

**Impact  
Factor  
2.147**

**ISSN 2349-638x**

**Refereed And Indexed Journal**



**AAYUSHI  
INTERNATIONAL  
INTERDISCIPLINARY  
RESEARCH JOURNAL  
(AIIRJ)**

**Monthly Publish Journal**

**VOL-III**

**ISSUE-  
XII**

**Dec.**

**2016**

**Address**

- Vikram Nagar, Boudhi Chouk, Latur.
- Tq. Latur, Dis. Latur 413512
- (+91) 9922455749, (+91) 9158387437

**Email**

- aiirjpramod@gmail.com

**Website**

- www.aiirjournal.com

**CHIEF EDITOR – PRAMOD PRAKASHRAO TANDALE**

## “Effects Of Circuite Training On Power Ability In Collegite Athlete”

**Atul R Patil,**

RDIK&KD College, Badnera ,  
Amravati

### Abstract

*Circuit training is a comparatively new addition in the field of Physical Training, making its appearance in the mid 1950's, with new varieties, such as Boxercise and Body Pump, coming on the scene each year. The aim of Circuit Training is a progressive development of the muscular respiratory systems. The purpose of the research was to effects of Circuit training on power ability among collegiate Athletes .The 50 collegiate Athletes as an experimental group who were playing intercollegiate track and field Competition in Amravati and their age ranged between 18-28 years. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The Circuit training was planned as 12 weeks 5 days a week and 60 min. The result reveals that there was significant effect of Circuit training on Athletic power ( $T= p<.05$ ) and work power ( $T=, p<0.05$ ). It is found that Circuit training improve the athletic and work power performance of collegiate Athletes.*

### Introduction

Circuit training is a comparatively new addition in the field of Physical Training, making its appearance in the mid 1950's, with new varieties, such as Boxercise and Body Pump, coming on the scene each year. The aim of Circuit Training is a progressive development of the muscular respiratory systems. (Circuit Training Exercise achieves all round fitness).

Circuit training is a modality of exercise that has grown in popularity over the past two decades, particularly for its role in improving athletic performance by increasing muscular strength, power and speed, hypertrophy, local muscular endurance, motor performance, balance, and coordination (Aaberg, 1999;Starkey1996). The benefits of Circuit training in both competitive and recreational athletes have been well documented over the past Two decades. Improvements in muscle strength and power, increase in muscle size, and improvement in sports performance are common benefits resulting from Circuit training

### Materials and Methods

**Subjects:** The 50 collegiate Athletes as an experimental group who were playing intercollegiate track and field Competition in Amravati and their age ranged between 18-28 years selected as a subject for present study. The Circuit training was planned as 12 weeks 5 days a week and 60 min. Only training was given to the experimental groups. Voluntary to participate in the Circuit training programmes. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The subjects were free of smoking, alcohol and caffeine consumption, antioxidant supplementation and drugs during the programmes. They completed an informed consent document to participate in the study. The age, height, weights, power ability of all subjects were measured.

**Research Design:** The design in a research study refers to “the researcher’s overall plan for answering the researcher’s question or testing the research hypotheses. This study involves the effects of Circuit training on Power ability on collegiate athletes as quasi experimental design.

**Training Programme:** The exercise session should consist of the following

- 1) A warm-up period of approximately 10 minutes this should combine calisthenics’ type stretching exercises and progressive aerobic activity that should increase the heart rate close to the prescribed heart rate for the session.
- 2) A cool-down period of 5-10 minutes. Training program would be planned as 12 weeks 5 days a week and 60min. Day the level of training intensity is increased from initial 50% to 70% during twelve weeks students were trained according to protocol of three sets, 8-12 repeat and 3-5 minutes break between each set circuit training programs were created in the frame of these criteria.

**Parameters measurements:** Power generally measured by two methods Athletic power measured by using the Standing Broad Jump test and work power test would be measured by using the Vertical Power Jump test.

A) **Athletic Power:** Athletic power measured by the Standing Broad Jump.

**Standing Broad Jump:** This test measures the power of legs in jumping horizontal distance and may be applied to children of both sexes aged seven years above.

