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Effect of Circuit Training on Selected Motor Fitness Variables of Inter Collegiate Athletes

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ABSTRACT

The purpose of the present was to find out the effect of Circuit training on selected motor fitness variables of Inter Collegiate Athletes. For this study thirty (N=30) inter collegiate Athletes of Andhra University were randomly selected as subjects. Their age category from 18-25 years, they were divided in two groups, groups of fifteen each. Group I underwent circuit training, group II underwent control group. Their did not participate in any special training, apart from their regular curricular activities. Training was given eight weeks and alternative three days per week. The pre and post test were conducted before and after training for eight weeks. The data collected from two groups before and after training period were statistically analyzed by using "t" test at 0.05 level of confidence was fixed to test the significant. The result of the study show there is a significant difference between the experimental group and control group

Key words: - Agility, Speed, Endurance, Flexibility, Circuit training

Introduction:

Physical fitness is a capacity for sustained physical activity. It is to achieve success in every walk of life. The progress of one country depends mainly on the degree of physical fitness of the people. According to Willgoose(1961) "Physical Fitness provides capacity for doing all types of activities". Currently there is wide interest to identify the most effective methods of training for strength and endurance development and this is of special significance for physical education programmes in schools and colleges.

Training is a series of physical activities executed for the purpose of increasing efficiently in running and it should be continued throughout an athlete's life time. The specific physical fitness that permits a faster time is acquired most efficiently through scientifically tailored schedule to the length and anticipated speed of the racing distance.(Falls, 1968) Sports training is a specialized process of the physical perfection of the content of which is the planned preparation for top class performance in the event or discipline chosen on the basis of evaluation and training. For improving the standard of play in the field of sports, conditioning exercises play a prominent role. Conditioning is essential for any form of sports or games.

The word training has been a part of human language since ancient times. It denotes the process of preparation for some task. This process invariably extends to a number of days and even months and year. The term "training" is widely used in sports. There is however some disagreements among sports coaches and also sports scientists regarding the exact meaning of the word. Some experts, especially belonging for sports medicine understood sports training as basically doing physical exercise, several terms used in training for example, strength training, interval training, bench step training, technical training and statistical training reflect the line of thinking.

Training involves periodic assessment of the athlete's status and progress. Training usually varies regular increase in the difficulty of task performance. Training suggest some form of gradual increase in performance output over an extended period of time. Most kind of training needs regular repeated and collective repetition of some of the original movement. Any invariable training implies hard work. Training should result in a level of personal fitness and should be associated with good health. Training is the programme of exercise designed to improve the skills and increase the energy capacities of an athlete for a particular event.

CIRCUIT TRAINING:

Circuit training was invented in1953 as an efficient way for coaches to train many athletics in a limited amount of time with limited equipment. The exerciser moved through a series of weight training or calisthenics arranged consecutively. It was a fast paced workout of 15-45 seconds per station with little (15-30 seconds) or no rest between stations. Today this is known as "circuit training." Research has shown that it can increase muscular strength and endurance. There is a mild improvement in aerobic stamina but only if the rest period are kept very short. Another variation is "aerobic circuit training". Aerobic stations like treadmill, rower, bike or stepper (one to five minutes for station) are interspersed with training stations. This protocol has

been found to increase aerobic stamina and muscular endurance and endurance. A well designed circuit can be help to correct the imbalances that occur in any sport played at high level. It can also be one of the training for improving strength endurance be it for a sport such as soccer or a classic endurance event like the triathlon. If you haven't quit reached "elite athlete" status yet , circuit training is superb for general fitness and caters for a wide varieties of fitness levels. A great time saver, it can be refreshing and fun change from the more monotonous types of exercises. Circuit training in its self not a form of exercise per se, but the way of an exercise session is structured. Routines can be developed for strength developed or for improving endurance or some combination of two.

Objective of the study

To study the effect of circuit training on selected motor fitness variables of inter collegiate Athletes

Hypothesis

It was hypothesized that the circuit training will be significantly improve the selected motor fitness variables of inter colligate Athletes.

