



1. Raghvendra Pratap Singh
2. Sandeep kumar Dwivedi

Comparison of Speed and Flexibility Among Gymnastics and Athletics Players of Prayagraj

1. Department of Physical Education MGM PG COLLEGE Sambhal, 2. Research Scholar University of Allahabad (U.P.), India

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Abstract: *The purpose of this study was to compare the significant difference of Speed and Flexibility components among Gymnastic and Athletics players of Army Public School and Khel Gaon Public School of Prayagraj. Amongst the total 40 participants of the study, 20 of Gymnastic players from Khel Gaon Public School and 20 of Athletics players from Army Public School were selected using convenience sampling techniques. The data were collected by the use of 40-yard dash for speed and Sit and reach test for flexibility. The data were analysed and compared with the help of statistical procedures in which arithmetic mean, standard deviation, standard error of mean, and t-test were employed and the level of significance was observed at 0.05. The results of the study were depicted that Gymnastic players were found to be superior to Athletics players in performing flexibility and Athletics players were found to be superior to Gymnastic players in performing speed. The obtained t-value 6.4259 & 8.5282 is more than the tabulated value $t_{0.05(38)} = 1.684$.*

Key Words: Mental Health, Sports Activity, Depression, Anxiety and Self confidence.

Gymnastics is a sport that includes physical exercises requiring balance, strength, flexibility, agility, coordination, and endurance. The movements involved in gymnastics contribute to the development of the arms, legs, shoulders, back, chest, and abdominal muscle groups. Gymnastics evolved from exercises used by the ancient Greeks that included skills for mounting and dismounting a horse and from circus performance skills. The word gymnastics derives from the common Greek adjective (gymnos), by way of the related verb (gymnazo), whose meaning is to "train naked", "train in gymnastic exercise", generally "to train, to exercise". The verb had this meaning because athletes in ancient times exercised and competed without clothing.

Athletics is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules. It has been a part of the official program of the Summer Olympic Games since Tokyo 1964. Athletics was invented in 1895 by William G. Morgan, physical director of the Young Men's Christian Association (YMCA) in Holyoke, Massachusetts. It was designed as an indoor sport for businessmen who found the new game of basketball too vigorous. Morgan called the sport "mintonette," until a professor from Springfield College in Massachusetts noted the volleying nature of play and proposed the name of "Athletics."

Physical fitness is a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, moderate-vigorous physical exercise, and sufficient rest.

Before the industrial revolution, fitness was defined as the capacity to carry out the day's activities without undue fatigue. However, with automation and changes in lifestyles physical fitness is now considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy, to resist hypokinetic diseases, and to meet emergency situations.

Physical fitness is used in the context of two meanings: General fitness (a state of health and well-being) and specific fitness (the ability to perform specific sports or occupational skills). Fitness can be further subdivided into five categories: Cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition. The criteria for physical fitness have also expanded to include the capacity to meet physical demands in an emergency situation.

Physical fitness is the capacity of the heart, blood vessels, lungs, and muscles to function at optimum efficiency. In



previous years, fitness was defined as the capacity to carry out the day's activities without undue fatigue. However, with increased leisure time, and changes in lifestyles 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 hypokinetic diseases. (Those conditions that occur as a result of a sedentary lifestyle. Examples would include obesity and complications arising from obesity, such as diabetes.)

Physical fitness can be divided into two parts. Health related physical fitness and performance related fitness

Physical fitness	
Health related physical fitness	Performance related fitness
Cardiovascular endurance	Agility
Muscular strength	Balance
Muscular endurance	Coordination (hand-eye and/or foot-eye)
Flexibility	Power
Body composition	Reaction time
	Speed

Speed is the ability to move quickly across the ground or move limbs rapidly to grab or throw.

Speed is not just how fast someone can run (or cycle, swim etc.), but is dependent on their acceleration (how quickly they can accelerate from a stationary position), maximal speed of movement, and also speed maintenance (minimizing deceleration).

Speed is one of the main fitness components, important for success in many sports. For some athletes such as Track and Field sprinters, sprint swimmers, cyclists and speed skaters, speed is the most important aspect of fitness. In many other sports, including team field sports, good speed is also very important as part of the overall fitness profile.

Flexibility is the capacity of a joint or muscle to move through its full range of motion.

Flexibility is specific to a particular movement or joints, and the degree of flexibility can vary around the body.

Flexibility is one of the main fitness components, important for success in many sports. Certain sports, such as gymnastics, it is one of the most important physical attributes. In many other sports, including team field sports, good flexibility is an important part of the overall fitness profile. Good flexibility is also important for injury prevention. Stretching exercises can be used in injury rehabilitation, preparation for sport (warm up), and for recovery after exercise.

Speed and flexibility are major factor for achieving high sports performance in different sports. Many researchers have said that the speed is an inborn ability Whereas Flexibility is often highly neglected when training for sports.

Purpose of the Study- The purpose of this study was to compare the flexibility and speed among gymnastics and Athletics players in Prayagraj.

Methodology Subject and Design

The present study was conducted on 40 Gymnastics and Athletics players of schools of Prayagraj. Keeping in view the objectives, the players were categorized into two main groups: Gymnastics (20), and Athletics (20) players. The sample was collected from Army Public School and Khel Gaon Public School Prayagraj. Theageof



subjects ranged from 14 to 16 years.

