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Effect of aerobic training on selected physical and physiological variables among University male students

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Abstract
The present study was designed to find out effect of aerobic training on selected physical fitness and physiological variables among school boys. To fulfill the purpose of the study 30 Physical Education, Vinaya Bhavana,Visva Bharati students are selected and they are divided in two equal groups namely experimental and control group and their age ranged from 19 to 25 years. To find out the effect of aerobic training on selected physical fitness components data was collected through the administration of 50mts run, shuttle run, sit and reach. On the other hand physiological components data was collected through the administration of breath holding time, resting heart rate. The collected data was calculated with the application of dependent 't' test. Finally the results of the study concluded that with the comparison of pre-test and post-test of experimental group due to the effect of six weeks aerobic training have an positive impact on speed, flexibility, agility (Physical Fitness Components) resting heart rate, breath holding time (Physiological Components).

Keywords: Speed, agility, flexibility, physical fitness

Introduction
Aerobic training which defined as the rhythmical contraction and relaxation of large muscle masses over an extended time, was shown to improve physical performance and reduce fatigue therefore it have some positive impact in efficiency on physiological parameters such as breath holding time and resting heart rate, therefore the study shows all the good effect of aerobic on physical fitness as well as physiological point of views.

Aim of the Study
The aim of the study is to find out the effect of aerobics exercises on selected physical and physiological variables among university male students.

Hypothesis
It is hypothesized that there was a significant difference on experimental group of selected physical and physiological variables.

Significant of the Study
This Study was helpful to the coaches to take this training as initial device for developing physical and physiological variables and performance of the players in respective games and sports. This study shows the positive effect on speed, flexibility, agility and breath holding time, resting heart rate of Physical Education Students.

Methodology
This study was designed to deal with the impact of aerobic training on selected physical and physiological variables among Physical Education male students. To facilitate the study, thirty male students of Vinaya Bhavana, Visva Bharati, Santiniketan selected as subject were randomly selected and their age were between 19 to 25 years. They were assigned in to two groups namely experimental as well as control group. The experimental group were under go with aerobic training weekly 4 day with the duration of 1 hour including 15 minutes general and specific exercise and 15 minutes for cooling down exercise.

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Criterion Measures

For the present study the researcher used to measure the following physical fitness variables as to measure speed through 50mts run in seconds, to measure flexibility through Jonson flexibility box in cm, to measure agility through shuttle run in seconds. Whereas physiological components as to measure breath holding time manual method used in seconds, to measure resting pulse rate used electronic pulse monitor.

Statistical Procedure

To observed the results of the study dependent "t" test was used for the interpretation of the pre and post-test date of experimental group as well as control group.
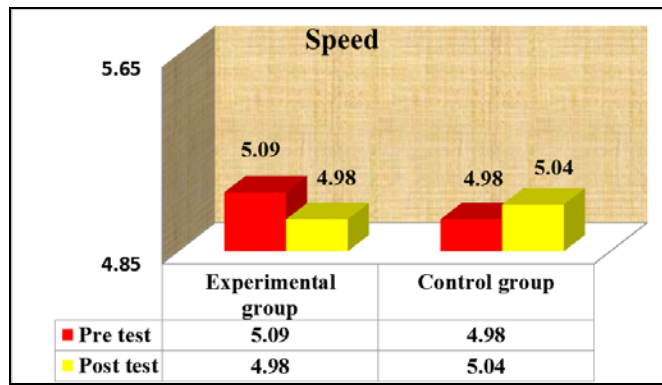
Results and Discussion

Table I: Table showing the mean, mean difference, standard deviation and 't' value of experimental and control group on Speed

Group	No. of Subjects	Pre-Mean	Post-Mean	Standard Deviation		Std. Error Mean	"t"
				Pre	Post		
Experimental	15	5.18	4.97	0.27	0.40	0.09	2.402*
Control	15	5.15	5.14	0.21	0.42	0.10	0.136

*Significance at 0.05 level of confidence

Experimental group pre and post-test mean value were 5.18 and 4.97 respectively. In Control group pre and post-test were mean value was 5.15 and 5.14 respectively. In experimental the obtained t-ratio 2.402 was greater than the table value of 2.15 so it is found significant. In control group the obtained t-ratio 0.136 was lesser than the table value of 2.15 so it was found not significant. Difference in two group-ratios was employed and the level of significance was set at 0.05.