**Equipment:** Floor Mat or long jump pit may be used, measuring tape, marking tape.

**Test Administration:** A demonstration of the standing Broad jump is given to a group of Subjects to be tested. The Subject is then asked to stand behind the starting line with the feet parallel to each other. He is instructed to jump as farthest as possible by bending knees and swinging arms to take off for the broad jump in the forward direction. The subject is given three trials.

**Scoring:** The distance between the starting line and the nearest point of landing provides the score of the test. The best trial is used as the final score of the test.

B) **Work Power :** work power test measured by the Vertical Power Jump.

**Vertical Jump:** This test measures the power of legs in jumping vertically and can be applied to children of both sexes aged nine years and above.

**Equipment:** A Black board of 4.5 feet x 2 feet painted with green and red lines ,one inch apart and one feet apart respectively ( The board is fixed firmly to a wall, preferably 6 a weighing scale (optional). In case, the blackboard is not available, a smooth and plain wall may be painted black for use in this test.

**Test Administration:** In the beginning a demonstration of the vertical jump, is given to a group of five to ten subject is asked to stand erect facing the board . His dominant hand’s fingertips are marked with chalk powder and the subject is asked to raise the marked fingertips to a maximum height on the blackboard without lifting the heels so as to mark his maximum reach point. The fingertips are rechalked. With the chalked hand side towards the wall, a vertical jump is to be performed by the subject to make another mark at the maximal height of the jump. The subject is not allowed to run or hop. However, the subject is properly instructed to take a good jump by bending the knees and swinging the arms. The subject may be given three to five trials at his will and the best performance is considered.

**Scoring:** The maximum distance between the reaching height and the jumping height provides the score the test. However, to get the power in foot-pound units, the above distance is multiplied by

the subject's body weight. But majority of the testers routinely use directly the distance jumped irrespective of body weight as the score of the test.

#### Collection Of Data:

The 50 collegiate Athletes from Amravati and their age ranged between 18-28 years. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the experimental tests. The Circuit training was planned as 12 weeks 5 days a week and 60 min.

**Results Of The Study:** As the primary aim of the study was to statistically effects of Circuit training on power ability collegiate students . With the help of mean Standard Deviations &T-ratio

**Table-1**  
Shows Mean Scores and Standard Deviations of Morphological characteristics of the Collegiate students

Sr. No.	Components	Means Scores	Standard Deviation
1.	Age (Year)	21.07	4.61
2.	Weight (Kg)	66.19	5.22
3.	Height (cm)	171.60	9.56

Mean Score (S.Ds.) age of experimental group was 21.07 (4.61) years, mean score (S.Ds.) weight was 66.19 (5.22) kg., mean score (S.Ds.) and height was 171.60 (9.56) cm,

**Table-2, Mean Scores and Standard Deviations of Pre and Post-test of Work Power among Experimental group.**

components	Test	Number	Mean Scores(cm.)	S. Ds	T-Ratio
Work Power	Pre Test	50	41.40	3.60	3.87
	Post Test	50	56.98	4.25	

Significant at 0.05 level

**Table-2,** illustrates the mean scores and standard deviations of work **Power** using through Vertical Jump test among experimental group.

The mean scores obtained from Table 2, the mean score of Pre-test was 41.40 and the post test was 56.98 respectively of **work Power** among experimental group. In addition standard deviations of Pre-test were 3.60 and the post test was 4.25 respectively of **work Power** among experimental group. The result of the study shows that there was significant effects of circuit training were found on Work power among collegiate athletes.

