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Neuromuscular compatibility and its relationship to the accuracy of receiving the serve in volleyball

Assistant Lecturer. Younis Sabih Abdullah
Maysan Education Directorate – Iraq
Email: alkhzlyywns891@gmail.com

Abstract: The game of volleyball depends on many skills, including the skill of sending and receiving, which means receiving the ball from the sending player of the opposing team to prepare it for the prepared player or colleague on the field. The research study aims to identify the relationship between neuromuscular compatibility with the skill of receiving the serve in volleyball, the research problem lies in identifying the weakness in the skill of receiving the serve for the volleyball players in order to develop this skill for the volleyball players.

Keywords: Muscular Coordination, Volleyball, Skills, coordination.

1-1 Introducing the research

The game of volleyball is one of the games that occupied a wide space among its fans and followers, just like the rest of the other organized games, because it is characterized by a special character that distinguishes it from the rest of the games due to the nature of modern performance in the game and as a result of the amendments and changes that occurred in the law of the game and that it needs physical preparation that includes both Strength, speed, flexibility, and agility, in addition to their needs for skillful and psychological preparation, that all the administrative actions that the individual performs are the result of a single muscle factor or muscle group. Sometimes it requires the involvement of more than one muscle in a specific action. They all share the same amount, but the work of these muscles differs among them in terms of the relative importance of those responsible for doing that work. This work in performing the movement requires a degree of compatibility between the muscular and nervous systems. In achieving victory, compatibility in volleyball is considered the basis of tactics. Play is the basis of high psychological and motor requirements that reflect the level of the player's tactic. The importance of neuromuscular compatibility can be seen by observing the player's ability to balance the focus and organize motor actions within the arena, as well as by determining the appropriate place for the player's movement. inside the arena.

1-2 Research problem

Compatibility is one of the elements of physical fitness and its multiple components. When the athlete acquires it, the motor experience will determine for him, which is the result of the combination of the elements of the various components of physical fitness. In recent years, the method of reception has appeared with the specialized players in each team for this task because it is difficult and important in light of the high technical levels. It is the first Touching the receiving team, which should be executed accurately and precisely in order to follow the numbers and the attack, and it is a defensive skill on which the team's position depends in many cases, given the researcher's observation that there is a weakness in the skill of receiving the serve among the volleyball players through the following question: Is there neuromuscular compatibility among the national team players Maysan Volleyball University.

1-3 research objectives

1- The research aims to identify the relationship between neuromuscular compatibility and the skill of receiving the serve in volleyball

1-4 research hypotheses

1- There is a significant correlation between neuromuscular compatibility and the skill of receiving the serve in volleyball.

1-5 areas of research

1-5-1 The human field: The players of the University of Maysan volleyball team for the 2022-2023 sports season.

1-5-2 The spatial field: the volleyball court for the university team, Maysan.

1-5-3 The time frame for the period from 1/1/2022 to 15/4/2023 .

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2-1 Theoretical Studies

2-1-1 Neuromuscular compatibility

Compatibility is one of the elements of physical fitness and one of its multiple components, which, when the athlete acquires it, will determine his motor experience, which is the result of the combination and mixing of the elements of the various components of physical fitness, Robert defines it as the ability of the individual to control the work of the different parts of the body that are involved in performing a specific motor duty and linking these parts to a single, streamlined movement with an effective effort to take that motor duty. The performance of mathematical skills, and we find, in addition to accuracy, the motor comprehension by careful information in the other senses, including the sense of sight regarding the situation and parts of the movement, as well as the position of the opponent and the position of the observing ball through the eyes(1). It is the ability of the nervous system to give more than one command at the same time or with a very small time difference, and Singer defines it as the individual's ability to control the different parts of the body that are involved in performing a specific motor duty and link these parts with a unilateral, smooth movement with an effective effort to accomplish that motor duty and it is divided into General agreement and special agreement, and Larson defines it as the individual's ability to integrate movements from types of movements in one framework. As for Barrow and Maji, consensus is defined as the individual's ability to integrate types of movements within a specific framework. Fleishman says that the individual's ability to perform tactical movements at one time. Compatibility between multiple parties, being the ability to coordinate or agree between a group of parties when they work together at one time, and the total compatibility of the body is defined as the ability to coordinate between the movements of the different parts of the body when they perform comprehensive movements(2).

2-1-2 The importance of neuromuscular compatibility

Neuromuscular compatibility has a great importance and a prominent role in achieving victory. Compatibility in the game of volleyball is considered the basis of the tactic for playing. It is a reflection of the global psychological and motor requirements that are reflected in the level of the player's tactic once again. The importance of neuromuscular compatibility can be seen by observing the player's ability to balance, focus and organize actions. Movement inside the arena and also by determining the appropriate place for the player's movement inside the arena, since the game of volleyball is one of the organized games, therefore, the focus is on the tactical side and on the permanent observation of the movement of the players from the same team, as well as the movement of the opponent, especially when performing the movement of hitting the smasher(3).

