

# Study of Effects of Selected Circuit Training Program on Leg Explosive Power of Sportsman

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**Abstract**—The objective of the study was to know the effects of selected Circuit training program on Leg explosive power of sportsman. For this study total 60 district level sports selected from district level sports school, the age group 12 to 17 years were selected for the study. 60 students equally divided into two groups i.e. 30 sportsmen in experimental Group and 30 sportsmen in Control Group. Selected Circuit training was given to experimental group and no training given to control group. It was hypothesis that that there will be significant difference between selected Circuit training program and Control Group on selected Leg explosive power. To determine the effects on Circuit training, a one-way analysis of covariance test was applied, with significance tested at the 0.05 level. Total duration of training was 12 weeks. Study was indicated that selected Circuit training program impact significant effect on leg explosive power. The study was also indicated that selected Circuit training program impact significant effect on leg explosive power, it means the leg explosive power was decreases by the selected Circuit training program.

## I. INTRODUCTION

Circuit exercises" refer to a type of exercise that focuses on rapidly stretching a muscle and then immediately contracting it to produce maximum force in a short period of time, essentially training muscles to generate explosive power, often involving jumping movements like box jumps, depth jumps, and squat jumps; primarily used by athletes to improve performance in sports requiring quick bursts of energy like sprinting or jumping.

Circuit is defined as the exercises that enable a muscle to reach maximum force in a short period of time. Circuit training is a series of explosive body weight resistance exercises using the stretch-shortening cycle (SSC) of the muscle fiber to

enhance physical capacity such as increasing musculotendinous stiffness and power. It is a quick, powerful movement involving pre-stretching the muscle tendon unit followed by a subsequent stronger concentric contraction. This process of muscle lengthening followed by rapid shortening during the SSC is integral to Circuit exercise. The SSC process significantly enhances the ability of the muscle-tendon unit to produce maximal force in the shortest amount of time. These benefits have prompted the use of Circuit exercise as a bridge between pure strength and sport-related power and speed. Circuit exercise is a popular form of training used to improve athletic performance.

## II. OBJECTIVE OF THE STUDY

The objective of the study was to know the effects of selected Circuit training program on Leg explosive power of sportsman.

## III. MATERIAL AND METHODOLOGY

For this study total 60 district level sports selected from district level sports school, the age group 12 to 17 years were selected for the study. 60 students equally divided into two groups i.e. 30 sportsmen in experimental Group and 30sportsmen in Control Group. Selected Circuit training was given to experimental groupand no training given to control group. It was hypothesis that that there will be significant difference between selected Circuit training program and Control Group on selected Leg explosive power. a one-way analysis of covariance test was applied, with significance tested at the 0.05 level, which is considered adequate for the purpose of the study. Total duration of training was 12 weeks.

Table-1 Covariance analysis of the performance of an experimental and a control group in an Leg explosive power

sTest	Group		Covariance analysis				
	Experimental Group	Control Group	Sum of squares		DF	Mean square Sum	F
Pre-test Mean	1.73	1.79	A	0.048	1	0.048	2.828
			W	0.976	58	0.017	
Post-test Mean	1.87	1.76	A	0.164	1	0.164	5.883*
			W	1.620	58	0.028	
Adjusted Mean	1.89	1.74	A	0.329	1	0.329	19.847*
			W	0.944	57	0.017	

The above table - 1 shows all the statistical data of the pre-test and final test means and analysis of covariance 'F'. Accordingly, the 'F' ratio of the pre-test means of the leg explosive force test performance (experimental training group = 1.73, and control group = 1.79) was found to be 2.828. Comparing this with the table value (4.007), it was not found to be significant at the 0.05 level. Therefore, the division of the subjects into the experimental group and the control group was successful. The 'F' ratio of the final test means of both the groups (experimental training group = 1.87, and control group = 1.76) was found to be 5.883. Which was found to be significant at the 0.05 level when compared with the table value (4.007). Therefore, the training provided proved to have improved the performance of the subjects at a significant level. In addition, the 'F' ratio of the corrected medians (Experimental Training Group = 1.89, and Control Group = 1.74) was found to be 19.847. Which was found to be significant at the 0.05 level when compared with the table value (4.010). The difference between the corrected medians of both the groups found to be significant by the 'F' ratio.

#### IV. RESULTS OF THE STUDY

Therefore, it can be said that the 12-week Circuit training given to the experimental group was beneficial; therefore, the experimental group was more effective than the control group.

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