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COMPARISON OF HANDGRIP STRENGTH BETWEEN RIGHT-HAND AND LEFT-HAND UNIVERSITY MALE BADMINTON PLAYERS

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ABSTRACT

Badminton is a popular sport worldwide that requires fast and powerful shots and agile footwork. Badminton is all about the wrist and the true power of any badminton shot comes from a combination of your wrist action and the racket swing. The present study aimed to compare the handgrip strength between right-handed and left-handed university badminton players. For this purpose, a total no. of 30 (right-handed n=15 and left-handed n=15) male badminton players ages 19-25 years old from the Department of Sport Sciences and Physical Education, University of the Punjab Lahore were selected for this study. All subjects were assessed for their handgrip strength using a hand-held dynamometer. Three trials were given for each of the participants and an average score was recorded. Descriptive statistics of handgrip strength were analyzed in terms of mean and standard deviation. The results concluded that there was a significant difference ($p < 0.05$) between the mean score of hand grip strength of the left hand and right hand of badminton players. Accordingly, to statistical values, Badminton players had more left-hand strength than right-hand at University Level.

INTRODUCTION

In the sports world, badminton game is known as quick footwork, powerful shots game. A badminton smash can travel up to 493 kph, making it one of the

world's fastest racket sports. Drop shots, slow drops, and fast drops in badminton require good wrist control. Shots can be made on both the forehand and backhand sides. The wrist action in badminton is crucial for creating powerful shots. A smooth wrist motion increases power and enhances control over the shuttle's course. The ultimate power of any badminton shot comes from a combination of your wrist action and the racket swing since badminton is all about the wrist (King et al., 2020). To generate the most force in any sort of shot in badminton, you must flick your wrist in a "rapid snapping motion" to provide more power. To generate the snapping motion of your wrist and to generate the power for your badminton backhand and overhead stroke, it is very helpful to train players to improve their wrist action.

The development of total strength and the prevention of injuries depend heavily on these motor skills. According to Sakurai & Ohtsuki (2000), the proximal muscles of the participant who lacked skill displayed a comparable pattern of activity. According to reports, accurate performance of the smash in badminton appears to depend on control of the distal muscles. The research team combined video analysis of elite competitions with rankings and handedness statistics for the top 100 athletes across six sports over multiple seasons. Squash, badminton, and tennis are among the sports where left-handed sportsmen excel. Manufacturers of badminton rackets must create left-handed rackets with a unique grip designed exclusively for left-handed badminton players. Your overall strength will rise as a result of strengthening your handgrip muscles, which will also improve your badminton smash. Numerous anthropometric and hand strength studies have compared hand dominance in various sports (Maleki-Ghahfarokhi et al., 2019). Gross anthropometric measurements like BMI, arm circumference, skin folds, arm length, comparisons of muscle strength, and patterns of movements between hand dominance in sports have all been examined by numerous researchers. In To compare the hand grip strength differences between right-handed and left-handed badminton players, this study was created.

METHODOLOGY

The researchers used a convenient sampling technique case for this research. A total no. of $n=30$ male badminton players (18-25 Years old) (left-hand $n=15$ and right-hand $n=15$) were selected from the department of Sport Sciences and Physical Education, University of the Punjab, Lahore, belonging from different semesters of BS and M.Sc. programs. In this study, the hand-held dynamometer was administrated to compare the left-hand and right-hand grip strength ability of male badminton players.

The procedure of the Hand-held Dynamometer

Badminton players were assessed for their eligibility. If the subjects fulfilled the inclusion and exclusion criteria, an information sheet providing details about the study was provided to them. For subjects who were willing to take part in the study, informed consent was obtained from them for the same. All subjects were assessed for their handgrip strength using a hand-held dynamometer. Three trials were given for each of the participants and an average score was recorded. The subject was made to sit on a chair with the elbow flexed at 90

degrees and the forearm in semi-pronation (neutral position) lying on an armrest. There was a one-minute resting period was given in between each squeeze to overcome the fatigue. The mean value of three squeezes was recorded.

Digital Hand-held Dynamometer



Figure 1. Hand-held Dynamometer

Data Analysis

The results were expressed and analyzed by using appropriate statistical tools i.e. Percentage, Means, Standard Deviation, and independent Sample t-Test.

RESULTS

Table 1. Demographic characteristics of the group's participants

Group	Demographic characteristics	Sample Size	Average/ Standard deviation
Left Hand	Age (year)	15	24.82±2.61
	Height (cm)		176.47±5.87
	Body Mass (kg)		72.78±10.68
	Body Mass Index (kg/m ²)		22.11±2.21
Right Hand	Age (year)	15	23.12±.41
	Height (cm)		174.47±4.77
	Body Mass (kg)		73.81±9.61
	Body Mass Index (kg/m ²)		22.71±1.12

Table 1 presents the demographic characteristics data of left-handed and right-handed players.

Table 1 shows that the Left-hand average age (year) was 24.82±2.61, height 176.47±5.87 cm, body mass 72.78±10.68 kg and body mass index 22.11±2.21

kg/m² and right-hand average age (year) was 23.12±.41, height 174.47±4.77cm, body mass 73.81±9.61kg and body mass index 22.71±1.12 kg/m².

Table 1. Independent Samples T Test of hand grip strength of the left-handed and right-handed badminton players at the university level

#	Variable	N	Mean	SD	t	P
1	Hand Grip Strength of Left Hand	15	51.6	11.13	.551	.48
2	Hand Grip Strength of Right Hand	15	47.4	11.39		

Table 1 shows the results of the Independent Samples t Test of hand grip strength of the left hand and right hand of badminton players at the university level. The hand grip strength of the left hand had a mean of 51.6 and the right-hand mean of 47.4. This table shows that there was a significant difference ($p < 0.05$) between the mean score of hand grip strength of the left hand and right hand of badminton players at the university level. Accordingly, to statistical values, Badminton players had more left-hand strength than right-hand at University Level.

DISCUSSION AND CONCLUSION

The aim of the present study was to check the comparison between the hand grip strength of the left hand and right hand of badminton players at the university level. Through convenience sampling, $n=15$ players of right-handed and $n=15$ players left-handed were recruited after screening for inclusion and exclusion criteria of the study. All subjects were assessed for their handgrip strength using a hand-held CAMRY Digital Hand Dynamometer Grip Strength Measurement (Meter Auto Capturing Electronic Hand Grip Power 198 Lbs / 90 Kgs). The results concluded that there was a significant difference ($p < 0.05$) between the mean score of hand grip strength of the left hand and right hand of badminton players. According to the statistical values, left-hand players had more strength than the right hand. The results of the present study are supported by the previous study. The left-hand players have an enlarged brain region in the right hemisphere during development which favors them playing better than the right-handed players (Grouios, 2004). It was reported that the performing activities which demand spatial tasks and attention, the right half of the brain is neuroanatomical highly suitable for left-handers (Ramajayam, 2018).

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