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## A comparative analysis of muscular strength between Wushu and taekwondo players

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### Abstract

The purpose of the study was to find out the comparative analysis of muscular strength between inter-college level Wushu and Taekwondo players. The study has been conducted on 25 Wushu male players and 25 Taekwondo male players studying at Panjab University, Chandigarh. The age of the subjects ranged between 20-25 years. The parameters selected for the purpose of the study was muscular strength (back, leg and hand). Back Dynamometer was used to measure muscular strength of back and leg and hand grip dynamometer was used to measure hand grip strength. The collected data were statistically analysed by using independent 't'-test to find out the significance difference between the two groups. The level significance chosen was 0.05. Based on the analysis of statistical results, it was revealed that there were significant differences obtained on leg and back strength and hand grip strength between inter-college level male Wushu players and Taekwondo players. Wushu players were performed significantly better on hand grip strength and back & leg strength as compare to Taekwondo players.

**Keywords:** Muscular strength, Wushu and taekwondo players

### Introduction

Muscular strength may be defined as the force exerted by an individual during a single maximum effort (Eckert and Helen, M., 1974) [3]. Muscular strength is the maximal one-effort force that can be exerted against a resistance, the maximum amount of force that one can generate in an isolated movement of a single muscle group (Caspersen *et al.* 1985) [2]. Iermakov *et al.* (2016) [5] proved the importance of studying of grip strength as factor of martial arts sportsmen's successfulness specialising in throws and grips of immobilisation of opponent's body (judo, sambo, wrestling etc.). Kaynar *et al.* (2011) [9] also reported that hand grip strength is strongly related to the strength in the upper body and neck muscle groups in their study on 22 elite wrestlers. Tizar *et al.* (2018) [10], in their research on 45 elite basketball, handball and volleyball players, found a significant difference only in terms of Back Strength when comparing the basketball and handball teams in terms of strength right, strength left, vertical jump, long jump, leg strength, back strength.

While Karakoc *et al.* (2015) [5] analysed the hand grip strength of athletes actively engaged in different sports. 90 female and 90 male athletes, totally one hundred eighty sportsmen volunteered to participate in this study. Athletes participated in this study were judo wrestlers, badminton players, athletes, handball players, basketball players, football players. According to the data of the research that there was no significant difference in hand grip strength of athletes engaged in different sports.

Ayhan *et al.* (2021) [1] found that elite female taekwondo players have greater back, leg, and claw strength values than elite female athletes and field hockey players; elite male athletes have greater back and leg strength values than elite male taekwondo players. Taking views from the above research studies conducted by known researchers, the present study was focus on comparative analysis of muscular strength between wushu and taekwondo players.

### Objectives of the Study

**The objectives of the study were as follows**

1. To determine the Muscular Strength (Back and Leg) between inter-college level male

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- Wushu players and Taekwondo players.
- To determine the Muscular Strength (Hand Grip) between inter-college level male Wushu players and Taekwondo players.

**Materials and Methods**

For the purpose of the study, fifty (Wushu=25, Taekwondo=25) inter-college level male players studying at Panjab University, Chandigarh were selected as subjects of the study. The age of the subjects ranged between 20-25 years. The parameters selected for the purpose of the study were Muscular strength (Hand Grip Strength and Back & Leg

Strength). Back Dynamometer was used to measure muscular strength of back and leg and hand grip dynamometer was used to measure hand grip strength. The collected data was statistically analysed by using independent ‘t’-test with the help of SPSS software to find out the significance difference between the two groups. The level of significance chosen was 0.05.

**Findings**

The comparison of Muscular Strength between Wushu players and Taekwondo players is depicted in table 1.

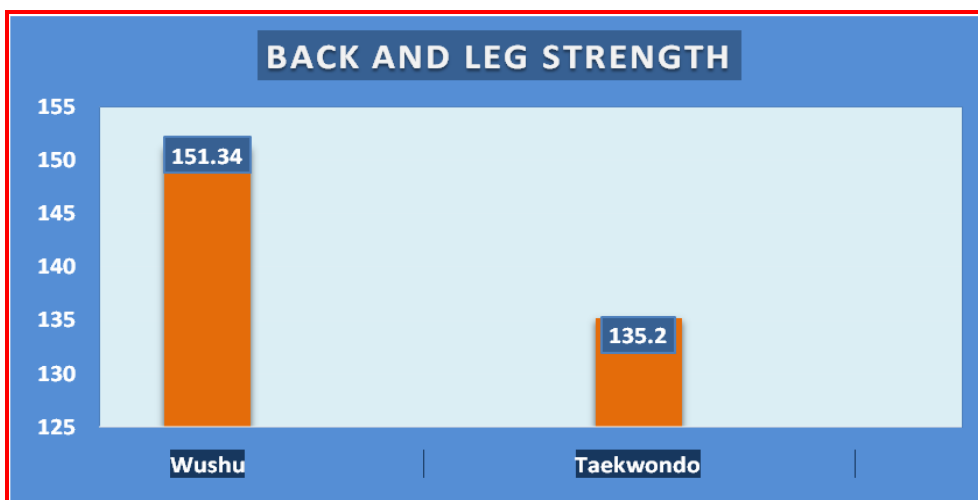
**Table 1:** Comparison of Scores on Muscular Strength (Back and Leg Strength) Between Wushu Players and Taekwondo Players

