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ISOLATED AND COMBINED EFFECT OF AEROBIC AND CIRCUIT TRAINING ON LEG EXPLOSIVE POWER AMONG ENGINEERING COLLEGE PLAYERS

Physical Education

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ABSTRACT

The present study was designed to find out the isolated and combined effect of aerobic and circuit training on leg Explosive Power among Engineering College Players. To attain the purpose, Sixty (N=60) players who have participated in the Anna University inter collegiate tournaments during 2016-2017 were selected randomly as subjects. The subjects were assigned at random into four groups of fifteen each (n=15). Group-I underwent Aerobic Training, Group-II underwent Circuit Training, Group-III underwent Combined Aerobic Training and Circuit Training, Group-IV acted as Control. The duration of the training period for all the three Experimental groups was restricted to twelve weeks and the number of sessions per week was confined to three in a week. For Combined Aerobic Training and Circuit Training the training period was restricted to alternative weeks for twelve weeks. Leg Explosive Power was selected as dependent variable and it was assessed by Sargent Jump test. All the subjects were tested prior to and immediately after the training for all the selected variables. Data were collected and statistically analyzed using ANCOVA. Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases 0.05 level of significance was fixed. The results of the study showed that there was a significant difference was found among all the Experimental groups namely Aerobic Training, Circuit Training and Combined Aerobic Training and Circuit Training groups had significantly increase in the Leg Explosive Power. Further the results of the study showed that Combined Aerobic Training and Circuit Training group was found to be better than the Aerobic training group and Circuit Training group in Leg Explosive Power.

KEYWORDS

Aerobic Training, Circuit Training Group, Combined Aerobic Training And Circuit Training, Leg Explosive Power

INTRODUCTION

Training has been explained as a programme of exercise designed to improve the skills and increase the energy capacities of an athlete's for particular event. The word 'training' means different things in different fields. In sports, the word training is generally understood to be synonyms doing physical exercises. In a narrow sense, training is doing physical exercise for the improvement of performance. This concept is reflected in words for terms which are gives to a separate component of training or separate methods of procedures of doing physical exercises, sports, medicine and exercise physiologists also understand training to be doing physical exercise for improvement of performance or of separate performance factors ***(Singh, 1991).***

The term aerobic means living in an air or utilizing oxygen. Aerobic exercises refer to those activities that require oxygen for prolonged periods and place such demands on the body that it is required to improve its capacity to handle oxygen. As a result of aerobic exercise, there are beneficial changes that occur in the lungs, the heart and the vascular system ***(Cooper, 1982).***

Aerobic exercise improves the body's use of oxygen, therefore increasing the ability to store it and transport it, which results in greater slow muscle twitch fibres.

Circuit training is designed to develop cardio respiratory endurance as well as flexibility, strength and muscular endurance in essential muscle groups. It is an efficient training method in terms of gain made in short time ***(Miller, 1974).***

Circuit training is probably the most common training regime used by wide variables of sports activities in order to improve performance. A circuit consists of number of different stations at which the athlete performs a given exercise as many times as possible within a given time period. When the time is completed, the individual moves on to next station and performs a different exercise for a similar period of time and so on around the various stations ***(Connolly and Einzing, 1986).***

Circuit training can provide vigorous activity in a number of fitness and motor ability activities and is aimed at developing all the basic physical fitness components performed in an interesting and an imaginative fashion ***(Johnson and Stolberg, 1971).***

METHODOLOGY

The study was conducted on sixty (N=60) players who have participated in the Anna University inter collegiate tournaments during 2016-2017 were selected randomly as subjects. The subjects were assigned at random into four groups of fifteen each (n=15). Group-I underwent Aerobic Training, Group-II underwent Circuit Training, Group-III underwent Combined Aerobic Training and Circuit Training, Group-IV acted as Control. The duration of the training period for all the three Experimental groups was restricted to twelve weeks and the number of sessions per week was confined to three in a week. For Combined Aerobic Training and Circuit Training the training period was restricted to alternative weeks for twelve weeks. Leg Explosive Power was selected as dependent variable and it was assessed by Sargent Jump test.

ANALYSIS OF THE DATA

The data collected from the experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

The Analysis of covariance (ANCOVA) on Leg Explosive Power of Experimental Groups and Control group have been analyzed and presented in Table -1.

