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Special exercises on motor reaction speed and its effect on motor coordination and court defense skill for the volleyball libero player

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The current study aimed to identify the effectiveness of training for motor response speed in developing the skill of defending the canister for the libero volleyball player, and the researcher used the experimental method with one group in order to fit the problem and the research sample, the research sample was selected by the deliberate method, which are the players of Shahrban Volleyball Club for youth, while the experimental research sample was represented by the libero players of the Muqdadiya Youth Club, which are (2), after that special exercises for the speed of motor response were prepared and the appropriate tests were selected after it The training modules were applied for (4) weeks and at the rate of (3) units per week, as the total of the training modules reached (12) units that were applied in the main part, and after obtaining the results, the researcher processed them by using the SPSS statistical bag, and after analyzing the results, the researcher reached The most important conclusions: The training of the motor response speed plays an effective role in developing the pitch defense skill of libero players, and the most important recommendations were: the necessity of using the exercises prepared by the researcher by the coaches because of their role and effectiveness in the development of players.

1. Introduction

"The volleyball player needs a fast motor response speed that contributes to performing duties in a meaningful and distinct manner, as the speed of motor response is one of the necessities of the volleyball game because it is one of the fast games that needs high concentration, attention, and quick response speed for all players, especially the libero player" (Khayun, 2010, 37) defined it as "the time from the moment the stimulus enters through the senses to the end of the entire movement and contains the reaction time and the time of movement", and (Mehdi, 2013, 96) defines it as "the confined period Between the appearance of the stimulus and the beginning of the kinetic response", **"The skill** of defending the field is considered the second defensive line after the skill of the barrier, where the attack and various balls coming by the opposing team are repelled and their court is protected in case the players of the barrier fail to stop or counter the attack of the opposing team, and the defending player requires many qualities that include speed, balance, and coordination between the hand and the eye" (Sabhan and Hassan, 2011, 19), as he believes (Hammad, 2007, 292) "is to save the battered balls." by the opposing team or bouncing off the barrier wall and passing it with two arms or one arm, whether the pass is from the bottom, the top or the leg", that this skill is difficult and requires quick reaction and concentration in tackling balls, especially from the libero player, as he confirmed (Mohammed, 2003, 211) that the skill of defending the field is considered "one of the difficult skills that need physical components in muscular strength, reaction abilities, concentration in timing, balance, agility, the ability to control and courage In the front fall, the libero player is considered one of the most important players in the team, as he "plays in the back line, has precise control of the ball, must be an accomplished defender and must move around the field in order to keep the ball in the air and not allow it to fall on the pitch" (Al-Washami, 1994, 276), as Taha (Taha, 1999, 289) sees the libero

player as " the best passer in the team and is responsible for receiving the ball from his teammates and helping the attack by controlling the pace of the player's play The free man is the only one who is allowed to serve with some restrictions and is not allowed to attack the ball on the net except in specific cases", and he believes (Khatiba, 1996, 256) that he is "the player who is distinguished by distinguished skills in defense and reception, and he is considered the main link in defending his team, turning the ball into an attack defending the field, stopping attacks quickly and efficiently, and he also provides support to his teammates on the field in defense and attack. It is characterized by physical endurance and high fitness because its role requires a lot of running, bending and getting up quickly", motor coordination is considered the highest level of fluidity and coordination of movement "It is the ability of an individual to integrate several movements such as reconciling the movements of the arms and legs" (Majid: 1989: 163), "Compatibility is a complex physical ability and is related to speed, strength, endurance and flexibility, and the word compatibility from a physiological point of view means the ability of neurological processes in the central nervous system to coordinate and the athlete is called to have Compatibility is able to move more than one part of his body in different directions at the same time" (Abdul-Jabbar and Rustom: 2016: 98), "The compatibility component requires effective cooperation between the muscular and nervous systems to be able to perform the movements in the best way, especially the complex ones, i.e. those movements in which more than one part of the body is used to perform at the same time, or that require the integration of movements of different types in one frame" (Shalash and Sobhi: 2000: 56).

2-1- Research Problem:

After observing and reviewing many matches, we see that an effective libero player is very important in volleyball, a player specialized in defending the court and controlling the ball such as diving, rolling and passing, he needs special training to develop this player, as the researcher is a former player in the game of volleyball

and specialized in it and is very familiar with the secrets and skills of this game, he found that one of the secrets of winning matches is to pay attention to the training, refinement and development of this important player, especially in the youth stage To reach the stage of applicants in the best possible performance to serve the clubs and national teams, and through a general vision of the matches of the league of the age groups, most clubs do not allocate special time to train this free player or special training in order to reach the best levels, as he is a special defense player distinguished by defensive skills, especially the skill of receiving the serve, the skill of defending the field, and covering the attack in order to create a balance between the level of offensive and defensive skills, and he has the ability and physical fitness of defensive movements and his knowledge. the offensive plans of the opposing team,

3.1 Research Objectives

- 1- Preparing exercises or exercises for the speed of motor response and its effect on motor coordination and the skill of defending the court for the libero volleyball player.
- 2- Identify the effect of exercises or exercises related to motor response speed and its effect on motor coordination and the skill of defending the court of the libero volleyball player.

