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## Effects of varied combinations of aerobic dance, brain gym and yogasana on the selected physical fitness variables among school girls

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### Abstract

**Introduction** The purpose of the study was to find out the effects of varied combinations of aerobic dance, brain gym and yogasana on the selected physical fitness variables among school girls.

**Methodology** of the study was formulated as pre and posttest random group design. The selected subjects were the participants of the school girls in the trichy district. The age of the subjects for the study was ranged in between 14 to 18 years. The subjects were randomly selected and divided into four equal groups - Group I, aerobic group, Group II, aerobic with brain gym, Group III aerobic with yogasana and Group IV, control group and each group consisting of 15 subjects, totally 60 subjects. The selected subjects were initially tested on the criterion variables used in the study and it is considered as the pre-test. After assessing the pre-test, the subjects belonging to the group-I aerobic group were treated with the aerobic dance, the group II treated with the aerobic dance with brain gym, Group III aerobic dance with yogasana and the group III control group was not given specific training.

**Statistical Tool**, the collected data were statistically analyzed with a paired (sample) t test to find out the significant improvement between pre and post test of all the groups. The groups during the experimental period of twelve weeks to the criterion measures were tested for the significance by applying t test at 0.05 level. It was considered as sufficient for the study. The collected data was processed by using the Analysis of Covariance (ANCOVA) to determine the significant difference among the treatment means of the each variable. During the analysis of covariance showed significant differences between treatment means, Scheffe's post hoc test was applied to test the significant differences between the paired adjusted means at 0.05 level of the confidence.

**Discussion**, before and after training the pre test and the post test was conducted for the four groups. Subjects in the experimental groups were treated with the respective treatment for three days a week for the duration of 12 weeks. After completion of the treatment period all the subjects were again tested on the criterion variables and considered as the post test.

**Conclusion**, it was concluded that the group I, aerobic dance group and the group II, aerobic dance with brain gym, the group III aerobic dance with yogasana after 12 weeks training showed a significant improvements on the selected physical fitness variables.

**Keywords:** brain gym, Aerobic Training, yogasana, Physical Fitness.

### Introduction

Health, recreation, and dance are frequently referred to as allied fields of physical education, exercise science and sport. These fields share many purposes with physical education exercise science and sport, namely the development of the total individual and concern for quality of life. Health education concerns itself with total well-being of the individual, encompassing physical, mental, social, emotional and spiritual health. Teachers need to take into consideration that the brain has parallel processes. While one side of the brain is used for more creative thinking and artistic expression, the other is more analytical and logical. Although these processes occur in different parts of the brain, when students learn, they need to be able to access and use both processes simultaneously. The needs of each student are very different and knowledge of how they learn is crucial to developing activities and lessons that will allow them to attain knowledge. In order to meet the needs of all learners, teachers need to use a plethora of methodologies. By incorporating a variety of methods, the brain is able to find patterns in seemingly random information.

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This helps to make information more logical and meaningful (Reardon, 1999). One method that has been strongly tied to increasing student learning is incorporating movement into educational practices. Physical fitness is the body's ability to function efficiently and effectively. It is a state of being that consists of at least five health-related and six skill-related, physical fitness components, each of which contributes to the total quality of life. Physical fitness is associated with a person's ability to work effectively, enjoy leisure time, be healthy, resist hypokinetic diseases, and meet emergency situations. It is related to, but different from, health and wellness. Although the development of physical fitness is the result of many things, optimal physical fitness is not possible without regular physical activity. The five components of health-related physical fitness are body composition, cardiovascular fitness, flexibility, muscular endurance and strength. Each health related fitness characteristic has direct relationship to good health and reduced risk of hypo-kinetic diseases.

### Methodology

The selected subjects were the participants of the school girls

in the trichy District. The age of the subjects for the study was ranged in between 14 to 18 years. The subjects were randomly selected and divided into three equal groups namely Experimental group-I, Aerobic training (ADG), Experimental group-II, Aerobic training with brain gym (ADWBG), Experimental group-III, Aerobic training with yogasana (ADWYG) and Group-IV, Control Group (CG) each consisting of 15 subjects. The selected subjects were initially tested on the criterion variables used in the study and it was considered as the pre-test. After assessing the pre-test, the subjects belonging to the experimental group-I were treated with the aerobic dance, the subjects belonging to the experimental group-II were treated with the aerobic dance with brain gym and the subjects belonging to the experimental group-III were treated with the aerobic dance with yogasana. As far as the subjects in the group IV - Control Group (CG) was concerned they were not given any specific training. Subjects in the experimental groups I and II were treated with their respective treatments for three days a week and for a duration of 12 weeks. After completion of the treatment period, all the subjects were again tested on the criterion variables and considered as the post test.

