ISSN: 2349 - 4891

International

Journal of Recent Research and Applied Studies

(Multidisciplinary Open Access Refereed e-Journal)

Effect of Aerobic Dance and Classical Dance on Selected Physiological Variables of School Girls

Dr. D. Jim Reeves Silent Night

Director of Physical Education (SG), Aditanar College of Arts and Science, Tiruchendur, Tamilnadu, India.

Received 25th March 2015, Accepted 1st June 2015

Abstract

The purpose of the present study was to find the effect of aerobic dance and classical dance on Physiological variables of School girls. Sixty female students from Sarah Tucker Girls Hr. Sec. School Palayamkottai, Tamilnadu, India were selected as subjects. The selected subjects were divided in to three groups and group I was given regular training on aerobic dance and group II was given regular training on classical dance and group III acted as control group. The subject's age ranged from 16 to 18 years. Anaerobic Power, Aerobic Power and Resting Heart Rate were selected as physiological variables for this study. The collected data were analyzed statistically by using dependent't' test to determine the improvement, if any among the groups prior to and immediately after the training period on selected physical fitness variables separately. Analysis of covariance (ANCOVA) was used to determine the differences, if any among the adjusted Post test means on selected dependent variables separately. The level of significance was fixed at.05 level of confidence, which was considered as appropriate. The results of the study revealed that aerobic dance is better than classical dance in improving selected physical fitness variables.

Keywords: Classical Dance, Aerobic Dance, Anaerobic Power, Aerobic Power and Resting Heart Rate, Endurance.

Introduction

High level of performance in sports and games might be dependent upon the physiological make up and it was recognized that physiological proficiency was needed for the high level performance. (Gianetti, G et.al. 2008) For specific physiological systems of the body to be fit, they must function well enough to support the particular game that the player is playing. Since different games make different demands up on the organism with respect of neurological, respiratory, circulatory and temperature regulating functions physiological fitness is specific to the activity. Physiological systems are highly adaptable to exercise. (Gianetti, G et.al. 2008) In order to find out the influence of varied aerobic exercises on physiological variables, the researcher selected variables, vital capacity, resting heart rate, mean arterial blood pressure, breath holding time and respiratory rate. Aerobic activity exercises and strengthens our heart and lungs and it is a form of exercises which increases the amount of oxygen in our blood. An aerobics exercise gets the heart pumping and helps us to burn up the fat. Aerobic dance and bharathanatyam have evolved from rigidly choreographed dance routines intended for female participants to free style routines that incorporate random combinations of dance, sport, and exercise movements designed to attract men and women.

Correspondence
Dr.D.Jim Reeves Silent Night
E-mail: dimreeves27@gmail.com, Ph: +9194863 17265

Bharathnatyam was the dance technique evolved in south of India in tamilnadu and practiced in the temples of Siva. It is highly specialized science with a traditional background and rigid course and convention. Bharathnatyam skillfully embodies the three [primary ingredients of dancing. They are 'Bava' or 'mood' or 'Music' or 'melody' and 'tala' or 'timing'. The technique of Bharathnatyam consists of sixty-four principles of coordinated hand, foot, face, and body movements, which are performed to the accompaniment of dance syllables. Traditional aerobic dance consists of mixture of running, hopping, skipping, jumping, sliding, and swimming moments and a variety of dance steps self to music. During performance of these dance routines there is suspension phase of the body during which both feet one momentarily of the floor. This type of a modification of traditional aerobic dance has evolved called "high impact" aerobic dance. Recently, a modification of traditional aerobic dance has evolved called "low impact" aerobic dance. In this approach, one foot maintained contact with the floor at all times. There by eliminating the suspension phase of the activity thus the incidence of impact type of influence should be lessened with low impact dance. Regular physical activity is associated with a healthy, longer life, a lower risk of heart disease, high blood pressure, diabetes, obesity, and some cancers.

Methodology

The purpose of the study is to find out the effect of aerobic dance and classical dance on selected physiological variables of high school girls. Sixty female

students from Sarah Tucker Girls Hr. Sec. School, Palayamkottai, Tamilnadu, India were selected as subjects. The selected subjects were divided into three groups and two groups were given regular training on aerobic dance and classical dance and the third group acted as control group. The subjects' age ranged from 16 to 18 years. Anaerobic Power, Aerobic Power and Resting Heart Rate were selected as physiological variables. Anaerobic Power was estimated by Margaria Kalamen Test, Aerobic Power was estimated by Queen's college step test and Resting Heart Rate was measured by Radial pulse method. The collected data were analyzed statistically by using dependent't' test to determine he improvement, if any among the groups prior to and immediately after the training period on selected psychological variables separately. Analysis of covariance (ANCOVA) was used to determine the differences, if any among the adjusted Post test means on selected dependent variables separately. The level of significance was fixed at.05 level of confidence, which was considered as appropriate.

