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## A comparative study of the effect of circuit training on speed, agility and endurance among physical education students of Mewar University, Chittorgarh Rajasthan

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### Abstract

The History shows evidence that interval training, fartlek training and repetition running were used as conditioning factors to improve speed, agility and endurance. Now-a-days circuit training was divided to improve strength and endurance used almost in all track and field events and games to improve the strength and endurance of the players. The Researcher was interested in conducting a study to find out, if there was significant effect on speed, agility and endurance among physical education students through circuit training.

Forty male subjects from Mewar University Chittorgarh Rajasthan were selected at random as the subjects for the study. During the pre-test period, the subjects were asked to do 50 yard dash, SEMO agility and 12 minute run walk and their initial performance was recorded.

Then the group was administered the programme of circuit training, for a period of six weeks. Selected exercises were regularly done in the morning, there circuits a day and thrice in a week. At the end of the experimental period of six weeks, again the subjects were asked to do 50 yard dash, SEMO agility and endurance and their final performance was recorded.

**Keywords:** Comparative study, circuit training, speed, agility, endurance etc.

### Introduction

Football is Physical fitness as an important quality for every athlete to perform his task with vigor and alertness without undue fatigue Fitness is the ability of the individual to live a full and balanced life. It involves physical, mental and emotional and spiritual factors and the capacity for their wholesome expression.

Mans existence and effectiveness depend upon his Muscles. Muscular efficiency including strength and endurance is essential to man. Man needs vigorous exercise for growth and development. A muscle must be overload in order to be strengthened. If not it will become weak and degenerate. It is a biological principle that function builds structure and structure decides function.

It is true that organs and muscles that are used will develop and those that are not used will disappear.

Man now needs a stronger body than he has had, not only for specific tasks but to enable him to with stand the strain of living. Strength has become an important trait for an athlete to perform his task in the athletic field. The value of strength in athletics is not a new idea. Hooks States “the good strong man will always beat the good weak man.

A combination of the techniques of weight lifting with the principles of “circuit training” results in a system of continuous exercise which brings about significant improvement in cardiovascular respiratory efficiency and muscular endurance. Through circuit training the athletes may increasing their strength and endurance by in area sing the repetitions of exercise at each station or by doing the required frequencies of exercise in a shorter length of form. If the work load is kept constant, the athletes can develop strength and endurance by gradually decreasing the time taken to go through the circuit. (Shea)

**Circuit training:** “In circuit training the athletes goes from one exercise to another in a planed sequence and in the shortest possible time.”

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**Circuit**

“Circuit is the term used to designate the total series of exercises casually eight to twelve exercises.”

**Speed**

Speed is the ability of an athlete to move as fast as possible, through the optimal range of motion, in a deliberate and intentional manner, in a particular direction. Speed is not just measured on how fast a person is either; there are several components of measurement that give a complete picture of an athlete's speed.

**Agility**

“Agility can be defined as the ability of the individual to change the direction of his entire body or parts of his body accurately and rapidly.”

**Endurance**

“Endurance is conserved to be the capacity of an individual to sustain movement or effort over a period of time.

**Methodology**

The purpose of this study was to investigate the effect of selected circuit training on speed, agility and endurance among physical education students. To fulfill this aim 40 students of Mewar University, Chittorgarh Rajasthan were selected as subjects by random sample selection.

**Sampling method**

The simple random sampling was applied to select the subjects for this study.

**Selection of subject**

Total twenty control & twenty experimental students of Mewar University Chittorgarh Rajasthan were selected as a subject for the presented studies & their age ranged from 18 to 26 years were selected.

**Selection of variables**

The following variables were selected as present study.

**Physical variables**

- a) 50 yard dash.
- b) Semo agility.
- c) 12 Minutes Run Walk.

For the physical variables the AAPHER physical fitness test were used.

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**(i) 50 yard dash**

**Purpose:** To find out the speed of the subject.

**Equipment:** Stopwatch, measuring tape.

**Scoring:** The interval between the starting signal & the instant subject crosses the finish line is the score of the test. The time is recorded correct up to tenth of a second.

**(ii) Semo agility**

**Purpose:** To measure agility ability of the subjects.

**Equipment:** Stopwatch, four plastic cones and basketball court.

**Scoring:** Each subject is given two trails and time of each trail is noted accurate up to 0.1 second. The lesser value of the time out of the two trails is the score of the subject.

**(iii) Minutes Run Walk**

**Purpose:** To find out the endurance of the subject.

**Equipment:** Track & stopwatch.

**Scoring:** The time taken to 12 Minutes Run walk recorded in 12 Minute score of the test.

**(iv) Experimental variable**

The group was subject to the experimental treatment. six circuit station were fixed with fixed with specific exercise, with specified sistance or number of repetitions for each exercise, for three complete circuits of six exercises. This group was under this training for three days a week over a period of six months.

**Tools of the study**

For the present study, modified tools were used for data collection stopwatch, measuring tape.

