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## A study of performance physical fitness components of runners, jumpers and throwers

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### Abstract

The purpose of this study to investigate a study of performance physical fitness components of Runners, Jumpers and Throwers. The subjects are selected 180(N=180) male Senior National level representation and All India inter University Runners (60), Jumpers (60) and Throwers (60) Between the age of 18-25 years. The data were collected Speed (50 sprint Mts run), Reaction time (Nelson foot reaction), Power (Standing Broad Jump), Agility (Illinois Agility) and Coordination Ability (Medicine ball put). To determine the significant differences of performance physical fitness components, between Senior National level representation and All India inter University Runners Throwers and Jumpers, unpaired t-test was employed for data analyses. The data was further analyzed by one way Analysis of Variance (ANOVA) to find out the intra-group differences and where the 'F' ratio found significant then Post-hoc test Least Significant Difference (LSD) was applied to find out the direction and degree of differences. To test the hypothesis, the level of significance was set at 0.05.

**Keywords:** Performance physical fitness, runners, jumpers, throwers

### Introduction

Track & Field comprises of running, hurdling, jumping, and throwing events, held between individuals and teams at indoor and outdoor meets. The running and hurdling competitions make up the track events, while the jumping and throwing contests comprise the field events. In many countries the sport as a whole is called athletics.

The Running, jumps and throwing are the fundamental activities of human beings which had gratified the food gathering and safety need of mankind right from the ancient times. Competitive Running, jumps and throws were come a long way in the development of technique and style.

Man's Performance in sports or any other field depends on his movement oriented behavior and all these actions have their roots in biological phenomena. This Biological Phenomena is the foremost which fluctuates periodically and so does the performance. Athlete's performance that occur several hours before or after the circadian peak, 'Window' will be potentially subjected to less than optima performance.

Physical fitness is the ability to perform any activity under condition of fatigue and defined to proper function of the internal organs like heart rate, respiration, circulation, secretion of enzymes and hormones in the normal way.

Performance physical fitness is the ability of perform in the specific or particular sports and games skills and techniques. Generally in the field of physical education and sports sciences deals allied disciplines are anatomy, kinesiology, biomechanics, sports training and nutrition etc. In sports training deals to train up sports persons to get effective performance in the particular competitions. We wish to acquire good performance in any level of competitions, athletes need to good physical fitness and performance physical fitness.

Performance physical fitness components are major substantial to give optimal performance in the competitions in specialized sports and games.

### Methodology

#### Statement of the Problem

The problem is stated as a study of performance physical fitness components of runners, jumpers and throwers of athletes.

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**Hypothesis of the Study**

1. There would be significant differences of performance physical Fitness Components of Senior National and All India inter University Runners Throwers and Jumpers.
2. There would be significant differences of performance physical Fitness Components among Senior National Runners Throwers and Jumpers.
3. There would be significant differences of performance physical Fitness among All India Inter University Runners Throwers and Jumpers.

**Selection of the Subjects**

For the purpose of the present study , one hundred eighty subjects are selected (N=180) male Senior National level representation and All India inter University Runners (60), Jumpers (60) and Throwers (60) from Andhra Pradesh and Telangana States. Between the age of 18-25 years.

**Selection of Performance Physical Fitness Components and Tests**

**Speed (50 Mts Sprint):** The time was recorded to the nearest one tenth of a second.

**Reaction Time (Foot Reaction):** The time was recorded to the nearest one tenth of a second.

**Power (Standing Broad Jump):** The best out of three trials was recorded in centimeter as his score.

**Agility (Illinois Agility):** The time was recorded to the nearest one tenth of a second.

**Coordination Ability (Medicine ball put):** The best out of three trials was recorded in centimeter as his score.

**Significance of the Study**

This study enables to runners, jumpers, and throwers for association of performance physical fitness components relation with effective performance.

**Statistical Analysis and Results**

To determine the significant differences of performance fitness components, between Senior National level representation and All India inter University Runners Throwers and Jumpers, unpaired t-test was employed for data analyses. The data was further analyzed by one way Analysis of Variance (ANOVA) to find out the intra-group differences and where the „F“ ratio found significant then Post-hoc test Least Significant Difference (LSD) was applied to find out the direction and degree of differences. To test the hypothesis, the level of significance was set at 0.05.

The results of Performance Fitness Components of Senior National level representation and All India inter University Runners Throwers and Jumpers are presented in the following tables and their interpretations are given accordingly. Graphical representation of each component is also presented for mean comparison. Further discussion of finding is initiated for better understanding of results.

**Table 1:** Significant Differences in the Mean Scores of Senior National level representation and All India inter University Runners on the performance Fitness Components

Components	Mean		Sd		Mean Difference	T-Value	P-Value
	All India University	Senior National	All In India University	Senior National			
Agility	16.3203	16.1090	1.31924	2.60597	.21133	.396	.693
Reaction time	17.8173	20.4000	8.40997	5.73916	2.58267	1.389	0.170
Speed	5.9990	5.8837	.25460	.14464	.11533	2.157*	.035
Power	21.5333	24.5333	3.72997	4.25671	3.00000	2.903*	.005
Coordination Ability	15.9333	14.9000	4.54429	3.76325	1.03333	.959	.341

\*Significant at 0.05 level, t.05 (58)

**Agility**

A glance at table-1 shows the results of Senior national and All India University Runners with regard to performance physical fitness components. The descriptive statistics shows the Mean and SD values of All in India University Runners on the component of agility as 16.3203 and 1.31924 respectively. However, Senior National Runners had Mean and SD values as 16.1090 and 2.60597 respectively. The‘t’-value .396 as shown in the table above was found statistically insignificant (p>0.05). It has been observed from the above results that Senior National Runners have demonstrated better on the component agility than the All in India University Runners though insignificantly.

insignificantly.