Results

The influence of independent variables on each criterion variable were analyzed and presented in table. The mean and dependent 't' test values on selected physiological variables of Aerobic dance group, Classical dance group and control group have been analyzed and presented in Table I.

Table I. Summary of mean standard deviation and dependent 't' test for the pre post and adjusted post tests on anaerobic power, aerobic power and resting heart rate of experimental and control groups

			Aerobic Dance Group	Classical Dance Group	Control Group
Anaerobic power (scores are expressed in Kg.m/s)	Pre test	Mean	47.775	47.884	47.142
		SD	2.193	6.335	9.153
	Post test	Mean	56.723	51.437	47.678
		SD	5.497	7.182	9.386
	Adjusted Post test	Mean	56.544	51.145	48.149
	't' test		9.073*	5.143*	0.418
Aerobic power (scores are expressed in ml/min/Kg)	Pre test	Mean	33.013	33.118	33.155
		SD	1.050	1.077	0.951
	Post test	Mean	34.583	34.042	33.153
		SD	0.845	0.921	1.033
	Adjusted Post test	Mean	34.645	34.025	33.108
	't' test		10.215*	10.185*	1.630
Resting Heart Rate (Scores Are Expressed In Pulse Count Per Minute)	Pre test	Mean	77.700	77.600	77.950
		SD	2.029	2.137	1.731
	Post test	Mean	74.700	75.650	77.750
		SD	2.080	2.007	1.943
	Adjusted Post test	Mean	74.739	75.768	77.592
	't' test		10.362*	4.666*	1.490

*Significant at .05 level. The table value required for .05 level of significance with df19 is 1.729.

The table I shows that the pre-test mean values of aerobic dance, classical dance and control groups are 47.775,47.884 and 47.142 respectively; the post-test means are 56.723,51.437 and 47.678 respectively; and the adjusted post-test means are 56.544,51.145 and 48.149 respectively on anaerobic power. The obtained dependent t-ratio values between the pre and post test means on anaerobic power of aerobic dance, classical dance and control groups are 9.073,5.143 and 0.418 respectively. Since, the obtained 't' ratio values of experimental groups are greater than the table value, it is implies that aerobic dance and classical dance groups have significantly improved on the performance of anaerobic power. However, the control group has not improved significantly as the obtained 't' value is less than the table value, because they were not subjected to any specific training.

The table I shows that the pre-test mean values of aerobic dance, classical dance and control groups are 33.013,33.118 and 33.115 respectively; the post-test means are 34.583,34.042 and 33.153 respectively; and the adjusted post-test means are 34.645,34.025 and 33.108 respectively on aerobic power. The obtained dependent t-ratio values between the pre and post test

means on aerobic power of aerobic dance, classical dance and control groups are 10.215,10.185 and 1.630 respectively. The table value required for significant difference with df 19 at .05 level is 1.729. Since, the obtained 't' ratio values of experimental groups are greater than the table value, it is implies that aerobic dance and classical dance groups have significantly improved on the performance of aerobic power. However, the control group has not improved significantly as the obtained 't' value is less than the table value, because they were not subjected to any specific training.

The table I shows that the pre-test mean values of aerobic dance, classical dance and control groups are 77.700,77.600 and 77.950 respectively; the post-test means are 74.700,75.650 and 77.750 respectively; and the adjusted post-test means are 74.739,75.768 and 77.592 respectively on resting heart rate. The obtained dependent t-ratio values between the pre and post test means on resting heart rate of aerobic dance, classical dance and control groups are 10.362,4.666 and 1.490 respectively. The table value required for significant difference with df 19 at .05 level is 1.729. Since, the obtained 't' ratio values of experimental groups are greater than the table value, it is implies that aerobic dance and classical dance groups have significantly improved on the performance of resting heart rate. However, the control group has not improved significantly as the obtained 't' value is less than the table value, because they were not subjected to any specific training.

The analysis of covariance on anaerobic power of aerobic dance, classical dance and control groups have been analysed and presented in Table II.