**Collection of data**

Data was collected on Mewar University Chittorgarh Rajasthan at the department of physical education and sports, through 20 control and 20 experimental group subjects. Tests were conducted on the subjects and their raw scores were collected.

**Statistical analysis**

To analysis of data mean, standard deviation and t-ratio were used to significant value of 0.05 level.

**Analysis of data and result of the study**

The result of the study present through table and figures, which are given below.

Mean score, standard deviation and t- value of Experimental and Control group students with respect to 50 yard dash, Semo Agility and 12 minute Run-Walk variables.

**Table 1:** Shows statistical comparison of Speed between pre-test and post-test of Experimental group is as under

Group	Mean	SD	T-ratio
Pre-test	7.43	1.32	0.07
Post-test	7.40	1.32	

N = 20

From the above table it is observed that the mean of Experimental group students in per-test and post-test is 7.43 and 7.40 respectively. After applying “t” test it is found that the t-ratio is 0.07 which was not significant at the 0.05 level of significance.

**Table 2:** Shows statistical comparison of Speed between pre-test and post-test of Control group is as under

Group	Mean	SD	T-ratio
Pre-test	8.45	2.32	2
Post-test	8.31	2.15	

N = 20

From the above table it is observed that the mean of Control group students in per-test and post-test is 8.45 and 8.31 respectively. After applying “t” test it is found that the t-ratio is 2 which was not significant at the 0.05 level of significance.

**Table 3:** Shows statistical comparison of Agility between pre-test and post-test of Experimental group is as under:

Group	Mean	SD	T-ratio
Pre-test	12.78	1.20	0.51
Post-test	12.59	1.22	

N = 20

From the above table it is observed that the mean of Experimental group students in per-test and post-test is 12.78

and 12.59 respectively. After applying “t” test it is found that the t-ratio is 0.51 which was not significant at the 0.05 level of significance.

**Table 4:** Shows statistical comparison of Agility between pre-test and post-test of Control group is as under

Group	Mean	SD	T-ratio
Pre-test	13.07	0.96	0.25
Post-test	13.17	1.56	

N = 20

From the above table it is observed that the mean of Control group students in pre-test and post-test is 13.07 and 13.17 respectively. After applying “t” test it is found that the t-ratio is 0.25 which was not significant at the 0.05 level of significance. N = 20

**Table 5:** Shows statistical comparison of endurance between pre-test and post-test of Experimental group is as under

Group	Mean	SD	T-ratio
Pre-test	1755	446.45	0.65
Post-test	1845	423.64	

N = 20

From the above table it is observed that the mean of Experimental group students in pre-test and post-test is 1755 and 1845 respectively. After applying “t” test it is found that the t-ratio is 0.65 which was not significant at the 0.05 level of significance.

**Table 6:** Shows statistical comparison of Endurance between pre-test and post-test of Control group is as under

Group	Mean	SD	T-ratio
Pre-test	1845	471.03	2.18
Post-test	1530	438.29	

N = 20

From the above table it is observed that the mean of Control group students in pre-test and post-test is 1845 and 1530 respectively. After applying “t” test it is found that the t-ratio is 2.18 which was not significant at the 0.05 level of significance.

### Discussion and findings

The present study deals with “The effect of circuit training on speed, agility and endurance among physical education students” Their range of age is between 18-26 years.

1. The hypothesis of the present study that there would be significant effect of circuit training on speed among experimental group of physical education students. After applying “t” test it is found that the t-ratio is 0.07 which was not significant at the 0.05 level of significance.
2. The hypothesis of the present study that there would be significant effect of circuit training on speed among control group of physical education students. After applying “t” test it is found that the t-ratio is 2 which was not significant at the 0.05 level of significance.
3. The hypothesis of the present study that there would be significant effect of circuit training on agility among experimental group of physical education students. After applying “t” test it is found that the t-ratio is 0.51 which was not significant at the 0.05 level of significance.
4. The hypothesis of the present study that there would be significant effect of circuit training on agility among control group of physical education students. After applying “t” test it is found that the t-ratio is 0.25 which was not significant at the 0.05 level of significance.
5. The hypothesis of the present study that there would be

significant effect of circuit training on endurance among experimental group of physical education students. After applying “t” test it is found that the t-ratio is 0.65 which was not significant at the 0.05 level of significance.

6. The hypothesis of the present study that there would be significant effect of circuit training on endurance among control group of physical education students. After applying “t” test it is found that the t-ratio is 2.18 which was significant at the 0.05 level of significance.

### Conclusion

Mean, S.D and t- ratio were utilized to compare the selected physical variable between control and experimental groups among physical education students.

On the basis of statistical result the following conclusions were drawn within the limitation of the study.

1. There was no significant effect of speed between control group and experimental group among physical education students.
2. There was no significant effect of Agility between control group and experimental group among physical education students.
3. There was significant effect of Endurance between control group and experimental group among physical education students.

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