

A Comparative Study of Cardio-Respiratory Endurance of Inter-University Basketball Players and Inter-Collegiate Basketball Players

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Abstract – Physical Educators have long been concerned with the measurement of Cardio – vascular endurance. This form of endurance involves the continued activity of the entire organism, during which major adjustments of the circulatory and respiratory systems are necessary, as in Running, Hockey, Basketball, Swimming, Football and Handball competitions. Here, endurance is not dependent upon the strength of the muscles involved in the activity but must rely greatly on the affective functioning of the circulatory and respiratory systems. It has very significant value in various games and sports, especially in long distance running in track and field, basketball, football, boxing, handball and other vigorous and long duration games.

Harvard step test (short form) is employed to measure the cardio respiratory endurance. Here in this study the modified form of this test was used. It is most simple and easy. The main purpose of this study was to compare the cardio respiratory endurance of inter university and inter college footballers of the Don Bosco College affiliated to Goa university, Goa. It was hypothesized that the cardio respiratory endurance of inter university footballers would be greater than inter college footballers. The total subjects were seventy (35X2=70 college and university level of male footballers ages 18-25 years in two groups). They were regular players of their specific game of Football. They participated in inter university and inter college competition. The data were collected after the Harvard step test in modified short form.

Keywords: Cardio Respiratory Endurance & Harvard Step Test.

INTRODUCTION

Sports and medicine have been closely associated throughout recorded history. It is a natural relationship between client and professional adviser. As soon as sport develops out of the spontaneous play into an organized activity, then practice for a competitive event takes place and the sportsman seeks systematic methods of preparation. He examines such technical and scientific information as is available about the way his body performs its athletic function and turns to the doctor as physiologist. But sport also involves injury. This may be no a very severe wound. The sportsman again turns to the doctor as clinician and pathologist to restore him to active competition as quickly as possible. Sports medicine is that branch of Medical science that deals with the treatment and prevention of injuries incurred while participating in sports. The field also concerns the methodology of scientific Research to determine the cause of sports injuries. In recent year's physicians who specialize in treating one specific part of the Anatomy such as the

knee, back, foot or elbow have compiled and exchanged information on their specialty and have also formed association to promote the study of injury – prone parts of the body. When the growth of professional sports, team physician and specialists in sports medicine have received wide publicity for their treatment of injuries to the start athletes.

The body utilizes three major energy systems to provide the tremendous amounts of muscle power required in athletic events. These are (1) the Phosphogen system (2) the glycogen – lactic acid system, and (3) the aerobic system. The phosphogen system stores energy to the high energy bonds of adenosine triphosphate and phosphocreatine, both of which are present inside the muscle fibres. This system can give extreme surges of muscle power for 10 to 15 seconds. The glycogen – acid system releases energy by converting glycogen into lactic acid. This system can supply energy at a rate about one half as great as the phosphogen system, and it can provide maximum muscle contraction for 30 to 40 seconds. The aerobic system releases energy

by metabolizing carbohydrates, fats and proteins with oxygen. This system can provide energy at a rate only one fourth that of the phosphogen system, but its endurance is unlimited as long as appropriate nutrients last.

Physical Educators have long been concerned with the measurement of Cardio – vascular endurance. This form of endurance involves the continued activity of the entire organism, during which major adjustments of the circulatory and respiratory systems are necessary, as in Running, Hockey, Swimming, Football and Handball competitions. Here, endurance is not dependent upon the strength of the muscles involved in the activity but must rely greatly on the affective functioning of the circulatory and respiratory systems. The cardio –Respiratory endurance refers to the ability to carry workload for relatively prolonged period.

