



The Relationship of Two Traits: Explosive Strength and Distinctive Strength with Leg Speed to the Accuracy of High-Smashing Performance by Dhi Qar University Volleyball Team Players

Amjad Abd Kadhim

University of Thi-Qar

amamabab22@utq.edu.iq

<https://doi.org/10.32792/utq/utj/vol20/2/6>

Abstract

The goals of the research search out recognize the principles of explosive capacity with the performers of the University of Dhi-Qar volleyball group, and to recognize the principles of the capacity characteristic of speed with the performers of the University of Dhi-Qar volleyball group and Identify the friendship betwixt the explosive force and the capacity characteristic of speed and veracity of the efficiency of the ability of the overpowering extreme front with the performers of the University of Dhi Qar volleyball crew, and the scientist secondhand the explanatory approach in the design of correlational connections, and the scientist selected the research sample from the performers of the University of Dhi-Qar crew, whose number attained (8) in another direction (14), and accordingly the portion of the research sample is (57.14%), and individual of ultimate main decisions The life of a meaningful equivalence between explosive strength and distinctive strength with leg speed to the accuracy of high-smashing performance by Dhi Qar University volleyball team players



1- Definition of research:

1-1 Research Introduction and Importance:

The results, scientific research, and continuous follow-up analysis and planning have led to an increase in technical performance and an addition to achievements. This progress and development was due to these studies and scientific research, which has led to raising the level and capabilities of athletes and developing their physical level, skill and tactical performance of athletes in various sports events and that scientific and technical progress has become one of the features of the new life, which included all aspects of life, which came as a result of studies, research and extensive experiments shown on the scientific foundations to reach accurate scientific results to provide solutions This progress included the mathematical aspect, which benefited a lot from the scientific results of these applied studies, which focused on the overlap between sciences in order to prepare the individual athlete in comprehensive numbers to reach mathematical achievement.

The substance usually in volleyball is an main and essential determinant to raise the level of ability conduct, as extrasensory perception plays a prominent act in the performer's command of elementary abilities, and volleyball all at once of the composite sports endeavors is individual of the mechanics sports that hold a lot of engine abilities that need a large number of potential and material capacities in consideration of be exhausted a good style and decent conduct One of ultimate main of these abilities is the ability of extreme front compressing, which is individual of ultimate outstanding offensive abilities in volleyball, that has an excellent and productive act in ironing out the result of the half and the competition, as this ability demands consideration in the particles of each of its basic, main and conclusive portions, and through the previous, the significance of research display or take public learning the friendship 'tween the explosive force and the capacity characteristic of speed correctly operating the ability of extreme front crush beating with the performers of the University of Dhi-Qar volleyball group.



1-2 Research problem:

Strength, in all its forms, is a key element in achieving success in volleyball. To harness this ability, a player requires outstanding physical and motor fitness to enhance their performance and execute the game's skills with high efficiency. This paves the way for superior results in local and international competitions.

The skill of hitting must be mastered according to the crushing and in harmony with each other, and between the propulsive force and the force characterized by speed. As a result, we qualified for the level of the Dhi Qar University team, and we compared our achievements with the higher levels of other universities, and the weaker ones in both strength and the skill of the crushing strike. This was contributed to by the assistance that contributed to the strong impact and the force characterized by speed in the skill of the strong strike and the crushing strike.

1-3 Research objectives:

- 1- Identify the explosive power values of the players of the Dhi Qar University volleyball team.
- 2- Identify the values of speed-related power among the players of the Dhi Qar University volleyball team.
- 3- Identify the accuracy values of the high smash against the players of the Dhi Qar University volleyball team.
- 4- Identify the relationship between explosive power, speed-related power, and the accuracy of the high smash against the players of the Dhi Qar University volleyball team.

1-4 Research Hypothesis:

Research Hypotheses:

There is a statistically significant relationship between explosive power and the amplitude-speed characteristic, as well as between the validity and efficiency of maximum knockout power in relation to the performance locations of Dhi Qar University volleyball team players.

Research Areas:

- Human Domain: Includes Dhi Qar University volleyball team players for the 2023-2024 academic year.



