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# A Comparative Study Of Speed, Agility And Strength Endurance Between Judo And Wrestling Players

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***Abstract:***

***Background:*** *The comparative study aims to identify the difference in Speed, Agility and Strength endurance between Judo and Wrestling players. Games and sports have become integral parts of human life due to the high competition and advancement of scientific techniques training.*
***Purpose:*** *The purpose of the study was to find out the differences in speed, agility, and strength endurance of judo and wrestling players in Manipur.*
***Methods:*** *For the study, 20 athletes each from Judo and Wrestling were selected as the subjects for this study. The age group of the subjects ranged from 14-19 years. The selected variables were Speed, Agility, and Strength endurance and is tested using 50 50-meter dash, shuttle run, and strength Endurance respectively. The data was analyzed by using an independent "t' test and the level of significance was chosen at 0.05 level of confidence.*
***Result:*** *After the comparison of speed, agility, and strength between the players of the two groups, the outcome reveals that there was a significant difference in speed, agility, and strength between judo and wrestling players.*

***Keywords:*** *Speed, Agility, Strength endurance, judo, and wrestling.*

## 1. Introduction

Wrestling and grappling sports have a rich and complex history dating back to prehistoric times. The modern era of wrestling saw a surge in popularity during the 19th century, leading to the development of Greco-Roman wrestling in Europe, and freestyle wrestling and collegiate wrestling in Great Britain and the United States, respectively. These sports experienced significant popularity at the turn of the 20th century. In the 1920s, wrestling began to be showcased as a form of sports entertainment, evolving into what is now known as professional wrestling, distinct from the competitive sports wrestling, now referred to as amateur wrestling. Wrestling, as a form of simulated combat and displayed behavior among males, has deep anthropological roots.
Greco-Roman wrestling was introduced as an Olympic discipline in the first modern Olympic Games held in Athens in 1896. After not being featured in the 1900 Olympics, wrestling reappeared in 1904 in St. Louis, this time with freestyle competition. Since then, Greco-Roman and freestyle wrestling have both been featured in the Olympics, with women's freestyle added in the 2004 Summer Olympics.
Judo, a sport developed from Japanese martial arts and ways of physical, intellectual, and moral activities, was founded by Professor Jigoro Kano, known as the father of Japanese Physical Education. Kano, who excelled in academics but had an inferiority complex about his small physique, created a new school of judo in May 1882 at the age of 21, incorporating the best elements of various jujitsu styles. This marked the birth of modern judo. Initially, he had only nine students, and the practice hall (dojo) measured just 12 jo (about 24 square yards).
Kano's dream came true at the Tokyo Olympics in 1964 when men's Judo was recognized as an official Olympic event. Women's judo was introduced as a demonstration event at the 1988 Seoul Olympics and was added to the official program at the Barcelona Olympics in 1992. Judo is widely played in India, with the first written record of Judo in India at Shantiniketan in 1929, where demonstrations and coaching were conducted by Shinzo Tagaki, arranged by Rabindranath Tagore. The Judo Federation of India was formed in 1965.
Judo and wrestling are two prominent combat sports that require a unique combination of physical attributes, including speed, agility, and strength endurance. While both sports share similarities in terms of grappling and controlling techniques, they also differ in their rules, strategies, and physical demands. Understanding the differences and similarities in the physical attributes of judo and wrestling players is essential for optimizing training programs and enhancing performance in these sports.

Speed is a crucial component of success in both judo and wrestling. Judo players need speed to execute throws and counter-attacks swiftly, while wrestlers require speed for takedowns and escapes. Studies have shown that speed is influenced by factors such as technique, reaction time, and explosiveness (Franchini, Takito, & Kiss, 2011). However, the specific demands of each sport may require athletes to develop different types of speed. Speed is a critical component of performance in both judo and wrestling. In wrestling, speed is crucial for executing takedowns and defending against opponents' attacks (Sikorski et al., 2013). However, the specific demands of each sport may influence how speed is developed and utilized.

Agility, the ability to change direction quickly and effectively, is another important attribute for judo and wrestling athletes. Wrestlers also rely on agility to maneuverer around opponents and set up scoring opportunities (Sikorski et al., 2013). The unique techniques and strategies of each sport may influence the development and utilization of agility in athletes.Judo players use agility to evade opponents and execute techniques, while wrestlers rely on agility to maneuverer around their opponents and maintain control. Research has shown that agility is influenced by factors such as flexibility, coordination, and balance (Franchini, Sterkowicz, Meira, & Gomes, 2013), and may vary depending on the specific techniques and strategies employed in each sport.