Methodology

Experimental design

The selected subjects (N=30) were divided in to two groups each group containing of fifteen. The experimental group underwent the circuit training for the five days in a week and eight weeks in total and control group was in kept under the control of the investigator in which they were in as usual activates .

Selection of the subjects

The purpose of the present study was to find the effect of the circuit training on selected performance variables for inter-collegiate Athletes. To achieve the aim of the study the investigator had randomly selected thirty inter-collegiate level Athletes from Andhra University. Their age was ranged from 15-25 years.

Selection of variables

The investigator reviewed the available scientific literature and had discussion with exports in the field of Athletes to identify the components underlying the present problem. Based on these the following variables were considered for the present study as follows.

1. Cardiovascular endurance.
2. Speed
3. Agility
4. Flexibility

Criterion measures

The following criterion measures were chosen for this study.

1. 1. Cardiovascular endurance were measure by using 12 minutes run or walk test and recorded in minutes and seconds .
2. Speed was measured by using 50 yard dash and record to the nearest one-tenth of a second.
3. Agility was measured by using 10X10 yard shuttle run test and record to the nearest one-tenth of a second.
4. Flexibility was measured by using sit and reach test and recorded to the nearest centimeter.

Circuit training programme

The following circuit training was adopted to develop the performance variables for inter-colligate Athletes.

S.NO	Name of the station	Duration for one station (in seconds)	Rest between the station (in seconds)	Rest between the circuit (in minutes)
01	Jump and split legs	40	20	2
02	Shuttle run	40	20	2
03	Lunge	40	20	2
04	Plank	40	20	2
05	Change of direction	40	20	2

06	Diamond dips	40	20	2
07	T-run	40	20	2
08	High knee	40	20	2

Exercise duration for 1 circuit 5.20 minutes. (8 stations X 40 seconds)

Exercise duration for 3 circuit 15.60 minutes.

Rest between the stations 1 circuit (8 stations X 20 seconds)

Rest between the stations 3 circuit (3 circuit X 2 minutes)

Statistical technique

The present study paid its attention mainly on testing the effectiveness of circuit training selected performance variables for inter-collegiate Athletesplayers. The statistical tool used for this present study is described here. The significance of the mean difference between the present and post test values of the variable by the experimental and control group during the treatment period of eight weeks were tested by applying' test.

TABLE 4.1: significance of mean gains/losses between pre and post test of experimental group selected performance variables.

S.NO	Variables	Initial test	Post test	Mean diff	't' ratio
01	Cardiovascular endurance.	2202.00	2239.00	91.33	3.67
02	Speed	8.70	8.43	.27	5.20
03	Agility	15.89	15.24	.65	5.89
04	Flexibility	20.53	22.13	1.60	3.11

*significant at 0.05 level, mean diff= mean difference/ σ Dm=standard error

An examination of table 4.1indicates that the obtain 't ' value on selected fitness variables were cardiovascular endurance (3.67), speed (5.20), agility (5.89), flexibility (3.11). Since the obtain't' ratios were greater than the required table value of the 2.14 for df 1, 14 and it was found that the mean difference between the initial and final test on selected variables were statistically significant at 0.05level. Therefore it was concluded that the eight weeks practice of circuit training produce significant improvement on performance variables for inter-colligate Athletesplayers and the formulated hypothesis was accepted.

TABLE 4.2: significance of mean gains/losses between pre and post test of control group selected performance variables.

S.NO	Variables	Initial test	Post test	Mean diff	DM	't' ratio
01	Cardiovascular endurance.	2183.33	2184.33	1.00	314.81	.15
02	Speed	8.69	8.68	.008	.0035	1.49
03	Agility	16.24	16.22	.017	.018	1.04
04	Flexibility	20.20	20.40	.20	.26	1.00

Mean diff= mean differenced /σ DM=standard error of difference between mean

An examination of table 4.02indicates that the obtained 't' values on selected fitness variables were cardiovascular endurance (.15),speed (1.49),agility (1.04), flexibility (1.00). since the obtained 't' ratios were lesser than the required table value of 2.14 for df 1,14 and it was found that the mean difference between initial and final test on selected variables were statistically significant at 0.05 level. Therefore it was concluded that the formulated hypothesis were rejected.

