

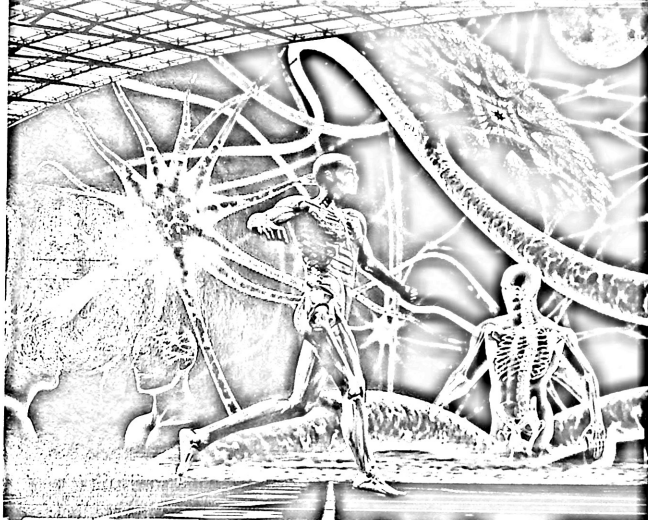
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## REACTION TIME: BETWEEN AEROBIC AND BHARATHANATYAM DANCERS.



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### ABSTRACT

*The purpose of this study was to compare Reaction time between Aerobic dancers (AD) and Bharathanatyam dancers (BD). To achieve the purpose, sixty (N=60) women dancers, of whom the AD (n=30) who practice aerobic dance for 60 to 90 min / day for 3 days / week over the period of minimum 5 years and the BD (n=30) practice Bharathanatyam 60 to 90 min / day 3 days / week over the period of minimum 5 years selected from Jaffna, Sri Lanka as subjects. Their mean age was  $17 \pm 1.3$  years. They were measured on Reaction time (RT-auditory) by using chronometer. The collected data were statistically treated by using independent 't' test, and 0.05 level of confidence was fixed to test the significance. The result showed that BD were better than AD on reaction time. Hence it was concluded that, Bharathanatyam dancers developed better reaction time when compared to aerobic dancers.*

*Key words: Reaction time, Aerobic Dance, Bharathanatyam Dance.*

### INTRODUCTION

Dancing is probably one of the oldest arts. The first generation of mankind, without doubt, began to gesticulate with face, body, and limbs.

How long it took to develop bodily gesticulation into an art, no one can guess - perhaps a millennium. Every dance, no matter what style, has

something in common. It not only involves flexibility and body movement, but also physics. If the proper physics are not taken into consideration, injuries may occur. Dance is an art form that generally refers to movement of the body, usually rhythmic and to music, used as a form of expression. In the early 1920s, dance studies began to be considered an academic discipline. Today these studies are an integral part of many universities' arts and humanities programs. By the late 20th century, the recognition of practical knowledge as equal to academic knowledge led to the emergence of practice research and practice as research.

The quality of this art, therefore, necessarily depends on the physical qualities and skills that dancers possess. The stronger and more flexible a dancer's body is, the more capable it is of a wide range of movement. Nearly all professional dancers start training at a young age in order to shape and develop their bodies correctly. As well as strength and mobility, 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. Particularly in theatrical dance, the dancer must be able to project movement clearly and make its expressive qualities intelligible to the audience. Grace, fluidity, and harmony of body are also frequently desired in the dancer, as is physical beauty.

Reaction time means the time that elapses between a stimulus and the response to it.

**Aerobic dance:** In the early 1970's, Jacki Sorenson developed a fitness program now known as aerobic dance, which was designed to improve cardiovascular endurance. 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 <sup>(1)</sup>. Aerobic dance is appropriate for the general public since skill and technique are not emphasized <sup>(2)</sup>.

**Bharatanatyam:** A very popular and one of the oldest of all classical dance forms in India. The general interpretation for the name is BHava(expression) + RAga (music) + TAla(rhythm) + NATYAM(dance) = Bharatanatyam. 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 *bharata natyam*, a classical dance form is based on this treatise. The variety and style of the dance and musical accompaniment provide to the people tastes and performing them. In the modern day scenario it is performed by both male and female artists. The purpose of the study was to compare the reaction time between aerobic and bharathanatyam dancers.

