Comparative Study of Selected Physical Fitness Components between National Level Male Jumpers and Sprinters

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Abstract: This study aimed the problem is entitled as 'Comparative study of selected physical fitness components between national level male Jumpers and Sprinters'. For the purpose of the study forty (N=40) male athletes of age ranging from 17-26 years, were purposely selected from athletics training centers of only Punjab state. The subjects were further divided into two groups i.e., Male jumpers (N=20) Male sprinter (20). Purposive sampling technique was applied to select the sample. 'Comparative study of selected physical fitness components between national level male Jumpers and Sprinters 't' test was applied at 0.05 level of significance.

Keywords: Speed, Muscular Strength, Reaction Time, Jumpers, Sprinters.

INTRODUCTION

Physical fitness has been considered as one of the most important aspects of human existence a sound body and an active mind are inter-related. No education is complete without sound physical education. No education is complete without sound physical health as it makes a person efficient and fit to work in any area of human endeavour. Physical fitness is that state of body in which a person can carry his daily duties and responsibilities efficiently and with the energy left he can enjoy hobbies and other recreational activities. In other words, physical fitness can be defined as that state of bodies in which a person can do work for a longer duration without undue fatigue.(Kang &Deol 2008)

Health and physical fitness have a vital role in the life of men from time Immemorial. The progress of the Nation lies in the hands of the people, who are healthy and physically fit. Every individual should develop physical fitness for a happy and effective living. In order to get physical fitness, one has to involve in physical activities. Physical activity is essential for the development of whole some personality of a child which would depend upon the opportunities provided for whole some development of the mental, physical, social and spiritual aspects. Hence a well-organized and properly administered physical education programme for school children is very essential. (Kamlesh M. L, 2015).

MATERIAL AND METHODS

For the purpose of the study forty (N=40) male athletes of age ranging from 17-26 years, were purposely selected from athletics training centers of only Punjab state. The subjects were further divided into two groups i.e., Male jumpers (N=20) Male sprinter (20).

VARIABLES

- Speed
- Muscular strength
- Reaction time

TABLE NO. 1: VARIABLES, TESTS AND UNIT OF MEASUREMENT

VARIABLE	UNITS OF MEASURES	EQUIPMENT/TEST USED
Speed	Seconds	50Mt dash
Muscular endurance	Numbers	Sit ups in one mint
Reaction time	Seconds	Nelson hand reaction time

ADMINISTRATION OF THE TESTS

For the purpose of the study, the necessary data was collected by administering various tests for the chosen variables:

1. SPEED:
Test: 50 Meter Dash
Objective: To measure speed of subject.

Equipment: Stopwatch, 50m Marked Area Straight, Paper and Pen.

Procedure:
Subject took starting position behind starting line in standing start on signal 'go' Two subjects start sprint at one time increase speed until to cross the finish line. When subject start sprint time was also start by time keeper which was assigned by examiner. Time was start when subject rear foot contacted ground and time stopped when subject cross the finish line.
Scoring: Best performance from three trials, considered as score of the speed test. Speed measured near to the $1/10^{th}$ of the second.

2. MUSCULAR ENDURANCE:
Test: Bent knee sit ups
Objective: To measure endurance of abdominal muscles
Equipment: Stop Watch, Mat, Paper, Pen.

Procedure:
Subject lay down in spine position with bent knees, feet on floor with heels 12 inches from buttocks.
The angle of knees should be less than 90. Hands of the subject on the back of the neck with fingers clasped. When subjects curl up touch the elbow to the knees, bring the head straight, eye focus forward back straight, chest up. Subject turn to starting position with elbow on surface before starting up again. Time is simultaneously start when subject start sit ups. After one minute on the single of stop time stopped and subject was also stop sit ups and examiner note down the number of sit ups perform it by subjects in one minute. Avoid incorrect fingers interlaced, incorrect starting position that is elbow not flat on the surface. Avoid breaking contact from ground of feet and hip.
Scoring: Total number of correct executed sit ups in one minute.

3. REACTION TIME:
Test: Nelson Hand reaction Time Test
Objective: To measure the reaction time of hand movement in response to visual stimulus.
Equipment: Nelson reaction time scale

Procedure:
Subject sat on the chair with forearm and hand resting on table. Tip of the thumb and index finger ready to pinch position about three to four inches beyond table edge. Thumb and index finger was in horizontal position. Examiner held the stick from the top. Stick hanged between thumb and index finger. Base line of stick should parallel to the upper surface of subject thumb. When examiner fails subject was looked at concentrating zone that black in shad between .120 and .130 inches. Avoid hand up and down movement will be catching the stick when it was failing. Twenty trials are given to each subject. Each attempt was preceded by command "ready" after that examiner fall down the stick between two seconds maximum.

Scoring:
Three trials were given to each subject. When stick was catch by subjects reading of score read just above the upper edge of the thumb. From three trials, Average of middle trials considered as score of reaction time test and then this value is put in below mention formula to find out the reaction time subjects.

