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Effect of Yogic Practice and Aerobic Exercise on Resting Pulse Rate and Blood Pressure among School Boys

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Abstract

The purpose of the study was to find out the effect of yogic practices and aerobic exercise on resting pulse rate, systolic and diastolic blood pressure. Thirty school boys aged between 15 and 17 years were selected for the study. They were divided into three equal groups, each group consisted of ten subjects, in which Group I underwent yogic practice and group II underwent aerobic exercise (walk-jog-walk programme), five days per week for twelve weeks and group III acted as control, who did not participate in any training. The subjects were tested on selected criterion variables such as resting pulse rate, systolic and diastolic blood pressure at prior to and immediately after the training period. Resting pulse rate was assessed by counting the pulse at resting condition. Systolic and diastolic blood pressure was measured by using sphygmomanometer. Analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups and control group on selected criterion variables separately. Since, there were three groups involved, the Scheffé S test was used to find out which of the adjusted post test mean was differ significantly. The selected criterion variables such as resting pulse rate was reduced significantly for both the training groups when compared with the control group and the systolic and diastolic blood pressure were also significantly reduced for yogic practice group and aerobic exercise group. There was no significant difference was found between the yogic practice group and aerobic exercise group on resting pulse rate, systolic and diastolic blood pressure.

Keywords: Yogic Practice, Aerobic Exercise, Systolic and Diastolic Blood Pressure, ANCOVA, Scheffé S test.

Introduction

Yoga is an ancient philosophical and religious tradition, which is thought to have originated in India in at least 1000 B.C. It refers to a large body of values, attitudes and techniques whose primary objective is the pursuit of enlightment or self-knowledge. The word yoga is probably derived from the Sanskrit word “Yuj” which means to “unite” or “connect” and, in the higher levels of yoga, this is often said to mean the experience of union of the individual self with the universal self.

Yogasanas are Indian’s unique contribution to physical education. Yoga and physical education may be compared to two bullocks hitched to shaft as they are for the judicious blending of the education of body and the mind. There is no denial of the fact that yoga and physical education attach importance by gaining the benefits of physical health, mental health, physical fitness and peace of mind through their regular practices. Physical education concerns with anatomical aspects of the physique with its physiological reactions for a given activity. The ultimate aim of which is to enjoy a good health and optimum fitness. Yoga is providing a multidimensional development and it has now become an adjunct to physical education.

Aerobic exercise uses continuous, rhythmic movement of large muscle groups to strengthen your heart and lungs (cardiovascular system). When you exercise, your muscles demand more oxygen-rich blood. This makes your heart beat faster to keep up. When you follow a program of regular aerobic exercise, your cardiovascular system grows stronger and can meet the muscles' demands without as much effort. In addition, your muscles adapt and become more efficient at performing activity.

Aerobic exercise includes any type of exercise, typically those performed at moderate levels of intensity for extended periods of time, that maintains an increased heart rate. In such exercise, oxygen is used to "burn" fats and glucose in order to produce adenosine triphosphate, the basic energy carrier for all cells. Initially during aerobic exercise, glycogen is broken down to produce glucose, but in its absence, fat metabolism is initiated instead. The latter is a slow process, and is accompanied by a decline in performance level. The switch to fat as fuel is a major cause of what marathon runners call "hitting the wall." There are various types of aerobic exercise. In general, aerobic exercise is one performed at

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a moderately high level of intensity over a long period of time. For example, running a long distance at a moderate pace is an aerobic exercise, but sprinting is not.

The pulse is a decidedly low tech/high yield and antiquated term still useful at the bedside in an age of computational analysis of cardiac performance. Pressure waves generated by the heart in systole moves the arterial walls. The pressure exerted by the blood on the vessel walls during the resting portion of the cardiac cycle, measured in millimeters of mercury by a sphygmomanometer.

Methodology

The purpose of the study was to find out the effect of yogic practices and aerobic exercise on resting pulse rate, systolic blood pressure and muscular endurance. To achieve this purpose of the study, thirty school aged boys ages between 15 and 17 years were contacted and randomly selected as subjects. They were divided into three equal groups, each group consisted of ten subjects in which Group I underwent yogic practices and group II underwent aerobic exercises (walk-jog-walk) five days per week for twelve weeks and group III acted as control, who did not participate in any training. The subjects were tested on selected criterion variables such as resting pulse rate, systolic blood pressure and diastolic blood pressure at prior to and immediately after the training period. The selected criterion variables such as resting pulse rate was assessed by counting the pulse at resting condition, systolic and diastolic blood pressure was assessed by using sphygmomanometer. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate.

