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# A Comparative Analysis of Motor Fitness Components of Throwers: A Foundation for Success

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## Abstract

*Thus the aim of this study was to determine the comparative analysis of motor fitness components of throwers. To obtain data, the investigators had selected sixty (N=60), Male Inter-College and Inter-University Level throwers between the age group of 18-25 years were selected. The subjects were purposively assigned into three groups: Group-A: Throwers ($n_1$=60) Inter-College ($n_{1a}$=30) and Inter-University ($n_{1b}$=30). To determine the significant differences of motor fitness components between Inter-College and Inter- University Throwers, unpaired t-test was employed for data analyses. To test the hypothesis, the level of significance was set at 0.05. To conclude, it is significant to mention in relation to motor fitness components that insignificant differences occur between Inter-College and Inter-University Throwers on the sub variable Balance and Flexibility. However, the significant differences occur between Inter-College and Inter-University Throwers on the sub variable agility, speed and explosive strength.*

**Keywords**: Agility, balance, speed, explosive strength and flexibility.

## Introduction

Today's many sports are played by the peoples in the world, but athletic is one of the most popular sports. Because of its tradition, its universality and prestige, as well as the wide range of skills and qualities that encompasses, it is the basic sports "par excellence". In addition, athletic constitute the most important element of the modern Olympic games. It is practices in all countries for the education values and its role in the improvement of physical condition. Often providing the necessary foundation for optimum performance in other sports, it is frequently regard as an example of country development. One of the additional attempts was the development of classification indexes for categorized students according to their abilities. This was to allow physical education classes to be formed homogeneously so that they could be taught with increased efficiency. The earliest classification index focused on predicting ability by age, height and weight information[1]. At the same time, researcher began classifying the student by motor ability testing. The term motor ability was introduced, which referred to the overall proficiency in performing a wide range of sports related tasks. To increase the accuracy of the prediction, test batteries were designed on the premises that certain motor abilities such as agility, balance, co-ordination, endurance, power, speed and strength were the basic of physical performance[2]. From 1940 to the 1970s, other researcher such as (Fleishman) developed the notion that ability is specific rather than general in nature. The factors most often cited by these investigators included muscular strength, muscular agility, balance, endurance and flexibility. During this period[3] developed theory of basic abilities. Fleshman distinguished between skill and abilities. He states that skills are learned traits based on abilities that a person has, abilities are more general and innate in nature than skills. Fleshman clarifies that the performance of various skills based on some specific motor abilities and multitude of motor performance factor affects an individual ability to perform specific sports skills. Abilities mean the power of mind. In other words we can say that they are same as motor capacity. Everybody has capacity or abilities within his/her limit. It goes beyond one's own ability and reaches to high performance. These positive and negative changes are dependent upon various pertaining factors. The important factors are as follows: heredity, environment, practices, motivation, physical conditions, health habits and other characteristics. Some of the abilities are innate and inherent qualities, which have been encompassed in the human body since the human body itself. Human motor behaviour is dependent upon various abilities and these abilities are divided into different categories i.e., Physical fitness, motor fitness, motor ability and motor educability. There is no doubt that physical fitness and motor fitness is often used interchangeably, motor fitness is actually broader and more definitive in scope. Physical fitness includes muscular strength, and cardiovascular endurance. Muscular power, agility, speed and flexibility are other to compose motor fitness. Motor fitness is a term that describes an athlete's ability to perform effectively during sports or other physical activity. According to Barrow Motor fitness may be defined as a limited phase of motor ability, giving importance for the capacity to do vigorous work. An athlete's motor fitness is a combination of five different components, each of which is essential for high levels of performance[4]. Motor fitness, also termed motor ability refers to a

person's performance abilities as affected by the factors of agility, balance, speed, explosive strength, and flexibility[5]. All the five components of motor fitness are essential for competing at high levels of sports performance. That's why the concept is seen as an essential part of any athlete's training regime[6].