TABLE – 2 SPEED

Group	Mean	S. D	SEM	't' value
Jumpers	6.07	0.26	0.05	1.62
Sprinters	5.90	0.36	0.08	

$'t'_{0.05}(40) = 2.02$

In the above table & figure 4.1 it was found that the mean values of jumper and sprinter of speed were recorded as 6.07 & 5.90 whereas the standard deviation was 0.26 & 0.36 respectively. The calculated t- value for jumper and sprinter of 1.62, which is lesser than the tabulated t- value (2.02) at .05 level of significance. So, it implies that there was no significant difference found between jumper and sprinter of their speed variable.
However mean value of jumpers 6.07 is slightly higher than the mean value of sprinters 5.90 this shows that male sprinters are slightly better than jumpers in speed variable.

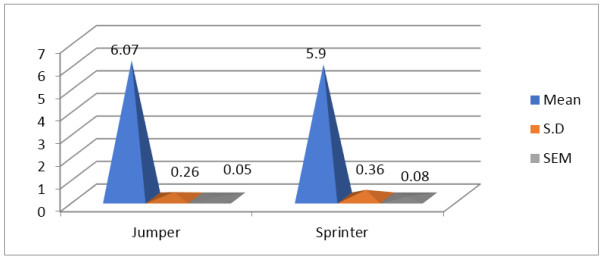

FIG. I GRAPHICAL REPRESENTATION OF SPEED

TABLE – 2 MUSCULAR STRENGTH

Group	Mean	S. D	SEM	't' value
Jumpers	44.30	6.95	1.55	1.2124
Sprinters	47.05	7.39	1.65	

$'t'_{0.05}(40) = 2.02$

In the above table & figure 4.2 it was found that the mean values of jumpers and sprinters of muscular strength were recorded as 44.30& 47.05 where as the standard deviation was 6.95 & 7.39 respectively. The calculated t- value for jumper and sprinter of 1.2124, which is lesser than the tabulated t- value (2.02) at. .05 level of significance. So, it implies that there was insignificant difference found between jumper and sprinter of their muscular strength variable.

However mean value of jumpers 44.30 is slightly higher than the mean value of sprinters 47.05 this shows that male sprinters are slightly better than jumpers in muscular strength variable

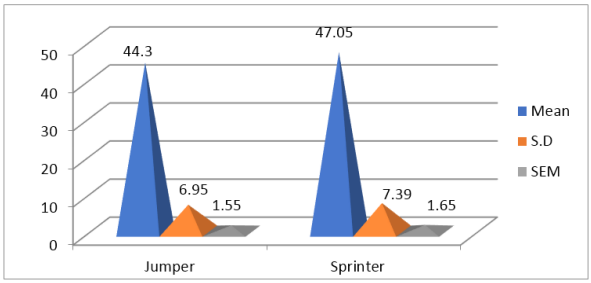

FIG. I GRAPHICAL REPRESENTATION OF MUSCULAR STRENGTH

TABLE – 3 REACTION TIME

Group	Mean	S. D	SEM	't' value
Jumpers	4.77	2.80	0.62	2.32
Sprinters	3.05	1.77	0.39	

't'$_{0.05}$ (40) = 2.02

In the above table & figure 4.3 it was found that the mean values of jumpers and sprinters of reaction time were recorded as 4.77 & 3.05 where as the standard deviation was 2.80 & 1.77 respectively. The calculated t- value for jumper and sprinter of 2.32, which is greater than the tabulated t- value (2.02) at 0.05 level of significance. So, it implies that there was significant difference found between jumper and sprinter of their reaction time variables.

However mean value of jumpers 4.77 is slightly higher than the mean value of sprinters 3.05 and 't' value is 2.32 is higher than tabulated 't' value this shows that male sprinters are much better than jumpers in reaction time variable.

DISCUSSION OF THE FINDINGS

I. Physical Fitness Variable

i) SPEED

The result of the study informs that there was insignificant difference between male jumpers and sprinters for their Speed. Meswaniya (2012) 'Comparison of Selected Physical Fitness Variables of School Level Softball and Cricket Players' supported the present study.

ii) MUSCULAR STRENGTH

It was found that there was no significant difference between jumpers and sprinters national level athletes for their muscular strength. But while comparing the mean values of both the groups, it has been observed that cricket players have demonstrated better flexibility than the softball play. These findings are supported by Singh, L (2016) 'Analysis of Physical fitness components of handball players were randomly selected from different colleges of district Hoshiarpur, Punjab'.

iii) REACTION TIME

The result of the study showed that there was significant difference between jumpers and sprinters national level athletes for their explosive Strength variable. On the basis of analysis of the data, investigator found that the earlier study of Kaur, S. and Bhagat, U (2016) "Assessment of reaction time and steadiness between inter- college and inter university level female softball players", supported the present study.

CONCLUSIONS

Based on the results of the study the following conclusions were drawn by the investigator:

1) The results strongly confirm that, no significant differences were observed between jumpers and sprinters for their speed.
2) The result authenticated that, there were no significant differences between jumpers and sprinters for their muscular strength.
3) The results substantiate that, significant differences were observed between jumpers and sprinters for their reaction time.

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