Effects of Selected Pranayams on Cardio-vascular Endurance and Reaction Time of High School Students of Punjab

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ABSTRACT

The main objective of the present study was to find the effects of selected Pranayams on cardio- vascular endurance and Reaction Time of high school studetns in Punjab. Two hundred boys of 13 to 16 years age group from Govt. High School, Karala, Mohali, Punjab, and S.B.W.S.M.P. School, Bamur, Mohali, Punjab, wre selected as the research subjects. The Pranayams training duration was of 10-weeks. The subjects were divided into two groups as experimental (Group A) and control (Group B). The experimental group underwent Pranayams training for 10 weeks and control group did not receive the Pranayams training. The't' test was used to compare pre and post-training value. After 10weeks, Pranayams training, there was a significant (P< 0.001) difference between pre and post-testing of experimental group for the cardio-vascular endurance (pre=1710.27±50.73, post 1785.51±78.24 and reaction time (pre = 24.81±0.40, post 23.55±0.43) as well as control group for the cardio-vascular endurance (pre = 1580.94±13.62, post = 1498.17±62.78) and reaction timee (pre= 25.90±0.50, post = 25.83±0.52). The experimental group has a significant improvement on cardio-vascular endurance and reaction time than the control group.

INTRODUCTION

Pranayams is a scientific way of life. It is the fourth part of the eight-fold yoga. It is an easier way of understanding and realizing the dimensions of consciousness. The word '*prana*' is a combination of two syllables *pra* and *na* and denotes constancy, being a force in constant motion. Whereas prana is the vital force, Pranayama is the process by which the internal pranic store is increased. Some people split the word 'Pranayama' Into *prana* and *yama* and define it as 'breath control'. However, it actually comprises the words *prana* and *ayama* which means 'pranic capacity or length'. Pranayama is a technique through which the quantity of *prana* in the body is activated to a higher frequency. By practising Pranayama certain amount of heat or creative force is generated throughout the entire body, influencing the existing quantum or prana. The science of Pranayama is based on retention of prana or *kumbhaka* towards this end. Due to fear of death, even Brahma, the Lord of creation, keeps practicing Pranayama and so do many Yogis and Munis. Hence, it is recommended alwyas to control the breath. "Even Brahma and other gods in heaven devote themselves to practising Pranayama because it ends the fear of death." (Svatmarama, 1985). The mortals should follow the same path and control the breath. It may be the origin of Pranayama. Breath is life.

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Without food or water life is possible but without breathing it's not. There is a close link between breath and soul.

Pranayama is a philosophy of life. It is way of living. Pranayama is an excellent spiritual lore of selt-realization. Pranayama keeps the body fit and healthy. It reduces extra fat and body looks younger in age. It improves the power of memory and eliminates mental disorders. It tones up the stomach, the liver, the bladder, the small and the large intestiness and the digestive system. It purifies tubular channels and removes sluggishness; form becomes healthy and the inner voice begins to be heard. The constant practice of Pranayama strengthens the nervous system. The mind becomes calm and is capable of concentration. the constant practice of Pranayama rouses spiritual power. It gives spiritual joy, spiritual lights and mental peace. The aspirant who practices Pranayama gets ready for celibacy and becomes a celibate in the true sense of the word. It is necessary for the nervous to practise Dharana, Dhyana and Samadhi. This kind of purification can be accomplished through Pranayama. The constant flow of thoughts impedes spiritual progress. Not only that, such a meaningless flow of thoughts is detrimental to the health of mind. If Pranayama are practiced properly, it can slow down this flow or even stop it and consequently mental health and spiritual development can be maintained. The internal glands become health balanced and efficient by regular Pranayama.

Purpose of the study

1. To assess the effects of selected Pranayams on Cardio-Vascular Endurance of high school students in Punjab.
2. to assess the effects of selected Pranayams on Reaction Time of high school students in Punjab.

