EFFECT OF PROGRESSIVE INTERVAL RUNNING ON CARDIO RESPIRATORY ENDURANCE AND SPEED ENDURANCE AMONG BASKETBALL PLAYERS

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Abstract: The purpose of the study was to find out the effect of progressive interval running on cardio respiratory endurance and speed endurance among basketball players. To achieve the purpose of this study, 20 school male basketball players are randomly selected as subjects from the in around Tirunelveli District, Tamilnadu, India. Their age ranged from 15 to 17 years. the selected participants were randomly divided into two groups such as group 'I' underwent progressive interval running (n=10) and group 'II' acted as control group (n-10). Group 'I' underwent progressive interval running for three alternative days and one session per day and each session lasted for 30 minutes for six week. Group 'II' was not exposed to any specific training but they were participated in regular activities. The data on cardio respiratory endurance and speed endurance were collected by administering by cooper 12 minutes run/ walk test and 150 meters run method. The pre and post tests data were collected on selected criterion variables prior to and immediately after the training programme. The pre and post-test scores were statistically examined by the analysis of co-variance (ANCOVA) for each and every selected variable separately. It was concluded that the progressive interval running group had shown significantly improved in cardio respiratory endurance and speed endurance. However the control group had not shown any significant improvement on any of the selected variables such as cardio respiratory endurance and speed endurance.

Index Terms: **Progressive Interval Running, Cardio Respiratory Endurance, Speed Endurance. Basketball**

I. INTRODUCTION

Basketball is a modern ball game which belongs to the family of team sports. It combines the best features of different branches of sport, that is, the advantages of physical abilities, technical skills and tactical knowledge [1]

Nowadays, basketball has the ability to show the improvements by having a great potential in our country and in the world. Day by day, the increasing number of athletes brings high-level achievements in team sports such as basketball [2]

The required energy for short time and narrow space technical skills applications are produced by anaerobic way; thus it is known that basketball is a game that requires a high level of anaerobic fitness [3]

Training is any organized and regular activity done for increasing the performance of athletes and are divided into different kinds considering the performance requirements of athletes [4]

Interval training is a series of repeated bouts of exercise alternated with period of lighter work or rest. The interval training work outs is the best thing to having your very own coach. It has been used for decades by world's greatest athletes. Cyclists, swimmers, rowers, cross-country skiers, tri athletes and 9 runners all engage in interval training in order to increase the amount of time they spend exercising at very high intensities to reach the maximum. Even the great athlete, Paavo Nurmi, who captured four gold medals at the 1924 Olympics and once set three world records within a 90-minute time span, pioneered the practice of using higher-than competitive intensities during interval workouts. So based on the literature, the interval training programme could be formulated to enhance the fitness and sports performance level. [5].

II. STATEMENT OF THE PROBLEM

The purpose of the study was to find out the effect of progressive interval running on cardio respiratory endurance and speed endurance among basketball players.

III. METHODOLOGY

To achieve the purpose of the study twenty school male basketball players were randomly selected from around Tirunelveli District, Tirunelveli, Tamilnadu, India. Their age ranged from 15 to 17 years. The researcher reviewed the available scientific journals, periodical, magazine, e-resources and research paper. Taking into consideration feasibility criteria, availability of the instrument and relevance of the variable of the present study the following dependent variables namely cardio respiratory endurance and speed endurance were selected. Similarly progressive interval running were chosen as independent variable. The

cardio respiratory endurance and speed endurance time were assessed by cooper 12 mint run/ walk test and 150 meters run method respectively.

This study was conducted to determine the possibility cause and effect of progressive interval running on cardio respiratory endurance and speed endurance among basketball players. The subjects were divided into two equal group consists of 10 each and named as experimental group (Group-I) and control group (Group-II). Group-I (n=10) underwent progressive interval running and Group II (n=10) acted as control group. The control group was not given any treatment and the experimental group was given progressive interval running for three alternative days per week, for a period of six weeks. The related group research design was used in this study. The collected data from the two groups prior to and after the experimental treatments on cardio respiratory endurance and speed endurance were statistically analyzed by using the statistical technique of analysis of covariance (ANCOVA). In all the cases 0.05 level of confidence was fixed as a level of confidence.

IV. RESULT AND FINDINGS

The effect of progressive interval running on cardio respiratory endurance and speed endurance parameters were analyzed and presented below.

4.1 Cardio Respiratory Endurance

Table 4.1: Computation of 't'-ratio between pre and post test means of progressive interval running group and control group on cardio respiratory endurance (meters)

Group	Test	Mean	t-ratio
Progressive Interval Running Group	Pre test	1570	23.67*
	Post test	1856	
Control Group	Pre test	1581	1.83
	Post test	1600	

*Significant at 0.05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

The table 4.1 shows that the pre-test mean value of progressive interval running group and control group are 1570 and 1581 respectively and the post-test means are 1856 and 1600 respectively. The obtained dependent t-ratio values between the pre and post test means of progressive interval running and control group are 23.67and 1.83 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained't' ratio value of varied progressive interval running group was greater than the table value, it is understood that progressive interval running group had significantly improved the cardio respiratory endurance. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any specific training.