- Time Domain: Extends from March 25, 2023, to April 28, 2023.

- Spatial Domain: The gymnasium at the College of Physical Education at Dhi Qar University.

Research Methods and Fieldwork:

- Research Methodology: The researcher relied on the interpretive approach to analyze the correlations between variables.

- Research Population and Sample: The sample included selected individuals from the actual community of origin at Dhi Qar University. The number of participants was 8 individuals in one direction and 14 in the other, making the sample percentage 57.14%.

2-3 Means, tools and devices:

The researchers used the following means , tools and devices :

(- Personal interview.- Al-Esnabana. - Observation.- Testing and measurement.- Volleyball court.

- Balls (5).- Tape measure.- Colored chalk.- Mat number (2). - Stopwatch (2).- Medicine ball weighing (3 kg). - Smooth wall. - Blackboard number (1)).

2-4 Identification of the tests under research:

First: - Vertical jump from stability (Sargent).¹

- Objective of the test: - Measure the explosive power of the muscles of the legs.

- Tools: - flat ground does not expose the individual to slipping, tape measure, draws on the ground the line of standing of the players,

Chalk material.

¹ - Kamal Abdel Hamid and Mohamed Sobhi Hassanein. Measurement in Handball, Cairo, Dar Al-Fikr Al-Arabi, 1980, p. 133.



- Test Description: The tester begins by dipping their fingers in the chalk, then stands facing a wall to make a mark with their fingertips. Ensure that their heels do not leave the floor and record the number in front of the mark. From a standing position, the tester moves their arms up and then down behind them while slightly bending their knees. They then push forward with their knees open to jump vertically as high as they can, leaving another mark with their fingers fully extended.

- Test conditions: - When placing the performance of the first mark, the heels should not be lifted from the ground, and the shoulder of the distinctive arm should not be lifted from the level of the other shoulder during the marking, as the shoulders must be on one straight . Each tester has two chances to take the test, and the best score is recorded.

The score is measured by the distance between the first and second marks, reflecting the tester's explosive power in centimeters.

Part 2: The Continuous Jumps in Place ²

Test: The goal here is to assess the distinctive power and speed of the legs' movements.

- Performance descriptors: - The tester stands inside the circle and the arms are stable in the middle, when the start signal is heard, the tester jumps in place to the maximum possible number within (15) seconds.

Third: - Test the accuracy of the overwhelming beating.³

- Objective of the test: - Measure the accuracy of the overwhelming multiplication in the diagonal direction.

- Tools: - Volleyball court, volleyball, two mattresses placed

-Performance details: Hitting from position (4) and preparing the trainer from position (3), in addition to a distinguished laboratory performance with 15 strong strokes.

² - Mohammed Sobhi Hassanein. Factorial Analysis of Physical Capabilities Intention, 2nd Edition, Cairo, Dar Al-Fikr Al-Arabi, 1996, p. 382.

³ - Muhammad Sobhi and Muhammad Abd al-Moneim, op. cit., p. 208.



-Sign up:

- Four points for each correct crushing blow in which the ball falls on the selected rank.
- Three points are awarded for each successful smash in which the ball lands in the designated area.
- Two points are awarded for each successful smash, depending on whether the ball lands in area (A) or (B).
- The maximum score for the test is (60) points.

2.5 Sample of research :

The subject of conducting a field test on 10/4/2023 in the closed sports hall of the Faculty of Sports Education, Dhi Qar University, on a basic sample of volleyball players with a total number of (8) players.

2.6 Exploratory Experiment:

The researcher conducted a field study and experiment on February 4 for a sample consisting of four players. The sample was represented by players representing Dhi Qar University for the academic year (2023-2024).

- 1- 1- Determining the level of understanding and comprehension of players for physical and skill tests.
- 2- Identify the factors and obstacles that may appear when carrying out tests.
- 3- Organizing the work of the assistant team, and clarifying the instructions and guidelines related to conducting tests.
- 4- Identify the time it takes to conduct physical and skill tests.