Strength endurance, the ability to sustain strength over time, is vital for both judo and wrestling athletes, who often engage in prolonged bouts of intense physical exertion. Judo players need strength endurance to execute multiple throws and grappling exchanges, while wrestlers require it to maintain control and exert force during takedowns. Studies have shown that strength endurance is influenced by factors such as muscle mass, muscle fibre type, and cardiovascular fitness (Sikorski et al., 2013), and may be developed through specific training programs tailored to each sport. Research has shown that judo players exhibit high levels of strength endurance, allowing them to execute multiple throws and grappling exchanges during a match (Franchini et al., 2013). Wrestlers also rely on strength endurance to maintain control and exert force during takedowns and escapes (Sikorski et al., 2013).

While there is a lack of direct comparative studies between judo and wrestling players regarding speed, agility, and strength endurance, some research has compared the physical attributes of athletes in these sports to other combat sports. For example, a study by James et al. (2017) compared the physical attributes of judo, wrestling, and taekwondo athletes and found significant differences in agility and strength endurance between the three groups. However, more research is needed to directly compare these attributes between judo and wrestling players.

This study aims to compare the speed, agility, and strength endurance of judo and wrestling players, providing valuable insights into the physical attributes of these athletes. By understanding the differences and similarities in these attributes, coaches and trainers can develop more effective training programs to enhance the performance of judo and wrestling players. The findings of this study may also have implications for injury prevention and sports science research in combat sports.

Furthermore, there is a substantial body of literature examining the physical attributes of judo and wrestling athletes individually, few studies have directly compared these attributes between the two sports. Understanding the differences and similarities in speed, agility, and strength endurance between judo and wrestling players is essential for developing targeted training programs and optimizing performance in each sport. Further research in this area is needed to provide a more comprehensive understanding of the physical attributes of judo and wrestling athletes.

**Objective of the study**

- This study aims to compare the speed, agility, and strength endurance of judo and wrestling players,

## 2. Methodology

In this chapter, the procedure for the sources of data, selection of the subjects, criterion measures, the procedure for administration of tests, and statistical procedures employed for the study are described.

### 2.1 Material and Methods

Forty male athletes, comprising 20 judo players and 20 wrestling players aged between 14 and 19 years from Manipur, were involved in this study.

### 2.2 Selection of Subjects

For this study, 20 (twenty) judo players and 20 (twenty) wrestling players aged between 14 and 19 years from Manipur, were selected randomly to be the subjects of the study.

The independent t-test was employed to compare the attributes between judo and wrestling players.

### 2.3 Criterion measures

1. Speed: 50 Meter Dash

2. Agility: Shuttle Run
3. Strength Endurance: Sit Up

**2.4 Test Administration:**
Tests were conducted in the morning between 7:00-9:00 A.M. Subjects were briefed on the test items and study purpose to ensure maximum effort. The participants' speed, agility, and strength endurance were assessed using standardized tests. Stopwatch was used to record the time taken to complete the 50 Meter Dash (speed), Shuttle Run (Agility) and Sit Up test (Strength Endurance). Speed was assessed using the 50-yard dash for linear speed and the T-test for agility. Strength endurance was evaluated using the number of push-ups and sit-ups completed in one minute. These measures are commonly used in sports science research and have been validated for assessing physical attributes in combat sports athletes.

**3. Analysis and interpretation of data**
The statistical analysis for comparison of the scores of 50 Meter Dash (speed), Shuttle Run (Agility) and Sit Up test (Strength Endurance) between the judo and wrestling players are presented in this chapter. Independent t-tests were used to compare the speed, agility, and strength endurance between judo and wrestling players.

**3.1 Statistical Analysis of Data**
The collected data were statistically analysed by using descriptive statistics to understand the characteristics of the variables and an independent t-test to compare means between the groups**.**

**3.2 Level of Significance**
To test the hypothesis, Statistical significance was set at $p < .05$.

**3.3 Findings**
The aim of the study was to assess and compare the speed, agility, and strength endurance of male judo and wrestling players from Manipur. Descriptive statistics were used to summarize the demographic and training characteristics of the participants.
The data collected from wrestlers and judo players in Manipur was statistically analysed using an independent t-test. The results of the analysis, including the 50m Dash (Speed), Shuttle run (Agility), and Sit-up (Strength endurance) tests, are presented in Table 1.