Tools to be used:

40-yard dash for speed and Sit and reach test for flexibility were used on subjects for collection of data.

Both tests were administered during the school day (before the lockdown period).

Statistical Analysis- This was a comparative study of two group of Gymnastics and Athletics game players for finding out difference in criterion measure the mean difference of these groups were tested for significance by 't' test and level of significance was set at 0.05 level.

Analysis of Data and Result of the Study- There are at least two level at which Data are categorized, presented and analysed statistically in this study. The selected variable and group have been compared.

Mean and Standard Deviation of Gymnastics and Athletics Players on Speed Component Variable

Mean score and standard deviations of the two groups on Speed component variable are presented in Table - 1.

Table -1

Variable	Gymnastic Players		Athletics Players	
	Mean	S.D.	Mean	S.D.
Speed	6.870	0.514	5.895	0.443

Comparison of Speed Component Variable of Gymnastic Players and Athletics Players 't' test of Speed is given in Table-2 and graphically portrayed in Figure-1

Table -2

Comparison of Speed Component Variable					
	Mean	Mean Difference	SEM	t-value(calculated)	Significance level
Gymnastic Players	6.870	0.975	0.152	6.4259	0.05
Athletics Players	5.895				

* Significant at .05 level

Tabulated $t_{0.05(38)} = 1.684$

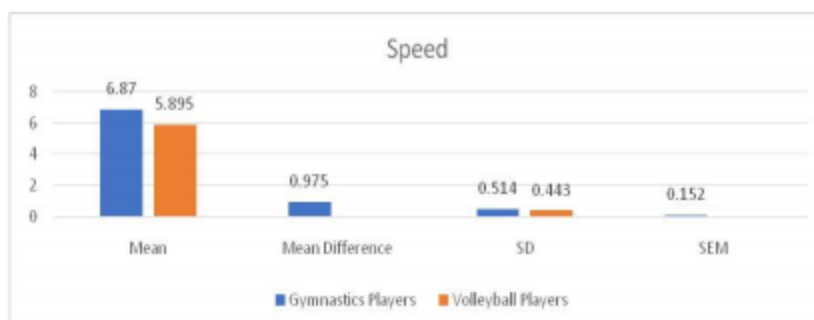


Figure-1 Comparison of Speed Component Variable of Gymnastic Players and Athletics Players

It is observed from the Table-2 that means index score has increase by 0.975 after the test. Since calculated't' >Tabulated't' (6.4259 >1.684). The result indicated that significance difference between Gymnastic players and Athletics players in the speed level. It is evident that Gymnastic players and Athletics players in speed test differed significantly, as the obtained t-value of 6.4259 is much more than the tabulated value $t_{0.05(38)} = 1.684$.

Mean and Standard Deviation of Gymnastics and Athletics Players on Flexibility Component Variable

Mean score and standard deviations of the two groups on Flexibility component variable are presented in Table - 3.



Table -1

Variable	Gymnastic Players		Athletics Players	
	Mean	S.D.	Mean	S.D.
Flexibility	16.65	1.69	11.45	2.14

Comparison of Flexibility Component Variable of Gymnastic Players and Athletics Players

't' test of Flexibility is given in Table-4 and graphically portrayed in Figure-2

Table -4

Comparison of Flexibility Component Variable					
	Mean	Mean Difference	SEM	t-value (calculated)	Significance level
Gymnastic Players	16.65	5.200	0.610	6.4259	0.05
Athletics Players	11.45				

* Significant at .05 level

Tabulated $t_{0.5(38)} = 1.684$

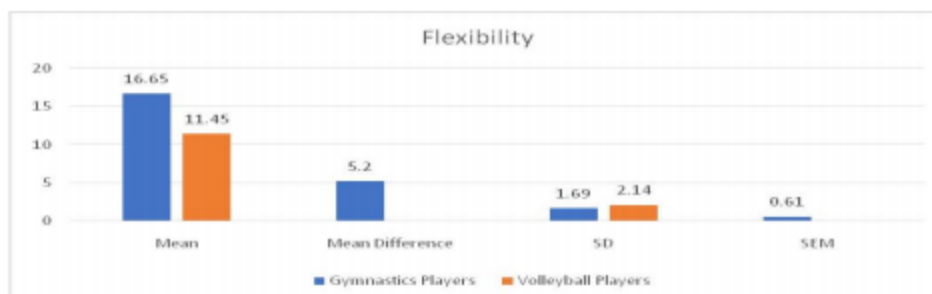


Figure-2 Comparison of Flexibility Component Variable of Gymnastic Players and Athletics Players.

It is observed from the Table-4 that means index score has increase by 5.200 after the test. Since calculated 't' > Tabulated 't' ($8.5282 > 1.684$). The result indicated that significance difference between Gymnastic players and Athletics players in the flexibility level. It is evident that Gymnastic players and Athletics players in flexibility test differed significantly, as the obtained t-value of 8.5282 is much more than the tabulated value $t_{0.05(38)} = 1.684$.

Conclusion- There is significant difference of speed component between Gymnastic and Athletics players. The speed of Athletics players was significantly higher

There is significant difference of flexibility between Gymnastic and Athletics players. The flexibility of Gymnastic players was significantly higher than the Athletics players.

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