EFFECT OF TWELVE WEEKS CIRCUIT TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES IN COLLEGE HOSTEL STUDENTS

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Abstract

The Purpose of the study was to find out the effect of aerobic training on selected physiological variables. Selection of Subjects: For the present study 40 male students from SGT University Gurugram were selected randomly as the subjects for the study. The age of the subjects ranged between 20 - 23 years. Selection of Variables: The variables selected for the present study were circuit training (independent variable), Resting Heart Rate (RHR) and Peak Flow Rate (PFR). For the study pre-test – post-test randomized group design, which consists of control group (20 students) and experimental group (20 students) was used. The data were collected through the pre-test, before training and post-test, after twelve weeks of aerobic exercises training. For comparing pre and post-test means of experimental and control groups of selected physiological variables, descriptive analysis and Paired t-test were used; the data analyzed with the help of SPSS software and the level of significance was set at 0.05 level of confidence. The result of the study showed that there was significant difference between pre and post-test (experimental group) of RHR and PFR. On the basis of the findings it was concluded that the aerobic training might be responsible for the improvement of selected physiological variables like RHR and PFR.

Keywords: Circuit Training, Aerobic Exercise, Physiological Variables, Resting Heart Rate, Peak Flow Rate.

Introduction

Aerobic exercises are a wonderful way to burn your fat and tone your body muscles, leaving you healthy and in a good shape. Finding the perfect workout routines takes time and effort. These best workout routines is a great place to start if a person is interested in flat abs.

All these activities are healthy easier to perform and inexpensive. Aerobic exercises are beneficial in so many ways like Strengthening the respiratory muscles, Strengthening and enlarge the heart muscle and improve its pumping, Improving blood circulation and red blood cells, Reducing stress and depression Increasing your stamina and endurance of your muscles, In short it reduces the risk of heart attacks.

Circuit training is a form of exercise that uses a number of exercise sets separated by short intervals. The cardiovascular effort to recover from each set serves a function similar to an aerobic exercise, but this is not the same as saying that a weight training set is itself an aerobic process.

Peak Expiratory Flow Rate (PEFR) is the maximal expiratory flow rate achieved and this occurs very early in the forced expiratory maneuver. The peak expiratory flow rate measures how fast a person can breathe out (exhale) air. It is one of many tests that measures how well your airways work. It is a simple method of measuring airway obstruction and it will detect moderate or severe disease.

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Methodology

To find out the effect of twelve weeks circuit training of aerobic exercises on selected physiological variables i.e. resting heart rate (RHR), Peak Flow Rate (PFR). For the present study 40 male students from SGT University Gurugram were selected as subject. The age of the subjects ranged from 20-25 years. The subjects were divided into two groups i.e. one experimental (Aerobic exercise group, 20 students) and one control group (20 students). Keeping the feasibility criterion in mind, the researcher selected the following variables for the present study:

A. Circuit training (Independent variables)

B. Physiological variables (Dependent variables)

- Resting heart rate (RHR)
- Peak Flow Rate (PFR)

For the study pre-test& post-test randomized group design, which consists of one control group (n=20) and one experimental group (n=20) was used. Equal numbers of subjects were assigned randomly to the group. One group served as experimental group (Aerobic exercises training group) on which treatment was assigned and the second group served as the control group.

Before the administration of aerobic training, the selected tests for selected physiological variables were administered on both the experimental and control groups to collect pre-test data. After the completion of twelve weeks of aerobic exercises training again the same tests were conducted to collect the post training data. Necessary instructions were given to the subjects before administration of the tests.

The training for experimental group was administered at SGT University Gurugram. Selected aerobic exercises (On the spot Running, Jumping, Stair Jump, Rope Skipping, Rhythmic Exercises etc,) were given to experimental group on five days i.e. (Monday to Friday) sessions per week for twelve Weeks. Researcher used circuit training method for selected aerobic exercises at different intensity. Each training session consisted of 60-120 minutes included 10-15 minutes of warming up and 10-15 minutes for cooling down. Remaining minutes allotted for aerobic exercise training program.

The data were analyzed by applying descriptive statistical and paired t-test. The data analyzed with the help of SPSS software and the level of significance was set at 0.05 level of significance.

Result and Findings of the Study

TABLE 1
DESCRIPTIVE STATISTICS OF EXPERIMENTAL GROUP AND CONTROL GROUP IN RELATION TO RHR

Group	Test	Mean	Std. Dev	Std. Error Mean
Control	Pre	77.05	6.41	1.43
	Post	76.95	4.97	1.11
Exp.	Pre	76.60	5.86	1.31
	Post	72.70	5.22	1.16

Table 1 shows that the descriptive statistics i.e. mean, standard deviation, Std. Error Mean etc. of Resting Heart Rate (RHR) in relation to pre and post-test of control and experimental group.

