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Statistical analysis of selected physical fitness components of sprinters and long jumpers

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Abstract

Physical fitness is the ability to carry out daily tasks with vigor and alertness; without undue fatigue. The purpose of this study was to compare the physical fitness of sprinters and long jumpers of Punjab state. The research was a descriptive comparative method. A total of 40 Players (20 sprinters and 20 long jumpers) were selected purposively from the 13 Secondary Schools of Punjab state. The criterion measures adopted for this study were Flexibility and muscular strength and Endurance. The data collection tools used in the study was sit & reach, Sit Ups. Data of Physical Fitness Components between sprinters and long jumpers was compared by using independent Sample 't' test. The level of significance was kept at 0.05 level of significant to test the hypothesis. The statistical analysis of physical components revealed that in the parameters such as sit-ups and sit and reach, there was significant difference between sprinters and long jumpers. Finally the researcher concluded that the long jumpers were more fit as compare to sprinters Players.

Keywords: Physical fitness, long jumpers, sprinters players

Introduction

Physical fitness is now defined as the body's ability to function efficiently and effectively in work and leisure activities, to resist hypo kinetic diseases, and to meet the emergency situations (Corbin and Lindsey, 1994). Fitness concepts in elementary physical education center on children's understanding of fitness as good health, and a working knowledge of activities that promote a healthy level of fitness. However, with increased leisure time, and changes in life styles wrought by the industrial revolution, which took a large proportion of the population away from farm life and into more urban areas, this definition is no longer considered comprehensive enough. The definition for physical fitness is now defined as the body's ability to function efficiently and effectively in work and leisure activities, not only at a set point in time, but at various ages and stages within a person's life cycle. The key is in finding optimum health within the limits of one's lifestyle, in order to be able to resist hypo kinetic diseases. The purpose of this study was to compare the physical fitness of sprinters and long jumpers of Punjab state.

Procedure and methodology

Sample: A total of 40 athletes (20 sprinters and 20 long jumpers) were selected purposively from the 13 Secondary Schools of Punjab state. **Methodology:** The research was a descriptive comparative method the criterion measures adopted for this study were Flexibility and muscular strength and Endurance.

Selection of test:

Flexibility: sit & reach test

Muscular strength and Endurance: Sit Ups test

Administration of test

Sit and reach test

The sit and reach test is a common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. This test is important as because tightness

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in this area is implicated in lumbar lordosis, forward pelvic tilt and lower back pain. This test was first described by Wells and Dillon (1952) and is now widely used as a general test of flexibility.

Purpose: The sit and reach test is a common measure of flexibility

Equipment required: sit and reach box (or alternatively a ruler can be used, and a step or box).

Sit and Reach Test Procedure: This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down. With the palms facing downwards, and the hands on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for at one-two seconds while the distance is recorded. Make sure there are no jerky movements. See also video demonstrations of the Sit and Reach Test.

Scoring: The score is recorded to the nearest centimeter or half inch as the distance reached by the hand. Some test versions use the level of the feet as the zero mark, while others have the zero mark 9 inches before the feet. There is also the modified sit and reach test which adjusts the zero mark depending on the arm and leg length of the subject. There are some norms for the sit and reach test and also examples of some actual athlete results.

Sit-Up

This is a general description of a sit-up test to measure abdominal muscle endurance (also called curl up or crunch test). The procedures and technique for this test can vary

Results

Table 1: Shows mean, SD and t value of selected Physical fitness components between sprinters and long jumpers

Variables	N	Mean		S.D		T. Value	P. Value
		Sprinters	Long Jumpers	Sprinters	Long Jumpers		
SIT-UPS	20	23.70	25.20	2.11	1.44	2.6322*	0.0122
Sit & Reach	20	15.0710	17.7595	2.0172	0.4653	5.8080*	0.0001

*Significant at 0.05 level

Presents the results of sprinters and long jumpers with regard to the variables sit-ups and sit & reach. The descriptive statistics shows the Mean and SD values of sprinters on the variable sit-up and sit & reach as (23.70+-2.11,15.0710+-2.0172) respectively while in case of long jumpers the mean were found (25.20+- 1.44,17.7595+-0.4653) respectively. The

depending on which specific test you are performing. See the procedures section for links to instructions for the specific abdominal endurance tests.

