



Effect of Aerobic Dance and Suryanamaskar on the Selected Low Physiological Variables on School Children of Kerala State

Rakhi Ramakrishnan¹ & Dr. A Shenbagavalli²

¹Ph.D Research Scholar, Department of Physical Education, Chennai, Tamilnadu, India.

²Dean, Faculty of Education, Department of Physical Education and Health Sciences, Alagappa University, Karaikudi, Tamilnadu, India.

Received 20th September 2016, Accepted 21st October 2016

Abstract

The purpose of the study was to find out the effect of aerobic dance and suryanamaskar on the selected low physiological variables on school children of Kerala state. To achieve the purpose of the present study, forty five school children from Kerala state, India were selected as subjects at random and their ages ranged from 12 to 14 years. The subjects were divided into three equal groups of fifteen each. Group I acted as Experimental Group I (Aerobic dance training), Group II acted as Experimental Group II (Suryanamaskar) Group III acted as Control Group. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The study was formulated as a true random group design, consisting of a pre-test and post-test. Forty five school children from Kerala state, India was selected as subjects at random and their ages ranged from 12 to 14 years. The subjects (N=45) were randomly assigned to three equal groups of fifteen subjects each. Pre test was conducted for all the subjects on selected low physiological variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group I, Experimental Group II and Control Group in an equivalent manner. Experimental Group I was exposed to aerobic dance training, Experimental Group II was exposed to suryanamaskar practices and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. After the experimental treatment, all the forty five subjects were tested on their physiological variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The experimental training groups had shown better performance on physiological variables than the control group.

Keywords: Aerobic Dance, Suryanamaskar, School Children, Kerala.

© Copy Right, IJRRAS, 2016. All Rights Reserved.

Introduction

Aerobic exercise is the exercise that involves or improves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. They are several kinds of aerobic exercise which are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise, involving large muscle groups, and a cooling down period at the end. Aerobics is a form of physical exercise that combines rhythmic aerobic exercise with stretching and strength training routines with the goal of improving all elements of fitness (flexibility, muscular strength and

cardio – vascular fitness). It is usually performed to music and may be practiced in a group setting led by an instructor, although it can be done solo and without musical accompaniment. With the goal of preventing illness and promoting physical fitness, practitioners perform various routines comprising a number of different dance-like exercises. Formal aerobics classes are divided into different levels of intensity and complexity. Aerobics classes may allow participants to select their level of participation according to their fitness level. Many gyms offer a wide variety of aerobic classes for participants. Each class is designed for a certain level of experience and taught by a certified instructor with a specialty area related to their particular class (Cooper, 1985).

The aerobic dance is a common craze among most people today. It is one of the best ways to enjoy a fitness program and also a way to achieve better health. The aerobic dance is a feet tapping exercise that is accompanied with musical beats and the signals of an

Correspondence

Rakhi Ramakrishnan

E-mail: rakhi.sanil@gmail.com, Ph. +9194971 80006

instructor. Aerobic dancing also induces fast breathing for a long period of time by pumping more oxygen into the bloodstream. Also known as “aerobics”, the aerobic dance can be done with hip hop or country folk music. There are different types of aerobics such as dance aerobics, step aerobics, low impact aerobics, high impact aerobics, water aerobics and aerobic kickboxing (Cooper, 1969).

Methodology

The purpose of the study was to find out the effect of aerobic dance and suryanamaskar on the selected low physiological variables on school children of Kerala state. To achieve the purpose of the present study, forty five school children from Kerala state, India were selected as subjects at random and their ages ranged from 12 to 14 years. The subjects were divided into three equal groups of fifteen each. Group I acted as Experimental Group I (Aerobic dance training), Group II acted as Experimental Group II (Suryanamaskar) Group III acted as Control Group. The requirement of the experiment procedures, testing as well as exercise schedule was explained to the subjects so as to get full co-operation of the effort required on their part and prior to the administration of the study. The study was

formulated as a true random group design, consisting of a pre-test and post-test. Forty five school children from Kerala state, India was selected as subjects at random and their ages ranged from 12 to 14 years. The subjects (N=45) were randomly assigned to three equal groups of fifteen subjects each. Pre test was conducted for all the subjects on selected low physiological variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group I, Experimental Group II and Control Group in an equivalent manner. Experimental Group I was exposed to aerobic dance training, Experimental Group II was exposed to suryanamaskar practices and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. After the experimental treatment, all the forty five subjects were tested on their physiological variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the ‘F’ ratio for adjusted test was found to be significant, Scheffe’s post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses.