Fig I: Bar diagram showing the pre and post mean test value of experimental and control group on Speed
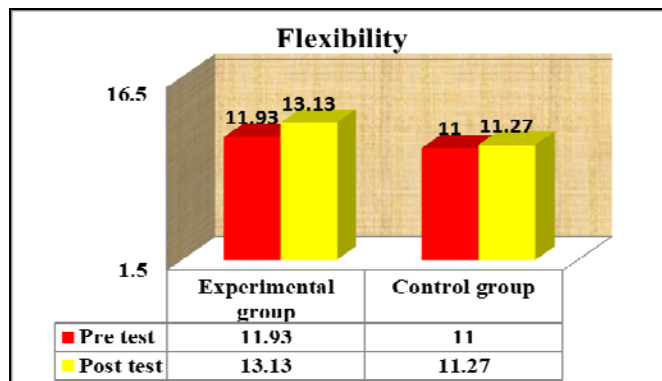
Table II: Table showing the mean, mean difference, standard deviation and 't' value of experimental and control group on Flexibility

Group	No. of Subjects	Pre-Mean	Post-Mean	Standard Deviation		Std. Error Mean	"t"
				Pre	Post		
Experimental	15	11.93	13.13	1.87	2.10	0.17	6.874*
Control	15	11	11.27	1.25	1.79	0.34	0.774

*Significance at 0.05 level of confidence

Experimental group pre and post-test mean value were 11.93, 13.13 respectively. In Control group pre and post-test were mean value was 11.00, 11.27 respectively. In experimental the obtained t- ratio 6.874 was greater than the table value of 2.15 so it is found as significant. In control group the obtained t-ratio 0.774 was lesser than the table value of 2.15 so it was found as not significant. Difference in two group's t- ratio was employed and the level of significance was set at 0.05.

Fig II: Bar diagram showing the pre and post mean test value of experimental and control group on Flexibility
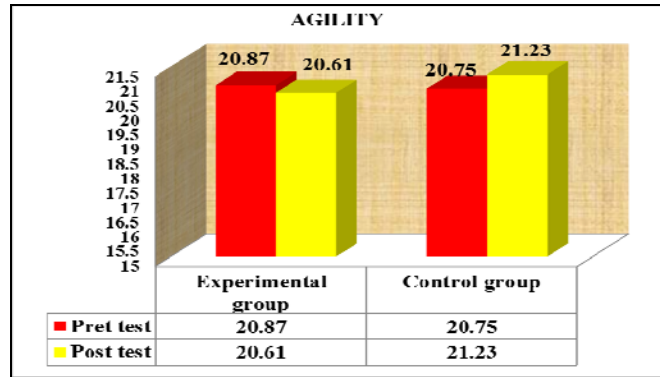
Table III: Table showing the mean, mean difference, standard deviation and 't' value of experimental and control group on Agility

Group	No.of Subjects	Pre-Mean	Post-Mean	Standard Deviation		Std. Error Mean	"t"
				Pre	Post		
Experimental	15	21.61	21.41	0.91	0.91	0.09	2.323*
Control	15	21.59	21.49	1.08	1.00	0.17	0.561

*Significance at 0.05 level of confidence

Experimental group pre and post-test mean value were 21.61 and 21.41respectively. In Control group pre and post-test were mean value was 21.59 and 21.49 respectively. In experimental the obtained t- ratio 2.323 was greater than the table value of2.15 so it is found as significant. In control group the obtained t-ratio 0.561was lesser than the table value of 2.15 so it was found as not significant. Difference in two group's t-ratio was employed and the level of significance was set at 0.05.

