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Comparison of selected physical fitness components between male sportsperson and dancers at national level

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Abstract

The purpose of the study was to compare physical Fitness variables and anthropometrical variables between sports persons and dancers at national level.

Sample: The study was conducted on National level male sportspersons and dancers of Maharashtra, 18-24 years of age group. A total hundred (N=100) in which 50 sportspersons and 50 dancers were selected as subject.

Method and Analysis: The following variables were selected for this study: Strength, Endurance and Speed. The data pertaining to each of the selected muscular was examined by 't'- test Analysis of Variance in order to observe the significant differences, if any. The level of significance was set at 0.05 level.

Findings and Conclusion: The analysis of the data revealed significant differences Endurance, Strength and Speed in the performance of selected physical fitness.

Keywords: strength, endurance, speed

Introduction

Physical fitness is the ability of the organism to make adequate physical and emotional adjustment of the demand every day. Therefore, the concept of physical fitness in the term of meeting directly the requirement of daily life has been widely rejected. A physically person only meet the daily requirement which is assented to carry out is job effectively but also is left with energy to their himself in leisure time pursuits in addition to meet unforeseen emergencies. Physical fitness is the more important factor for the progress in the general life as well as filed of sport if citizen of the country went to improve in any filed may be sports of general life physical fitness is essential. It is therefore the responsibility of every country to promote physical fitness of its citizen because physical fitness is the basic requirement for most of the task to be under taken by an individual in his life (Kumar 2016) ^[1].

Collection of data

1. Strength

Standing Long Jump Test (Broad Jump): The Standing long jump, also called the Broad Jump, is a common and easy to administer test of explosive leg power.

Purpose: To measure the explosive power of the legs.

Equipment required: Floor, mat or long jump pit may be used, measuring tape, marking powder/chalk.

Procedure: The athlete stands behind a line marked on the ground with feet slightly apart. A two-foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. Three attempts are allowed.

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2. Endurance

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

Purpose: The sit 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 surface, stopwatch, recording sheets and pen.

Procedure: The subject lies on a 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) sit 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.

3. Speed

40 Meter Sprint: Sprint or speed tests can be performed over varying distances, depending on the factors being tested and the relevance to the sport.

Purpose: The aim of this test is to determine acceleration and speed.

Equipment required: Measuring tape or marked track, stopwatch or timing gates, cone markers, flat and clear surface of at least 60 meters.

Procedure: The test involves running a single maximum sprint over 40 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on the starting line. This runner should be stationary prior to starting. The person timing should stand at the finish line with one arm held high, and call 'ready' followed by a sweep down their arm quickly to start the subject (do not call out 'go' due to the time delay in the subject hearing the call). As the arm sweeps down, the tester should start the stopwatch which is held in the downward sweeping arm, and finish the stopwatch as their chest passes through the finish.

Statistical techniques

The data was analyzed and compared with the help of statistical procedure in which mean, standard deviation, df and 't' test were used to compare the data.

The analysis of data, interpretation and discussion of the results has been presented below:-

Tables and figures showing endurance, strength, speed variables of sports person and dancer

Table 1: Mean and standard division of selected Strength variable of Sportspersons and dancers

Group	Mean	S. D.	S.E.M.	t-value
Sportsperson	1.713	0.161	0.042	6.3203
Dance Students	1.293	0.312	0.075	

$t'_{0.05(98)} = 1.664$

Table & figure 1 statistically depict that mean and standard deviation with regard to Sportsperson is 1.713 and 0.161 where as in case of Dancers is 1.293 and 0.312 respectively. The calculated t-value (6.3203) which is more than the tabulated t-value (1.664) at 0.05 level. So, it indicates that there is significant difference between Sportsperson and dancers male students for their Strength.

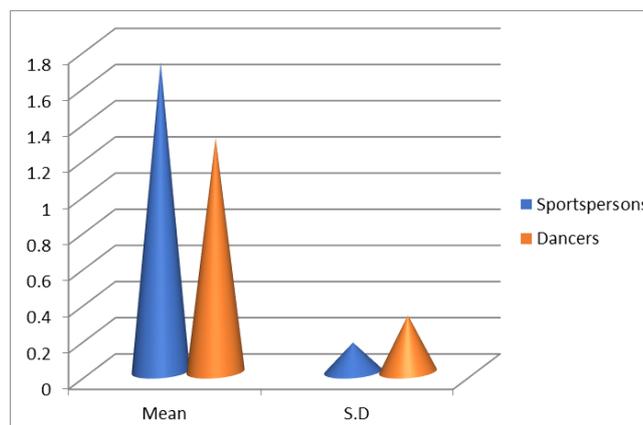


Fig 1: Mean and standard division of selected Strength variable of sportspersons and dancers

Table 2: Mean and standard division of selected Endurance variable between sportspersons and dancers

Group	Mean	S. D.	t value
Sportsperson	33.51	11.29	1.393
Dancers	31.32	6.32	

$t'_{0.05(98)} = 1.664$

Table & figure 2 statistically depict that mean and standard deviation with regard to Sportsperson is 33.51 and 11.29 where as in case of Dancers students is 31.32 and 6.32 respectively. The calculated t-value (1.393) which is more than the tabulated t-value (1.664) at 0.05 level. So, it indicates that there is significant difference between Sportsperson and dancers male students for their Endurance.