Purpose: The curl up test measures abdominal muscular strength and endurance of the abdominals and hip-flexors, important in back support and core stability.

Equipment required: Flat, clean, cushioned surface, stopwatch, recording sheets, and pen

Sit-up test procedure: The subject lies on a cushioned, flat, clean surface with knees flexed, usually at 90 degrees. Some techniques may specify how far the feet are from the buttocks, such as about 12 inches. A partner may assist by anchoring the feet to the ground. The position of the hands and arms can affect the difficulty of the test. They are generally not placed behind the head as this encourages the subject to stress the neck and pull the head forward. The hand may be placed by the side of the head, or the arms crossed over the chest, reaching out in front. Some protocols use curl up strips or other marks on the ground to slide the hands along and indicate how much to curl up. The subject raises the trunk in a smooth motion, keeping the arms in position, curling up the desired amount. The trunk is lowered back to the floor so that the shoulder blades or upper back touch the floor.

Scoring: The completion of one complete curl up (up and back) counts as one. The situp must be performed correctly for it to be counted. For the tempo tests, the test is continued until the subject cannot maintain the rhythm or has reached the target number for the test.

Analysis of Data: Data of Physical Fitness Components between sprinters and long jumpers was compared by using independent Sample 't' test. The level of significance was kept at 0.05 level of significant to test the hypothesis.

't'-value 2.6322 and 5.8080 as shown in the table above was found statistically significant (P<.05). But while comparing the mean values of both the groups, it has been observed that long jumpers have demonstrated better in both tests than sprinters. The comparison of mean scores of both the groups has been presented graphically in figure

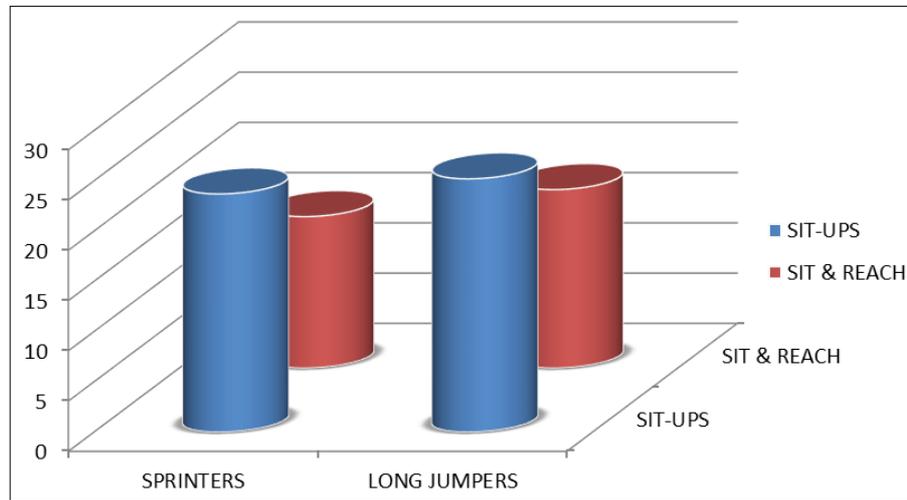


Fig 1

Conclusion

The statistical analysis of physical components revealed that in the parameters such as sit-ups and sit and reach there was significant difference between sprinters and long jumpers. The results of statistics have indicated that the mean scores in sit-ups, and sit and reach in case of sprinters players were found (23.70 \pm 2.11, 15.0710 \pm 2.0172) respectively while in case of long jumpers the mean were found (25.20 \pm 1.44, 17.7595 \pm 0.4653) respectively. The results also showed that all the physical fitness components the Muscular strength/Endurance and Flexibility long jumpers were found to be better than sprinters.

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