

## **Effect of Circuit Training on Motor Fitness and Volleyball Skill Performance of Male Volleyball Players**

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### **Abstract:**

The purpose of this study was to see how Circuit Training affected on selected motor fitness measures and volleyball skill performance in male volleyball players. Thirty male volleyball players from Gujarat state, ranging in age from 18 to 25, were chosen as subjects for the study. They were randomly divided into two groups: experimental and control, each of which included 15 topics. Explosive power, cardio-respiratory endurance, and muscular strength were the motor fitness factors. Prior to and after the trial, the subjects' volleyball skill performance was evaluated using the Brady volley test and the Russell Lange serving exam. For eight weeks, the experimental group participated in a Circuit Training programmed three days each week. The information was statistically analyzed. ANCOVA ( $P \leq 0.05$ ) Circuit Training considerably improved explosive power, cardio respiratory endurance, muscular strength ( $P < 0.05$ ), as well as volleyball skill performance such as volleying ability and serving ability, according to ANCOVA ( $P < 0.05$ ) and the results..

**Key words:** Interval Circuit Training, Motor Fitness, Volleyball

### **Introduction**

When it comes to developing or refining a sport skill, training and technique are crucial. Normally, as the skill adapts to training, the efficiency of the skill improves. Circuit training, together with strength, flexibility, and mental skills training, has now become an important component of the overall programme, particularly in sports where strength and endurance are required. Circuit training's goal is to condition the athlete to move at a rapid rate while using maximum power when needed. The neuromuscular system must be conditioned to exceedingly quick movements, and training must be very specific in order to achieve this. Circuit

training is an exercise programme in which you perform a series of timed exercises at a fast pace followed by a brief period of rest. Circuit training workouts may goal the entire body or just one specific area, such as the arms, legs, or chest. In addition, circuit training workouts may focus on strength training, aerobics, or a combination of the two; the possibilities are virtually limitless. Circuit training usually consists of discontinuous exercise connecting exercising for a fixed number of repetitions using a sequence of stations connecting light resistance training. Each station usually involves an equal exercise: rest ratio lasting among 60-120 sec. In essence, circuit training is similar to a combination of aerobic and resistance exercise (McCarthy et al, 1995; Maiorana et al, 2002; Park et al, 2003; Takeshima et al, 2004). Studies display that circuit training is the most time efficient way to enhance cardiovascular fitness and muscle endurance and that it helps to achieve their goals and maintain them longer than other forms of exercise. Previous researches have also proved that light-resistance circuit training produces marked reduction in body fat both in athletes and sedentary individuals (Mosher et al, 1998; Dolezal and Potteiger, 1998; Balducci et al, 2004; Chtara et al, 2005). The purpose of this study was to find out the effect of Circuit Training on motor fitness and volleyball skill performance of male volleyball Player.

### **Methodology**

To achieve this purpose thirty male volleyball players from the Gujarat state, were selected as subjects, of which fifteen each as experimental group and control group. The subjects were taken in the age group among 18 and 25 years. The selected dependent variables namely muscular strength, cardio respiratory endurance, explosive power and volleyball skill performance variables namely Brady volley test and Russell Lange serving test were assessed using standard tests and procedures, prior to and directly after the training protocol. The experimental group underwent Circuit Training program for three days a week for eight weeks. The participants performed the following exercises namely squat jumps, Burpees, dumbbell squat and swings, tuck jumps, squat thrusts, fast feet on box, jumping jacks, alternating split squat respectively. The experimental design used for the present investigation was random group design including thirty subjects. Analysis of covariance (ANCOVA) was used as a statistical technique to determine the significant variance, if any,

existing between pretest and post test data on selected dependent variables. The level of significance was recognized at 0.05 levels.

## Results and Discussions

The results of the analysis regarding the impact of Circuit Training on selected motor fitness and volleyball skill performance and it is presented in Table-I.

**Table I: Analysis of Covariance on Selected motor fitness and volleyball skill performance of Circuit Training Group and Control Group**

Variables	Groups	Adjusted Mean	SOV	Sum of Squares	df	Mean Square	'F' ratio
Muscular strength	Experimental	38.73	B	223.72	1	223.72	89.39*
	Control	32.88	W	67.57	27	2.503	
Cardio-Respiratory endurance	Experimental	2618.66	B	171153.3	1	171153.3	31.46*
	Control	2487.33	W	146890.3	27	5440.38	
Explosive power	Experimental	55.67	B	38.76	1	38.76	30.05*
	Control	49.47	W	34.73	27	1.29	
Brady volley test	Experimental	43.71	B	32.78	1	32.78	25.49*
	Control	40..02	W	34.71	27	1.29	
Russell Lange serving test	Experimental	33.76	B	401.14	1	401.14	73.87*
	Control	30.42	W	146.51	27	5.43	

\* Required table value for significance at 0.05 level of confidence for df of 1 and 27 is 4.21

Training group and control group on muscular strength, cardio respiratory endurance, explosive power, Brady volley test and Russell Lange serving test, since the obtained 'F' ratio of 89.39, 31.46, 30.05 and 25.49, 73.87 respectively were higher than the required table value of 4.21 for significance at 0.05 level of confidence for df of 1 and 27. Hence it is concluded that eight weeks of Circuit Training can produce significant variations on muscular strength, cardio respiratory endurance, explosive power, Brady volley test and Russell Lange serving test performance.

Based on the statistical analysis of the data it is concluded that eight weeks of Circuit Training can produce significant variations on muscular strength, cardio respiratory endurance, explosive power, serving test performance as in Brady volley

test and Russell Lange. Kaikkonen and others (2000) observed significant progress on cardiovascular and muscular fitness due to the effect of a 12-week low resistance circuit weight training.

Gettman and others (1978) conducted a study to determine the changes elicited by circuit weight training and running (RN) programs showed 3 days per week for 21 weeks. It was concluded that the circuit weight training program was most specific in improving strength and moving body composition and aerobic capacity. Baquet et al. (2004) carried out an investigation as to analyze the effect of seven-week interval training programme on physical fitness components of adolescent children and the results pointed out significant improvement in standing broad jump and 20-meter shuttle run. This indicates that the interval training programme resulted in the improvement of aerobic performance and explosive power of the subjects. This is also parallel to the findings of the present study.

## **Conclusions**

Circuit Training has a substantial effect on muscular strength, cardio pulmonary endurance, explosive power, Brady volley test, and Russell Lange serving test performance, according to the findings of this study. As a result, it is proposed that Circuit Training adaption variations are quite dynamic and vary for each individual.

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