Results

Table 1. Analysis of Covariance and 'F' ratio for Resting Pulse Rate, Systolic blood pressure and Diastolic blood pressure for Yogic Practice, Aerobic Exercise and Control Groups

Variable Name	Group Name	Yogic Practice Group	Aerobic Exercise Group	Control Group	'F' Ratio
Resting pulse rate (Numbers)	**Pre-test Mean ± S.D**	80.8 ± 3.225	79.6 ± 4.033	81.1 ± 2.9606	0.533
	Post-test Mean ± S.D.	80.1 ± 2.6909	78.1 ± 4.208	82.6 ± 3.2728	4.107*
	Adj. Post-test Mean ± S.D.	79.828	78.916	82.056	9.134*
Systolic blood pressure (mmHg)	**Pre-test Mean ± S.D**	118.2 ± 4.23	117.31 ± 5.01	117.8 ± 4.89	1.33
	Post-test Mean ± S.D.	116.3 ± 3.87	115.81 ± 6.29	117.6 ± 5.63	8.886*
	Adj. Post-test Mean ± S.D.	116.134	115.932	117.959	25.886*
Diastolic blood pressure (mmHg)	**Pre-test Mean ± S.D**	81.36 ± 2.31	80.71 ± 4.19	81.59 ± 4.23	1.089
	Post-test Mean ± S.D.	79.65 ± 3.89	79.11 ± 5.31	82.31 ± 6.37	9.883*
	Adj. Post-test Mean ± S.D.	78.313	78.556	83.097	29.996*

* Significant at .05 level of confidence.
(Table value required for significant at .05 level of confidence with df 2 and 27 and 2 and 26 are 3.35 and 3.37).

Table II. Scheffĕ S Test for the Difference between the Adjusted Post-Test Mean of Selected Criterion Variables

Adjusted Post-test Mean on Resting Pulse Rate				
Yogic Practice Group	**Aerobic Exercise Group**	*Control group*	**Mean Difference**	**Confidence interval at .05 level**
79.828	78.916		0.912	1.9362
79.828		82.056	2.228*	1.9362
	78.916	82.056	3.14*	1.9362

Adjusted Post-test Mean on Systolic Blood Pressure				
Yogic Practice Group	**Aerobic Exercise Group**	*Control group*	**Mean Difference**	**Confidence interval at .05 level**
116.134	115.932		0.202	0.99659
116.134		117.959	1.825*	0.99659
	115.932	117.959	2.027*	0.99659
Adjusted Post-test Mean on Diastolic Blood Pressure				
Yogic Practice Group	**Aerobic Exercise Group**	*Control group*	**Mean Difference**	**Confidence interval at .05 level**
78.313	78.556		0.243	1.2671
78.313		83.097	4.784*	1.2671
	78.556	83.097	4.541*	1.2671

* Significant at .05 level of confidence.

Table – I showed that there was a significant difference among yogic practice group, aerobic exercise group and control group on resting pulse rate, systolic blood pressure and muscular endurance.

Table – II showed that the Scheffĕ *S* Test for the difference between adjusted post-test mean difference in resting pulse rate between yogic practice group and control group (2.228) and aerobic exercise group and control group (3.14) which were significant at .05 level of confidence. But there was no significant difference between yogic practice group and aerobic exercise groups (0.912) on resting pulse rate after the respective training programme.

Table – II showed that the Scheffĕ *S* Test for the difference between adjusted post-test mean systolic blood pressure of yogic practice group and aerobic exercise group (0.202) which was insignificant at 0.05 level of confidence. But the difference between yogic practice group and control group (1.825) and aerobic exercise group and control group (2.027), which were significant at .05 level of confidence.

Table – II also shows that the Scheffĕ *S* Test for the difference between adjusted post-test mean difference in diastolic blood pressure between yogic practice group and control group (4.784) and aerobic exercise group and control group (4.541) which were significant at .05 level of confidence. But there was no significant difference between yogic practice group and aerobic exercise groups (0.243) on diastolic blood pressure after the respective training programme.

Conclusion

Based on the results of the study, the following conclusion were drawn:

1. It was concluded from the result of the study that there was a significant decrease in resting pulse rate for experimental groups when compared with control group. But there was no significant difference between the experimental groups on resting pulse rate.
2. Yogic practice group and aerobic exercise group showed significant decrease in systolic blood pressure as compared to control group. There was no significant difference was found between the yogic practice group and aerobic exercise group on systolic blood pressure.
3. It was concluded from the result of the study that there was a significant decrease in diastolic blood pressure for experimental groups when compared with control group. But there was no significant difference found between the experimental groups on resting pulse rate.

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