



Review Paper

## Physical Fitness Consideration of Bharathanatyam Dance

Sabaanath S.<sup>1</sup> and Thevanthy T.<sup>2</sup>

<sup>1</sup>Sports Science Unit, University of Jaffna, SRI LANKA

<sup>2</sup>Departments of Dance, Ramanathan Academy of Fine Arts, University of Jaffna, SRI LANKA

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### Abstract

*Bharathanatyam dance placed physical demands on dancers and choreographed dance practice may be inadequate to develop dancers' physiological and key fitness parameters. However, for the extreme theatre performance and lifelong professional dance career, dancers need to concentrate on physical fitness components such as aerobic power, muscular strength, flexibility, balance, movement speed and coordination. Unfounded truth of fitness components mainly reflects the bharathanatyam performance as well as professional dance carrier. The main objective of the study was to analyze the physical fitness consideration of Bharathanatyam Dancers. Myth of the dancers would be, 'Physical exercises indirectly diminish aesthetic appearance of the dancers' and Most of the bharathanatyam dancers are practice dance as a cultural form and does not need additional fitness. This may hush the dancers prolonged theatre performance and leads to bungling, fatigue and injuries. So enhance and maintain the extreme theatre performance bharathanatyam dancers need additional fitness. The intensities of the patha varnam (core item of Bharathanatyam dance brief periods more than 15 min) attain 70–80% of maximum VO<sub>2</sub>, which are similar responses during long distance running. However, sub maximal exercise minimum 20 minutes are needed to peak aerobic power. Modern research evidence revealed that additional fitness training may improve bharathanatyam dancer's fitness and decrease rate of dance injuries, without affect the artistic and aesthetic gracefulness. Adequate and appropriate fitness training have help succeeded in theatre performance settings. An awareness of these issues will supports to dancers and choreographers to improve training methods, to employ effective injury prevention strategies and to establish healthier physical state. Bharathanatyam dance has high metabolic and cardiovascular demands and is characterized by combining both the anaerobic lactic and aerobic systems. Furthermore, additional fitness training program increases lactate threshold and contributes to higher blood lactate after theatre performance. Further, training for strength and flexibility have positively influence on muscles and joints act against the external resistance and minimize the injury ratio. However, any variation in the traditional training methods must be handled cautiously to ensure that the aesthetic beauty of the dance should not affected by additional fitness training. In future scientific investigations are needed to nurture of Bharathanatyam.*

**Keywords:** Bharathanatyam, physical fitness, VO<sub>2</sub> max.

### Introduction

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. Dance is aesthetic and it is more than a physical movement. Dance execution transformed into a practiced action that combination of physical, emotional components. A 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 bharathanatyam dance, the dancer must be able to project movement clearly and make expression clear to the audience. Bharathanatyam dancers are physically beauty because of Grace, fluidity, and harmony of body.

*Bharathanatyam* is a popular and oldest dance form and oldest dance of all. The general etymology for the name is combination of **BH**Avam (body's graceful expression), **RA**gam (music), **TA**lam(tempo), **NATYAM**(dance). The variety and style of the dance and musical accompaniment provide to the people tastes and performing them. In the present scenario it is perform by males and females. Many learn as a leisure pursuit and few make it as a profession. Whether taken as leisure or a profession it definitely needs lot of practice, attentiveness and commitment.

The bharathanatyam dancers are practice and prepare culturally and anciently designed items and have no 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 foundation also needs to successful the prolonged theatre performance. It means if the dancers are fatigue faster they cannot perform whole

programme effectively and may lose the body expression (BHAVA).

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<sup>1</sup>. 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<sup>2,3</sup> and anaerobic<sup>1</sup> conditions, and on their capacity to develop high levels of muscle tension, i.e. muscle strength<sup>4,5</sup>. Joint mobility/muscle flexibility<sup>6</sup> and body composition<sup>7</sup> 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.

Aerobic nature of training required to develop bharathanatyam dance choreography. Physiological changes may have contributed to the higher hyperlactataemia in the training effect. This effect should be considered positive for a better performance, since it enhances the capacity of skeletal muscles controlling the disorder in intracellular pH during Exercise, once more lactate and H<sup>+</sup> are released outside the cell into the bloodstream, delaying fatigue<sup>8</sup>.