PURPOSE OF THE STUDY:

The main purpose of this study was to find out the cardio – respiratory endurance of Inter University basketball and Inter Collegiate basketball players of the Colleges under Jammu University. The allied objective of this study was:

- To measure the cardio – respiratory endurance of basketball Players.
- This study would help to know about the required cardio – respiratory endurance level of basketball Players.
- This study would help to select the players of basketball.
- This study would help to prepare the training schedule for basketball coaching

METHODOLOGY:

The basketball players of the colleges under Jammu University were the sources of data for measuring the pulse count and physical efficiency indexes/cardio – respiratory indexes. Twenty five students for the game of basketball players of Jammu University were the selected subjects of the study. Age group of the students was from 18 – 25 years. Modified Harvard Test was employed for this study. Only one height of the bench was used for the college level players i.e. 20 inches high of bench. To measure the physical efficiency Index (PEI) modified Harvard Step Test by renowned scientists Gallagher and Brouha, was selected. The data was collected by the Harvard Step Test. The following materials were requiring for operating this test;

- A. 20” high bench
- B. A Stop watch
- C. Two chair and one adjusted table

Each player of basketball group was asked to perform step - up and step – down exercise on a 20” inches bench for a much time as he can, up to this optimum effort but not more than minutes. After completing the exercise to optimum limit, one minute’s rest was given by making the subject sit on a chair and then afterwards his pulse was taken for 30 seconds.

The score which was obtained from the test was employed to calculate the Physical Efficiency Index (PEI) of each subject using the above mentioned formula. Same method and procedure was employed to count the pulse and to calculate the Physical Efficiency Index in case of Inter University basketball group and Inter Collegiate basketball group.

Here, it may be mentioned that the surface area of each tester of each group was within 1.85 square meters. So, here also the height of the bench was 20”inches for testing all cases.

Statistical Analysis and Interpretation of Data:

In the present study, “ A Comparative Study of Cardio – respiratory Endurance Inter University basketball and Inter Collegiate basketball of the colleges affiliated to Jammu University” the researcher had worked with two group – i.e. (1) Inter University basketball group (2) Inter Collegiate basketball group.

All the groups were given to do the Harvard Step Test (Modified short form) for 5 minutes. After the pulse count was collected from the two groups, each consisting of 25 players. The raw data were put to statistical treatment.

Through the statistical treatment, the significance of differences was computed as follows:

Note: - The experimental two groups score were computed in the statistical analysis to find ‘t’ ratio. They were found significant.

FINDING:

Table No-1

Significant’ Mean Difference between Inter University basket players and Inter College basketball

Group Ratio	Mean	Mean difference	S.E. ‘t’
1. Inter University basketball players	127.973=M1	[M1-M2]= 10.116	4.917*
2. Inter college basketball players	117.857=M2		2.057

*Significant at .05 level of Confidence

The data collected on twenty five male inter university basketball and twenty five inter College basketball

players after the Harvard Step Test (modified short form) on Cardio respiratory index was analysed using Mean difference, Standard error and 't' ratio statistical technique. The results pertaining to these have been presented in table no. 1. Here, calculated value was found to be more than tabulated value. So it can be said that 't' Value was significant at 0.05 level of confidence.

The significance of difference in Cardio respiratory endurance of Inter University basketball and inter College basketball players have been presented in Table no.1.

A sixty eight degree of freedom, the value of 't' at 0.05 level of confidence should be greater than 2.00 Table No. 1 reveals that there is a significant mean difference in Cardio respiratory endurance of inters university basketball and inters college basketball players.

DISCUSSION OF FINDING:

From Table No.1 we can see that the mean of Inter university basketball group is greater than inter college basketball group and the calculated value was found to be more than tabulated value. So here we can say that the inter university basketball are dominating the inter college basketball in cardio respiratory endurance ('t' = 4.917).

CONCLUSION:

In the present study the following findings and conclusions were drawn;

- The training programme affects the pulse rate in the positive way, the pulse rate was increased.
- The training programme increased the P.F.I., of each individual of different games.
- The P.F.I., of inter university basketball players was greater than P.F.I., inter college basketball players.

It was hypothesized that the cardio respiratory endurance of inter university basketball players was more than inter college basketball players. Here from the statistical data of mean of two groups and significant values of 't' ratio in different groups. The hypothesis was found to be correct. So the hypothesis is selected. Now it can be concluded that cardio respiratory endurance of inter university basketball players is more than inter college basketball players.

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