**Table 1:** Significant differences of the mean and t-test values among the three groups

GROUP	VARIABLES	PRE- TEST	POST- TEST	MD	SD	SEM	t-ratio
Aerobic	Cardiac respiratory	722	807.3	85.33	57.30	14.79	5.76
Brain gym		693	787.3	94.00	35.81	9.24	10.16
Yogasana		662.6	740.66	78.00	27.56	7.11	10.95
Control		674.6	665.33	9.33	25.48	6.58	1.41
Aerobic	Muscular Strength	7.73	9.2	1.46	0.516	0.133	11.00
Brain gym		7.53	8.66	1.13	0.351	0.090	12.47
Yogasana		6.86	8	1.13	0.639	0.165	6.85
Control		7.6	7.6	.000	0.534	0.138	.000
Aerobic	Flexibility	6.06	7.33	1.267	0.457	0.118	10.71
Brain gym		5.86	6.93	1.067	0.258	0.066	16.00
Yogasana		4.93	6.46	1.533	0.516	0.133	11.50
Control		5.66	5.33	.3333	0.723	0.186	1.78
Aerobic	BC	31.27	29.20	2.074	3.22	0.834	2.488
Brain gym		30.64	28.60	2.03	1.001	0.258	7.88
Yogasana		28.65	28.07	0.59	0.976	0.252	2.33
Control		30.33	31.35	1.024	1.540	0.397	2.57

The Table-I reveals that the pre and posttest values of the varied combination of aerobic dance, brain gym and yogasana on the selected physical fitness variable on cardiac respiratory, muscular strength and endurance, flexibility and body composition. The pre-test mean values of the aerobic dance group are 722, 7.73, 6.06 and 31.27 respectively. The pretest mean values of the brain gym group are 693, 7.53, 5.86 and 30.64 respectively. The pretest mean values of the yogasana group are 662.6, 6.82, 4.93 and 28.65 respectively. The pretest mean values of the control group are 674.6, 7.6, 5.66 and 30.33 respectively. The posttest mean values of the aerobic dance group are 807.3, 9.2, 7.33 and 29.20 respectively. The pretest mean values of the brain gym group are 787, 8.66, 6.93 and 28.60 respectively. The pretest mean values of the yogasana group are 740.66, 8, 6.46 and 28.07 respectively. The pretest mean values of the control group are 665.33, 7.6, 6.46 and 31.35 respectively.

The obtained t-values of the aerobic dance, brain gym and

yogasana groups are 5.76, 10.16, 10.95, 11.00, 12.47, 6.85, 10.71, 16.00, 11.50, 2.488, 7.88 and 2.33 respectively. The required table value is 2.02. Since the obtained t-ratios are greater than the required table value at 0.05 level of confidence so there are a significant difference, between the pre and post test values of the physical fitness components among school girls.

The obtained t-values of the control group are 1.41, 0.00, 1.78 and 2.57 respectively. The required table value is 2.02. Since the obtained t-ratios are less than the required table value at 0.05 level of confidence so there are an insignificant difference, between the pre and post test values of the physical fitness components among school girls.

### Analysis of co variance between varied combination of aerobic, brain gym, yogasana and control group on cardiac respiratory

Test	Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Source of variance	df	Sum of Square	Mean Square	F-ratio
Pre-test Mean	722	693.3	662.66	674.67	B / S	3	30058.33	10019.44	5.37
					W / S	56	104440.0	1865.00	
Post-test Mean	807.3	787.3	740.67	665.33	B / S	3	179045.0	59681.67	29.36
					W / S	56	113053.3	2018.81	
Adjusted Post-test Mean	785.66	784.02	757.01	673.98	B / S	3	115530.9	38510.31	30.18
					W / S	55	70182.84	1276.05	

The pre-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 722, 693.3, 662.66 and 674.67 respectively for cardiac respiratory.

The post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 807.3, 787.3, 740.67 and 665.33 respectively for cardiac respiratory.

The adjusted post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 785.66, 784.02, 757.04 and 673.98 respectively for cardiac respiratory.

**Scheffee’s post hoc values of paired mean differences among experimental groups and control group cardiac respiratory**

Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group(CG)	Mean difference	Confidence Interval
807.33	787.33			20	2.59
807.33		740.66		66.67	
807.33			665.33	142	
	787.33	740.66		46.67	
	787.33		665.33	122	
		740.66	665.33	75.33	

The obtained mean differences between experimental group-I(ADY) and experimental group II(BGG), experimental group-I(ADG) and experimental group-III(YG) and experimental group-I(ADY) and control group(CG), experimental group II(BGG) and experimental group-III(YG) and experimental group II(BGG) and control group(CG) and experimental group-III(YG) and control group(CG) were 20,

66.67, 142, 46.67, 122 and 75.33 respectively. The required confidence interval value was 2.59.

**Analysis of co variance between varied combination of aerobic, brain gym, yogasana and control group on muscular strength and endurance**

Test	Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Source of variance	df	Sum of Square	Mean Square	F-ratio
Pre-test Mean	7.74	7.53	6.86	7.6	B / S	3	6.73	2.25	3.31
					W / S	56	38.0	0.679	
Post-test Mean	9.2	8.67	8	7.6	B / S	3	22.60	7.53	11.94
					W / S	56	35.33	0.63	
Adjusted Post-test Mean	8.971	8.59	8.43	7.47	B / S	3	18.27	6.09	25.58
					W / S	55	13.10	0.238	

The pre-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 7.74, 7.53, 6.86 and 7.6 respectively for muscular strength and endurance.

