

## EFFECT OF INTERVAL TRAINING ON SELECTED PHYSICAL FITNESS (MUSCULAR ENDURANCE) VARIABLE AMONG INTERCOLLEGIATE WOMEN ATHLETES

**\*DR.G.P.RAJU**

*\*Assistant Professor, Department of Physical Education. JNTUK University College of Engineering. Narasaraopet-522601, A.P. India*

### **ABSTRACT**

*The purpose of the study was to find out the effect of interval training on selected physical Fitness variable (Muscular endurance) among intercollegiate women athletes .The subjects taken for the present study were 40 inter collegiate level women athletes from different colleges in Andhra Pradesh, who represented their colleges in intercollegiate level athletic meets. The subjects were selected on a random basis and were allotted to two groups (control and experimental groups) by random assignment. The age of the subjects ranged from 19 to 24 years with mean age of 20.5 years. A pre-test-post-test randomized group design was used for this study. The randomly selected 40 Inter collegiate women athletes were divided into two groups randomly consisting of twenty women athletes in each group. To statistical significant, the obtained data were subjected to statistical treatment using ANCOVA. In all cases 0.05 was fixed to test the hypothesis of this study.*

*Key Words: - Interval training, Physical Fitness, Women Athletes.*

### **INTRODUCTION**

The ancient philosopher Aristotle of Greece proclaimed the quality of people, quoted by Bucher as follows: “The body is the temple of the soul and to reach harmony of body, mind and spirit, the body must be physically fit”. The efficiency of the human body depends upon many factors. With the enhanced status of sports in society the provision of sports training has become very important although the need for competent training has long been recognized.

## **TRAINING**

In general usage, the term “training” is used to denote different things. In the broad sense, training today is used to mean any organized instruction whose aim is to increase man’s physical psychological, intellectual or mechanical performance rapidly. In the field of sport we speak of training, in the sense of preparing sportsman for the highest levels of performance.

## **SPORTS TRAINING**

Sports Training is a programme of exercise designed to improve the skills and to increase the energy capacity of an athlete for a particular event, therefore training is essential for the development of physical fitness components (William, J.C.P. and Sperryn, P.N., 1976).

## **INTERVAL TRAINING**

In 1956 Olympic games at Melbourne, four athletes created a new Olympic record in 800 M and nine athletes in 1500 M race. This record breaking effort in middle distance and many other events has been the recent trend in Olympics and World championships is the scientific training method which was then and is now being adopted as “interval training” specific to each sport / event.

## **INTENSITY OF TRAINING**

Exercise intensity should be checked frequently during and beginning of exercise programme. This requires some practice in taking one’s pulse usually in the radial or carotid artery locations, since it is rather difficult to palpate the pulse during exercise. The pulse should be taken for a period of ten seconds immediately after stopping, beginning the count with zero. If the rate is below the prescribed training range, the intensity should be increased and if the rate is above the range, the intensity should be reduced.

## **INTENSITIES OF TRAINING AND ITS EFFECT**

The training effect of exercise depends upon the amount of stress imposed upon the relevant part of the body. There is variation in the resting heart rate response that is used in the exercise gives a better indication of intensity.

## **ATHLETES**

Athletics is one of the most popular sports around the world. The events are the oldest form of organised sports, and are associated with the simplest physical activities running, throwing a stone, surmounting an obstacle. These activities gradually evolved into sports events such as running, jumping and throwing events.

## **PHYSICAL FITNESS**

Fitness is a term, which is often used as synonyms to health in a limited manner. Fitness denotes different facts of health. The term fitness is the capacity of the individual to live and function effectively, purposefully, here and now to meet confidently the problems and crises which are among his expectations.

## **NEED OF THE STUDY**

The training process acts as a means of improvement of sports performance. In order to ensure fast development of sports performance in every individual the physical education teacher, the coaches and the instructors must possess a thorough knowledge of the improvement aspects of sports training. Training demands correct understanding and realization of the sportsman's strength, capacity and weakness, so planned and formulated that the strong points are further encouraged and developed and his weakness are discriminated and eliminated.

