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## A comparative study of JCR test among sprinters and throwers: An exploratory study

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### Abstract

In the present study, an attempt has been made to compare physical fitness among inter-collegiate male Sprinters and Throwers of Guru Nanak Dev University, Amritsar. For this study, Cooper's JCR motor fitness test is applied to Sprinters and Throwers to compare their physical fitness performance. 20 Sprinters and 20 Throwers at Inter College Competition of Guru Nanak Dev University, Amritsar were selected randomly for this study. The age group of the subjects was between 19 to 25 years. The physical fitness of the subjects under evaluation was assessed by the help Cooper's JCR motor fitness. For analysis of the data Mean & SD were calculated and to examine the significance difference between the group mean of different physical fitness components, independent samples t-test was applied and level of confidence was set at 0.05 level. The result reveals that the Vertical-jump performance of Sprinters is high as compared to Throwers. The result indicates that there are insignificant differences between Sprinters and Throwers in Chin-ups, throwers performed better than sprinters. Result found that Sprinters have shown their dominance and their superiority on Shuttle-Run compare to Throwers.

**Keywords:** Physical fitness, Sprinters, Throwers, Vertical-jump, Chin-ups and Shuttle-Run

### Introduction

Fitness may mean many things - strength, vigor, vitality, capacity for work, and so on, but these are all partial views of fitness, which is a very idea term to be viewed and understood in its broad perspective. Fitness is total and total fitness generally implies soundness and readiness for life, and its functions. According to Nixon and Cozens the ability to carry out daily tasks with vigour and alertness, without undue fatigue, with ample energy to enjoy leisure pursuits. Hence, this concept of physical fitness directly conveys a meaning of healthful living performance in sport and games depends mainly on Muscular Strength, Muscular Endurance < Cardiovascular Endurance, Flexibility, Muscular Power, Speed, Agility, Balance, Reaction time and Neuro Muscular Co-Ordination is the Speed and Accuracy with which the Nervous system acts with correct Muscular response to produce desire movement. The capacity of performing physical activity is named physical fitness or motor fitness, albeit these terms are difficult to define. Physical fitness is the capacity to meet successfully the present and potential physical challenges of life. Fitness is the ability to perform muscular work satisfactorily. Physical fitness, today, is better understood in terms of the functioning of the heart, blood vessels, lungs, and muscles to function at optimum efficiency. Physical fitness is the prime requisite to lead the optimum life and to live most and serve best in this modern world. According to Nixon and Cozens the ability to carry out daily tasks with vigour and alertness, without undue fatigue, with ample energy to enjoy leisure pursuits. Physical fitness may be conceived as the capacity to perform one's daily tasks without fatigue; motor fitness, also termed motor ability, refers to a person's performance abilities as affected by the factors of speed, agility, balance, coordination, and power. The physical fitness of human beings is the main objective of Physical Education and Sport Programme. The main purpose of the study of to find out whether the participation in Sprinters and Throwers will develop the motor ability of every individual. The vigorous participation in Sprinters and Throwers will develop (physical fitness) motor ability. A person can improve the physical fitness through related test batteries for development better performance in sports activities, but also meaning of healthful living. A good physique depends upon certain amount of Physical strength along with the Mental Strength while Physical Strength determines one's abilities and capacities

