



EFFECT OF CIRCUIT TRAINING PROGRAMME ON SELECTED PHYSICAL FITNESS VARIABLES AMONG SPORTS PERSON

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Abstract

The purpose of this study was to find out the effect of circuit training on selected physical fitness variables among sports persons. For the present study 40 male college sports persons (n=40) of Rajarshi shahu College Pathri were randomly selected as a subject and their age ranged between 18 to 25 years. The selected subjects were randomly assigned into two equal groups such as circuit training group (CTG) and control group (CG) with twenty subjects each (n=20). The experimental (circuit training) group underwent their respective experimental training for six weeks and a session on every day. Control group was not undergone any specific training apart from their regular activities. The data was collected before and after six weeks of training period. Independent t-test was applied for calculate the differences between both groups. The level of significance was set at 0.05 levels. It was concluded on the basis of results that circuit training has significant effect on all selected physical fitness variables.

Keywords - Circuit training, physical fitness, sports persons.

I. Introduction:

Physical fitness is a current issue for researchers to deal with level of physical fitness is deteriorating due to advancement in technology and lack of activity and interest towards sports. It is very important for sports person and common man also. Physical fitness is set of attributes to health or skill that people have achieved which is measured with specific tests (Casperson, C. J., Powell, K. E. & Christensen, G. M., 1985).

Physical fitness is the balanced development of muscular strength, speed, muscular endurance, muscular co-ordination, cardiovascular endurance, flexibility and agility also which is outcomes of proper planed training so it is needed to develop the components of physical fitness. It is known that planning long term fitness programme is the best way to improve these components (Donnnelly et. al., 2009). Many countries are promoting physical fitness improvement among young people in different ways in the last decades (Department of Health and Human Services, 1990).

Circuit training is one of the training methods which are given number of exercises arranged in a given area, it is based on sound anatomical, kinesiological and physiological principals designed to increase strength, speed, power, flexibility and cardiovascular endurance also. Circuit training provides a strenuous workout entirely studied to an individual's specific needs, existing capacity and rate of adjustment to progressive vigorous exercises according by Howell & Morford (1964) and Hockey (1981).

The basic assumption underlying circuit training is that important takes place either by going the same amount of work in a shorter period by doing more work in a given time. Circuit training utilizes 3 variables of load, repetitions and time, and this places it on an advantage over alternative coaching strategies.

II. Review of Related Literature :

A review of related literature shows that this study conducted by various authors shown a remarkable increase in the performance in various sport fields. Dr. R. Senthil Kumaran (2018) performed experiments with progressive loading which led to circuit training. For the present study 30 male physical education students were selected in two balanced groups which had six weeks training period. Pre-test and post-test random design which consists of experimental group and control group was used. Findings indicated that circuit training had positive impact on muscular endurance and flexibility among physical education students than the control group.

Sunita Rani & Dr. Ashok Malik (2017) studied on the effects of circuit training on selected physical fitness variables of sports persons. They were selected 28 state level healthy male subjects from various games like as Athletics, Football, Cricket and Hockey of 15 to 19 years age. Subjects were equally distributed in to two groups i.e. experimental and control group. Experimental group had offered selected training for six week. They were stated that circuit training is effective in improving muscular strength and endurance of arm, shoulders and trunk, speed and agility, speed of lower extremities and cardio-vascular endurance also.

Vikesh Kumar (2016) examined the effect of circuit training program on selected motor abilities among male students of Guru Nanak Dev University, Amritsar. Total Sixty (n=60) male subjects age ranged from 18 to 25 years were selected for this study. The subjects were purposively divided in two groups i.e. experimental and control group. The duration of training was eight week. The training programme was consists of sit-ups, push-ups, squat jumps, compass jumps, astride jumps and shuttle run were selected for the main training schedule. According by researcher circuit training had significantly improved speed, leg, arm power and agility also. Similar findings carried out by Dr. M. Suresh Kumar (2014).