## **OBJECTIVES OF THE STUDY**

The study aimed at finding out the physical fitness levels of muscular endurance of intercollegiate level women athletes. The study further aimed at formulating suitable interval training for the benefit of women athletes and to find out the effect of the same on selected physical Fitness variable of intercollegiate level women athletes.

## **STATEMENT OF THE PROBLEM**

The purpose of the study was to find out the effect of interval training on selected Physical Fitness variable (Muscular endurance) among intercollegiate women athletes.

## METHODOLOGY

This chapter describes the methodology and procedure adopted. This includes the selection of subjects, selection of variables, procedure for administering the test item, selection of test item, collection of data and statistical technique employed for analyzing the data. The purpose of the study was to find out the effect of interval training interval training on selected physical Fitness variable (Muscular endurance) among inter collegiate women athletes.

### SELECTION OF SUBJECTS

The subjects taken for the present study were 40 inter collegiate level women athletes from different colleges in Andhra Pradesh, who represented their colleges in intercollegiate level athletic meets. The subjects were selected on a random basis and were allotted to two groups (control and experimental groups) by random assignment. The age of the subjects ranged from 19 to 24 years with mean age of 20.5 years.

### EXPERIMENTAL DESIGN

The primary responsibility of the investigator is to adopt the appropriate experimental methodology before proceeding with data collection (David H. Clarke and H. Harrison Clarke, 1984).

### TEST ADMINISTRATION AND COLLECTION OF DATA

#### Muscular Endurance (Sit-Ups)

**Purpose:-**To estimate the muscular endurance

**Equipment:-** Gymnastic Mats

**Procedure:-** The subject being tested took supine lying position with bent knees, feet flat about 18 inches from the buttocks, and the hands touching the side of the head. A partner holds the subject feet as the exercises performed. The subject touched the elbow to the alternate knee with each sit-up. The subject performs as many sit-ups in one minute as possible.

**Scoring:-**The number of correct repetitions was recorded as the score.

**Results on Muscular Strength:-** The initial and final means on interval training group and control group on Muscular Strength through Analysis of Covariance (ANCOVA) is presented in Table I.

**Table-I**  
**ANCOVA RESULTS ON PHYSICAL FITNESS VARIABLE MUSCULAR STRENGTH TO INTERVAL TRAINING**

	<b>Experimental Group</b>	<b>Control</b>	<b>Source of Variance</b>	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Squares</b>	<b>Obtained F</b>
Pre-test Mean	29.80	30.70	Between	8.10	1	8.10	0.44
			Within	697.40	38	18.35	
Post-test Mean	33.80	29.90	Between	152.10	1	152.10	8.22*
			Within	703.00	38	18.50	
Adjusted Post-test Mean	34.16	29.54	Between	211.19	1	211.19	30.77*
			Within	253.97	37	6.86	
Mean Diff.	4.00	-0.80					

Table F-ratio at 0.05 level of confidence for 1 and 38 (df) =4.10, 1 and 37(df) =4.11.

\* Significant at 0.05 level

The pre-test mean on experimental group was 29.80, and control group was 30.70 and the obtained F-value was 0.44, which was less than the required F-value of 4.10 to be significant. Hence, it was not significant and the groups were equal at initial stage.