2.7 Statistical Methods:

The scientist used the following mathematical method: - Percentage. - Arithmetic mean. - Standard deviation. - Simple cooperative equation (Pearson). The researcher then presented the results, analyzed, discussed and studied them.

1.1.3 Result of the explosive force and the characteristic force of velocity

Table (1) shows the standard deviation and arithmetic mean of explosive power at speed for the players selected from the sample.

University of Thi-Qar Volleyball

Standard deviation	Arithmetic mean	auditions
		Statistical milestones
3.11	42.98	Vertical jump of stability (Sargent)/cm
1.07	13.58	Test consecutive jumps in place / number

3-1-2 Displaying the results of the high forehand smash skill performance of volleyball players at Thi Qar University

Table (2) shows the standard deviation and arithmetic mean of explosive power at speed for the players selected from the sample.

University of Thi-Qar Volleyball

Standard deviation	Arithmetic mean	Statistical milestones auditions
1.56	36.04	Overwhelming Beating Performance Accuracy/Degree

3.1.3 Displaying the results of the high forehand smash skill performance of volleyball players at Thi Qar University

3.2 Discussion of the results :

The results in Table (3) showed the existence of a significant relationship and a correlation relationship, and this relationship is between explosive power, power characterized by speed, and accuracy of performing the crushing strike in the research sample, which is represented by volleyball players at Thi Qar University. The researcher attributes this to the need of volleyball players in general for this skill, in particular, to the form of power characterized by speed, due to its importance during training and matches, to enable the player to achieve goals during the strike. This requires ideal implementation and great speed to enhance accuracy which is to achieve a direct point and then win the game and the match, as the strength "is an important ability for all competitions for both men and women, as the muscle fibers in the muscles respond when they are subject to the influence of weight or resistance, and this response makes the muscle more able to respond and better to the central nervous system."⁴The researcher attributes this relationship to the specificity of the overwhelming beating skill, which is one of the crucial skills in volleyball and depends heavily on the speed of the two legs in addition to the speed of the arm in the beating, This skill is an offensive skill

⁴- Petertomsen. Training Theories, Cairo, International Association of Amateur Athletics Federations, 1996, pp. 5-13.



and an important skill in the game that requires the player to have explosive power in the legs, which will score a direct point for the player. The reason for the emergence of a relationship between explosive power of the legs and the accuracy of performing the smash skill, is that the research shows the great importance of muscular strength in its two aspects, explosive power and the power characterized by speed in the legs, and the urgent need for strong leg muscles.

4- Conclusions and recommendations:

4.1 Conclusions:

- 1 - enjoy the research sample good amounts in the tests of explosive power and the power characteristic speed.
- 2- The results showed good levels of accuracy in the volleyball smash performance of the sample.
- 3- There is a significant correlation between the explosive power of the legs and the accuracy of the smash performance of the Dhi Qar University volleyball team players.

4.2 Recommendations:

- 1- Focusing on forms of muscular strength has an effective impact on training curricula, so it's essential that volleyball coaches and players pay attention to them.
- 2- Emphasis on conducting physical and skill tests on an ongoing basis for volleyball team players in Iraqi clubs and universities.
- 3- Conducting similar studies of other physical abilities with other skills in volleyball.
- 4- The need to strengthen studies by conducting similar studies on different samples, different genders, and other age groups to test other physical abilities along with other skills in volleyball