To attain successful theater performance the dancers must also have good cognitive abilities such as balance, coordination and reaction time. Since, few numbers of findings have been published on this field and many on western dance only, Indian and Sri Lankan dance trainers and choreographers have been applying methods of training based on professional experience, trial and error and few know proper training methods. Thus, there is a need to establish greatest training plan for bio motor abilities for dancers particularly to improve the quality and keep the identity of the traditional bharathanatyam dance. Keeping these ideas in mind, an attempt has been made to analyze the physical and physiological consideration of bharathanatyam dance.

## Research Problem

Health is considered as the most precious asset of human. Understanding of different mode of exercise training is important factor for trainers, choreographers and dancers. So research on modern and science based fitness training will support to reach most favorable status in bharathanatyam theatre sittings. Thus, analyze the physical and physiological consideration of bharathanatyam dance is useful research objectives to attain extreme dance science research in future. The present scientific study is one of the pioneer attempts to discover and imply an accurate scientific training method for the improvement of physical and physiological parameter of bharathanatyam dancers.

## Objective of the Study

The objective of the study was to analyze the physical and physiological consideration of Bharathanatyam Dance and construct different proportion of aerobic and anaerobic fitness training to bharathanatyam dancers.

**Fitness for Dancers:** Bharathanatyam dancers are practice and perform the dance as a cultural event. To enhance physiological as well as physical performance of stage setting bharathanatyam dancers have to undergo periodized fitness training in proper proportion. A few numbers of authors have investigated aerobic fitness levels of dance students, using laboratory-based tests.

Fitness training is gaining in popularity, it is important for dance participants, and choreographers to be aware of the potential benefits of such training. One of the main reasons individuals participate in dance is to theatre performance settings. As of yet, there has been few published research determining the effect of fitness training on physiological as well as cognitive performance. Research completed on this topic will provide information as to whether or not additional fitness may affect one's physical and physiological qualities.

**Aerobic Fitness:** Professional bharathanatyam dancers have to be expert in aesthetic as well as gracefulness part of the dance and have to be physically fit to handle the physiological stress during the activity and free from injuries. Generally dancers are not physically fit compare with athlete. Many bharathanatyam dancers practice dance as a traditional style. The unfounded truth is additional fitness play an important role to skill development.

Oxygen is used to metabolize energy from food that delivers aerobically to working muscles. Regular structured physical activity that will improve cardiorespiratory endurance of bharathanatyam dancers, which means the main energy supply from aerobic in nature. Aerobic type of activity should be carryout up to minimum 20 minutes with the sub maximal range of exercise intensity in trice a week<sup>9</sup>. These kind of training largely dominates the dancers prolong theater performance settings.

To achieve extreme theatre performance by the dancers, the aerobic types of exercise have to apply according to the nature of bharathanatyam item. Prolonged sub maximal exercise has grown to be an excellent mode of training for oxidative energy system to enhance long duration bharathanatyam performance. Load dynamics should be apply in different manner according to the nature of dance item and implementation of this method of training to build physiological parameters is entirely unknown. Further sufficient numbers of findings are required in relation to aerobic training and its effects. Hence, there is a need to analyze the additional fitness training on improvement of the bharathanatyam dance performance.

Despite the fact that the time of motor activity is relatively long in its training sessions (classes), curiously the theatre 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<sup>10</sup>.

Aerobic fitness means the ability of an individual work under aerobic nature. Bharathanatyam Dancers have lower  $VO_2$  max (45mL/kg/min,<sup>11</sup> than gymnastics (55mL/kg/min)<sup>12</sup> and classical ballet (45mL/kg/min)<sup>3</sup>. To improve aerobic parameters, the intensity should be specifically pitched at an optimal level to provide a genuine training stimulus. It means sub maximal exercise intensity up 85 % has to progressively employ to dancers by the mode of exercise training and it should not affect the aesthetic gracefulness of bharathanatyam.

The best practice of endurance training has to be target on intensity insert of volume of training. The intensity just higher than lactate threshold range may support to develop aerobic power. The important precaution should be followed by the trainers, choreographers to avoid injury to bharathanatyam dancers. The intensity of the prolonged aerobic type of training may cause overuse injury especially in the knee joints. Bharathanatyam dancers definitely pay attention to prevent knee joint injury due to the overuse. In most of the bharathanatyam dancing event, dancers have to sit on their opened toe half squad position. So dancers have to keep their knee health to carry out prolonged excellent theatre performance.