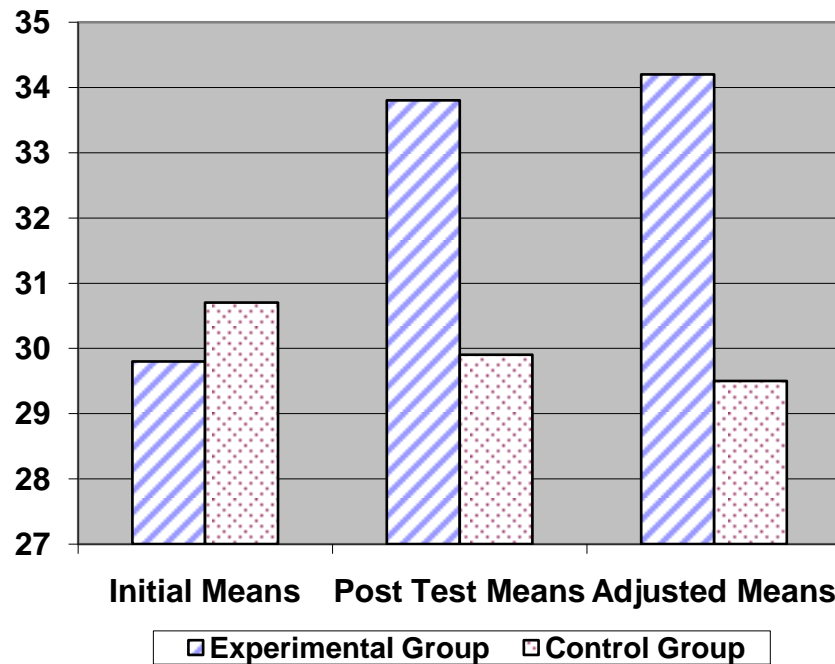
The comparison of post-test mean, experimental group 33.80 and control group 29.90 proved to be significant at 0.05 level as the obtained F-value 8.22 was greater than the required table F-value of 4.10 to be significant at 0.05 level.

Taking into consideration the initial and final mean values adjusted post-test means were calculated and the obtained F-value of 30.77 was greater than the required F-value to be significant 4.11 and hence, there was significant difference.

Thus, it was proved that interval training group gained mean difference of 4.00 which was due to interval training given to intercollegiate women athletes, and the difference was found to be significant at 0.05 level.

The initial, post and adjusted means values of experimental and control group on Muscular Strength is presented in Figure 2 for better understanding of the results of his study.

**Figure-1**  
**Bar Diagram Showing Initial, Final and Adjusted Means on Muscular Strength of Experimental and Control Groups.**



## DISCUSSIONS ON MUSCULAR STRENGTH

The results presented in Table-I proved that the Muscular Strength has not been significantly improved among control group as they did not undergo interval training experimental treatment. However, the 12 weeks interval training given to the experimental group significantly improved variable Muscular Strength among intercollegiate women athletes. The statistical mean difference between initial test and final test of experimental group stood at 34.16 and control group stood at 29.54. And the differences were found to be significant at 0.05 level as the obtained F-value of 30.77 was greater than the required table F-value of 4.11 to be significant at 0.05 level.

Thus, it was proved that interval training was significantly better than control group in improving Muscular Strength of the intercollegiate women athletes.

## DISCUSSIONS ON HYPOTHESIS

For the purpose of the study, it was hypothesized that:

1. There would be significant differences due to interval training on physical fitness variables such as muscular endurance among intercollegiate women athletes.

The results presented in Table-I on effects of interval training on physical fitness variable, muscular endurance proved that the obtained F-values 30.77 were greater than the required F-value of 4.11 to be significant at 0.05 level. This proved those selected physical fitness variable, muscular endurance was significantly improved due to interval training among intercollegiate women athletes. The formulated hypothesis, that there would be significant differences due to interval training on physical fitness variable such as muscular endurance among intercollegiate women athletes was accepted at 0.05 level.

## FINDING

The results proved that selected physical variable, muscular endurance was significantly beneficially altered due to 12 weeks interval training among intercollegiate women athletes.

## CONCLUSION

Within the limitations and delimitations of the study, the following conclusions were drawn:

1. It was concluded that the 12 weeks interval training significantly improved physical fitness variable, muscular endurance among intercollegiate women athletes.

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