Table II. Analysis of covariance for the data on anaerobic power, aerobic power and resting heart rate among experimental and control groups

		Sources of Variance	Sum of Squares	Df	Mean Squares	F-Ratio
Anaerobic Power	Pre test	Between	6.426	2	3.213	0.765
		Within	2445.627	57	42.906	
	Post test	Between	826.006	2	413.003	56.578*
		Within	3227.817	57	56.628	
	Adjusted Post test	Between	723.165	2	361.582	67.531*
		Within	647.284	56	11.559	
Aerobic Power	Pre test	Between	0.216	2	0.108	0.102
		Within	60.167	57	1.056	
	Post test	Between	20.872	2	10.436	11.905*
		Within	49.967	57	0.877	
	Adjusted Post test	Between	23.856	2	11.928	42.149*
		Within	15.847	56	0.283	
Resting Heart Rate	Pre test	Between	1.300	2	0.650	0.167
		Within	221.950	57	3.894	
	Post test	Between	97.433	2	48.717	12.047*
		Within	230.500	57	4.044	
	Adjusted Post test	Between	83.176	2	41.588	25.237*
		Within	92.282	56	1.648	

* Significant at 0.05 level of confidence. The table value for significance at 0.05 with df 2 and 57 and 2 and 56 are 3.162 and 3.166 respectively.

Table II shows that the F-ratio for pre test of anaerobic power is 0.765 against the table value 3.162 (df 2 and 57) which is insignificant at 0.05 level of confidence. It implies that there is no significant difference between the pre test mean scores of experimental and control groups on anaerobic power. From the above table it infers that the F-ratio for post test of anaerobic power is 56.578 against the table value 3.162 (df 2 and 57) which is significant at 0.05 level of confidence. Since the obtained F-ratio is greater than the table value, it implies that there is significant difference between the post test mean scores of experimental and control groups on anaerobic power. It is also revealed that the F-ratio for adjusted post test of anaerobic power is 67.531 against the table value 3.166 (df 2 and 56) which is significant at 0.05 level of confidence. Since the value of F-ratio is higher than the table value, it indicates that there are significant differences among the adjusted post-test means of aerobic dance, classical dance and control groups on anaerobic power.

Table II shows that the F-ratio for pre test of aerobic power is 0.102 against the table value 3.162 (df 2 and 57) which is insignificant at 0.05 level of confidence. It implies that there is no significant difference between the pre test mean scores of experimental and control groups on aerobic power. From the above table it infers that the F-ratio for post test of aerobic power is 11.905 against the table value 3.162 (df 2 and 57) which is significant at 0.05 level of confidence. Since the obtained F-ratio is greater than the table value, it implies that there is significant difference between the post test mean scores of experimental and control groups on aerobic power. The table II also reveals that the F-ratio for adjusted post test of aerobic power is 42.149 against the table value 3.166 (df 2 and 56) which is significant at 0.05 level of confidence. Since the value of F-ratio is higher than the table value, it indicates that there are significant differences among the adjusted post-test means of aerobic dance, classical dance and control groups on aerobic power.

Table II shows that the F-ratio for pre test of resting heart rate is 0.167 against the table value 3.162 (df 2 and 57) which is insignificant at 0.05 level of confidence. It implies that there is no significant difference between the pre test mean scores of experimental and control groups on resting heart rate. It is inferred from above table that the F-ratio for post test of resting heart rate is 12.047 against the table value 3.162 (df 2 and 57) which is significant at 0.05 level of confidence. Since the obtained F-ratio is greater than the table value, it implies that there is significant difference between the post test mean scores of experimental and control groups on resting heart rate. It is also revealed that the F-ratio for adjusted post test of resting heart rate is 25.237 against the table value 3.166 (df 2 and 56) which is significant at 0.05 level of confidence. Since the value of F-ratio is higher than the table value, it indicates that there are significant differences among the adjusted post-test means of aerobic dance, classical dance and control groups on resting heart rate.

Since the obtained F-ratio for post test for Anaerobic Power (56.578), Aerobic Power (11.905) and Resting Heart Rate (12.047) are greater than the table value at 0.05 level of confidence, Scheffe's post-hoc test was applied to find out which of the three paired means had a significant difference on the above selected physiological variables, and the results are presented in Table III.