Ab Raof Bhat, Javaid Ahemad Shaikh & M. Kalimuthu (2017) performed experience with effect of circuit training on college male students. Total Thirty (n=30) male subjects age ranged from 18 to 24 years were selected for this study. The subjects were purposively divided in two groups i.e. experimental and control group. The duration of training was eight week for experimental group but control group did not involve in any special training apart from their regular activities. As per researcher statement circuit training is one of the best training methods for improving the agility as well as the all over physical fitness of students.

Satyanarayana Raju P. & Syam Babu M. (2017) studied on effect of circuit training for development of endurance among football players. The samples for this study consists of twenty (n=20) male players of Andhra University out of which 10 are experimental group and 10 are controlled group also, circuit training exercises given to experimental group on alternate day, three session per week and controlled group given general training for six weeks. Findings indicated that circuit training is important to increase endurance in players.

III. Methodology :

3.1- Subject:

For the present study forty (n=40) male sports persons from Rajarshi Shahu College Pathri, Aurangabad, Maharashtra were selected at random and their age ranged from 18 to 25 years. For the present study was used pre-test and post-test random group design which consist of experimental and control group group. The group subjects were randomly assigned to two equal groups of twenty (n=20) each group. Group-I underwent circuit training it's called as experimental group and another Group-II has not undergone any training it's called as control group. Data was collected before and after six weeks of training period.

3.2- Selection of variables:

The following variables were selected for the present study.

- a. Speed
- b. Leg Explosive Strength
- c. Endurance
- d. Flexibility
- e. Agility

3.3- Administration of Test:

Following test were administrated to considering the physical fitness variables.

1. 50 yard dash
2. Standing broad jump
3. 12 minutes Run / Walk
4. Sit and Reach
5. Shuttle Run

3.4- Statistical Analysis:

The data collected in the study was subjected to statistical analysis with appropriate use of SPSS package. Central tendency was judged by calculating mean and variability was assessed by standard deviation. T-test was used to find out the statistical significances of each groups pre and post mean differences. The level of significance set at $p < 0.05$ level of confidence.

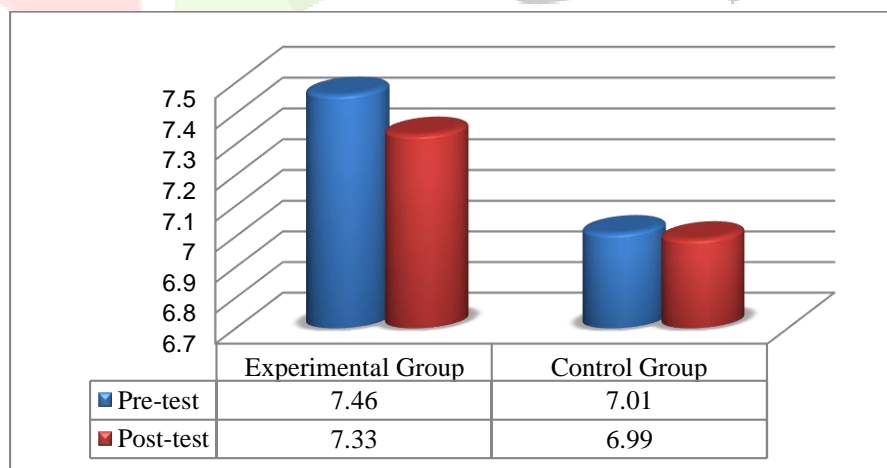
IV. Result and Discussion:

Based on 6-week circuit training exercise program the following results were obtained with respect to the effect of circuit training on selected physical fitness variables of sports persons.

Table 1: Shows descriptive statistics of selected physical variables among sports persons.