Further the intensity of the additional aerobic exercise (other than regular bharathanatyam dance practice) should be planed cautiously and increase the intensity by 10% will be safest method to increase training load and may follow training principles effectively.

**Anaerobic Endurance:** Present research is the pioneer and innovative study to fitness attribute in bharathanatyam dancers. The anaerobic stages are divided in to two categories. First one is phosphagen system jump and hop in bharathanatyam needed muscular action lasts few seconds and it is mainly energized by Pc system. Other one is glycolysis fuel by blood glucose and liver glycogen. The anaerobic requirement comes into effect when some bharathanatyam movements have fairly high power output extend to 30 – 60 seconds (dancing for jathi (beat) or adavu. ordinary ballet class extracted a average lactic acid level in blood up to 3 mmol/L in women and individual dance raised 10mmol/L this is higher than soccer, badminton, and field hockey players attain during the match<sup>13</sup>. Some imprecise way anaerobic endurance means the centre of muscular strength and aerobic endurance. So extend the fatigue point, bharathanatyam dancers need to concentrate strength endurance workout as work with lactic acid system to tolerate fast and high tempo dance movement without fatigue and injuries.

**Muscular Strength:** Dancers are neglected resistance training for fitness and theatre performance. Development in the muscle force to be a route for dancers to enhance strength endurance type of physical exertion<sup>1</sup>. Bharathanatyam dancers are not generally considered as strength is necessary component for success in prolonged performance. Supplementary resistance training to lower body can proportionally improve open toe half squad (ari mandi in bharathanatyam dance) position in an extended period of time and changes within the nervous system.

**Heart rate:** Resting heart rate is the best indicator to predict individual fitness level. The values of Heart Rate ( $HR_p$ ) peak found here, in relative terms (~90% HRmax), is supports with previous literature for the high intensity dance performance<sup>14</sup>. Nevertheless, it is higher than 27 min of Tap dance practice ( $83.8 \pm 6.2\%$  HRmax)<sup>15</sup> and 60 min of body pump, body combat, step, and spinning ( $60.2 \pm 6.5$ ;  $73.2 \pm 7.3$ ;  $72.4 \pm 5.7$  and  $74.3 \pm 6.7\%$  of HRmax, respectively)<sup>16</sup>. Evidently, bharathanatyam dance practice contributed for the higher HR responses in comparison with others dance. On the other hand, a research on relative intensity (~ 90% HRmax) during Street Dance (SD) choreography is supports with the American College of Sport Medicine guidelines for exercise prescription towards aerobic fitness improvement can be 20 to 60 min continuous or interval exercises with 64 % - 94% of the HRmax with the frequency of 3 to 5 times a week<sup>17</sup>. From a practical point of view, perhaps an interval approach would be appropriate for future investigation to test bharathanatyam dancer's cardiorespiratory fitness. Moreover, importance of additional fitness training to enhance not only performance aspects<sup>18</sup>, expression, movement to beat and music, are important to succeed bharathanatyam dancers. In addition, progressively increase in appropriate additional fitness training may reduction in resting heart rate and positively influence on aerobic power.

## Conclusion

Considering the findings of this study, it was concluded that bharathanatyam dance has high metabolic and cardiovascular demands and is characterized by combining both the anaerobic lactic and aerobic systems. Furthermore, additional fitness training program increases lactate threshold and contributes to enhance aerobic endurance, which improves the theatre performance. So sub maximal exercise intensity up 85 % has to progressively employ to dancers by the mode of exercise training and it should not affect the aesthetic gracefulness of bharathanatyam. Further, training for strength and flexibility have positively influence on muscles and joints act against the external resistance and minimize the injury ratio. The findings could support to dancers, choreographers and bharathanatyam mentors to have advance scientific approach to their daily dance practice routines.

**Implication:** In brightness of these studies, and with better understanding of the artistic and athletic needs of dancers in

different genres, it means Bharathanatyam dancers have to prepare physiologically to tolerate extreme theater demands.

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