Table 4.2: Analysis of covariance on cardio respiratory endurance of progressive interval running group and control group

Adjusted Post Test Means		Source of variance	Sum of squares	df	Mean square	F – ratio
Progressive Interval Running Group	Control Group	Between	202.03	1	202.03	56.91*
1855	1596	Within	60.35	17	3.55	

* Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table 4.2 shows that the adjusted post test means values on cardio respiratory endurance. The obtained f- ratio of 56.91 for adjusted post-test mean is greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of progressive interval running and control groups on cardio respiratory endurance. The bar diagram shows the mean values of pretest, post test and adjusted post test on cardio respiratory endurance of progressive interval running group and control group.
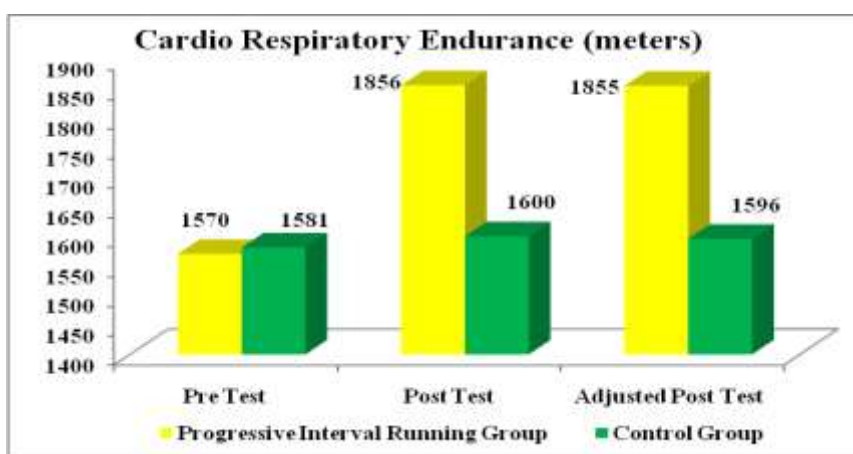

Figure 4.1: Pre test, post test and adjusted post test mean values of progressive interval running and control groups on

cardio respiratory endurance**.**

4.2 Speed Endurance

Table 4.3

Computation of 't'-ratio between pre and post test means of progressive interval running group and control group on speed endurance (meter/ seconds)

Group	Test	Mean	t-ratio
Progressive Interval Running Group	Pre test	23.17	**12.65***
	Post test	21.45	
Control Group	Pre test	23.61	1.61
	Post test	23.48	

 *Significant at 0.05 level. (Table value required for significance at .05 level for 't'-test with df 9 is 2.26)

The table 4.3 shows that the pre-test mean value of progressive interval running group and control group are 23.17 and 21.45 respectively and the post test means are 21.45 and 23.48 respectively. The obtained dependent t-ratio values between the pre and post test means of progressive interval running and control group are 12.65 and 1.61 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained 't' ratio value of varied progressive interval running group was greater than the table value, it is understood that progressive interval running group had significantly improved the speed endurance. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any specific training.

Table 4.4

Analysis of covariance on speed endurance of progressive interval running group and control group

Adjusted Post Test Means		Source of variance	Sum of squares	df	Mean square	F – ratio
progressive interval running Group	Control Group	Between	24.91	1	24.91	**16.28***
21.42	23.50	Within	26.01	17	1.53	

 * Significant at 0.05 level. Table value for df 1, 17 was 4.45

Table 4.4 shows that the adjusted post test means values on speed endurance. The obtained f- ratio of 16.28 for adjusted post test mean is greater than the table value 4.45 with df 1 and 17 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of progressive interval running and control groups on speed endurance. The bar diagram shows the mean values of pretest, post test and adjusted post test on speed endurance of progressive interval running group and control group.
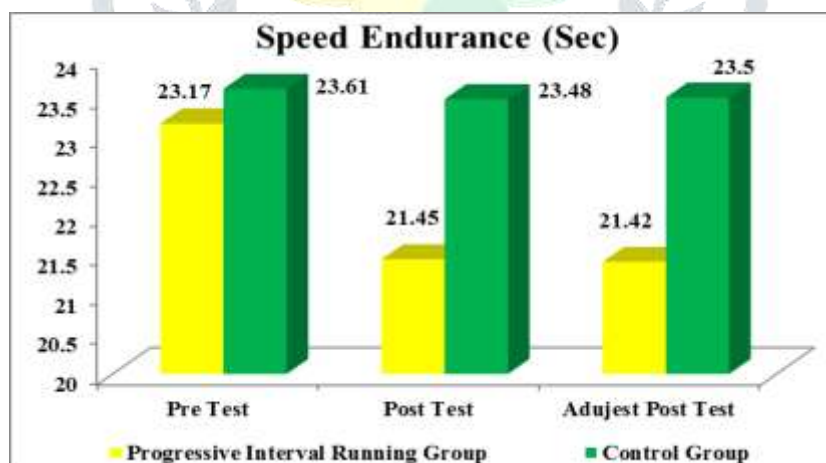

Figure 4.2: Pre test, post test and adjusted post test mean values of progressive interval running and control groups on speed endurance**.**

V. DISCUSSION ON FINDINGS

The result of the study indicates that there was a significant improvement on cardio respiratory endurance and speed endurance due to the influence effect of progressive interval running among basketball players when compared to control group**.** The results of this investigation are also supported by the following study of Deepak (2015). Arumugam, S. (2015) conducted a study on effect of stair climbing on cardio respiratory and speed endurance among soccer players, his concluded study on to improve the cardio respiratory and speed endurance due to stair climbing training among soccer players. Rajendra, N. (2017) assessed effect of Basketball specific repeated – sprint training on aerobic capacity of male Basketball players. It is concluded that basketball specific repeated sprint training for eight weeks is more effective in increasing aerobic capacity of men Basketball players

VI. CONCLUSIONS

1. There was significant improvement on cardio respiratory endurance and speed endurance due to the effect of progressive interval running among basketball players.

2. The control group had not shown any significant improvement on any of the selected variables.

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