



RELATIONSHIP BETWEEN ARM STRENGTH AND GRIP STRENGTH TO SERVING CAPACITY IN FEMALE LAWN TENNIS PLAYERS

Physical Education

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ABSTRACT

The purpose of the study was determining the relationship of arm strength and grip strength to serving capacity of female lawn tennis players. Twenty (20) female lawn tennis players who participate in inter college competition were selected as subjects. The criterion measures were arm strength and grip strength were measured by six pound medicine ball and grip dynamometer and serving capacity measured by French short serve test. In order to find out the relationship of arm strength and grip strength to serving capacity of lawn tennis player, the Pearson's Product Movement correlation was computed and level of significance was set to 0.05. The result revealed that there is significant correlation between arm strength ($r=0.456$) and grip strength ($r=0.220$) with serving capacity.

KEYWORDS

arm strength, grip strength, lawn tennis, medicine ball, grip dynamometer.

INTRODUCTION

There has been much dispute over the invention of modern tennis, but the officially recognized centennial of the game in 1973 commemorated its introduction by Major Walter Clopton Wingfield in 1873. He published the first book of rules that year and took out a patent on his game in 1874, although historians have concluded that similar games were played earlier and that the first tennis club was established by the Englishman Harry Gem and several associates in Leamington in 1872. Wingfield's court was of the hourglass shape and may have developed from badminton. The hourglass shape, stipulated by Wingfield in his booklet "Sphairistiké, or Lawn Tennis," may have been adopted for patent reasons since it distinguished the court from ordinary rectangular courts. At the time, the Marylebone Cricket Club (MCC) was the governing body of real tennis, whose rules it had recently revised. After J.M. Heathcote, a distinguished real tennis player, developed a better tennis ball of rubber covered with white flannel, the MCC in 1875 established a new, standardized set of rules for tennis.

An important milestone in the history of tennis was the decision of the All England Croquet Club to set aside one of its lawns at Wimbledon for tennis, which soon proved so popular that the club changed its name to the All England Croquet and Lawn Tennis Club. In 1877 the club decided to hold a tennis championship, and a championship subcommittee of three was appointed. It decided on a rectangular court 78 feet (23.8 metres) long by 27 feet (8.2 metres) wide. They adapted the real tennis method of scoring—15, 30, 40, game—and allowed the server one fault (i.e., two chances to deliver a proper service on each point). These major decisions remain part of the modern rules. Twenty-two entries were received, and the first winner of the Wimbledon Championships was Spencer Gore. In 1878 the Scottish Championships were held, followed in 1879 by the Irish Championships.

There were several alterations in some of the other rules (e.g., governing the height of the net) until 1880, when the All England Club and the MCC published revised rules that approximate very closely those still in use. The All England Club was the dominant authority then, the British Lawn Tennis Association (LTA) not being formed until 1888. In 1880 the first U.S. championship was held at the Staten Island Cricket and Baseball Club. The victor was an Englishman, O.E. Woodhouse. The popularity of the game in the United States and frequent doubts about the rules led to the foundation in 1881 of the U.S. National Lawn Tennis Association, later renamed the U.S. Lawn Tennis Association and, in 1975, the U.S. Tennis Association (USTA). Under its auspices, the first official U.S. national championship, played under English rules, was held in 1881 at the Newport Casino, Newport, Rhode Island. The winner, Richard Sears, was U.S. champion for seven consecutive years.

METHODOLOGY

Selection of Subjects

Twenty (20) female lawn tennis players, who had participated in the Inter Collegiate lawn tennis Competition 2011-2012 of Jiwaji University, Gwalior (M.P.) become decided on as topics for the take a look at. The common age of the subjects becomes 20 to 25 years.

Selection of Variables:

Independent Variable—Arm Strength and Grip Strength

Dependent Variable - Serving Capacity

Criterion Measures:

Arm Strength: Arm strength of the subjects becomes measured with the gap included through throwing medicine ball backward. Score become recorded in meter.

Grip Strength: Grip strength of the subjects becomes taken through the grip dynamometer. Score become recorded in pound.

Avery-Richardson Tennis Service Test: The Avery-Richardson Tennis Service Test was constructed to maximize the practical relationship between skills tests and playing situations. The test incorporates the game-like criteria of two balls per trial, service attempts to both right and left service courts, and comparable credit for flat, slice, and spin serves.

Research Design:

One Shot Experimental Research layout become used for this take a look at and pupil had taken power additives particularly arm strength and grip strength. Serving ability become measured through Avery-Richardson Tennis Service Test. To discover the connection among those Karl Pearson Product Movement Correlation become carried out. The level of significance was set at 0.05.

Collection of data:

The data was collected form Department of Physical Education, Institute of Professional Studies, Gwalior (M.P) and Department of Physical Education Jiwaji University, Gwalior (M.P) Inter College lawn tennis player were considered as subject for this study who had participated in 2011-12 Intervarsity.