## Methodology

**Selection of Subjects:** For the purpose of the present study, Sixty (N=60), Male Inter-College and Inter-University Level Throwers between the age group of 18-25 years were selected. The subjects were purposively assigned into three groups: Group-A: Throwers ($n_1$=60): Inter-College ($n_{1a}$=30) and Inter-University ($n_{1b}$=30)

**Selection of Variables:** A feasibility analysis as to which of the variables could be taken up for the investigation, keeping in view the availability of tools, adequacy to the subjects and the legitimate time that could be devoted for tests and to keep the entire study unitary and integrated was made in consultation with experts. With the above criteria in mind, the following variables were selected for the present study:

**Motor Fitness Components:** i. Agility, ii. Balance, iii. Speed, iv. Explosive Strength, v. Flexibility

**Statistical Technique Employed:** To determine the significant differences of motor fitness components between Inter-College and Inter- University Throwers, unpaired t-test was employed for data analyses. To test the hypothesis, the level of significance was set at 0.05.

## Results and Discussion

**Results:** The results of motor fitness components of Inter-College and Inter-University level Throwers are presented in the following tables and their interpretations are given accordingly. Graphical representation of each variable is also presented for mean comparison. Further discussion of finding is initiated for better understanding of results.

**Agility:** A glance at table-1 shows the results of Inter-College and Inter-University throwers with regard to motor fitness components. The descriptive statistics shows the Mean and SD values of Inter-College throwers on the variable of agility as 17.0870 and 1.44287 respectively. However, Inter-University throwers had mean and SD values as 16.2630 and 1.53191 respectively. The't'-value 2.145 as shown in the table above was found statistically significant (P<.05). It has been observed from the above results that Inter-University throwers have demonstrated significantly better on the variable agility than the Inter-College throwers.

**Balance:** The descriptive statistics shows the mean and SD values of Inter-College throwers on the variable of balance as 26.5680 and 6.80529 respectively. However, Inter-University throwers had mean and SD values as 26.8000 and 7.90199 respectively. The't'-value .122 as shown in the table above was found statistically insignificant (p>0.05). It has been observed from the above results that Inter-University throwers have demonstrated better on the variable balance than the Inter-College throwers though insignificantly.

**Speed:** The descriptive statistics shows the Mean and SD values of Inter-College throwers on the variable of speed as 6.7993 and .22938 respectively. However, Inter-University throwers had Mean and SD values as 6.2833 and .23798 respectively. The't'-value 8.551 as shown in the table above was found statistically significant (P<.05). It has been observed from the above results that Inter-University throwers have demonstrated significantly better on the variable speed than the Inter-College throwers.

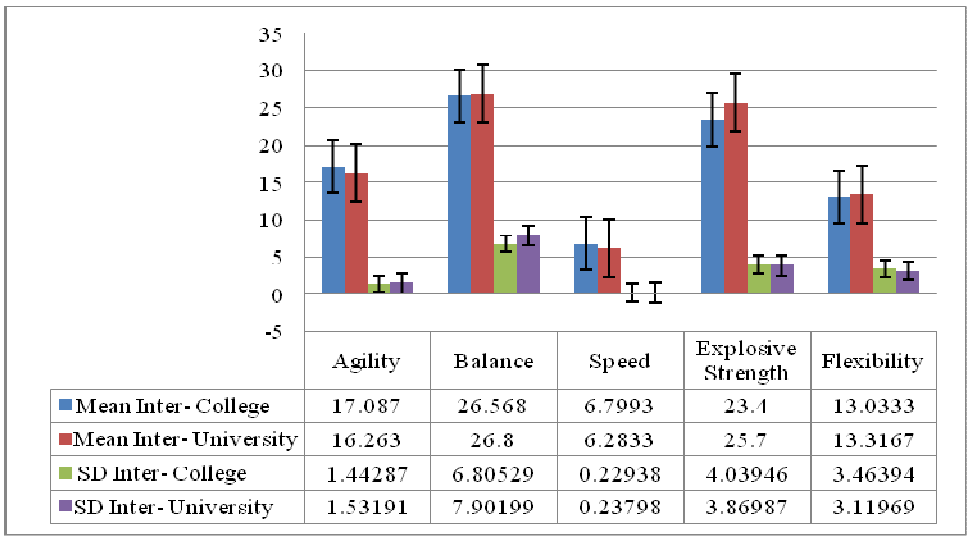
**Explosive Strength:** The descriptive statistics shows **t**he Mean and SD values of Inter-College throwers on the variable of explosive strength as 23.4000 and 4.03946 respectively. However, Inter-University throwers had Mean and SD values as 25.7000 and 3.86987 respectively. The't'-value 2.252 as shown in the table above was found statistically significant (P<.05). It has been observed from the above results that Inter-University throwers have demonstrated significantly better on the variable explosive strength than the Inter-College throwers.