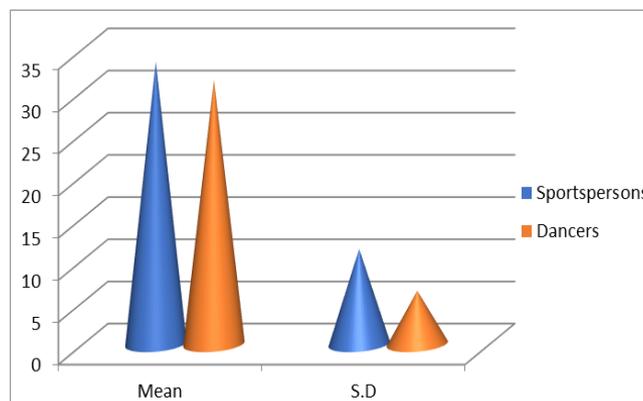


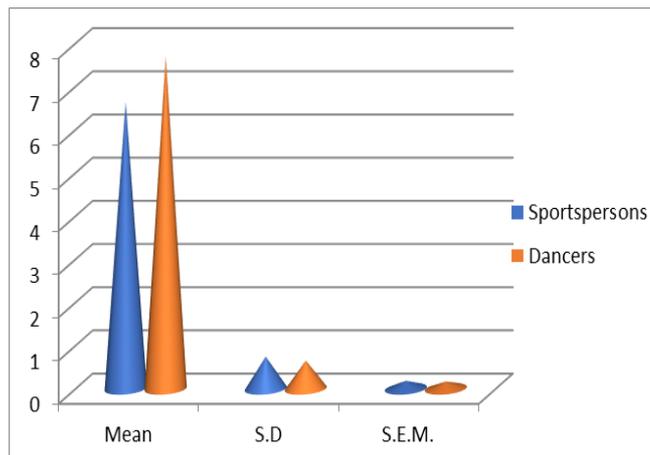
Fig 2: Mean and standard division of selected Endurance variable between Sportspersons and dancers

Table 3: Mean and standard division of selected Speed variable between sportspersons and dancers

Group	Mean	S. D.	t' value
Sportspersons	6.534	0.784	5.009
Dance Students	7.623	0.694	

* $t_{0.05(98)} = 1.664$

Table & figure 3 statistically depict that mean and standard deviation with regard to Sportsperson is 6.664 and 0.753 where as in case of Dancers students is 7.711 and 0.651 respectively. The calculated t-value (5.009) which is more than the tabulated t-value (1.664) at 0.05 level. So, it indicates that there is significant difference between physical education and dance male students for their speed.

**Fig 3:** Mean and standard division of selected Speed variable between Sportspersons and Dancers

Discussion of the finding

The statistical analysis of data shows that the performance of sportspersons and dancers in endurance, strength and speed variable was found significant difference because of the nature of the sports and dance.

Both require these components for better performance. The present study depicts that there is significant difference between the fitness components such as endurance, strength, and speed. The other reason may be the sportsperson taken for the study consists of players from different-different games which had represented inter-university level.

The present study was conducted to determine the differences of physical fitness between male Physical Education students and dancers of Performing Arts. The data pertaining to this study were collected from 50 male Physical Education students and 50 male dancers of Performing Arts age ranging from 18 to 24 years. For the study the physical fitness components i.e. Cardio-vascular endurance, Explosive Leg Strength, Speed, Arm Strength were tested in the evening from 4 p.m. to 6 p.m. by using the Harvard Step Test, Standing Broad Jump, 50 Yards Dash, Flexed Arm Hang. The collected raw data were further converted to t- score and analyzed statistically through t-test and the level of significant was observed at 0.05 level of confidence. On the basis of statistical findings it was concluded that there were significant differences in physical fitness between Physical Education students and dancers of Performing Arts. The Physical Education students have better physical fitness than dancers of Performing Arts. It was also further concluded that there are significant differences in Speed. On the basis of analysis of the data, investigator found that the earlier study of Baro *et al.* (2014) supported the present study.

Conclusions

On the basis of the results following conclusions were drawn:

1. There was significant difference was observed when we compared the sports persons with dancers' group in standing board jump.
2. There was significant difference was noticed when we compared the sports persons with dancers in sit-up test.
3. There was significant difference was observed when we compared the sports persons with dancers' group in 40mtr.dash test.

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