**Table no.1 Mean Comparison of 50m Dash (Speed), Shuttle run (Agility) and Sit-up(Strength endurance) between Wrestler and Judoka of Manipur.**

| variables | Group | N | Mean | MD | SD | SE | df | t-value |
|---|---|---|---|---|---|---|---|---|
| 50m Dash | wrestling | 20 | 7.08 | 0.10 | 0.31 | 0.11 | 38 | 0.91[@] |
| | Judo | 20 | 7.18 | | 0.40 | | | |
| Shuttle run | wrestling | 20 | 10.00 | 0.23 | 0.33 | 0.16 | 38 | 1.44[@] |
| | Judo | 20 | 10.24 | | 0.62 | | | |
| Sit-up | Wrestling | 20 | 52.45 | 5.10 | 6.52 | 1.85 | 38 | 2.76[*] |
| | Judo | 20 | 57.55 | | 5.08 | | | |

[@]Insignificance at 0.05, where tabulated $t_{(0.05)}(38) = 2.024$
[*]Significance at 0.05.

Table 1 displays the mean (M) and standard deviation (SD) for the 50m dash, Shuttle run, and Sit-up tests, which were 7.08±0.31 and 7.18±0.40, 10±0.33 and 10.24±0.62, and 52.45±6.52 and 57.55±5.08, respectively.
The results indicate that there was no significant difference between the mean values of the 50m dash for wrestling and judo players, as the calculated ‘t’ value of 0.91 was lower than the tabulated ‘t’ value of 2.024 at the 0.05 level of confidence. Similarly, no significant difference was observed in the Shuttle run, with a calculated ‘t’ value of 1.44 being lower than the tabulated ‘t’ value of 2.024 at the 0.05 level of confidence. However, a significant difference was found in the Sit-up test, as the calculated ‘t’ value of 2.76 was greater than the tabulated ‘t’ value of 2.024 at the 0.05 level of confidence.
Hence, there were no statistical significance in speed, as indicated by the 50m dash, for wrestlers and judo players. Similarly, there were no significant improvements in agility, as measured by the Shuttle run. However, a notable improvement was observed in strength, as indicated by the Sit-up test. The graphical representation of the mean comparison is illustrated in Figure 1

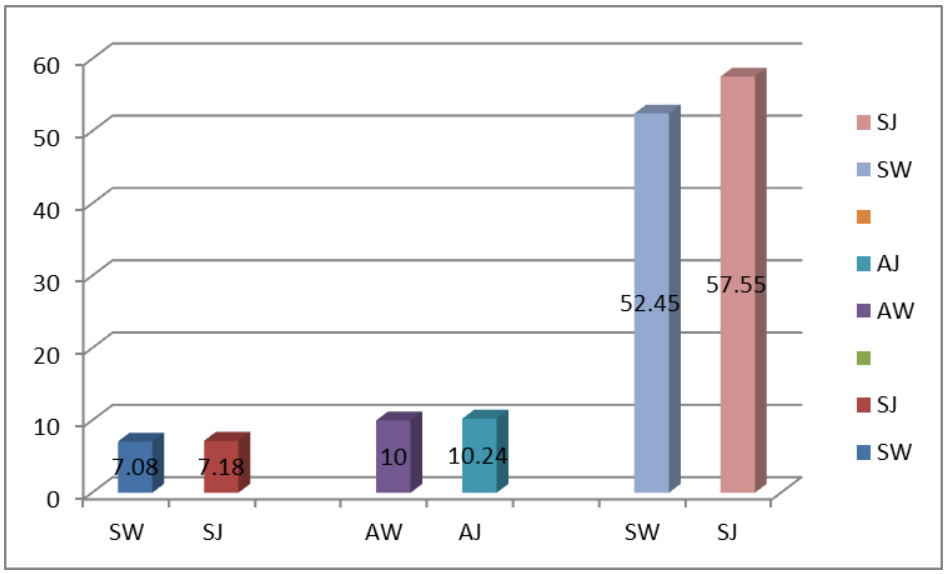


**Fig.1: Graphical representation of mean difference for Wrestler and Judo of Speed, Agility and Strength.**

The study's results showed that there were no significant differences between men's judo and wrestling in terms of speed and agility. However, there was a significant improvement in strength endurance, as determined by the independent t-test.

The findings suggest that judo and wrestling place different physical demands on athletes. Judo's emphasis on quick changes in direction and technique execution may explain the higher agility levels observed in judo players. On the other hand, wrestling's focus on grappling and takedowns may contribute to the greater strength endurance seen in wrestling players.

## 3. Conclusion

Acknowledging the delimitations and limitations of the current study, and based on the statistical findings, it can be concluded that there was no significant difference observed in speed and agility between judo and wrestling players, but a significant difference was found in terms of strength endurance. This insignificant difference may be attributed to the similar nature of the sports.

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