



## Comparative Analysis of Selected Physiological Variable Among Sprinters, Jumpers, Throwers And Long Distance Runners of Elite University Athletes of Kerala State

### KEYWORDS

Resting Pulse Rate, Sprinters, Jumpers, Throwers, Long Distance Runners

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**ABSTRACT** Aim of the present study was to compare the selected Physiological variables among University sprinters, jumpers, throwers and Long distance runner of Kerala state. To achieve this purpose, one hundred and twenty (N=120) male athletes who had participated in the Inter-University athletic meet during the year 2014-15 were selected randomly from each category of sprinters, jumpers, throwers and Long distance runner thus a total of 120 athletes from all the University in Kerala State. The athletes' age ranged between 18 and 24 years. Among Various Physiological variables Resting Pulse Rate was selected for this study. Resting Pulse Rate was measured through radial pulse method. The experimental design for the study was static group comparison design. One-way Analysis of variance (ANOVA) was used to find out the difference among the University sprinters, jumpers, throwers and long distance runners on the selected variables. As the obtained F-ratio was significant, the Scheffe's test was used as a post-hoc test to find out the significant difference between each cell. There was a significant difference among sprinters, jumpers, throwers and long distance runner on resting pulse rate. Further the results showed in Long distance runners have better resting pulse rate when compared to sprinters, jumpers and throwers.

### INTRODUCTION

Sports an integral part of the society has an important and valuable effect on many spheres of social life. Similarly the whole social pattern of a society may be reflected in its sports. Sports, unlike the other activities, is not an end product. It is undertaken essentially for its own sake. If we want to know why people play, the first answer is that they primarily play for fun, enjoyment or satisfaction. The sport is a carrier, which encourages coaching of various sports and games along with rules and regulations governed by them and also it prepares the trainees to take active part in competitive sports. It grows out of man's struggle for survival in a hostile world.

Regular, vigorous physical activity throughout life significantly reduces the risk of disability and premature death risk of disability and premature death from stroke and heart disease (Webster, 1988).

Physiology is the study of the functioning of human organism. In its fundamental sense, physiology involves the functioning of each major body system used in playing (e.g., skeletal muscles, cardiovascular system, and respiratory system) and how those systems are interrelated. In its applied sense, physiology addresses how exercise affects the functioning of body systems as well as how those systems impact performance.

The heart is a pump that forces blood around the body. It is actually a muscle, and works by contracting via electrical stimulation administered by the sino-atrial node, which is more commonly referred to as the 'pacemaker'. As the heart pumps, the muscles contract, pushing blood all around the body via the arteries providing the various tissues with oxygen and nutrients which are transported within the blood stream (Swapan et al., 2010).

### METHODOLOGY

The study was conducted on one hundred and twenty (N=120) male athletes who had participated in the Inter-Uni-

versity athletic meet during the year 2014-15 were selected randomly from each category of sprinters, jumpers, throwers and Long distance runner thus a total of 120 athletes from all the University in Kerala State. The athletes' age ranged between 18 and 24 years. Among various Physiological variables only resting pulse rate was selected for this study. And it was assessed through radial pulse method.

### ANALYSIS OF THE DATA

The Experimental design for the study was static group comparison design. One-way Analysis of variance (ANOVA) was used to find out the difference among the University sprinters, jumpers, throwers and long distance runners on the selected variables. As the obtained F-ratio was significant, the Scheffe's test was used as a post-hoc test to find out the significant difference between each cell. In all the cases, 0.05 level of significance was used to test the hypotheses.

The Analysis of Variance for the data obtained on Resting Pulse Rate of sprinters, jumpers, throwers, long distance runners, were analyzed and the results are presented in table -I.

**TABLE-I**  
ANALYSIS OF VARIANCE ON RESTING PULSE RATE OF SPRINTERS, JUMPERS, THROWERS AND LONG DISTANCE RUNNERS

Mean ± Standard Deviation				Sources of Variance	df	Sum of Squares	Mean Square	Obtained "F"
Sprinters	Jumpers	Throwers	Long Distance Runners					
72.47 ±1.59	72.53 ±1.50	73.97 ±1.50	72.13 ±0.94	SSB	3	59.56	19.85	10.69*
				SSW	116	216.37	1.86	

\*Significant at 0.05 level.

(Resting Pulse Rate is in Beats/ Minute)

(The table value required for significance at 0.05 level with df 3 and 116 is 2.68)

Table-I shows that the mean and standard deviation values of sprinters, jumpers, throwers and long distance runners are  $72.47 \pm 1.59$ ,  $72.53 \pm 1.50$ ,  $73.97 \pm 1.50$  and  $72.13 \pm 0.94$  respectively. The obtained F-ratio value among sprinters, jumpers, throwers and long distance runners is 10.69. The obtained F-ratio value is greater than the table value of 2.68 with df 2 and 116 required for significance at 0.05 level.

Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the means of sprinters, jumpers, throwers and long distance runners on Resting Pulse Rate.

To find out which of the four paired means had a significant difference, the Scheffe's post-hoc test was applied and the results are presented in table-II.

**TABLE-II  
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE PAIRED MEANS OF SPRINTERS, JUMPERS, THROWERS AND LONGDISTANCE RUNNERS ON RESTING PULSE RATE**

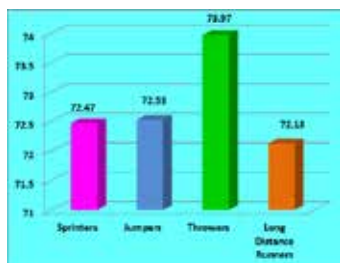
Adjusted Post test Means				Mean Difference	Confidence Interval
Sprinters	Jumpers	Throwers	Long Distance Runners		
72.47	72.53	--	--	0.06*	0.01
72.47	--	73.97	--	1.50*	0.01
72.47	--	--	72.13	0.34*	0.01
--	72.53	73.97	--	1.44*	0.01
--	72.53	--	72.13	0.40*	0.01
--	--	73.97	72.13	1.84*	0.01

\*Significant at 0.05 level.

Table- II shows that the mean difference in Resting Pulse Rate between sprinters and jumpers, sprinters and throwers, sprinters and long distance runners, jumpers and throwers, jumpers and long distance runners, throwers and long distance runners are 0.06, 1.50, 0.34, 1.44, 0.40 and 1.84 respectively, which are higher than the confidence interval value of 0.01 at 0.05 level of confidence.

The result of the study indicates that there is a significant difference between sprinters and jumpers, sprinters and throwers, sprinters and long distance runners, jumpers and throwers, jumpers and long distance runners, throwers and long distance runners on Resting Pulse Rate. However, the mean value of long distance runners is found to be better than sprinters, jumpers and throwers on Resting Pulse Rate.

The mean values of sprinters, jumpers and throwers on Resting Pulse Rate are graphically represented in the figure-I.



**CONCLUSION**

- From the analysis of the data, the following conclusions were drawn.

- There was a significant difference among sprinters, jumpers, throwers and long distance runner on the selected physiological variable such as Resting Pulse Rate.
- Further the results of the study showed sprinters have better Resting Pulse Rate when compared to jumpers, throwers and long distance runners.

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