The volleyball player makes more than (200) jumps per match, and these jumps are usually at constant rates and close to the maximum jump. Therefore, when performing the crushing hitting skill, neuromuscular coordination is required, as well as a great degree of accuracy when sending the ball to the opponent's court, penetrating a wall. Blocking the opposing team with strength and smooth movement when hitting the ball(4).

Skill is everything that can be expressed in achievement, which indicates what the individual has learned at the level of his proficiency in what he has learned, and skill is the characteristic of movement if it is repeated in one path, one time, a specific direction, a certain force, and it has a beginning and an end, and that volleyball mocks offensive skills and defensive skills, and it is agreed upon (Hamdi Abdel Moneim) (and Souad Hammad) that these basic skills in volleyball are the movements that the player must perform according to the conditions required by the game of volleyball in order to reach good results. As for (Play Line) (Tyler Francion) he indicates that skill is a means The effective that the team employs in the game plans and achieves its goal, which is to win the match.

2-1-3 Basic volleyball skills

Transmitter receiving skill

The skill of transmitter receiving serves to receive the ball from the sending player of the opposing team to prepare it for the prepared player or a colleague on the field by absorbing its strength and speed and passing it from the bottom to the top with the forearms from the bottom or to the top according to the strength of the ball and its speed and the position of the receiving player, and it is a skill derived from the skill of passing

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with the forearms and passing from The highest with the fingers, and the goal differed here in the ability to receive and transmit, and to deliver the ball accurately to the prepared player, it is considered the first touch of the future team, which should be carried out in an accurate and exact manner in order to be preceded by preparation and attack. It is a defensive skill on which the team's position often depends. Mastery of technical performance is one of the most important elements of this skill, as it requires focus on the ball, its height, speed and strength so that the player can reach the ball. The target area in order to get the best position for passing and to prepare himself to carry out the duty well and with perfection, and a way has appeared in recent years to receive specialized players in each team for this task because it is difficult and important in light of the high technical levels of the advanced teams in the performance of various serves, the skill of receiving and transmitting occupies (12)%. The technical motor performance of the reception skill, also called the educational stages, is divided into the following sections:

1- Preparation
2- The abilities of anticipation, appreciation and feeling
3- Reaction abilities
4-Movement of the feet
5- The art of performing performance(5).

3- Research methodology and field procedures

3-1 Research methodology

The research methodology that the researcher chooses must be suitable for solving a problem, and the methodology is the method that the researcher follows to determine the steps of his research, which can be achieved by reaching a solution to the research problem(6).

Accordingly, the researcher uses the descriptive method in the manner of the correlational relations, through which we learn to what extent the variables are related to each other, and they are important in the analysis of causes and effects, and it is possible to give an explanation of the relationship through a clear numerical logical analysis(7).

3-2 Research community

One of the basic things that the researcher should take into account is obtaining a sample that truly represents the original society(8).

Accordingly, the original community of the research was the University of Maysan volleyball team for the 2022-2023 sports season, whose number is (14) players, while the sample of the research reached (10) players, which represents a percentage of about 71%, and the sample was chosen randomly.

3-3 tools used

3-3-1 The methods used in the research

• Arabic sources
• Questionnaire
• the exams
• Sample assistant work cadre

3-3-2 The tools used in the research

• Volleyball court legal
• Legal volleyballs (10) balls
• stopwatch
• Measuring tape with a length of 10 m
• Colored adhesive tape
• Colored chalk

3-4 Exploratory experience

The exploratory experiment is a preliminary experimental study that the researcher conducts on a small sample before carrying out his research in order to test the research methods and tools(9).

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The researcher conducted an exploratory experiment on January 20, 2022 at 2:30 pm in the volleyball court for the University of Maysan team, on a sample of the research community, and their number was (4) players representing the University of Maysan volleyball team, and they were excluded from the main experiment, and the purpose was This includes conducting a pilot experiment.

3-5 main experience

The research procedures consisted of conducting neurological compatibility tests and a volleyball reception test, which the researcher applied to the research sample, which numbered (10) players, over a period of three days, starting from the date of 1/2/2022 , 36 Statistical methods The researcher used the statistical bag (spas), including extracting (the arithmetic mean, standard deviation, percentage, and Pearson's correlation coefficient).