Results

Table I. Computation of analysis of covariance of mean of aerobic dance training, suryanamaskar practices and control groups on systolic blood pressure

| | Aerobic Dance Training | Suryanamaskar Practices | Control Group | Source of Variance | Sum of Squares | df | Means Squares | F-ratio |
|--------------------------|------------------------|-------------------------|---------------|--------------------|----------------|----|---------------|---------|
| Pre-Test Means | 121.00 | 120.00 | 119.80 | BG | 12.40 | 2 | 6.20 | 0.52 |
| | | | | WG | 492.40 | 42 | 11.72 | |
| Post-Test Means | 116.26 | 115.20 | 120.00 | BG | 190.57 | 2 | 95.28 | 8.56* |
| | | | | WG | 467.33 | 42 | 11.12 | |
| Adjusted Post-Test Means | 116.10 | 115.26 | 120.10 | BG | 199.76 | 2 | 99.88 | 9.24* |
| | | | | WG | 442.76 | 41 | 10.79 | |

An examination of table - I indicated that the pre test means of aerobic dance training, suryanamaskar practices and control groups were 121.00, 120.00 and 119.80 respectively. The obtained F-ratio for the pre-test was 0.52 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the aerobic dance training, suryanamaskar practices and control groups were 116.26, 115.20 and 120.00 respectively. The obtained F-ratio for the post-test was 8.56 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence

for the degree of freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the aerobic dance training, suryanamaskar practices and control groups were 116.10, 115.26 and 120.10 respectively. The obtained F-ratio for the adjusted post-test means was 9.24 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This proved that there was a significant difference among the means due to the experimental trainings on systolic blood pressure. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s post hoc test. The results were presented in Table-II.

Table II. The scheffe’s test for the differences between the adjusted post test paired means on systolic blood pressure

| Adjusted Post-test means | | | Mean Difference | Required CI |
|--------------------------|-------------------------|---------------|-----------------|-------------|
| Aerobic Dance Training | Suryanamaskar Practices | Control Group | | |
| 116.10 | 115.26 | --- | 0.84 | 3.04 |
| 116.10 | --- | 120.10 | 4.00* | |
| --- | 115.26 | 120.10 | 4.84* | |

* Significant at 0.05 level of confidence

The multiple comparisons showed in Table II proved that there existed significant differences between the adjusted means of aerobic dance training with control group (4.00), suryanamaskar practices with control group (4.84). There was no significant difference between aerobic dance training and suryanamaskar practices

(0.84) at 0.05 level of confidence with the confidence interval value of 3.04. The pre, post and adjusted means on systolic blood pressure were presented through bar diagram for better understanding of the results of this study in figure-I.

Figure I. Pre post and adjusted post test differences of the, aerobic dance training, suryanamaskar practices and control groups on systolic blood pressure