Fig: Bar diagrams showing mean difference between pre test and post test of Experimental and Control groups.

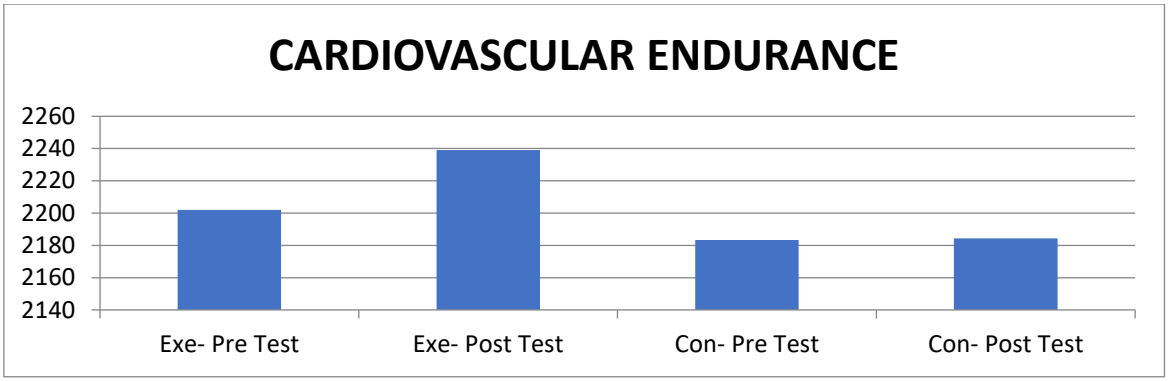


Figure 4.1

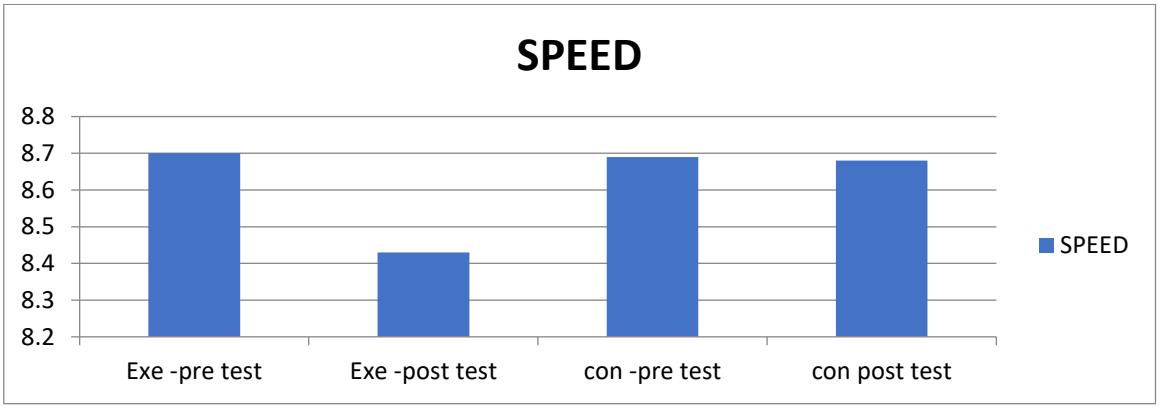
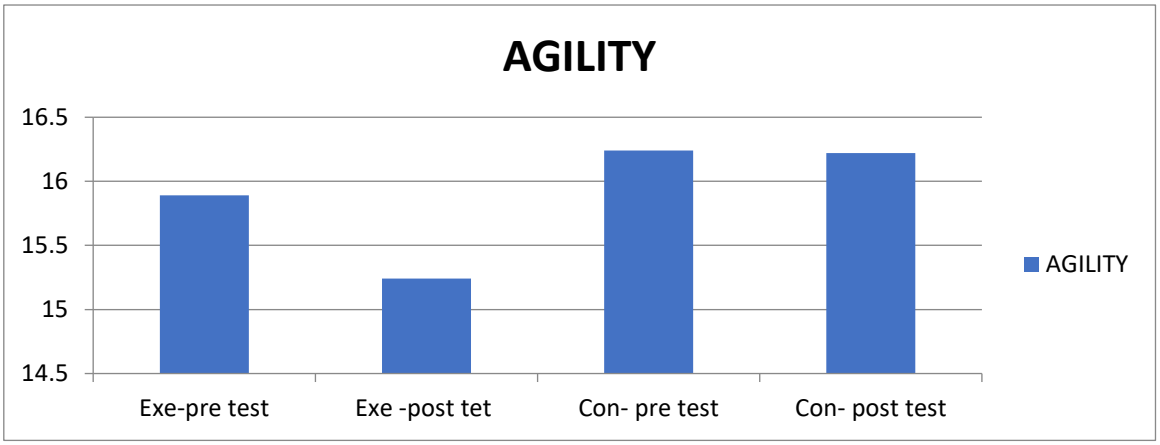


