

# Cross Sectional Study on the Audio-Visual Reaction Time in Bharatnatyam Dancers

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## INTRODUCTION

Bharatnatyam, a classical dance form ingenious to Tamil Nadu involves a series of rhythmic & synchronized movements of the body that corresponds to the beat of the music that they dance to. Reaction time is the elapsed time between the presentation of a sensory stimulus and appearance of appropriate voluntary response under the condition that the subject has been instructed to respond as rapidly as possible. Reaction time is crucial for our everyday lives and requires intact sensory skills, cognitive processing, and motor performance. The regular practice of Bharatnatyam dance can improve motor coordination and provide faster response to auditory and visual stimuli.

## AIM

To assess the effect of regular Bharatnatyam practice on the auditory and visual reaction time.

## OBJECTIVES

- To measure the auditory reaction time (ART) and visual reaction time (VRT) of the study group (Bharatnatyam dancers)
- To measure the ART and VRT time of the control group (non-dancers)
- To compare the results obtained in the study group to that of the control

## METHODS & MATERIALS

- Study design: Observational, Cross-sectional study
- Study place : Physiology department, Velammal Medical College Hospital and Research Institute, Madurai
- Sample size: 60 ( 30 dancers, 30 non-dancers)
- Study duration: 2weeks
- Study population: Trained Bharatnatyam dancers (> 5 years)



Choice Reaction Timer

## INCLUSION CRITERIA

- Trained Bharatnatyam dancers for a period of at least 5 years
- Age between 18 to 25 years with normal BMI

## EXCLUSION CRITERIA

- Refractive errors, Ocular problems, Hearing defects, Neuromuscular disorders, Psychiatric illness, Thyroid disorders and patients on medication that affects vision and audition.

## PROCEDURE

Obtained Institutional and Ethical Committee clearance

Informed voluntary consent (n=60)

Demographic and Anthropometric details (n=60)

ART & VRT was recorded for trained dancers (n=30) and non-dancers (n=30)

## RESULTS

Observational cross-sectional study was conducted involving 60 participants including 30 Bharatnatyam dancers as study group and 30 non-dancers as a control group. The ART (tone & click sounds) and VRT (green & red lights) was measured using an audio-visual reaction time apparatus in the study participants. Their mean and standard deviation was found and those values were used to calculate p-value by unpaired t-test method.

Parameters	Group	Mean (Reaction Time)	Standard Deviation	P Value
Green Light – Right Eye	1	0.140	0.021	<0.001*
	2	0.171	0.032	
Green Light – Left Eye	1	0.138	0.015	<0.001*
	2	0.166	0.025	
Red Light – Right Eye	1	0.143	0.020	0.007
	2	0.159	0.024	
Red Light – Left Eye	1	0.139	0.019	<0.001
	2	0.175	0.026	
Tone – Right Ear	1	0.141	0.022	<0.001
	2	0.166	0.025	
Tone – Left Ear	1	0.146	0.024	0.001
	2	0.169	0.028	
Click – Right Ear	1	0.139	0.022	<0.001
	2	0.162	0.028	
Click – Left Ear	1	0.140	0.020	<0.001*
	2	0.168	0.034	

## DISCUSSION

- The significant lower values of the ART and VRT signifies that practicing Bharatnatyam regularly can increase the speed of transmission of cortical signals which is also one of the myriad other benefits of regularly practicing dance from a young age.
- This significant decrease in ART and VRT may be due to the increased neural processing, enhanced sensory motor integration, increased cortical plasticity, proprioception & anticipation, coordination and motor skills
- The above factors may be enhanced due to the swift movement and actions performed by the dancers in response to the beat and rhythm of the music.

## LIMITATIONS

The physical activity status of the subjects are not considered.

## CONCLUSION

The trained Bharatnatyam dancers have significantly faster reaction time than the non dancers.

## REFERENCES

National Journal of Medical Research AUDIO- VISUAL REACTION TIME IN INDIAN CLASSICAL SINGERS Yuvraj Gharu1, Luxmi Gharu2 Author's Affiliations: 1Associate Professor, Dept. of Physiology, IGMC, Shimla 2Associate Professor, Dept. of Music, R.K.M.V., Shimla.