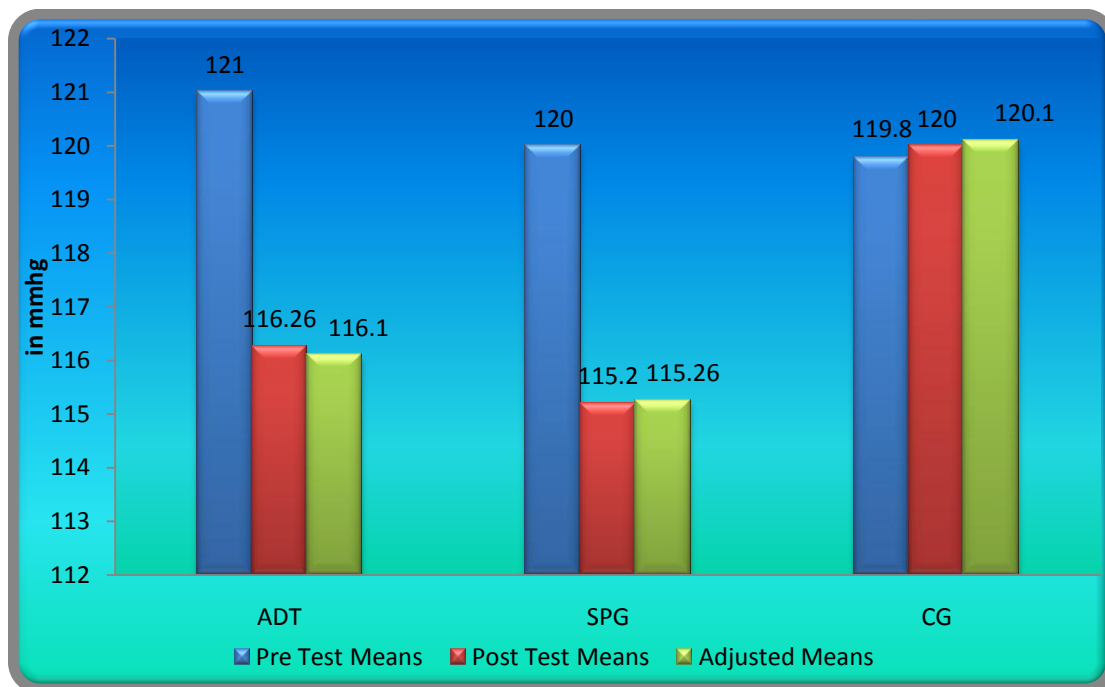


Table III. Computation of analysis of covariance of mean of aerobic dance training, suryanamaskar practices and control groups on diastolic blood pressure

| | Aerobic dance training | Suryanamaskar practices | Control Group | Source of Variance | Sum of Squares | df | Means Squares | F-ratio |
|--------------------------|------------------------|-------------------------|---------------|--------------------|----------------|----|---------------|---------|
| Pre-Test Means | 79.60 | 80.33 | 80.06 | BG | 4.13 | 2 | 2.06 | 0.41 |
| | | | | WG | 207.86 | 42 | 4.94 | |
| Post-Test Means | 76.66 | 76.60 | 79.86 | BG | 104.57 | 2 | 52.28 | 7.20* |
| | | | | WG | 304.66 | 42 | 7.25 | |
| Adjusted Post-Test Means | 76.73 | 76.54 | 79.85 | BG | 103.70 | 2 | 51.85 | 7.11* |
| | | | | WG | 298.72 | 41 | 7.28 | |

An examination of table - III indicated that the pre test means of aerobic dance training, suryanamaskar practices and control groups were 79.60, 80.33 and 80.06 respectively. The obtained F-ratio for the pre-test was 0.41 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the aerobic dance training, suryanamaskar practices and control groups were 76.66, 76.60 and 79.86 respectively. The obtained F-ratio for the post-test was 7.20 and the table F-ratio was 3.22. Hence post-test mean F-ratio was significant at 0.05 level of confidence for the degree of

freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the aerobic dance training, suryanamaskar practices and control groups were 76.73, 76.54 and 79.85 respectively. The obtained F-ratio for the adjusted post-test means was 7.11 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This proved that there was a significant difference among the means due to the experimental trainings on diastolic blood pressure. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe’s post hoc test. The results were presented in Table-IV.