#### METHODOLOGY

To achieve the purpose sixty (N=60) women dancers were randomly (AD- (n=30) practice aerobic dance for 60 to 90 min / day 3 days / week over the period of minimum 5 years) and

BD- (n=30) practice bharathanatyam for 60 to 90 min / day 3 days / week over the period of minimum 5 years) selected from Jaffna, Sri Lanka, as subjects. Their mean age was  $17 \pm 1.3$  years. They were measured on Reaction time (RT—auditory) by using chronometer. The collected data were statistically treated by using independent 't' test, and 0.05 level of confidence was fixed to test the significance. The result shows that BD were better than AD on reaction time. Hence it was concluded that, bharathanatyam dancers developed better reaction time when compared to aerobic dancers.

#### RESULTS

##### COMPARISON OF REACTION TIME BETWEEN AEROBIC AND BHARATHANATYAM DANCERS

variable	Group	Mean	SD	SE	"t"
Reaction Time(RT) (Sec)	AD	178.67	13.23	2.41	2.30*
	BD	170.90	12.92	2.36	

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

The result shows that BD were better than AD on RT. Hence it was concluded that Bharathanatyam Dancers have better reaction time than Aerobic Dancers.

#### DISCUSSIONS

Dancers are not just performing artists; their bodies are

also the instruments through which the art is created. Nearly all professional dancers start training at a young age in order to shape and develop their body correctly. Strength is built up in the right muscles, and the bone-connecting ligaments on which flexibility of the

joints is so dependent are lengthened early before they begin to harden. Dancing is an elegant, and regular movement, harmoniously composed of beautiful attitudes, and contrasted graceful posture of the body, and parts thereof.

Regular schedule of amateur dancing over many years throughout old age not only promotes posture and balance, but also has a wide range of beneficial effects on reaction times (RTs), motor behaviour, and tactile and cognitive performance by comparing such individuals with an aged-matched non-dancer Control Group<sup>(3)</sup>.

Compared to activities such as exercising, walking, or playing an instrument, dance has the advantage of combining many diverse features including physical activity, social and emotional interaction, and sensory stimulation, each of which is well documented to have beneficial effects.

Accordingly, there might also be many mechanisms mediating the positive outcomes of dancing. In healthy elderly individuals, physical fitness and cognitive performance are closely associated<sup>(4)</sup>. Consequently, many studies in the elderly have shown that improving aerobic capacity through physical exercise programs has beneficial effects on cognitive performance<sup>(5, 6, 7, 8-11)</sup>. While cardiovascular fitness might directly affect blood pressure and circulation,

animal research on the effects of physical exercise suggests a crucial involvement of neuro-trophins and other nerve growth factors<sup>(12,13)</sup>. Use-dependent plasticity, synaptic efficacy, and the maintenance of synaptic connections are controlled and modulated by neurotrophins such as brain-derived neurotrophic factor. The level of these factors increase by many factors such as physical activity and social interaction<sup>(12-15)</sup>. Housing animals under enriched environmental conditions, in particular, has been shown to increase neurotrophin gene expression, thus exerting neuroprotective functions<sup>(16, 17, 18)</sup>. Mild stress response in cells has been advocated as a major driving force for the up-regulation of stress resistance genes and growth factors<sup>(19)</sup>. Interestingly, among the factors inducing mild stress are sensory stimulation, physical activity, and cognitive challenges, all of which are involved in dancing.

It is therefore conceivable that intelligent people with better balance and faster RTs are those who are more likely to select dancing as a life-long avocation. In the present investigation, the bharathanatyam dancing group has better reaction time than the aerobic dancing group.

## CONCLUSIONS

From the results it was clear that bharathanatyam dancers were better than aerobic dancers on reaction time. Hence it was concluded that bharathanatyam dance practice may have positive influence on bio motor qualities in respect to auditory reaction time in women dancers.

## RECOMMENDATION

Aerobic and bharathanatyam dance will be recommended to improve and maintain good bio motor qualities. Further dancers will undergo some periodized bio motor training for improving their excellent theatre performance.

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