**Speed**

The descriptive statistics shows the Mean and SD values of All in India University Runners on the component of speed as 5.9990 and .25460 respectively. However, Senior National Runners had Mean and SD values as 5.8837 and .14464 respectively. The‘t’-value 2.157 as shown in the table above was found statistically significant (p<0.05). It has been observed from the above results that Senior National Runners have demonstrated better on the variable speed than the All in India University Runners. Significantly.

**Power**

The descriptive statistics shows the Mean and SD values of All in India University Runners on the component of Power as 21.5333 and 3.72997 respectively. However, Senior National Runners had Mean and SD values as 24.5333 and 4.25671 respectively. The‘t’-value 2.903 as shown in the table above was found statistically significant (P<.05). It has been observed from the above results that Senior National Runners have demonstrated significant better on the component of power than the All in India University Runners significantly.

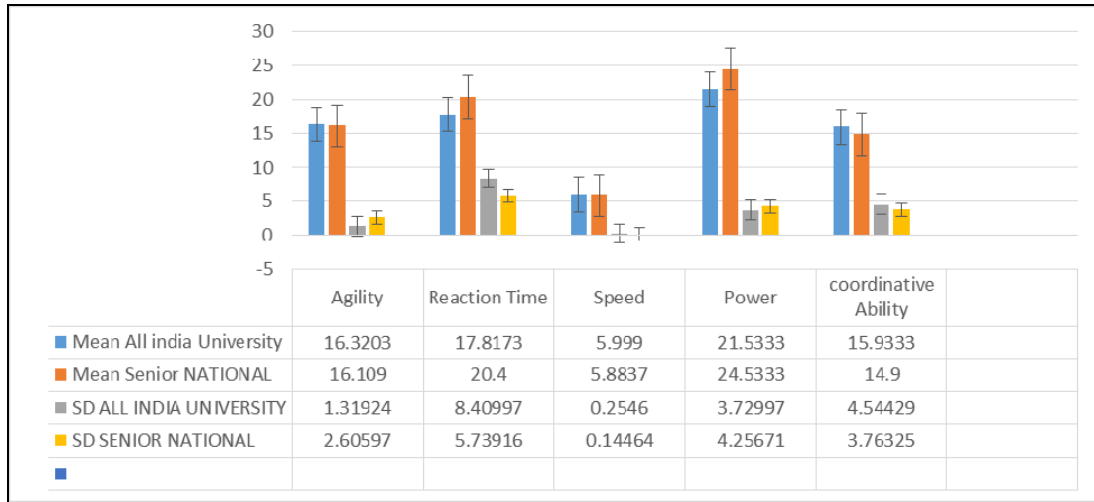
**Reaction Time**

The descriptive statistics shows the Mean and SD values of All in India University Runners on the component of Reaction Time as 17.8173 and 8.40997 respectively. However, Senior National Runners had Mean and SD values as 20.4000 and 5.73916 respectively. The‘t’-value 1.389 as shown in the table above was found statistically 64 insignificant (p>0.05). It has been observed from the above results that Senior National Runners have demonstrated better on the component Reaction Time than the All in India University Runners though

**Coordination Ability**

The descriptive statistics shows the Mean and SD values of All in India University Runners on the component of Coordination Ability as 15.9333 and 4.54429 respectively. However, Senior National Runners had Mean and SD values as 14.9000 and 3.76325 respectively. The 't'-value .959 as shown in the table above was found statistically insignificant

( $p > 0.05$ ). It has been observed from the above results that all in India University sprinters have demonstrated better on the component of Coordination Ability than the Senior National Runners. The comparison of mean scores of both the groups on performance physical fitness components has been presented graphically in below.



Graphical Representations in the Mean Scores Senior National level representation and All India inter University Runners on the Performance physical Fitness Components

**Reference**

1. Barrow, Harold M, Rose Mary, Mc Gee. A Practical Approach to Measurement in Physical Education, 3rdEd, Philadelphia: Lea and Febiger, 1979, 119.
2. Brown, Lee et al, Training for Speed, Agility and Quickness, Champaign Illinois: Human Kinetics Publishers Inc, 2000.
3. Dick, Frank W, Sports Training Principles, London: Kimpones Publishers, 1980.
4. Ed Jacoby, Bob Fraley, Complete Book of Jumps, Champaign Illinois: Human Kinetics Publishers Inc., 1995, 3.
5. Silvester, Jay. Complete Book of Throws, Champaign Illinois: Human Kinetics Publishers Inc., 2003, 9.
6. Dintiman, George Bough, *et al.* Sports Speed, (2nd ED), Champaign Illinois: Human Kinetics Publishers Inc., p. 1998, 72.
7. Pearson A. Speed, Agility and Quickness. London: A & C Black, 2001.
8. Wilmore, Jack H. Athletic Training and Physical Fitness: Physiological Principles and Practices of the Conditioning Process. Massachusehs: Allyn and Bacon Inc., 1977.
9. Jarver, J. Athletics field events. Hongkong: Australian, Sports Series, 1977, 112.
10. Baechle, Thomas R, Essentials of Strength Training and Conditioning, Champaign Illinois: Human Kinetics Publishers Inc. 1994.