Sr. No.	Variables	Group	Pre-test		Post-test		T-value
			Mean	SD	Mean	SD	
1	Speed (In Secs)	Experimental	7.46	0.416	7.33	0.475	3.145
		Control	7.01	0.238	6.99	0.312	0.724
2	Leg Explosive - Strength (In Mtrs)	Experimental	1.91	0.013	1.99	0.014	4.053
		Control	1.89	0.069	1.92	0.056	0.280
3	Endurance (In Mtrs)	Experimental	2.37	0.316	1.94	0.234	7.969
		Control	2.13	0.408	2.08	0.365	0.408
4	Flexibility (In Cms)	Experimental	28.06	2.434	31.28	3.078	4.951
		Control	27.54	1.978	27.60	1.915	0.461
5	Agility (In Secs)	Experimental	10.89	0.402	10.07	0.826	5.102
		Control	10.89	0.402	10.68	0.455	2.019

*Significant at 0.05 level.

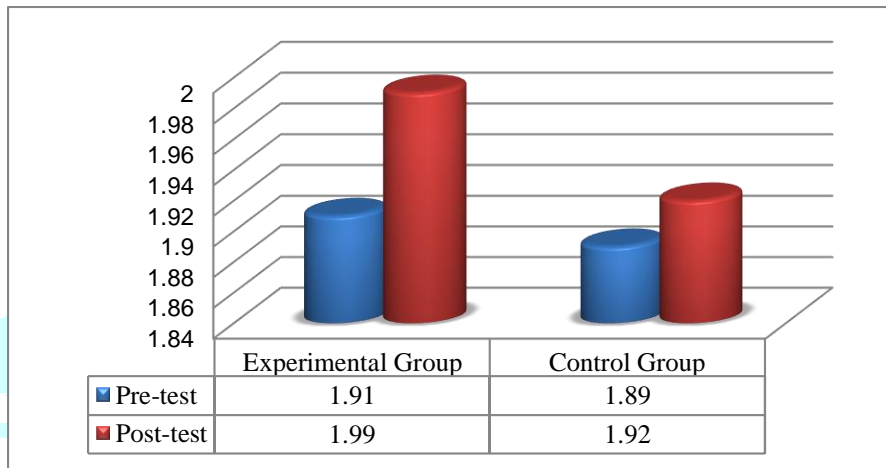


Graph 1: Shows descriptive statistics of Speed among sports persons.

Graph 1 presents the result of experimental group and control group with regard to the physical variable speed. The descriptive statistics shows the Mean and SD value of speed of pre-test and post-test of experimental group was 7.46 ± 0.416 and 7.33 ± 0.475 respectively, whereas, the Mean and SD value of speed of pre-test and post-test of control group was 7.01 ± 0.238 and 6.99 ± 0.312 . The 't' value of experimental group was 3.145* and control group was 0.724. It means there was statistical significant found in physical variable speed between experimental group pre-test and post-test among sports persons.

In this present study results also agree with the research findings conducted by Kiran G. N. & Dr. R. Srinivasa (2016) examines the effect of circuit training on speed, power and cardiovascular endurance among secondary school hockey players. They found experimental group is statistically significant than control group in speed. It is concluded that the circuit training group was significantly improved the selected motor fitness variables of secondary school hockey players. Vikesh Kumar (2016) & M. Sudhakar Babu et. al. (2013) concluded the studies in the effect of circuit training program on selected motor abilities. They were concluded that circuit training had significantly improved the speed.

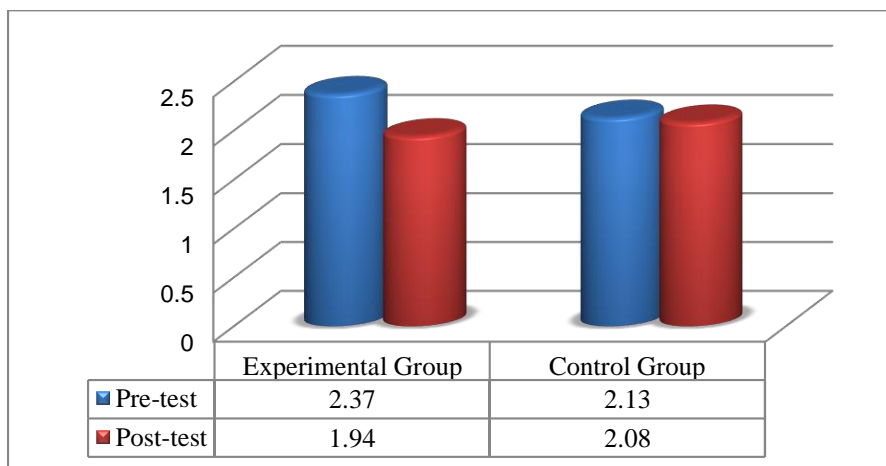
Similar results were founded in the study carried out by Dr. M. Suresh Kumar (2014) examines influence of circuit training on selected physical fitness variables among men hockey player. He was stated that significant was founded for physical variable speed.