TABLE 2
COMPARATIVE ANALYSIS BETWEEN PRE AND POST-TEST OF EXPERIMENTAL GROUP AND CONTROL GROUP IN RELATION TO RHR

Group	Pair	Paired Differences					t	Sig. (2-tailed)
		Mean	Std. Dev	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Control	Pre RHR-Post RHR	0.10	5.17	1.158	-2.32	2.52	0.086	0.932
Exp.	Pre RHR - Post RHR	3.90	4.43	.99	1.82	5.97	3.932*	0.001

*Statistically significant at 0.05 level

Table 2 shows the analysis of t-test of RHR, indicated that the resultant t-ratio of pre and post-test of control group is .086 was insignificant. In case of pre and post-test of experimental group is 3.932 was found significant as p value is 0.001 (p<0.05).

TABLE 3
DESCRIPTIVE STATISTICS OF EXPERIMENTAL GROUP AND CONTROL GROUP IN RELATION TO PFR

Group	Test	Mean	Std. Deviation	Std. Error Mean
Control	Pre	358.60	31.37	7.01
	Post	360.40	22.31	4.99
Exp.	Pre	356.75	20.61	4.60
	Post	381.70	31.05	6.94

Table 3 shows that the descriptive statistics i.e. mean, standard deviation, Std. Error Mean etc. of Peak flow rate (PFR) in relation to pre and post-test of control and experimental group.

TABLE 4
COMPARATIVE ANALYSIS BETWEEN PRE AND POST-TEST OF EXPERIMENTAL GROUP AND CONTROL GROUP IN RELATION TO PFR

Group	Pair	Paired Differences					t	Sig. (2-tailed)
		Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference			
					Lower	Upper		
Control	Pre PFR- Post PFR	1.80	24.22	5.41	-13.13	9.53	0.332	.743
Exp.	Pre PFR - Post PFR	24.95	24.80	5.54	-36.56	-13.33	4.498*	.000

*Statistically significant at 0.05 level

Table 5 shows the analysis of t-test of PFR, indicated that the resultant t-ratio of pre and post-test of control group is .332was insignificant. In case of pre and post-test of experimental group is 4.498 was found significant as p value is 0.001 (p<0.05).

Discussion of Findings
In this study, researcher investigated the effect of 12 weeks of aerobic training on RHR and PFR on college level male hostellers. The researcher found significant improvements in RHR and PFR compared with participants' pre-exercise values by continuing exercise training for up to 12 weeks (P = 0.001 and P = 0.00 respectively).

The literature thoroughly supports the evidence that exercise intensity is directly related to the change in VO2max (Gossardet al., 1986). Higher doses of aerobic exercise produce greater increases in VO2max, although these improvements are not proportionately greater. Regular participation in aerobic exercise often results in a decrease in resting heart rate (Katonaet al. 1982; Smith et al. 1989). Similar study conducted by M. Muralikrishna and P.V. Shelvam in 2014 had conducted a study, Effect of different intensities of aerobic training on vital capacity of middle aged obese men; The results showed that High intensity aerobic training positively influences the cardiopulmonary (vital capacity). Jakes et al. (2002) reported that those who participated in vigorous physical activity showed a slower rate of decline in FEV1 during 3.7years of follow-up. Holmen et al. (2002) found smaller lung capacity (FVC and FEV1) independent of age and height in never smokers with lower levels of physical exercise. In a prospective study, very young female competitive swimmers were found to have an increase in their vital capacity and total lung capacity during one-year of training (Courteix D. et.al., 1997), suggesting that larger lung volumes in swimmers may be due to the impact of training on lung growth. The findings of this study are also in consistent with the results of a study by Farrell et al. (1981), who found that FVC and FEV1 increased after 8 weeks of aerobic training in adults and attributed this finding to the improved contractility of the expiratory muscles as a result of endurance training. The exact mechanism of the FVC

improvement in this study is unknown, but respiratory muscles function, fat mass reduction and weight loss possibly play roles in this improvement. These studies are supporting to the result of this study in the relation of aerobic training.

Conclusions

On the basis of findings of the study, the following conclusions may be drawn:

- The results of the study indicate that the insignificant difference was found in pre and post-test of (control group) resting heart rate (RHR), ($p > 0.05$).
- The results of the study indicate that the significant difference was found in pre and post-test of (experimental group) resting heart rate (RHR), ($p < 0.05$).
- The results of the study indicate that the insignificant difference was found in pre and post-test of (control group) vital capacity (PFR), ($p > 0.05$).
- The results of the study indicate that the significant difference was found in pre and post-test of (experimental group) vital capacity (PFR), ($p < 0.05$).
- On the basis of the findings it was concluded that the 12 weeks of aerobic training may be responsible for the improvement of selected physiological variables like Resting Heart Rate (RHR), Peak Flow Rate (PFR).

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