

## A COMPARATIVE STUDY OF SELECTED PHYSICAL VARIABLES BETWEEN SQUASH AND TENNIS PLAYERS

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### Abstract:

*The purpose of the study was to compare the selected physical variables between squash and tennis players. A total of 80 male subjects (40 each in tennis and squash) age ranges from 18 to 26 were selected purposively for the study from different region of Madhya Pradesh who have participated in Inter-University tournaments. The data were collected for different physical variables i.e. back strength, hand grip (right and left) and balance (dynamic and static). For the analysis of data, independent t-test and Levene's test for equality of variances has been employed. The level of significance was set at 0.05. The significant difference was found between Squash and Tennis players on dynamic balance. Whereas, insignificant differences were found for other physical variables i.e. back strength, static balance and handgrip strength (right and left) among tennis and squash player.*

### KEY WORDS:

Tennis, Squash, Balance, Back Strength, Grip Strength.

### INTRODUCTION

Racquet sports are played by men and women, in singles and doubles competition (same-sex and mixed-sex pairs). Participation ranges from elite racquet players training 20-40 hours per week, to recreational racquet players who train a few times per week or just take part in the odd game. Tennis and squash are skill full as well as fast games which require speed, agility and balance to win. Squash is a sport that evolved from tennis and they have some similarities and differences. Squash is played by hitting against the wall against another player in a 4-wall enclosed court indoors, while tennis is played with a net separating two side of opponent's court and it's usually outdoors. Squash's ball, in comparison, is much smaller but denser than tennis's ball. A squash racket has much more smaller racket face area than that of the tennis, but their shapes are quite similar. .

The aerobic system kicks in during long rallies and periods of recovery, which are part of both these sports. In explosive parts of the game however, players are reliant on their anaerobic energy systems.

Recommending a racket to a squash or tennis player is not always an easy task as each individual has his own style of play and level of experience. There are, however, a number of features that could greatly enhance or detract from a player's playing ability or experience. Interestingly enough, many of the racket qualities that affect players' squash game affects a tennis players' game as well. Finding the right combination of weight, balance, shape and stiffness is the key to recommending the right racket, whether for squash or tennis.

Using a squash racket also trains a player's wrist to be more flexible. As the grip size of the squash racket is similar to the grip size of the tennis racket, players can do many exercises involving wrist work such as wrist rotation, backhand, forehand, drive and etc.

If a player uses a tennis racket to do this, it will make their wrist stiff because of its thick grip. The squash racket training is also part of a tennis player's warm up. Normally, most players will take a few

swings on the squash racket as a warm up before stepping onto the court.

Racket sports such as Tennis and Squash require a combination of psychological stability, tactical analysis, motor coordination as well as strong physical and physiological attributes. These demands make the sports particularly challenging for athletes at different levels (Ogino, Makita, Satomi & Yoshida, 2007).

One of the most important things in becoming a good tennis and squash player is to be in the correct position to hit the ball. Not only does your footwork have to be good to be able to get to the ball, but you also have to be balanced once you get there.

Research in junior competitive tennis has shown that losing balance while hitting causes 80% of all errors. Usually reasons such as hitting the ball too close or too far away from the body, bad elbow position, too high shoulders, etc. are given; when the real reason is that all these problems are caused by loss of balance. Taking consideration that balance is an essential component (Hassan F.).

Balance is your ability to maintain equilibrium, or control your body's position in space. This component can further be broken down into static balance, which is maintaining equilibrium while not moving, and dynamic balance, which is maintaining control of the body while moving without succumbing to gravity or momentum (Matte, 2013). Balance is important in racquet sports such as in tennis and squash while taking different types of strokes.

Core (abdominal and back) strength is crucial for the racquet sports player looking to increase serve power and avoid injury. A team of researchers from Arizona looked at the rotation and strength requirements of the trunk in elite tennis players. Weak or poorly controlled core muscles have been associated with low back pain. The back muscles are responsible for movements such as extension and flexion of the spine and rotation of the trunk (Killeline Leisure Centre, 2014).

## **SELECTION OF SUBJECTS**

A total of 80 subjects (n = 40, in tennis and squash each) were purposively selected from the Madhya Pradesh from the different regions. The age of the subjects were in the range of 18 to 26 years. The players who have participated in Inter-University in tennis and squash are selected for the study.

## **METHODOLOGY**

In this study the following variables were considered as the essential ingredients for both the games i.e. tennis and squash

1. Back strength
2. Grip strength (right and left)
3. Balance (dynamic balance and static balance)

For the collection of data of back strength, back dynamometer was used, and for grip strength (right and left) hand grip dynamometer was used and for balance the researcher has used the Johnson modified test for dynamic balance and for static balance bass stick test was used.

## **STATISTICAL TECHNIQUE**

To see the difference between the selected physical variables among tennis and squash players independent t-test statistical technique was employed at the level of significance 0.05.

## **RESULTS**

Independent t-test has been employed by the researcher to compare the back strength, dynamic balance, static balance, grip strength (right), grip strength (left) of tennis and squash players. Before employing independent t-test, Levene's test for equality of variances has been employed to see the equality of variances which is the very important assumption of independent t test.