METHODOLOGY

This study was designed to evaluate the effects of 10-week daily practice [Except Sunday and holidays] of selected Pranayams on cardio-vascular endurance and reaction time of high school students. Two Hundred, aged 13 to 16 years, studying in 6th to 10th class (high school students) were included. Groups of healthy students with no history of present and past illness were selected. Student 't' test was used to see the significant of mean differences between pre-test and post-test values.

RESULTS & DISCUSSION

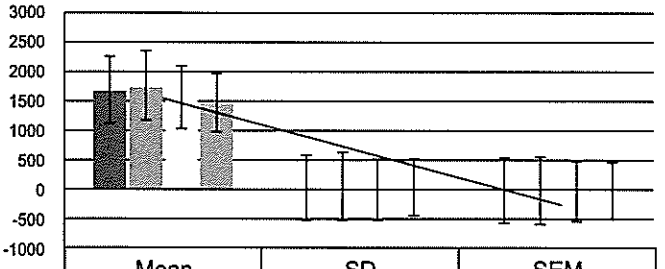
Computer 't' ratio to see the significance of differences between Pre-Test and Post-Test means of experimental group and the control group with regard to cardio-vascular endurance is given in Table 1.

Table-1 : Means of Experimental Group and the Control Group with regard to Cardio-vasculear Endurance.

Group	Number	Mean	S.D.	SEM	't' Value	P-value
Experiment (Pre-test)	100	1710-27	50.73	5.07	8.15*	0.0001
Experimental (Post-test)	100	1785.51	78.24	7.82		
Control (Pre-test)	100	1580.94	50.73	5.07	12.86*	0.0001
Control (Post-test)	100	1498.17	62.78	6.27		

$t_{.05}$ (99) = 1.65

Table 1 presents the results of experimental group and the control group with regard to the variable cardio-vascular endurance. The descriptive statistics shows that the Mean and SD values of cardio-vascular endurance of pre-test and post-test of experimental group were 1710.27±50.73 and 1785.51±78.24, respectively whereas the Mean and SD values of cardio-vascular endurance of pre-test and post-test and post-test of control group was 1580.94±13.62 and 1498.17±62.78. The 't' value in case of experimental group was 8.15* and for control group it was 12.86. The 't' value in case of experimental group 8.15* as show in the Table was found statistically significant as it was greater than the table value of t=1.65, which shows that cardio-vascular endurance of the experimental group was improved due to 10-week training of selected Pranayams. In case of control group there was also a significant difference. But when we see the mean values, it is found that there was a decrease in the mena value of post-test that may be one of the reasons for this type of results.



	Mean	SD	SEM
■ Experiment (Pre-test)	1710.27	50.73	5.07
■ Experiment (Post-test)	1785.51	78.24	7.82
■ Control (Pre-test)	1580.94	13.62	1.36
■ Control (Post-test)	1498.17	62.78	6.27

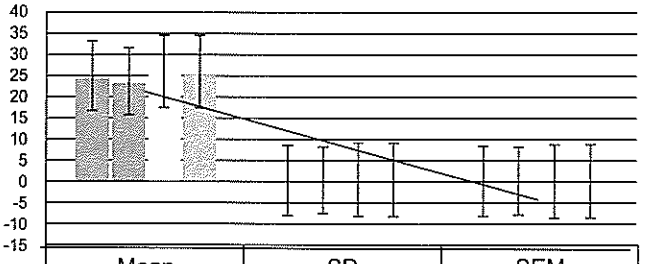
Fig.-1 Mean, Standard Deviation (SD), Standard Error of Mean (SEM) of cardio-vascular endurance of Experimental and Control Group.

Table-2: Significance of Difference between Pre-Test and Post-Test Mean of Experimental Group and Control Group with regard to Reaction Time.