Graph 2: Shows descriptive statistics of Leg Explosive Strength among sports persons.

Graph 2 presents the result of experimental group and control group with regard to the physical variable leg explosive strength. The descriptive statistics shows the Mean and SD value of explosive leg strength of pre-test and post-test of experimental group was 1.91 ± 0.013 and 1.99 ± 0.014 respectively, whereas, the Mean and SD value of explosive leg strength of pre-test and post-test of control group was 1.89 ± 0.069 and 1.92 ± 0.056 . The 't' value of experimental group was 4.053* and control group was 0.280. It means there was statistical significant found in explosive leg strength between pre-test and post-test of experimental group among sports persons.

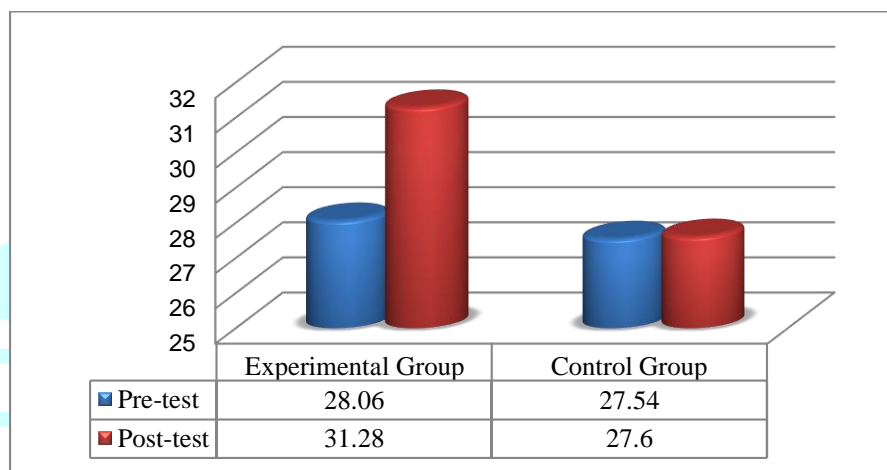
Kiran G. N. & Dr. R. Srinivasa (2016) agree with the present study finding the similar results. They were examines effect of circuit training on speed, power and cardiovascular endurance among secondary school hockey players. They found experimental group is statistically significant than control group in leg explosive strength. It is concluded that the circuit training group was significantly improved the selected motor fitness variables of secondary school hockey players.



Graph 3: Shows descriptive statistics of Endurance among sports persons.

Graph 3 presents the result of experimental group and control group with regard to the physical variable endurance. The descriptive statistics shows the Mean and SD value of endurance of pre-test and post-test of experimental group was 2.37 ± 0.316 and 1.94 ± 0.234 respectively, whereas, the Mean and SD value of endurance of pre-test and post-test of control group was 2.13 ± 0.408 and 2.08 ± 0.365 . The 't' value of experimental group was 7.969^* and control group was 0.408 . It means there was statistical significant found in endurance between pre-test and post-test of experimental group among sports persons.