Fig III: Bar diagram showing the pre and post mean test value of experimental and control group on Agility
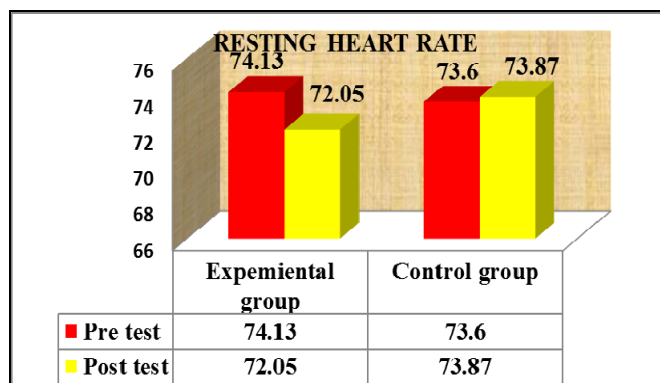
Table IV: Table showing the mean, mean difference, standard deviation and 't' value of experimental and control group on Resting Heart Rate

Group	No.of Subjects	Pre-Mean	Post-Mean	Standard Deviation		Std. Error Mean	"t"
				Pre	Post		
Experimental	15	74.13	72.07	1.36	1.44	0.38	5.39*
Control	15	73.60	73.87	1.18	1.19	0.45	0.59

*Significance at 0.05 level of confidence

Experimental group pre and post-test mean value were 74.13 and 73.87 respectively. In Control group pre and post-test were mean value was73.60 and 72.07 respectively. In experimental the obtained t- ratio5.39 was greater than the table value of 2.15 so it is found as significant. In control group the obtained t- ratio 0.59 was lesser than the table value of 2.15 so it was found as insignificant. Difference in two group t- ratio was employed and the level of significance was set at 0.05.

Fig IV: Bar diagram showing the pre and post mean test value of experimental and control group on Resting Heart Rate

Table V: Table showing the mean, mean difference, standard deviation and 't' value of experimental and control group on Breath Holding Time

Group	No.of Subjects	Pre-Mean	Post-Mean	Standard Deviation		Std. Error Mean	"t"
				Pre	Post		
Experimental	15	25.07	27.87	3.51	3.24	0.19	3.57*
Control	15	25.2	26.47	3.38	3.26	0.23	0.29

*Significance at 0.05 level of confidence

Experimental group pre and post-test mean value were 25.07 and 27.87 respectively. In Control group pre and post-test were mean value was 25.20 and 26.47respectively. In experimental the obtained t- ratio 3.57 was greater than the table value of 2.15 so it is found as significant. In control group the obtained t- ratio 0.29 was lesser than the table value 2.15 so it was found as not significant. Difference in two group's t- ratio was employed and the level of significance was set at 0.05.
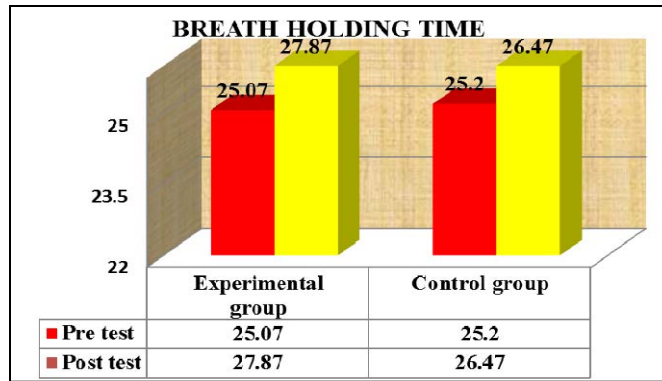
Fig V: Bar diagram showing the pre and post mean test value of experimental and control group on Breath Holding Time

Conclusions

In the light of the study undertaken certain limitations imposed by the experimental conditions, the following conclusions were arrived that speed, flexibility, agility, resting heart rate, breath holding time, were significantly improved due to the influence of aerobic training in experimental group.

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