Statistical Procedure

To discover the connection among arm strength and grip strength to serving ability in lawn tennis players the Karl Pearson Movement Correlation technique become carried out right here and stage of importance become set at 0.05.

RESULTS

The statistical analysis of data and results of the study of arm strength and grip strength to lawn tennis serving capacity of twenty (20) female players who participated in Inter Collegiate lawn tennis Competition 2011-2012 of Jiwaji University, Gwalior (M.P).

Findings

In order to decide the connection among arm power and grip power to serving ability in lawn tennis participant's Karl Person's Product Movement technique become used and the variables which includes arm strength and grip strength have been taken into consideration as impartial variables, wherein because the Avery-Richardson Tennis Service Test become taken into consideration as based variable.

Table No.01 Descriptive Analysis of Arm Strength of Female lawn tennis Players

S. No	Descriptive Statistic	Performance (in mts.)
1.	Minimum	02.60
2.	Maximum	06.50
3.	Range	09.10
4.	Mean	08.02
5.	Standard Deviation	0.72

Table no.01 indicate descriptive analysis of arm strength of female lawn tennis players where minimum, maximum, range, mean and standard deviation values of serving factor are 02.60, 06.50, 09.10, 08.02 and 0.72 respectively.

Table No.02 Descriptive Analysis of Grip Strength of Female lawn tennis Players

S. No	Descriptive Statistic	Performance (in kg.)
1.	Minimum	28.90
2.	Maximum	38.20
3.	Range	09.30
4.	Mean	33.08
5.	Standard Deviation	03.90

Table no.02 indicate descriptive analysis of grip strength of female lawn tennis players where minimum, maximum, range, mean and standard deviation values of serving factor are 28.90, 38.20, 9.30, 33.08 and 03.90 respectively.

Table No.03 Descriptive Analysis of Serving Capacity of Female lawn tennis Players

S. No	Descriptive Statistic	Scores
1.	Minimum	32.00
2.	Maximum	43.00
3.	Range	11.00
4.	Mean	36.90
5.	Standard Deviation	03.47

Table no.3 indicate descriptive analysis of serving capacity of female lawn tennis players where minimum, maximum, range, mean and standard deviation values of serving factor are 32.00, 43.00, 11.00, 36.90 and 03.47 respectively.

Relationship between Independent Variables to Dependent Variables

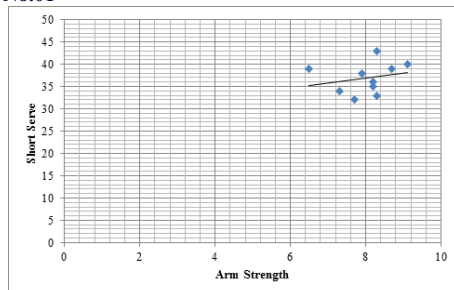
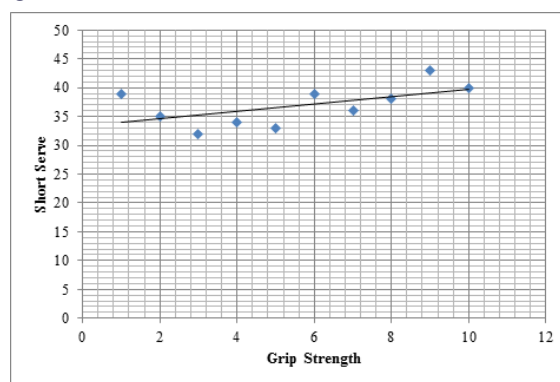
The relationship between independent variables (arm strength and grip strength) and depended variable of (serving capacity) were computed by Karl Pearson's Product Movement Correlation Method.

Table No.04 Relationship of Independent Variables to Serving Capacity among Female Players

S.No	Variables	Correlation Coefficient (r)
1.	Arm Strength and serve	0.228
2.	Grip Strength and serve	-0.436

Significant at 0.05 level of significance $r_{0.05(8)} = 0.632$

Table no.04 reveals no significant relationship was found between arm strength and serve ($r = -0.228$) and grip strength and short serve ($r = -0.436$). As calculated value is lesser than tabulated value (0.632), null hypothesis is accepted at 0.05 level of significance. Graphical representation of above table is made in figure no.01 and 02.

Figure No.01**Figure No.01 Relationship between Arm Strength and Severing Capacity among Female lawn tennis Player****Figure No.02****Figure No.02 Relationship between Grip Strength and Severing Capacity among Female lawn tennis Player**

Discussion of Findings

Arm strength and grip strength of female badminton player and serving performance was found by administrating appropriate test as well as utilization of appropriate statistics. It has been found that there is an in significance relationship between arm strength and grip strength to serving capacity performance may be because of the probably sample selected.

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