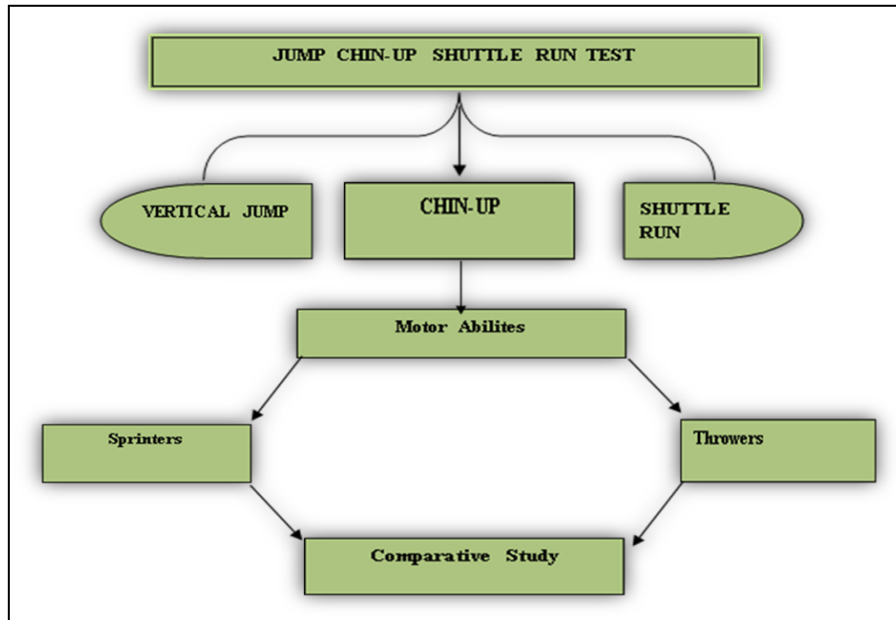
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potentialities, Agility, of and individuals on the other had the mental strength determines the Neuro Muscular co-ordination of the individual. Motor abilities represent an integrated outcome of most bodily functions involved in physical activity and can be used to assess the effectiveness of physical education as well as measure by standardize test J.C.R test batteries. Motor fitness refers to the ability of an athlete to perform successfully at their sport. The components of motor fitness are – agility, balance, coordination, power and reaction time.

**Material and methods**

**Sample of respondents**

To obtain data for this study, the investigators had selected forty (N=40) male inter-college level athletes of 19 to 25 years of age group to act as subjects. They were further divided into two groups which includes twenty (n= 20) Sprinters and forty five (n= 20) Throwers. The purposive sampling technique was used to obtain the required data. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study.



**Table 1:** Selection of variables

J.C.R. Test Items	Criterion Measure
Vertical-jump	Recorded in nearest cm/inches
Chin-ups	The total number of correctly completed Chin-ups is recorded
Shuttle-Run	Recorded to the nearest 1/100 <sup>th</sup> Second

**Data analysis**

Student’s t-test for independent data was used to assess the between-group differences. The level of  $p \leq 0.05$  was considered significant.

**Results**

The results pertaining to significant difference, if any, between male Sprinters and Throwers were assessed using the Student’s t test and the results are presented in tables-2:

**Table 2:** Mean Standard Deviation, Standard Error of the Mean, t-value and p-value of male Sprinters and Throwers.

Variables	Mean		SD		SEM		t-value	p-value
	Sprinters	Throwers	Sprinters	Throwers	Sprinters	Throwers		
Vertical-jump	16.25	14.95	2.02	1.39	0.45	0.31	2.37	0.023
Chin-ups	17.15	19.1	2.10	4.07	0.47	0.91	1.90	0.065
Shuttle-Run	9.29	9.83	0.58	0.55	0.14	0.12	3.02	0.0045