The post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 9.2, 8.67, 8 and 7.6 respectively for muscular strength and endurance.

The adjusted post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 8.97, 8.59, 8.43 and 7.47 respectively for muscular strength and endurance.

**Scheffee’s post hoc values of paired mean differences among experimental groups and control group on muscular strength and endurance**

Aerobic dance(ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Mean difference	Confidence Interval
8.97	8.59			0.38	1.23
8.97		8.43		0.54	
8.97			7.47	1.5	
	8.59	8.43		0.16	
	8.59		7.47	1.12	
		8.43	7.47	0.96	

The obtained mean differences between experimental group-I(ADY) and experimental group II(BGG), experimental group-I(ADG) and experimental group-III(YG) and experimental group-I(ADY) and control group(CG), experimental group II(BGG) and experimental group-III(YG) and experimental group II(BGG) and control group(CG) and experimental group-III(YG) and control group(CG) were

0.38, 0.54, 1.5, 0.16, 1.12 and 0.96 respectively. The required confidence interval value was 1.23.

**Analysis of co variance between varied combination of aerobic, brain gym, yogasana and control group on flexibility**

Test	Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Source of variance	df	Sum of Square	Mean Square	F-ratio
Pre-test Mean	6.07	5.87	4.93	5.66	B / S	3	11.00	3.67	5.56
					W / S	56	36.93	0.66	
Post-test Mean	7.33	6.93	6.46	5.33	B / S	3	33.65	11.21	12.24
					W / S	56	51.33	0.92	
Adjusted Post-test Mean	6.903	6.70	7.16	5.30	B / S	3	30.82	10.27	37.83
					W / S	55	14.93	0.27	

The pre-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 6.07, 5.87, 4.93 and 5.66 respectively for flexibility.

The post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 7.33, 6.93, 6.46 and 5.33 respectively for flexibility.

The adjusted post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 6.903, 6.702, 7.16 and 5.30 respectively for flexibility.

**Scheffee’s post hoc values of paired mean differences among experimental groups and control group on flexibility**

Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Mean difference	Confidence Interval
6.91	6.71			0.2	1.59
6.91		7.16		0.26	
6.91			5.30	1.60	
	6.71	7.16		0.45	
	6.71		5.30	1.41	
		7.16	5.30	1.86	

The obtained mean differences between experimental group-I(ADY) and experimental group II(BGG), experimental group-I(ADG) and experimental group-III(YG) and experimental group-I(ADY) and control group(CG), experimental group II(BGG) and experimental group-III(YG) and experimental group II(BGG) and control group(CG) and experimental group-III(YG) and control group(CG) were 0.2,

0.26, 1.60, 0.45, 1.41 and 1.86 respectively. The required confidence interval value was 1.59.

**Analysis of co variance between varied combination of aerobic, brain gym, yogasana and control group on body composition**

Test	Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Source of variance	df	Sum of Square	Mean Square	F-ratio
Pre-test Mean	31.27	30.64	28.65	30.32	B / S	3	56.16	18.72	10.64
					W / S	56	98.45	1.76	
Post-test Mean	29.20	28.60	28.07	31.35	B / S	3	93.24	31.08	9.95
					W / S	56	174.89	3.12	
Adjusted Post-test Mean	28.84	28.46	28.60	31.31	B / S	3	81.64	27.21	9.15
					W / S	55	163.58	2.97	

The pre-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 31.27, 30.64, 28.65 and 30.32 respectively for body composition.

The post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 29.20, 28.60, 28.07 and 31.35 respectively for body composition.

The adjusted post-test mean values of Aerobic dance Group (ADG), brain gym group (BGG), yogasana group (YG) and Control Group (CG) were 28.84, 28.46, 28.60 and 31.31 respectively for body composition.

**Scheffee’s post hoc values of paired mean differences among experimental groups and control group on body composition**

Aerobic dance (ADG)	Brain gym (BGG)	Yogasana (YG)	Control group (CG)	Mean difference	Confidence Interval
28.84	28.46			0.38	2.59
28.84		28.60		0.24	
28.84			31.31	2.47	
	28.46	28.60		0.14	
	28.46		31.31	2.85	
		28.60	31.31	2.71	

The obtained mean differences between experimental group-I (ADY) and experimental group II (BGG), experimental group-I(ADG) and experimental group-III (YG) and experimental group-I (ADY) and control group(CG), experimental group II (BGG) and experimental group-III(YG) and experimental group II (BGG) and control group (CG) and experimental group-III (YG) and control group (CG) were

0.38, 0.24, 2.47, 0.14, 2.85 and 2.71 respectively. The required confidence interval value was 2.59.

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