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Effect of yogasana and step aerobics training on selected physiological parameters among school girls

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The purpose of the study is to find out effect of yogasana and step aerobic exercises on selected physiological parameters. To achieve these purpose 45 school Girls' students were selected from Chennai selected as subjects. Their age group ranged from 14 to 16 years. They were divided in to three equal groups of 15 subjects each and assigned to Experimental group-1, Experimental group-2 and control group. The group-1 underwent yogasana practices and the group-2 underwent step aerobics training. The experimental groups underwent their respective training programme three days per week (alternate days) for twelve weeks. The criterion variables selected are resting pulse rate, vital capacity and breath holding time. ANCOVA was used to find out the significant differences. Statistical analysis found significant differences between yogasana practices and step aerobics training in improving the physiological parameters. Step aerobics training differed significantly ($p < 0.05$) from both yogasana practices and control groups for resting pulse rate. Both experimental groups improves breath holding time when compare to control group.

Keywords: Yogasana, step aerobics, physiological

Introduction

Yogasana practices play an important role in the maintenance of the bodies various systems. The practice of yoga not only develops the body but also enhances the mental faculties. Moreover, the yogi acquires mastery over the involuntary muscles of his organism. This working of Pranayama is seen in the systolic and diastolic actions of the heart, when it pumps the blood into arteries in the action of inspiration and expiration during the course of breathing; in the digestion of food; in the excretion of urine and fecal matter; in the manufacture of semen, Chile, chime, gastric juice, bile, intestinal juice, saliva; in closing and opening of the eyelids, in walking, playing, running, talking, thinking, reasoning, feeling and willing. Chandler. (1994) [3]. Found that a properly initiated sports specific step aerobic exercise programme essential for maximal performance to be reached in most any sports. Examined the effects of step aerobics with 45 minutes training period found significant changes in selected physiological parameters. More research is required concerning the variation in different methods of aerobic training and its effects. The applicability of this method of training to develop motor fitness and physiological parameters are not yet completely known. Hence, there is a need to find out whether step aerobics training is superior to yogasana practices in improving the selected physiological parameters.

Methods

The prime purpose of this study was to explore the effect of yogasana and step aerobics training on selected physiological parameters on physically untrained school Girls' students. To achieve these purpose 45 school Girls students were selected from Chennai selected as subjects. The age, height and weight of the subjects ranged from 14 to 16 years, 150 to 163 centimetres and 56 to 67 kilograms respectively. The selected subjects were medically examined by a qualified physician and certified that they were medically and physically fit enough to undergo the exercise. They were divided in to three equal groups of 15 subjects each and assigned to Experimental group-1, Experimental group-2 and control group. In a week the Experimental group-1 underwent yogasana practices, Experimental group-2 underwent aerobic training and control group was not given any special training.

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The selected independent variables were yogasana and aerobic exercise and the dependent variables were resting pulse rate and breathe holding time. These criterion variables were assessed using standard tests and procedures, before and after the exercise. The resting pulse rates tested by Manual palpation and breathe holding time tested by holding the breath for time. The training programmes were scheduled for one session a day, each session lasted between 45 minutes and an hour, approximately excluding warming up and relaxation in morning session. During the training period, the experimental groups underwent their respective training

programme three days per week for twelve weeks. The group-1 underwent yogasana practices and the group-2 utilized step aerobics training. The group-3 acted as control, which did not undergo any special training programme. The training sessions were held every other day, so that the body could rest. The selected variables were statistically examined for significant difference, if any, by applying the analysis of covariance (ANCOVA) with the help of SPSS package. The level of significance was accepted at $P < 0.05$.

Results on resting pulse rate

Table 1: Computation of analysis of covariance of Resting Pulse Rate

	Yogasana exercises group	Step Aerobic Training Group	Control Group	SV	Sum of Squares	DF	MS	Obtained F
Pre-Test Mean	69.22	69.75	70.25	B	11.0	2	5.50	1.63
				W	193.7	42	3.38	
Post-Test Mean	66.61	64.81	70.35	B	320.7	2	160.35	34.57*
				W	264.5	42	4.46	
Adjusted Post- Test Mean	66.69	64.80	70.72	B	302.3	2	151.15	32.59*
				W	259.6	41	4.46	

Table F-ratio at 0.05 level of confidence for 2 and 27 (DF) =3.35, 2 and 26 (DF) =3.37. *Significant at 0.05 level

Table-1 shows the obtained ‘F’ ratio value on the scores of pre-test means 1.63 was lesser than the required table value of 3.15 for significance at 0.05 level of confidence with degrees of freedom 2 and 42, which proved that the random assignment of the subjects were successful and their scores in resting pulse rate before the training were equal and there was no significant differences. The obtained post-test ‘F’ ratio value of 34.57 was greater than the required table value of 3.15. It implies that significant differences existed between the groups during the post test period on resting pulse rate.