**Flexibility:** The descriptive statistics shows the Mean and SD values of Inter-College throwers on the variable of flexibility as 13.0333 and 3.46394 respectively. However, Inter-University throwers had Mean and SD values as 13.3167 and 3.11969 respectively. The't'-value .333 as shown in the table above was found statistically insignificant (p>0.05). It has been observed from the above results that Inter-University throwers have demonstrated better on the variable flexibility than the Inter-College throwers though insignificantly. The comparison of mean scores of both the groups on respiratory indices has been presented graphically in figure-1.

**Table-1**
**Significant Differences in the Mean Scores of Inter-College and Inter-University Throwers on the Variable Motor Fitness Components**

| Variables | Mean | | SD | | Mean Difference | t-value | p-value |
|---|---|---|---|---|---|---|---|
| | Inter-College | Inter-University | Inter-College | Inter-University | | | |
| **Agility** | 17.0870 | 16.2630 | 1.44287 | 1.53191 | .82400 | 2.145* | .036 |
| **Balance** | 26.5680 | 26.8000 | 6.80529 | 7.90199 | .23200 | .122 | .903 |
| **Speed** | 6.7993 | 6.2833 | .22938 | .23798 | .51600 | 8.551* | .000 |
| **Explosive Strength** | 23.4000 | 25.7000 | 4.03946 | 3.86987 | 2.30000 | 2.252* | .02 |
| **Flexibility** | 13.0333 | 13.3167 | 3.46394 | 3.11969 | .28333 | .333 | .740 |

*Significant at 0.05 level, $t_{.05}$ (58)




| | Agility | Balance | Speed | Explosive Strength | Flexibility |
|---|---|---|---|---|---|
| Mean Inter-College | 17.087 | 26.568 | 6.7993 | 23.4 | 13.0333 |
| Mean Inter-University | 16.263 | 26.8 | 6.2833 | 25.7 | 13.3167 |
| SD Inter-College | 1.44287 | 6.80529 | 0.22938 | 4.03946 | 3.46394 |
| SD Inter-University | 1.53191 | 7.90199 | 0.23798 | 3.86987 | 3.11969 |

**Figure-1**
**Graphical Representations in the Mean Scores of Inter-College and Inter-University Throwers on the Variable Motor Fitness Components**

**Discussion of Findings:** The analysis highlighted that some sub variable of motor fitness components of Inter-College and Inter-University throwers differ significantly. It is observed from the results of table- 6 that significant differences were found with regard to motor fitness components of Inter-College and Inter-University throwers in the sub-variables; agility, speed and **e**xplosive strength. When compared to the mean values of both the groups, it has been found that Inter-University throwers have performed significantly better on agility, speed and **e**xplosive strength than their counterparts. However, no significant differences have been observed on the sub-variables; balance, and flexibility. The results of previous studies conducted on motor fitness components showed that higher level of motor fitness components i.e. speed and explosive strength give us the one up on our opponents. Saravanan and Singh[7] found significant difference on the diurnal rhythm on speed among groups during different times of the day, while the diurnal rhythm on strength endurance differs among different groups. Zajac[8] compared the level of general motor abilities and special sport skills, selected anthropometric variables and indicators of aerobic and anaerobic power of elite white and black basketball players of the Polish Basketball League. They found that due to better level of fitness components, black athletes dominate in track and field and in the best league in the world (the NBA).

## Conclusion

Based on the findings of this study, the following conclusions were drawn: To conclude, it is significant to mention in relation to Motor Fitness Components that insignificant differences occur between Inter-College and Inter-University Throwers on the sub variable Balance and Flexibility. However, the significant differences occur between Inter-College and Inter-University Throwers on the sub variable Agility, Speed and Explosive Strength.

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