Effects of Circuit Training and Acceleration Sprint Training on Vital Capacity

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Abstract

The purpose of the study was to find out the effects of circuit training and acceleration sprint training on vital capacity among college cricket players. To facilitate the study ninety cricket players their age ranged 18 to 25 years were selected at random from Prince Shri Venkateswara Arts and Science College Chennai. They were divided in to three equal groups of thirty each. Control group 30 subject were restricted for training. Experimental group sixty subjects were divided into two groups at random. Group one is considered as circuit training group practice for 5 days per week group two considered as acceleration sprint training group practice 5 days per week totally 12 weeks programme. The analysis of covariance was used to find out the adjusted mean differences among the treatment groups. The Scheffe's post-hoc test was used to find out the paired mean difference the measured alcove was used to find out the periodical effects of circuit training and acceleration sprint training.

Key words: Circuit training, Sprint training, Vital capacity.

Introduction

Life is made up of physical movements. Man becomes fit for physical activities by developing needed efficiency such as skills, strength endurance etc.

Circuit Training

Circuit training probably is the most common region used by a wide range of sports and activities in order to improve performance as well as vital capacity circuit training consist of a number of different stations and different exercises. These exercises are very helpful for the improvement in vital capacity.

Acceleration Sprint Training

It is defined as the rate of change of velocity this type of training develops almost exclusively speed and endurance. It involves 45 to 100 mts of jogging followed by 45 to 100 mts of fast striding. Then 45 to 100 mts sprinting and followed by 45 to 100mts of walking for recovery.

This training also improves the vital capacity.

Methodology

Subjects

The subjects selected for this study were all cricket players who were studying in Prince Shri Venkateswara Arts and Science College, Chennai. Ninety students were selected at random using the table of random number. It is ensured by examining the records of subjects kept in the college that they were medically fit to go through the experimental requirement

of this subject according to the college records the average age of the selected subjects was between 18 to 25 years. Totally ninety student were selected randomly and their vital capacity was measured by using wet spirometer. They were divided randomly into three groups two were considered as circuit training group and acceleration sprint training group and other one was treated as control group. All the subjects had routine activities except the subjects of the experimental group who were progressively introduced to the additional practice of the circuit and acceleration sprint training.

Equipment

The following equipments are used

Wet spirometer, cotton, antiseptic solution.

Description

The wet spirometer should be placed at the height that allows the subject to stand erect at the beginning of the rest.

The subject should forcefully inhale and exhale twice before taking the test. The subject should be instructed not to allow air to escape through his nose or around the mouth piece.

As the subject near completion of the effort he should bend slightly forward to get as much air as possible into the spirometers.

The tester should watch the needle to obtain the maximum reading.

The most hygienic individual wooden mouth piece is used for each subject or the mouth piece may be used repeatedly if thoroughly sterilized by boiling, streaming and smoking in an antiseptic solution.

Statistical Analysis

Analysis of covariance of Vital capacity score of Circuit Training, Acceleration Sprint Training and Control group.

Table-I

ANCOVA on the Scores of Vital Capacity for Two Groups

	Circuit training group	Acceleration sprint training group	Control group	Sources of variance	Sum of squares	Df	Mean squares	F Ratio
Pre test score	1913.333	1901.667	2023.333	B W	-400911739.34 11302505.00	2 87	- 20455869.50 129913.85	-157.4572
Post test score	2190.000	2230.000	2026.667	B W	-43017583.004 11538862.00	2 87	-21508791.5 -132630.60	-162.1707
Post test score	2208.2638	2254.7644	1983.6384	B W	5867605.6934 8029489.320	2 86	2933802.85 93366.15	31.4226
Mean Gains	-276.667	-328.333	-3.334					

B- Between groups means, W – With in group means, Df – Degrees of Freedom

Vital Capacity Results

The data pertaining to pre and post test result of vital capacity scores in exhaling measurement were presented with the support of wet spirometers. The table indicated that the vital capacity scores of test means of the circuit training groups. Acceleration sprint training group and control group 1913.333, 1901.667 and 2023.333. This indicated that the differences among the initial test means were not significant at 0.05 level of confidence.

The post-test means of the circuit training group, acceleration sprint training 2230.000 and 2026.667 respectively. The obtained F ratio for the post test mean of vital capacity was 162.1707 indicating a high level of significance at 0.05 levels at the degrees of Freedom 2 and 86.

The adjusted post test means of the circuit training group acceleration sprint training group and control groups were 2208, 2254.7644 and 1983.6384 respectively. The obtained F-ratio for the pulse rate was 31.4226 significant level confidence at the degrees of Freedom 2 and 86.

The obtained F-ratio value of 31.4226 was greater than the table value of 3.11 at 0.05 levels.

Table-II

Ordered Adjusted Vital Capacity Score Means, Differences between Means and Scheffe's Test of Circuit Training Acceleration Sprint Training and Control Groups

Circuit training group N-30	Acceleration sprint training group N-30	Control group N-30	Mean difference	Scheffe's test F Ratio
2208.2638	22547644	--	-46.7644	0.34739127
2208.2638	--	1983.6384	224.6254	8.1062
--	22547644	271.126	271.126	11.80984288

The required Scheffe's F Ratio is -3.1090 at 0.05 levels significance.

Adjusted Vital Capacity Score Results

In this table the Scheffe's post hoc test was presented. The F-ratio of the difference between circuit training group and control group acceleration sprint training group and control group as well as circuit training and acceleration sprint training groups were 8.1062, 11.80984288 and 0.34739127 respectively.

Findings

The result of the study showed that experimental group had significant improved vital capacity when compared with the mean difference of the control group. The analysis of data revealed that the circuit training method lesser vital capacity than acceleration sprint training method. Vital capacity brought about changes in the heart system. Efficiency of these systems led to improvement of vital capacity. The subjects of the study were are beginners whatever few vital capacity were involved in the circuit training and acceleration sprint training they quickly got adopted to these loads thus bringing about a significant change in the vital capacity which was reflected in the improvement of vital capacity efficiency.

Conclusions

In the light of the study under taken with certain limitation imposed by the experimental conditions, the following conclusions were drawn.

Circuit training and acceleration sprint training improved the, vital capacity more than the control group.

The acceleration sprint training was found to be superior circuit training in improving vital capacity.

References

Alexander. Edward, (1998), **Effect of circuit training on muscular strength and circular respiratory endurance,** Dissertation Abstracts International, 31.

Chatterjee, (1998), **Effect of circuit training, aerobic dancing XBX Plan on selected, physical physiological and Hematological variables among college women in varied periods,** Unpublished Ph.D. Thesis Jiwaji University, 42.

Gougles. G Stuart & Callings. W.D, (1987), Comparison of vital capacity and maximum breathing capacity of athletes and on athletes, ***Journal of Applied Physiology***, 14, 7-9.

Oslem. L.E. Effect of a set circuit weight training programme on strength and muscular endurance of college men, ***Completed Research in Health Physical Education and Recreation***, 28, 24.

Ravi Kumar, (1992), **Effect of circuit training selected physical and physiological variables,** Unpublished M.Phil Dissertation, Alagappa University, Karaikudi, 35.

Traigopula Veeraiah Choudry, (1991), **Analysis of circuit training variations on selected biochemical variables on college men athletes,** Unpublished M.Phil Dissertation, Alagappa University, Karaikudi, 53.

Wolf. J.C, (1963), Effect of acceleration physical conditioning programme on athletes and non athletes as St. Edward High School, ***Completed Research in Health Physical Education and Recreation***, 5(2), 98.

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