Table – 1
Values of Analysis of Covariance for Experimental Groups and Control Group on Leg Explosive Power

Certain Variables	Adjusted Post test Means				Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
	Aerobic Training Group	Circuit Training Group	Combined Aerobic Training and Circuit Training Group	Control Group					
Leg Explosive Power	42.07	42.00	42.94	39.79	Between	79.60	3	26.53	17.31*
					Within	84.29	55	1.53	

* Significant at.05 level of confidence

(The table value required for Significance at 0.05 level with df 3 and 55 is 2.77)

Table-1 shows that the adjusted post test mean value of Leg Explosive Power for Aerobic Training group, Circuit Training group, Combined Aerobic Training and Circuit Training group and Control group is

42.07, 42.00, 42.94 and 39.79 respectively. The obtained F-ratio of 17.31 for the adjusted post test mean is more than the table value of 2.77 for df 3 and 55 required for significance at 0.05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of Experimental groups on the increase of Leg Explosive Power.

To determine which of the paired means had a significant difference, Scheffe's test was applied as Post hoc test and the results are presented in Table-2.

Table - 2
The Scheffe's test for the differences between the adjusted post tests paired means on Leg Explosive Power

Certain Variables	Adjusted Post test Means				Mean Difference	Confidence Interval
	Aerobic Training Group	Circuit Training Group	Combined Aerobic Training and Circuit Training Group	Control Group		
Leg Explosive Power	42.07	42.00			0.07	1.30
	42.07		42.94		0.87	1.30
	42.07			39.79	2.28*	1.30
		42.00	42.94		0.94	1.30
		42.00		39.79	2.21*	1.30
			42.94	39.79	3.15*	1.30

Significant at.05 level of confidence

Table-2 shows that the adjusted post test mean differences on Leg Explosive Power between Aerobic Training group and Control group, Circuit Training and Control group and Combined Aerobic Training and Circuit Training group Control group are 2.28, 2.21 and 3.15 respectively and they are greater than the confidence interval value 1.30, which shows significant differences at 0.05 level of confidence.

Further the table-2 shows that the adjusted post test mean differences on Leg Explosive Power between Aerobic Training group and Circuit Training group, Aerobic Training group and Combined Aerobic Training and Circuit Training group, Circuit Training group and Combined Aerobic Training and Circuit Training group, are 0.07, 0.87 and 0.94, which is lesser than the confidence interval value 1.30 which shows there is no significant difference at 0.05 level of confidence.

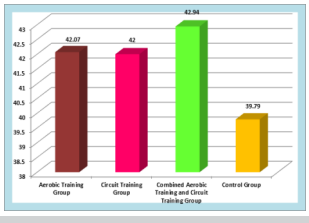
The results of the study further have revealed that there is a significant difference in Leg Explosive Power between the adjusted post test means of Aerobic Training group and Control group, Circuit Training and Control group and Combined Aerobic Training and Circuit Training group Control group.

The results of the study further have revealed that there is no significant difference in Leg Explosive Power between Aerobic Training group and Circuit Training group, Aerobic Training group and Combined Aerobic Training and Circuit Training group, Circuit Training group and Combined Aerobic Training and Circuit Training group.

It may be concluded that the Combined Aerobic Training and Circuit Training group has exhibited better than the other experimental groups in increasing Leg Explosive Power.

The adjusted post test mean value of Experimental groups on Leg Explosive Power is graphically represented in the Figure -1.

Figure-1
Bar diagram on ordered adjusted means of Leg Explosive Power



CONCLUSION

From the analysis of the data, the following conclusions were drawn.

1. Significant differences in achievement were found between Aerobic Training group, Circuit Training group, Combined Aerobic Training and Circuit Training group and Control group in Leg Explosive Power.
2. The Experimental groups namely, Aerobic Training group, Circuit Training group & Combined Aerobic Training and Circuit Training group had significantly improved in Leg Explosive Power.
3. The Combined Aerobic Training and Circuit Training group was found to be better than the Aerobic Training group, Circuit Training group and Control group in increasing Leg Explosive Power.

References

1. Connolly, Christopher and Hetty Einzing(1986), The Fitness Jungle, London: Century Hutchinson Limited.
2. Cooper Kenneth H(1982), The Aerobics Program for Total Well-being, New York: M. Evans and Co.
3. Johnson, Perry and Donald Stolberg (1971), Conditioning, Englewood Cliffs, New Jersey: Prentice Hall, Inc.
4. Miller, Donna Mae(1974), Coaching the Female Athletes, Philadelphia, Lea and Febiger.
5. Singh, Hardayal(1991), Science of Sports Training, New Delhi: D.V.S. Publications.