Group	Number	Mean	S.D.	SEM	't' Value	P-value
Experiment (Pre-test)	100	24.81	0.40	0.04	12.66*	0.0001
Experimental (Post-test)	100	23.55	0.43	0.04		
Control (Pre-test)	100	25.90	0.50	0.05	1.51	0.1345
Control (Post-test)	100	25.83	0.52	0.05		

t_{05} (99) = 1.65

Table 2 presents the results of experimental group and the control group with regard to the variable reaction time. The descriptive statistics shows the Mean and SD values of reaction time of pre-test and post-test of experimental group was 24.80±0.40 and 23.55±0.43, respectively, whereas, the mena and SD values of reaction time of pre-test and post-test of control group was 25.90±0.50 and 25.83±0.52. The 't'-value in case of experimental group 12.66* and for control group it was 1.51. The 't'-value in case of experimental group 12.66*, as shown in the Table, was found statistically significant, as it was greater then the table value of t=1.65, which show that reaction time of the experimental group decreased due to 10-weeks training of selected Pranayams. But in case of control group there was no decrease in the reaction time as the calculated value of t=1.51 was less than the table value required to be significant, at .05 level of significance.



	Mean	SD	SEM
■ Experiment (Pre-test)	24.81	0.4	0.04
■ Experiment (Post-test)	23.55	0.43	0.04
■ Control (Pre-test)	25.9	0.5	0.05
■ Control (Post-test)	25.83	0.52	0.05

Fig.-2: Mean , Standard Deviation (SD), Standard Error of Mean (SEM) of Reaction time of Experimental and Control Group.

The study was aimed to find out the effects of selected Pranayams on cardio-vascular endurance and reaction time of high school students in Punjab.

The results pertaining to the cardio-vascular endurance showed that there was significant difference found between pre and post-test for experimental group and for control group it was found insignificant, which indicates that there was a significant role of Pranayams on cardio-vascular endurance of high school studnets, the findings are supported by the findings of Ganguly and Gharate (1974) who studied the effects of yogic training on cardio-vascular efficiency of male students, and reported daily one hour of yogic training improved cardio-vascular efficiency of the subjects.

In a different study, Lolage and Berra (1999) conducted a study to find out the effects of Pranayams on cardio-vascular endurance of Kho-Kho players and reported in their findings that Pranayams were useful in improving cardio-vascular endurance of Kho-Kho players. Udupa et al (2003) also conducted a study to see the effects of Pranayams training on cardiac function of young person's; they found Pranayams training modulates ventricular performance by increasing Parasympathetic activity and

decrease sympathetic activity. Udupa et al (2005) in their study worked to find out the effects of slow and fast pranaymas on cardio-respiratory functions and concluded that different types of Pranayams produce different physiological response, in normal young persons. Abraham (2000) investigated the effects of different Pranayams techniques on cardio-respiratory endurance and reported no significant relationship between Pranayams and cardio-respiratory endurance his findings are contradicts our findings.

The results pertaining to the reaction time showed that there was a significant difference between pre and post-test for experimental group, and for control group it was found insignificant, which indicated that there was a significant role of Pranayams on reaction time of high school students, the findings are supported by the findings of Thombre et al (1992) who worked to find out the effects of Yoga training on reaction time. They documented in their findings that there was significant relation of Yoga training with the reaction time. this finding is in line with the findings of our study. Udupa et al (2005) also conducted a study to find out the effects of different Pranayams techniques on reaction ttime, they reported that there was a significant effect of Pranayams technique on reaction time and supports our findings.

CONCLUSION

On the basis of the obtained results the following conclusions were drawn:

1. That 10-week training programme of selected Pranayams improved cardio-vascular endurance of high school students.
2. That training programme of 10-weeks of selected Pranayams improved reaction time of high school students.

On the final note, it can canclude that regular practice of Pranayams is helpful to improve cardio-vascular endurance & reaction time. Thus it is suggested that to be in good shape of health status, one must regularly practice yogic asanas and pranayams.

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