\*Significant at 0.05 level  
Degree of freedom=38

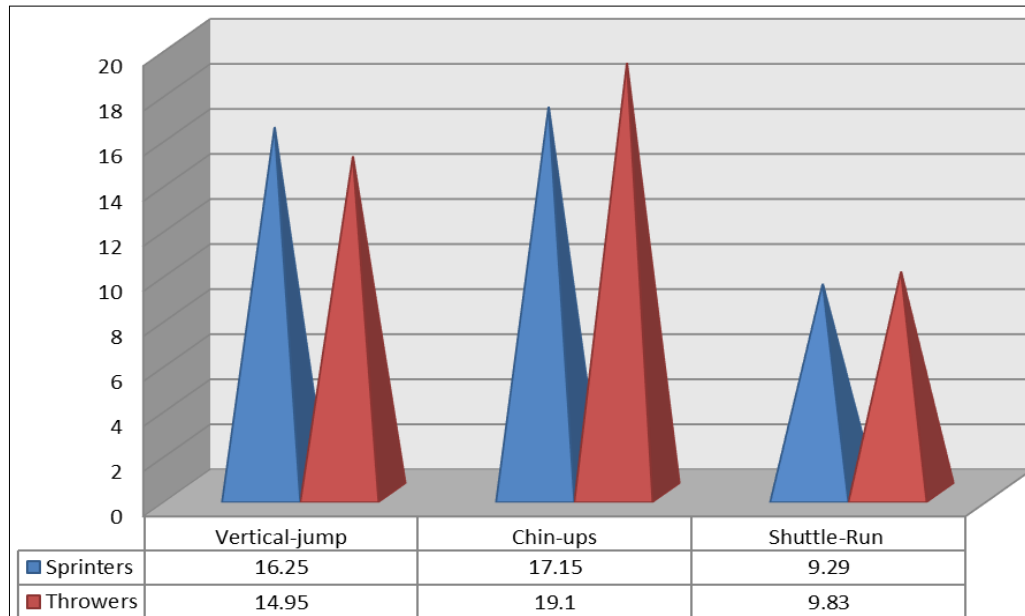
**Vertical-jump**

Table-2 presents the results of male Sprinters and Throwers with regard to the Cooper's JCR motor fitness test. The descriptive statistics shows the Mean and SD values of Sprinters on the sub-variable Vertical-jump as 16.25 and 2.02 respectively. However, Throwers had Mean and SD values as 14.95 and 1.39 respectively. The Mean Difference and Standard Error Difference of Mean were 0.45 and 0.31 respectively. The ‘t’-value 2.37 as shown in the table above was found statistically significant ( $P < .05$ ). It has been observed that Sprinters have better on Vertical-jump than the Throwers. The descriptive statistics shows the Mean and SD

values of Sprinters on the sub-variable Chin-ups as 17.15 and 2.10 respectively. However, Throwers had Mean and SD values as 19.1 and 4.07 respectively. The Mean Difference and Standard Error Difference of Mean were 0.47 and 0.91 respectively. The ‘t’-value 1.90 as shown in the table above was found statistically insignificant ( $P > .05$ ). It has been observed that Throwers have better on Chin-ups than the Sprinters. The descriptive statistics shows the Mean and SD values of Sprinters on the sub-variable Shuttle-Run as 9.29 and 0.58 respectively. However, Throwers had Mean and SD values as 9.83 and 0.55 respectively. The Mean Difference and Standard Error Difference of Mean were 0.14 and 0.12

respectively. The 't'-value 3.02 as shown in the table above was found statistically significant ( $P < .05$ ). It has been observed that Sprinters have better on Shuttle-Run than the

Throwers. The comparison of mean scores of both the groups has been presented graphically in figure below.



**Figure-**Graphical representation of mean scores of male Sprinters and Throwers with regard to the Cooper's JCR motor fitness test.

### Discussion & conclusion

The physical demands vary greatly among the track and field disciplines. The sprint events are the 100m, 200m, 400m, hurdles (110/100m, 400m) and relays (4x100m, 4x400m). Obviously top running speed is very important for sprinters; the throwing events are Discus, Shot Put, Javelin and Hammer Throw. The primary fitness component for throwers is power. JCR Test represents an important consideration in an individual's performance in Physical activity. While JCR test is one of the numbers of determinants of the capability of performance in Physical activity in many classes it may spell the difference between success and failure or even between life and death in emergencies. The present study under report studied the physical fitness components such as vertical jump, chin-up, shuttle run, of the male Sprinters and Throwers. From the obtained results it is very clear that the individuals who participate in Sprinting and Throwing events will develop better Vertical Jump, Chin-Up, and Shuttle Run. Hence it is finally concluded that The result reveals that the Vertical-jump performance of Sprinters is high as compared to Throwers. The result indicates that there are insignificant differences between Sprinters and Throwers in Chin-ups, throwers performed better than sprinters. Result found that Sprinters have shown their dominance and their superiority on Shuttle-Run compare to Throwers.

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