Table-1 also indicate that the adjusted post-test means obtained ‘F’ ratio value of 32.59 was greater than the required table value of 3.15. The result of the study shows that significant differences existed between the adjusted post-test mean of yogasana exercise, step aerobics training and control groups in reducing the resting pulse rate. Since the adjusted post-test mean ‘F’ value was found to be significant, the results were subjected to post hoc analysis using Scheffe’S test. The results were presented in table-2.

Table 2: Scheffe’s Confidence Interval Test Scores on Resting Pulse Rate

Means				Required C.I.
Yogasana exercises group	Step Aerobic Training Group	Control Group	Mean Difference	
66.69	64.80		1.89*	1.73
67.48		70.27	3.58*	1.73
	64.80	70.27	5.47*	1.73

* Significant at 0.05 level.

Table- 2 shows the result of the study shows that significant differences existed between yogasana exercises and aerobic exercise groups; yogasana exercise and control groups; and aerobic exercise and control groups, since the mean differences were greater than the confidence interval value of 1.73. This proved that due to twelve weeks of yogasana

exercise and aerobic exercise resting pulse rate of the subjects was reduced significantly. While considering the two training methods, from the results presented in table- 2 it was found that aerobic exercise group was better than yogasana exercise group in reducing resting pulse rate.

Results on Breath Holding Time

Table 3: Computation of analysis of covariance of Breath Holding Time

	Yogasana exercises group	Step Aerobic Training Group	Control Group	SV	SS	df	MS	Obtained F
Pre-Test Mean	42.60	42.90	37.95	B	308.1	2	154.05	2.39
				W	3673.6	42	64.45	
Post-test Mean	50.25	52.30	38.95	B	2067.4	2	1033.70	16.70*
				W	3526.9	42	61.88	
Adjusted Post-test Mean	48.91	50.69	41.90	B	798.8	2	399.40	54.49*
				W	410.5	41	7.33	

Table F-ratio at 0.05 level of confidence for 2 and 27 (DF) =3.35, 2 and 26 (DF) =3.37. *Significant at 0.05 level

Table-3 shows the obtained ‘F’ ratio value on the scores of pre-test means 2.39 was lesser than the required table value of 3.15, which proved that the random assignment of the subjects were successful and their scores in vital capacity

before the training were equal and there was no significant differences. The obtained post-test ‘F’ ratio value of 16.70 was greater than the required table value of 3.15. It implies that significant differences existed between the groups during

the post test period on vital capacity. Table-3 also indicates that the adjusted post-test means on breath holding time. The obtained 'F' ratio value of 54.49 was greater than the required table value of 3.15. The result of the study shows that significant differences existed between the adjusted post-test

mean of yogasana exercise, step aerobics training and control groups in improving the breath holding time. Since the adjusted post-test mean 'F' value was found to be significant, the results were subjected to post hoc analysis using Scheffe's test. The results were presented in table-4.

Table 4: Scheffe's Confidence Interval Test Scores on Breath Holding Time

Means				Required C.I.
Yogasana exercises group	Step Aerobics training Group	Control Group	Mean Difference	
48.91	50.69		1.78	2.18
48.91		41.90	7.01*	2.18
-	50.69	41.90	8.79*	2.18

* Significant at 0.05 level.

Table-4 shows that, the result of the study shows that significant differences existed between yogasana exercise and control groups; step aerobics training and control groups, since the mean differences were greater than the confidence interval value of 2.18. It was concluded from the result of the study that yogasana exercise and step aerobic exercise groups have significantly improved the breath holding time. The result of the study shows that no significant differences existed between yogasana exercises and aerobic training groups; since the mean differences were lesser than the confidence interval value of 2.18. However there was no significant differences existed between experimental groups.

Discussion on Findings

The analysis of covariance indicated that experimental group-1 (yogasana exercise), experimental group-2 (step aerobic exercise) were significantly improved the resting pulse rate. It may be due to the nature of varied regimens of yogasana exercises and step aerobics training. Which have influenced to increase the physiological level and function of various organs and systems. Further, finding of the study showed that the control group did not improve the resting pulse rate. However, the experimental group-2 had more effect on the improvement of resting pulse rate greater than the experimental group. The analysis of covariance indicated that experimental group-1 and 2 were significantly improved the breath holding time. It may be due to the nature of varied regimens of yogasana exercises and step aerobics training. Which would have influenced to increase the physiological level and function of various organs and systems? Further, finding of the study showed that the control group did not improve the breath holding time. The present stud was supported by.

Conclusion

Within the limitations of this study, the following conclusions were drawn:

1. Significant decreases on resting pulse rate have been observed following twelve weeks of yogasana and step aerobic exercises, when compared to control group.
2. When comparing the two experimental groups, step aerobic exercise was significantly better than the yogasana exercise in reducing resting pulse rate.
3. Significant increase on breath holding time have been observed following twelve weeks of yogasana and step aerobic exercises, when compared to control group.
4. It was also concluded that there was no significant differences between yogasana exercise and step aerobic exercise groups in improving breath holding time.

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