minimum 5 years)] were selected as subjects. They were measured Resting Heart Rate (RHR) using Palpating the radial artery for full one minute for each subject and VO_2 max assessed by Queen's step test.

The resting heart rate was taken during early morning hours the collected data were statistically treated by using independent 't' test , 0.05 level of confidence was fixed to test the significance.

RESULTS

Comparison Of Rhr And Vo₂ Between Athletes And Dancers

variable	Group	Mean	SD	SE	t-value
RHR (b/min)	Artists	68.47	3.81	0.70	5.67*
	Dancers	77.93	8.32	1.52	
VO ₂ max	Artists	46.67	2.57	0.47	3.25*
	Dancers	44.33	2.98	0.54	

*Significant at .05 level of confidence. with df (1, 58) is 2.00

The results of the study shows that athletes were had lesser Resting Heart Rate (RHR) (mean 68.47), and higher VO₂ max (mean 46.67) than Dancers [RHR (mean 77.93), and VO₂ max (mean 44.33)].

DISCUSSIONS

The bharathanatyam dancers are practice and prepare culturally and anciently designed items and have not involved any additional training for performance enhancement. Professional dancers concentrate merely on BHAVA (expression) + RAGAM (music) + TALAM (tempo) and this only essential for effective Theatre performance. But apart from this, strong fitness foundations also need to succeed the prolonged theatre performance. It means if the dancers are fatigue faster they cannot perform whole programme effectively and may loss the body expression (BHAVA). (Sabaanath.S.2015).

Dance is a predominantly intermittent type of exercise. In choreographed dance training is very demanding and energetic physical movement. In the present study, all the physiological parameters of the professional bharathanatyam dancers were significantly better than amateur dancers.

Although differences exist between dance and sporting activity, dance execution is not a single act. It forms of athletic activity depending on a huge number of rudiments with direct and indirect effects (Koutedakis Y. 1999). Physical fitness may be defined as "the individuals' ability to meet the demands of a specific physical task". As in most sports, dance fitness depends on the individuals' ability to work under aerobic (Clarkson PM. 1982., Cohen JL. 1988) and anaerobic conditions, and on their capacity to develop high levels of muscle tension, i.e. muscle strength. Joint mobility/muscle flexibility and body composition are also important parts of dance fitness. However, no single fitness measurement can predict success in dance, as they vary markedly depending on numerous parameters including age, sex and level of performance.

It may indicate the associated dance training out comes could be affected by such difference in duration, intensity and frequency of dance they undergone. The energetic demands during these

training sessions stand in rather sharp contrast to those which can exist during stage performance.

The literature indicates that changes in cardiorespiratory endurance, VO₂ max are directly related to the subject's initial fitness level and the frequency, intensity and duration of the training programme. Some aerobic type of activities, there is a close association with VO₂ max (Hemple and wells, 1985). It has been shown that arm work performed above the head produces a higher VO₂ max than the work performed below head level, due to an increased sympathetic tone (Parker et-al 1989). According to Hamilton et.al (1989) aerobic dance and circuit training can be intense enough to promote aerobic capacity. In another study improvement in cardiovascular fitness is related to the mode, frequency, duration, intensity, and rate of progression of exercise (Kirkendall DT & Calabrese LH-1983). The data suggest that dance as an activity for promoting fitness and will improve aerobic and physical working capacity. In the present investigation also suggests that dance is a activity for general population to enhance fitness but in the other hand the dancers who professionally performed in stage need to do additional fitness training which barrow from athletes.

CONCLUSION

From the results it was clear that, Athletes were better than Dancers on Resting Heart Rate and VO₂ max. Hence it was concluded that athletic type of training may have positive influence on health status in respect to cardiac function as well as VO₂ max in women dancers.

IMPLICATION

In the brightness and unpacked of the study reveals that bharathanatyam dance is an art form which help to improve health status. And for professional dancers need to undergo additional fitness to tolerate theatre load.

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