Table IV. The scheffe’s test for the differences between the adjusted post test paired means on diastolic blood pressure

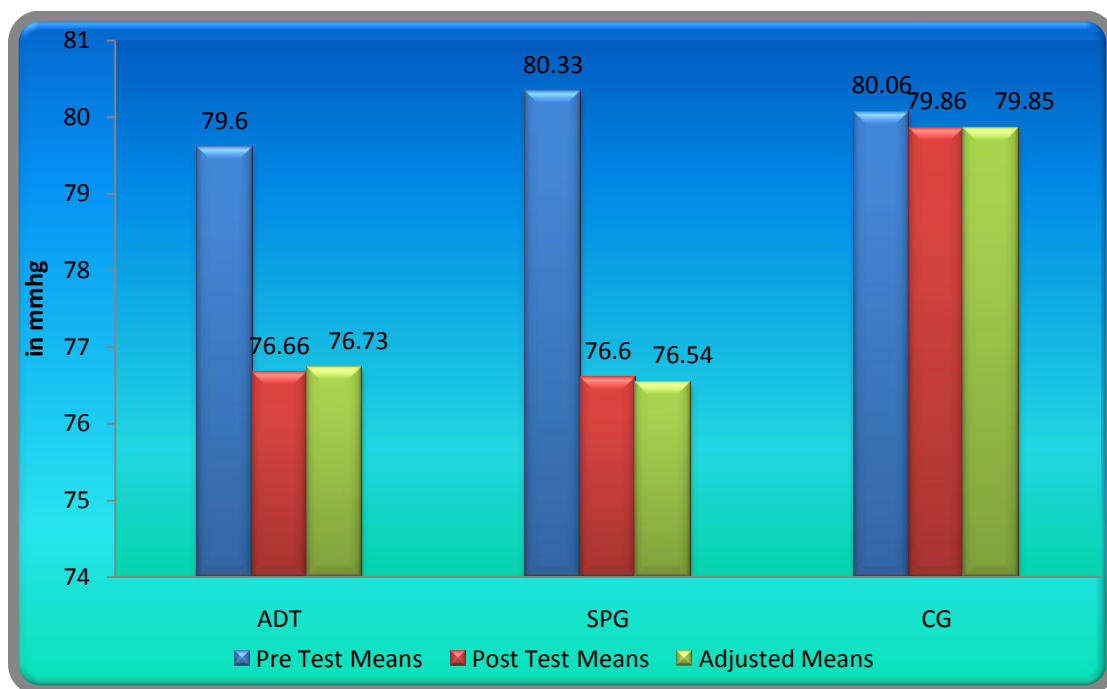
| Adjusted Post-test means | | | Mean Difference | Required CI |
|--------------------------|-------------------------|---------------|-----------------|-------------|
| Aerobic Dance Training | Suryanamaskar Practices | Control Group | | |
| 76.73 | 76.54 | --- | 0.19 | 2.50 |
| 76.73 | --- | 79.85 | 3.12* | |
| --- | 76.54 | 79.85 | 3.31* | |

** Significant at 0.05 level of confidence*

The multiple comparisons showed in Table IV proved that there existed significant differences between the adjusted means of aerobic dance training with control group (3.12), suryanamaskar practices with control group (3.31). There was no significant difference between aerobic dance training and suryanamaskar practices

(0.19) at 0.05 level of confidence with the confidence interval value of 2.50. The pre, post and adjusted means on diastolic blood pressure were presented through bar diagram for better understanding of the results of this study in Figure-II.

Figure II. Pre post and adjusted post test differences of the, aerobic dance training, suryanamaskar practices and control groups on diastolic blood pressure



Conclusions

1. The aerobic dance training group had shown significant improvement in all the selected low physiological variables among school children of Kerala state after undergoing aerobic dance training for a period of twelve weeks.
2. The suryanamaskar practices group had shown significant improvement in all the selected low physiological variables among school children of Kerala state after undergoing the suryanamaskar practices for a period of twelve weeks.
3. The experimental training groups had shown better performance on physiological variables than the control group.