3-6 field research procedures

1- Determine some of the tests used in the main experiment: the test is to measure the ability of the individual to perform a specific work according to accurate scientific formulas and controls (1) as the researcher presented the standardized test, the number of (6) tests and three tests in the field of measuring the accuracy of the skill, receiving and transmitting with the arms from below (87.5)%.

1- Testing the numbered circuits

• The purpose of the test is to measure the compatibility between the eyes and the legs.

• Tools: a stop watch. Eight circles are drawn on the ground, each with a diameter of (60) cm.

• Performance specifications: the laboratory stands inside circle No. (1) upon hearing the start signal, the jump with the feet together to circle No. (2), then to circle No. (3), then to circle No. (4) until circle No. (8), this is done at maximum speed(10).

• Recording: The tester records the time it takes to travel through eight circuits

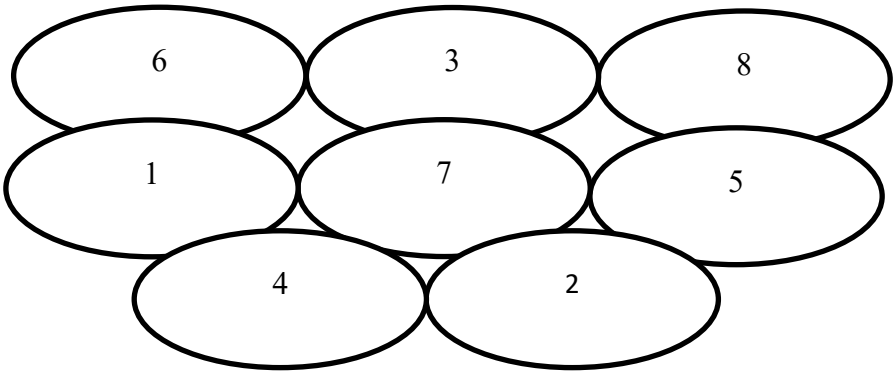

Figure (11)
Numbered circuit test

2- A test to measure the accuracy of the skill of transmitter receiving with the arms from below.

The purpose of the test is to measure the accuracy of the performance of the skill of transmitter receiving with the arms from the bottom from the center (1).

The tools used, a legal volleyball court divided as in the form of (4) goal setting tape, measuring tape (5) legal volleyballs

Performance specifications, the coach (researcher) directs the ball to the player in position No. (1), and he receives it to center (2) in area (A).

Registration conditions, the player has three attempts only (4) points for each attempt within area (A) (3) points for each attempt within area (B) two points for each attempt within area (C) and one point for each attempt within area (D)

Zero points when the ball falls outside these zones. When the ball falls on a common line between the zone, the higher zone score is calculated.

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4- Presentation, analysis and discussion of the results:

4-1 Presentation and analysis of the results, the relationship of neuromuscular compatibility with the skill of transmitter receiving in volleyball and discussing it:

Schedule (1)
Shows the arithmetic mean, standard and significant deviations of the neuromuscular compatibility relationship with the skill of receiving volleyball.

N	Arithmetic mean	standard deviation	Link
1	4.3 sec	0.49	0,92
2	9.054	2.195	

Through the previous table, we notice that the arithmetic mean has reached (3.4) seconds in the neuromuscular compatibility test for the players of the Maysan University sports team, with a standard deviation of (49.0), while receiving the transmission with the arms from the bottom for the players of the University of Maysan team has reached (9,054).) with a standard deviation of 2.195, and therefore the standard deviation value for both tests is less than (3), which gives acceptance to the values obtained by the players as a result of conducting the tests. As for the value of the correlation between the values of neuromuscular compatibility and the skill of receiving and transmitting with the arms from the bottom for the players of the University of Maysan volleyball team It reached (0.92), and this value means that there is a strong correlation between the variables under study, and the researcher sees the logicality of the results, since the skill of receiving and transmitting in volleyball requires compatibility of the movement of the eyes and arms with the movement of the legs, and that whenever the player has the ability to transmit nerve impulses in a way that serves motor performance So that we find a smoothness in the performance, which reflects the presence of the skill of receiving volleyball, as the autonomic nervous system increases the activity of the internal organs and works to preserve them, such as the activity of the heart, lungs, blood vessels, glands of internal secretions, intestines, and stomach(11).

5- Conclusions and recommendations

5-1 conclusions

1- There is a significant correlation between the neuromuscular compatibility and the skill of receiving the serve from the bottom in volleyball for the players of the University of Maysan team.

5-2 Recommendations

1- The need for coaches to test their teams periodically for neuromuscular compatibility and the skill of receiving the serve in volleyball

2- Conducting similar researches between neuromuscular coordination and the rest of the basic skills in volleyball.

3- Interest in developing neuromuscular compatibility among volleyball players.

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