Figure 4.2



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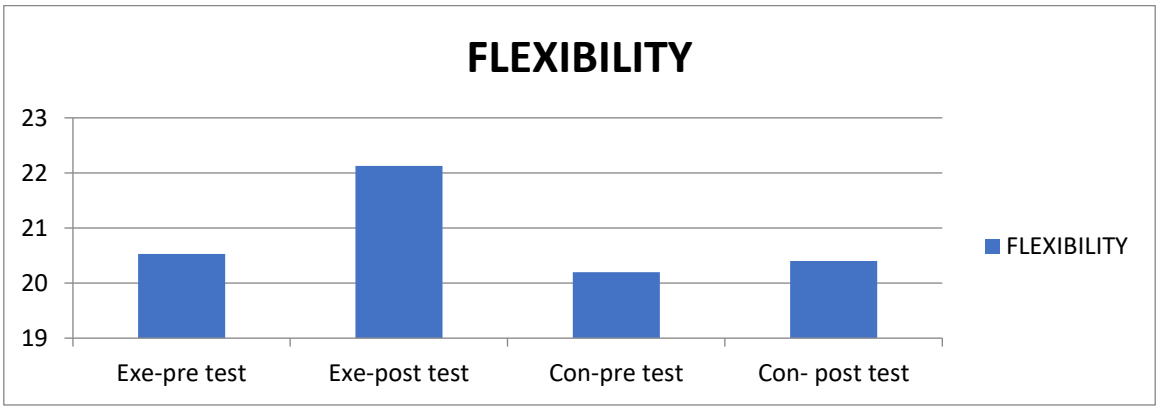

Figure 4.4

Discussion on findings

The results of the study showed that the end of the eight weeks of circuit training was a significant improvement on the selected performance variables were cardiovascular endurance, speed, agility and flexibility. The improvement is due to the circuit training programme specially designed to develop the performance variables include this study. Generally cardiovascular endurance, speed, agility and flexibility were developed in an overload principles based on training even by investigator to the subjects. this was confirmed by the studies conducted by Wilmore et al.,(1978) , Gettman et al.,(1982),Marcinik et al.,(1985), Jocbs et al.,(1987),Harnnel etal.,(1989) , Wood et al., (2001),Gotshalk et al,(2004) ,Takeshima et al.,(2004),Izquierdo et al.,(2005), Chtara et al.,(2008),Alccaraz et al .,(2008).\, Taskin et al.,(2009),Paoli et al.,(2010). The Athletesis a very competitive field game in nature to require a greater amount of excellence in performance variables. The same may be achieved by this present treatment to the Athletesplayers. These might be a cause of development of selected fitness variables attained by the subjects.

Conclusions

Based on the results of the present study the following conclusions have been drawn.

1. It was concluded that the circuit training programme significantly improved the selected performance variables for experimental group.
2. Further it was concluded that the selected performance on control group.

Recommendations

The following recommendations have been made from the results of the day.

1. The same study can be conducted with other variables such as physiological, socio-economic and psychological among the athletes .
2. Similar study can be conducted in inter-university, state and national level Athletes.
3. The same study can be conducted with other games i.e. football, volleyball, handball and kho-kho etc..
4. The same study can be conducted by increasing in terms of numbers of Athletes subjects.

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