References

- Ahmed Aboulela Abdel Fattah. Sports Training and Physiological Foundations, Cairo, Dar Al-Fikr Al-Arabi, 1997.
- Ahmed Abdel Moneim and Mohamed Sobhi. Educational Foundations of Volleyball , Cairo, Book Center for Publishing, 1997.
- Atheer Abdullah Al-Lami. Physical measurements and special physical characteristics and their relationship to the accuracy of shooting from the corner area of handball, Master Thesis, Faculty of Physical Education, University of Babylon, 1999.
- Bastawisi Ahmed. Foundations of Sports Training, Cairo, Dar Al-Fikr Al-Arabi, 1999.
- International Volleyball Federation. Official rules of volleyball 2001-2004, 2001.
- Hamdi Abdel Moneim. Volleyball, Cairo, Kobe for Printing, Publishing and Distribution, 1784.
- Juma Mohammed Awad. A training program to develop the speed of motor reaction and its impact on achieving some skills in volleyball, PhD thesis, College of Physical Education, University of Basra, 1996.
- Zaki Darwish and Adel Abdel Hafez. Strength Games in the Art of Throwing and Kinetic Games, Vol. 5-6, Egypt, Dar Al-Maaref, 1970.
- Saad Hammad Al-Jumaili, Volleyball (Education - Training - Arbitration), Libya, Seventh of April Publications, 1997.
- Saad Mohammed Qutb and Louay Ghanem Al-Sumaidi. Volleyball between theory and practice, Mosul, 1985.
- Sarhang Abdul Khaliq Abdullah. A comparative study of some forms of muscular strength among weightlifters and short-distance runners in Erbil, Journal of Physical Education Sciences, University of Babylon, Faculty of Physical Education, First Issue, Volume III, 2010.
- Adel Abdel Basir. Mathematical Training and Integration between Theory and Practice, Cairo Center for Books and Publishing, 1999.
- Amer Jabbar Al-Saadi, A comparative study between the biomechanical variables of the front and crushing volleyball crested transmissions, PhD thesis, College of Physical Education, Baghdad, 1998.
- Abdul Zahra Hamidi, A comparative analytical study of the performance of the Iraqi volleyball introduction force in the light of international performance systems, PhD thesis, College of Sports Education, University of Basra, 1995.
- Abdullah Hussein Al-Lami. Scientific Foundations of Sports Training, Iraq, Al-Taif Printing Press, 2004.



- Abd Ali Nassif and Sabah Abdi. Skills and Training in Weightlifting, Baghdad, Higher Education Press, 1988.
- Essam Abdel Khaleq. Sports Training, Theories - Applications, 9th Edition, Alexandria University, 1999.
- Ali Mustafa Taha. Volleyball, History, Education, Training, Analysis, Law, 1st Edition, Cairo, Dar Al-Fikr Al-Arabi, 1999.
- Kamal Abdel Hamid and Mohamed Sobhi Hassanein. Measurement in Handball, Cairo, Dar Al-Fikr Al-Arabi, 1980.
- Mohammed Jassim Al-Yasiri and Marwan Abdul Majeed Ibrahim. Statistical Methods in the Fields of Educational Research, 1st Edition, Amman, Al-Warraq Foundation for Publishing and Distribution, 2001.
- Mohammed Sobhi Hassanein. Evaluation and Measurement in Physical Education, 2nd Edition, Part 2, Cairo, Dar Al-Fikr Al-Arabi, 1987.
- Mohammed Sobhi Hassanein. Factorial Analysis of Physical Abilities, 2nd Edition, Cairo, Dar Al-Fikr Al-Arabi, 1996.
- Mohamed Sobhi Hassanein and Ahmed Khosrau. Encyclopedia of Applied Sports Training, 1st Edition, Cairo, Book Center for Publishing, 1998.
- Mohammed Saleh Fleih, The Effect of Learning Different Types of Transmission on the Accuracy of Volleyball Performance, Master Thesis, College of Physical Education, University of Baghdad, 1999.
- Mohammed Othman. Motor Learning and Sports Training, Kuwait, Dar Al-Qalam, 1988.
- Mohammed Khairi Al-Hourani. Talk in Volleyball, Jordan, Dar Al Uloom Print, 1993.
- Mufti Ibrahim Hamada. Sports Training. Leadership Planning, Cairo, Dar Al-Fikr Al-Arabi, 1998.
- Nahida Abd Zaid Al-Dulaimi, Volleyball, Najaf, Dar Al-Diaa for Printing and Publishing, 2011.
- Hara. The Origins of Sports Training, (translation) Abd Ali Nassif, Mosul, University Press, 1982.
- Wadih Yassin and Hassan Mohammed. Statistical Applications and Computer Uses in Physical Education Research, Mosul, Dar Al-Kutub for Printing and Publishing, 1999.