Table III. Scheffe's post hoc for difference between adjusted post test means of experimental and control groups on anaerobic power, aerobic power and resting heart rate

	Adjusted Post Test Mean			Mean Differences	Confidence Interval
	Aerobic Dance Group	Classical Dance Group	Control Group		
Anaerobic Power	56.544	51.145	---	5.399*	2.705
	56.544	---	48.149	8.395*	2.705
	---	51.145	48.149	2.997*	2.705
Aerobic Power	34.645	34.025	---	0.621*	0.423
	34.645	---	33.108	1.537*	0.423
	---	34.025	33.108	0.917*	0.423
Resting Heart Rate	74.739	75.768	---	1.029*	1.021
	74.739	---	77.592	2.853*	1.021
	---	75.768	77.592	1.824*	1.021

* Significant at 0.05 level.

Table III shows that the mean differences between, aerobic dance and classical dance groups; aerobic dance and control groups; classical dance and control groups on anaerobic power are 5.399,8.395 and 2.997 respectively. Since the mean difference values were higher than the confidence interval value 0.015 which show significant differences exist at 0.05 level of confidence. The result of the study indicates that the aerobic dance significantly improved when compared to classical dance and control groups on anaerobic power. It also reveals that classical dance group significantly improved the anaerobic power when compared to the control group.

Table III shows that the mean differences between, aerobic dance and classical dance groups; aerobic dance and control groups; classical dance and control groups on aerobic power are 0.621,1.537 and 0.917 respectively. Since the mean difference values were higher than the confidence interval value 0.015 which show significant differences exist at 0.05 level of confidence. The result of the study indicates that the aerobic dance significantly improved when compared to classical dance and control groups on aerobic power. It also reveals that classical dance group significantly improved the aerobic power when compared to the control group.

Table III shows that the mean differences between, aerobic dance and classical dance groups;aerobic dance and control groups; classical dance and control groups on resting heart rate are 1.029, 2.853 and 1.824 respectively. Since the mean difference values were higher than the confidence interval value 0.015 which show significant differences exist at 0.05 level of confidence. The result of the study indicates that the aerobic dance significantly improved when compared to classical dance and control groups on resting heart rate. It also reveals that classical dance group significantly improved the resting heart rate when compared to the control group.

Conclusions

1. Aerobic dance and Classical dance groups have shown significantly improved performance of selected physiological variables; anaerobic power, aerobic power and resting heart rate. However, the control group has not improved significantly on Anaerobic Power, Aerobic Power and Resting Heart Rate, because they were not subjected to any specific training.
2. Aerobic dance shown significant improvement when compared to classical dance and control groups on anaerobic power, Aerobic Power and Resting Heart Rate. It also concluded that classical dance group shown significant improvement on anaerobic power, Aerobic Power and Resting Heart Rate when compared to the control group.
3. Even though, both the dances are recommended since they give fun and pleasure while performing them along with hidden physiological improvements, Aerobic dance wins the hearts of youth as they are modern dance played along with modern music.

Reference

1. Baillie,Y., Wyon, M., (2007). Highland dance: heart rate and blood lactate differences between competition and class". *International Journal of Sports Physiology Performance*. Dec;2(4):371-6.
2. Bethany E. Martyn-Stevens(A-F), (2012). "Effects of a Dance Season on the Physiological Profile of Collegiate Female Modern Dancers". *Sports Medicine*,16 (1): 1-5, DOI: 10.5604/17342260.987830
3. Burgess G, Grogan S, Burwitz L., (2006). "Effects of a 6-week aerobic dance intervention on body image and physical self-perceptions in adolescent girls". *Body Image*. 3(1):57-66
4. Jaywant, P.J., (2013). "Effect of Aerobic Dance on the Body Fat Distribution and Cardiovascular Endurance in Middle Aged Women". *Journal of Exercise Science and Physiotherapy*, Vol. 9, No. 1: 6-10.
5. Kin, Jsler A., Kosar, S. N., and Korkusuz, F., "Effect of Step Aerobics and Aerobic Dancing on Serum Lipids and Lipoproteins". *Journal of Sports Medicine and Physical Fitness*, 41:34, Sept.2001, p.380 -05.
6. Kalamen, J. (1968*) Measurement of maximum muscular power in man. Doctoral thesis, Ohio State University.*
7. Tsimaras,V., Giamouridou,G., Kokaridas, D., Sidiropoulou, M. and Patsiaouras, A. (2012). "The effect of a traditional dance training program on dynamic balance of individuals with mental retardation". *Journal of Strength and Conditioning Research*, 26(1):192–198.