The table of independent t test for the comparison of tennis and squash players in the scores of back strength has been presented below.

**Table 1**  
**INDEPENDENT T-TEST FOR THE COMPARISON OF TENNIS AND SQUASH PLAYERS ON SCORES OF BACK STRENGTH**

Levene's Test for Equality of Means							
Equality of Variances							
	F	P-Value	T	df	P-Value	Mean Difference	Std. Error Difference
Back Strength	.087	.769	.211	78	.833	.75	3.55

Table 1 reveals that the Levene's test for equality of variance was insignificant as p-value is greater than .05. It is also evident from the above table that value test statistics (i.e. 't') was found insignificant as the corresponding p-value is greater than .05. The result from the above table shows that the mean difference (.75) of tennis and squash player on back strength was insignificant, which says that there is no difference in back strength of tennis and squash player.

The table of independent t test for the comparison of tennis and squash players in the scores of dynamic balance has been presented below.

**Table 2**  
**INDEPENDENT T-TEST FOR THE COMPARISON OF TENNIS AND SQUASH PLAYERS ON SCORES OF DYNAMIC BALANCE**

Levene's Test for Equality of Means							
for Equality of Variances							
	F	P-Value	T	df	P-Value	Mean Difference	Std. Error Difference
Dynamic Balance	.228	.635	3.02	78	.003	5.0	1.65

Table 2 reveals that the Levene's test for equality of variance was significant as p-value is greater than .05. It is also evident from the above table that value test statistics (i.e. 't') was found significant. As the p-value is greater than .05 the results from the above table shows that the mean difference (5.0) of tennis and squash player on back strength was significant which says that there is difference in dynamic balance of tennis and squash.

The table of independent t test for the comparison of tennis and squash players in the scores of static balance has been presented below.

**Table 3**  
**INDEPENDENT T-TEST FOR THE COMPARISON OF TENNIS AND SQUASH PLAYERS ON SCORES OF STATIC BALANCE**

Levene's Testt-test for Equality of Means for Equality of Variances							
	F	P-Value	T	df	P-Value	Mean Difference	Std. Error Difference
Static Balance	.018	.892	-.242	78	.809	-1.72	7.13

Table 3 reveals that the Levene's test for equality of variance was significant as p-value is greater than .05. It is also evident from the above table that value test statistics (i.e. 't') was found significant. As the p-value is greater than .05 the results from the above table shows that the mean difference (-1.72) of tennis and squash player on back strength was significant which says that there is no difference in static balance of tennis and squash.

The table of independent t test for the comparison of tennis and squash players in the scores of grip strength (right) has been presented below.

**Table 4**  
**INDEPENDENT T-TEST FOR THE COMPARISON OF TENNIS AND SQUASH PLAYERS ON SCORES OF GRIP STRENGTH (RIGHT)**

Levene's Testt-test for Equality of Means for Equality of Variances							
	F	P-Value	t	Df	P-Value	Mean Difference	Std. Error Difference
Grip Strength (Right)	.296	.588	-1.215	78	.228	-1.75	1.44

Table 4 reveals that the Levene's test for equality of variance was significant as p-value is greater than .05. It is also evident from the above table that value test statistics (i.e. 't') was found significant. As the p-value is greater than .05 the results from the above table shows that the mean difference (-1.75) of tennis and squash player on back strength was significant which says that there is no difference in grip strength (right) of tennis and squash

The table of independent t test for the comparison of tennis and squash players in the scores of grip strength (left) has been presented below.

**Table 5**  
**INDEPENDENT T-TEST FOR THE COMPARISON OF TENNIS AND SQUASH PLAYERS ON**  
**SCORES OF GRIP STRENGTH (LEFT)**

Levene's Testt-test for Equality of Means for Equality of Variances									
	F	P-Value			T	df	P-Value		Std. Error Difference
		Mean Difference	Mean Difference	Mean Difference					
Grip Strength (Left)	3.16	.079	1.308	78	.195	1.57	1.20		

Table 5 reveals that the Levene's test for equality of variance was significant as p-value is greater than .05. It is also evident from the above table that value test statistics (i.e. t') was found significant. As the p-value is greater than .05 the results from the above table shows that the mean difference (1.57) of tennis and squash player on back strength was significant which says that there is no difference in grip strength (left) of tennis and squash.

**DISCUSSION**

The result of the study shows that tennis and squash players significantly differ on dynamic balance. Whereas, on back strength, static balance and handgrip strength (right and left) the squash and tennis players were found same. Dynamic balance is to maintain and to control of the body while moving without succumbing to gravity or momentum. As the game of tennis and squash are racket games and have many skills very similar to each other. The difference lies in the area of the court, the equipment used for play and the time limit of game. The tennis player has to cover more distance in comparison to squash player as the dimensions of courts are different. The dynamic balance of squash players was found better than tennis player. It may be because the movement and skills in squash are speedier in comparison to the tennis.

**CONCLUSIONS**

- 1.Squash players are better than tennis players on dynamic balance.
- 2.Squash and tennis players are equal on static balance.
- 3.Squash and tennis players are equal on grip strength (left and right).
- 4.Squash and tennis players are equal on back strength.

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