References

1. Cooper, K.H. (1969). *New Aerobics*. New York: Bantam Books, p.30.
2. Cooper, K.H. (1985). *Aerobics Program For Total Well-Being: Exercise, Diet, And Emotional Balance*. New York: Bantam Books.
3. Dhananjay Shaw & Rakesh Tomar (2000). *Doctoral Research in Physical Education and Its Sciences in Developed Countries*, New Delhi: Vivek Thani Publications. p.374.
4. Fox, E.L. (1984). *Sports Physiology*. Philadelphia: Saunders College Publishers.
5. Iyengar. B.K.S. (1993). *The Art of Yoga*, New Delhi: Harper Collins Publishers.
6. Kuvalayananda, S. (1982). *Asanas*. Lonavla: Kaivalyadhama S.M.Y.M. Samiti.
7. Patel Sanjay. (2004). *Surya Namaskar – Teach yourself the Sun Salute*. Srishti Publishers: New Delhi.
8. Patabhi, J. & Sri, K. (2005). *Surya Namaskara. Ashtanga Yoga*: New York.
9. Henry, N. W., Michele, S.O. & Daniel, L. B. (1989). The Physiological Effects of Aerobic Dance. *Sports Medicine*. 8, 6, 335-345.
10. Indla Devasena & Pandurang Narhare (2011). Effect of yoga on heart rate and blood pressure and its clinical significance. *Int J Biol Med Res*. 2(3): 750-753.
11. Jayaraja, K. (2015). An Impact of Yoga Practices and Aerobic Dance on Shooting Performance among College Men Soccer Players. *International Journal of Recent Research and Applied Studies*, 2, 3 (11), 47 - 50.
12. Jim Reeves Silent Night. D. (2015). Effect of Aerobic Dance and Classical Dance on Selected Physiological Variables of School Girls. *International Journal of Recent Research and Applied Studies*, 2, 6(4), 15 -19.
13. Kalapotharakos, V.I., Ziogas, G. & Tokmakidis, S.P. (2011). Seasonal aerobic performance variations in elite soccer players. *J Strength Cond Res*. 25(6): 1502-1507.
14. Karthikeyan, R. (2015). Influence of Asana with Meditation on Selected Hematological Variables among Residential School Boys. *International Journal of Recent Research and Applied Studies*, 2, 2(8), 35 - 38.
15. Kin, I.A., Koşar, S.N. & Korkusuz, F. (2001). Effects of step aerobics and aerobic dancing on serum lipids and lipoproteins. *J Sports Med Phys Fitness*. 41(3):380-5.
16. Komal A Jakhotia, Apurv P Shimpi, Savita A Rairikar, Priyanka Mhendale, Renuka Hatekar, Ashok Shyam & Parag K Sancheti (2015). Suryanamaskar: An equivalent approach towards management of physical fitness in obese females. *Int J Yoga*. 8(1): 27–36.
17. Komathi R. and Kalimuthu, M. (2011). Effect of Yogic Practices on Abdominal Strength among School Boys. *Recent Trends in Yoga and Physical Education*, Vol. I, p.51.
18. Koutedakis, Y., Hukam, H., Metsios, G., Nevill, A., Giakas, G., Jamurtas, A. & Myszkewycz, L. (2007). The effects of three months of aerobic and strength training on selected performance and fitness related parameters in modern dance students. *J Strength Cond Res*. 21(3):808-12.
19. Kraemer, W.J., Keuning, M., Ratamess, N.A., Volek, J.S., McCormick, M., Bush, J.A., Nindl, B.C., Gordon, S.E., Mazzetti, S.A., Newton, R.U., Gomez, A.L., Wickham, R.B., Rubin, M.R. & Hakkinen, K. (2001). Resistance training combined with bench-step aerobics enhances women's health profile. *Med Sci Sports Exerc*. 33(2):259-69.
20. Lundberg, T.R., Fernandez, G. R., Gustafsson, T. & Tesch, P.A. (2012). Aerobic Exercise Alters Skeletal Muscle Molecular Responses to Resistance Exercise. *Med Sci Sports Exerc*. 2012 Mar 28.