Variable	Group	N	MEAN	SD	MD	SED	t- value
Back and Leg Strength	Wushu	25	151.34	26.76	16.14	5.76	2.803*
	Taekwondo	25	135.20	10.63			

\*Significance at .05 level  
 ‘t’.05 (48) = 1.67

A perusal of inside of table 1 pertaining to Wushu players and Taekwondo players on the variable back and leg strength had secured the mean and standard deviation value 151.34, 26.76 and 135.20, 10.63 respectively. The ‘t’-value was found statistically significant as the value obtained was 2.803

whereas the tabulated value was 1.67 on 48 degree of freedom at .05 level of significant. Mean score of inter-college level Wushu players and Taekwondo players on back and leg strength are depicted graphically in fig. 1.



**Fig 1:** Mean Scores of Wushu Players and Taekwondo Players on Muscular Strength (Back and Leg Strength)

The comparison of Grip Strength (Left and Right) between Wushu Players and Taekwondo Players is depicted in table no. 2.

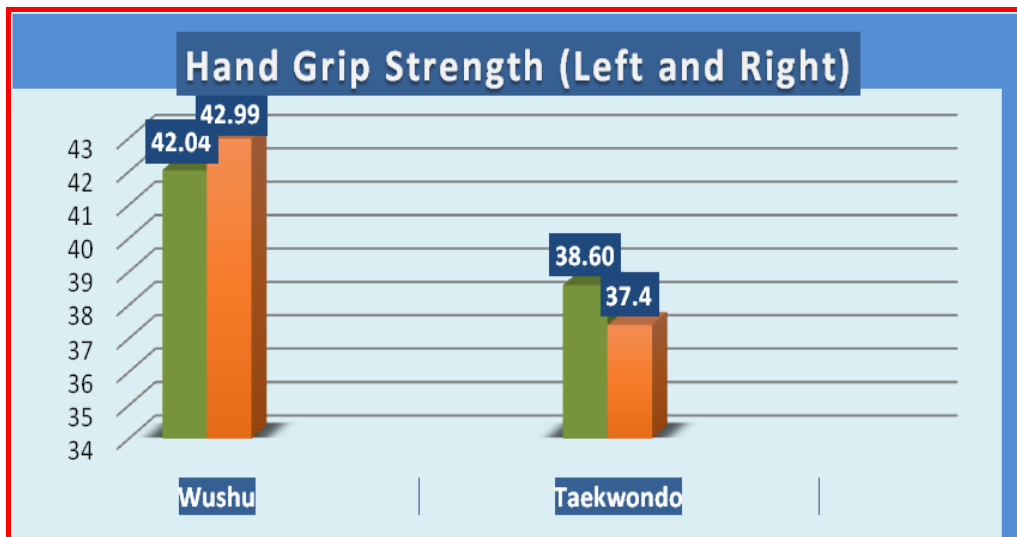
**Table 2:** Comparison of Scores on Hand Grip Strength (Left and Right) Between Wushu Players and Taekwondo Players

Variable	Group	N	Mean	SD	MD	SED	t- value
Hand Grip (Left)	Wushu	25	42.04	6.70	3.44	1.79	1.91*
	Taekwondo	25	38.60	6.01			
Hand Grip (Right)	Wushu	25	42.99	6.61	5.59	1.85	3.02*
	Taekwondo	25	37.40	6.48			

\*Significance at .05 level  
 ‘t’.05 (48) = 1.67

The above table revealed that on left hand grip and right-hand grip had secured the mean score, 42.04, 38.60 and 42.99, 37.40 between the wushu players and taekwondo players respectively. Standard deviation (SD) for hand grip (left) and hand grip (right) are 6.70, 6.01 and 6.61, 6.48 respectively. The ‘t’-value was found to be statistically significant as the

obtained values are 1.91 and 3.02 for left and right hand respectively whereas the tabulated value is 1.67 on 48 degree of freedom at 0.05 level of significant. Mean scores on the variable of hand grip strength (left and right) of inter-college Wushu players and Taekwondo players is depicted graphically in fig. 2.



**Fig 2:** Mean Scores of Wushu Players and Taekwondo Players on Hand Grip Strength (Left and Right)

### Conclusions

1. Significant difference was found on muscular strength (back and leg) between inter-college level male Wushu players and Taekwondo players.
2. Significant difference was obtained on muscular strength (hand grip) between inter-college level male Wushu players and Taekwondo players.
3. Wushu players were performed significantly better on hand grip strength and back & leg strength as compare to Taekwondo players.

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