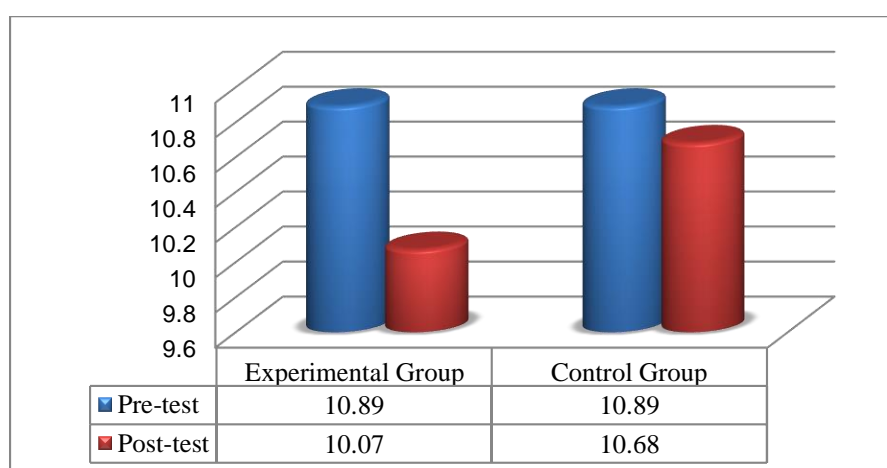
In this present study results also agree with the research findings conducted by Satyanarayana Raju P. & Syam Babu M. (2017) studied on effect of circuit training for development of endurance among football players of Andhra University. Result revealed that circuit training there is an improvement of experimental group in endurance and controlled group is decreased in performance to less levels due to general training. They were concluded that due to circuit training is an important to improve endurance among football players.



Graph 4: Shows descriptive statistics of Flexibility among sports persons.

Graph 4 presents the result of experimental group and control group with regard to the physical variable flexibility. The descriptive statistics shows the Mean and SD value of endurance of pre-test and post-test of experimental group was 28.06 ± 2.434 and 31.28 ± 3.078 respectively, whereas, the Mean and SD value of endurance of pre-test and post-test of control group was 27.54 ± 1.978 and 27.60 ± 1.915 . The 't' value of experimental group was 4.951^* and control group was 0.461 . It means there was statistical significant found in flexibility between pre-test and post-test of experimental group among sports persons.

Similar results were founded in the study carried out by Dr. R. Senthil Kumaran (2018) effect of circuit training on selected physical fitness variables among physical education students. It was found to be statistically significant in experimental group. He was concluded that circuit training had positive impact and better improvement on flexibility among physical education students.



Graph 5: Shows descriptive statistics of Agility among sports persons.

Graph 5 presents the result of experimental group and control group with regard to the physical variable Agility. The descriptive statistics shows the Mean and SD value of endurance of pre-test and post-test of experimental group was 10.89 ± 0.402 and 10.07 ± 0.826 respectively, whereas, the Mean and SD value of Agility of pre-test and post-test of control group was 10.89 ± 0.402 and 10.68 ± 0.455 . The 't' value of experimental group was 5.102* and control group was 0.461. It means there was statistical significant found in Agility between pre-test and post-test of experimental group among sports persons.

In this present study results also agree with the research findings conducted by Vikesh Kumar (2016) on effect of circuit training program on selected motor abilities among university male. He was stated that the circuit training had significantly improved the agility. Similar results were founded in the study carried out by Dr. M. Suresh Kumar (2014). He was studied Influence of circuit training on selected physical fitness variables among men hockey player. There was founded significant improvement for Agility. Ab Raof Bhat et. al., (2017) stated that there was significant difference in agility between the experimental and control group among male college volleyball players.

V. Conclusions:

On the basis of findings the following conclusions were drawn within the limitation of the present study.

- There were significant differences found in speed, leg explosive strength, endurance, flexibility and agility between pre-test and post-test of experimental group among sports persons.
- There were no significant differences found in speed, leg explosive strength, endurance, flexibility and agility between pre-test and post-test of control group among sports persons.

The statistical analysis of the present study stated that the circuit training had significantly improved the speed, leg explosive strength, endurance, flexibility and agility of subjects.

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