**Table-3, Mean Scores and Standard Deviations of Pre and Post-test of Athletic power ability among Experimental group.**

components	Test	Number	Mean Scores(cm.)	S. Ds	T-Ratio
Athletic Power	Pre Test	50	220.86	8.98	3.67
	Post Test	50	258.90	9.34	

Significant at 0.05 level

**Table-3**, illustrates the mean scores and standard deviations of **Athletic power** using through Standing Broad Jump test among experimental group. The mean scores obtained from Table 3, the mean score of Pre-test was 220.86 and the post test was 258.90 respectively of **Athletic power** among experimental group. In addition the standard deviations of Pre-test were 8.98 and the post test was 9.34 respectively of **Athletic power** among experimental group. The result of the study shows that there was significant effects of circuit training were found on Athletic power among collegiate athletes

### Discussion

The results reveal that there was significant effect of Circuit training was found out on work power and Athletic power among collegiate athletes. Jump performance has been a standard assessment of athletic strength and power in the lower body (Fatourous, 2000). Coaches and athletes have looked on this test as a predictor for athletic potential in many sports including weightlifting, football, basketball, volleyball, and track. Low strength attributable to poor muscular development hinders athletic performance including vertical jump and should be the primary training objective for the less-trained individual (Maffiuletti, 2002; Brown, 1986). Circuit training has been shown to improve vertical jump performance as much as 2–8 cm or 5–15%, it seems that lighter, more explosive lifts may be more effective than heavier lifts that are performed at lower velocities (Holcomb, 1996; Umesh, 2010; Fatourous, 2000). As a result, when training for explosive movements, relatively light ballistic Circuit exercises may be the most appropriate training model and offer the greatest potential for improvement in vertical jump performance (Anderst, 1994, Poole, 1987). Athletic performance in many sports demands the development of muscle strength, which is required for other performance related characteristics, notably speed and power. Muscle strength is routinely developed through prolonged participation in a structured Circuit exercise programmes. It is well recognized that athletic power is very important because poor physical capacity limits the ability to play at a higher level. Ideally, athletes should be selected at a young age then given correct coaching in skills and tactics, as well as a progressive conditioning programme to enable them to perform at high intensities throughout matches. Several male athletes have some conditioning background and whether this is correct or not, they usually see the benefits of circuit training for their sport (Poiss, 2004; Dorgo).

### References

1. **Blakey, J.B., and D. Southard (1987)** the combined effects of weight training and plyometrics on dynamic leg strength and leg power. *J. Appl. Sports Sci. Res.* 1:14–16. 1987
2. **Brown, M.E., et al. (1986)** Effect of plyometric training on vertical jump performance in high school basketball players. *J. Sports Med. Phys. Fitness Q. Rev.* 26:1–4. 1986.
3. **Dalgas U, (2009)**, Circuit training improves muscle strength and functional capacity in multiple sclerosis. *Neurology*. 2009 Nov 3;73(18):1478-84

4. **DevinderK. Kansal,(1996)**“Test and Measurement in sports and physical education” (New Delhi: D.V.S. Publications1996).
5. **Fatourous, I, et al.( 2000)** Evaluation of plyometric exercise training, weight training, and their combination on vertical jump performance and leg strength. *Journals of Strength Conditioning Research* 14: 470–476, 2000.
6. **Holcomb, W.R., et al. (1996)**The effectiveness of a modified plyometric program on power and the vertical jump. *J. Strength Cond. Res.* 10:89–92.1996.
7. **Holcomb, W.R., et al.( 1996)**The effectiveness of a modified plyometric program on power and the vertical jump. *J. Strength Cond. Res.* 10:89–92.1996.
8. **Izquierdo, M., et al. (2001).** Effects of Strength Training on Muscle Power and Serum Hormones in Middle-Aged and Older Men. *J Appl. Physiol.* 90(4):1497-1507.
9. **Maffiuletti N, et al.(2002)** The effect of electro stimulation training and basketball practice on muscle strength and jumping ability. *International Journalof Sports Medicine* 2002; 21(6): 437-443.
10. **Poole, W. and M. Maneval. (1987)**The effects of two ten week depth jumping routines on vertical jump performance as it relates to leg power. *J. Swim. Res.* 3:11–14. 1987
11. **Starkey DB, et al. (1996),** Effect of Circuit training volume on strength and muscle thickness. *Journal of Medicine and Science in Sports and Exercise* 1996; 28:1311-1320.
12. **UmeshMuktamath et.al.(2010),** Effects of two modes of Circuit training on speed leg explosive power and anaerobic power of college men students ,*British Journal of Sports Medicinebjsm.bmj.com, Volume 44, Issue Suppl 1Sports Physiology*