4.1. Hypothesis of the research

- 1- There are statistically significant differences between the results of the experimental group in the pre- and post-test and in favor of the post-test.

5.1 Research Areas

- Human field: Shahrban volleyball club players in the youth category for the 2025 sports season.

- Temporal Domain: From 10/3/2025 to 12/4/2025.
- Spatial Field: Shahrban Volleyball Sports Club Square.

2- Research Methodology and Field Procedures :

2-1 Research Methodology

Choosing the appropriate approach for the research problem and its objectives is one of the necessary requirements in scientific research, so the researcher used the experimental method to suit the nature of the problem to be solved because the problem determines the method used to obtain accurate information, as he defined it (Qandaliji, 2012, 148) as "the approved and precise change of the specific conditions of a particular incident and then the observation of the changes resulting in this same incident as well as its interpretation". The researcher designed a single experimental group with both pre- and post-tests.

2-2 Research Sample:

The experimental research sample was from the libero players of Shahrban Youth Sports Club, which numbered (2) players, who were selected by the deliberate method, where the test was conducted for the skill of defending the stadium on them and then the training units were applied.

2-3 - Methods, tools and devices used in the research:

- Means used:

Arabic and foreign sources and references, results registration form.

- Devices and tools used:

- HP computer, Sony (1) camcorder.
- Volleyballs (4).

- Camera (1)
- Camera Stand (1)
- Stopwatch (1)
- Stationery.

2-4 - Tests used in the research.

First: Test of Stadium Defense, Center No. (5).

- **Purpose of the test:** Accuracy of the pitch defense skill.
 - **Tools used:** volleyball court, net, balls (5), measuring tape to determine goals.
 - **Performance Description:** A line parallel to the side line is drawn at a distance of (3 m) to be an area of (2×2 m), called (A), and a line parallel to the last line is drawn at a distance of (1 m) and called (B) to be three areas of accuracy in the front area, then the preparer prepares to the attacking player to make a crushing strike on the designated area for the laboratory to sit, and then the laboratory defends the field and directs the ball to the indicated areas as shown in Figure (1).
 - **Registration:** The lab has (5) attempts.
 - (3) Degree if the ball is defended and falls into area (A).
 - (2) Degree if the ball is defended and falls into zone (B).
 - (1) A degree if the ball is defended and it falls all over the field.
 - (0) A score for a failed attempt or violation of the rules of the game.
- .The maximum score is (15) degrees -

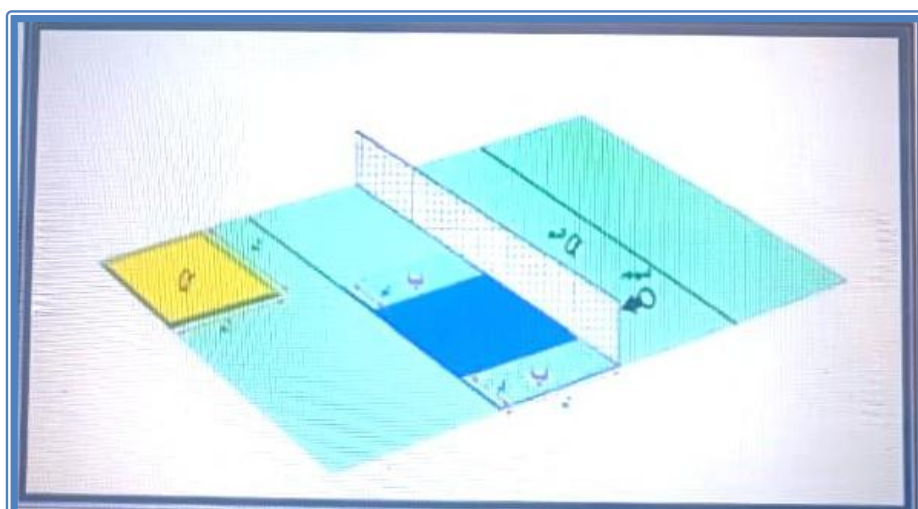


Figure (1)

Defending the Stadium Position No. (5)

Second: **Motor Compatibility Test** :**Name of the test** : Numbered circuits test (previous source, 150).**The objective of the test**: to measure the compatibility of the legs and eyes.**Tools used**: Stopwatch, drawing on the ground the diameter of each circle (60 cm) whistle.**Testing Procedures:**

The laboratory stands in circle No. (1) and when the signal is heard, the laborer jumps with both feet together to circle No. (2), then to circle No. (3), then to circle No. (4), then to circle No. (5), then to circle No. (6), then to circle No. (7), then to circle No. (8), this is done at full speed.

Registration: The laboratory records the time it takes to travel through the eight circuits.

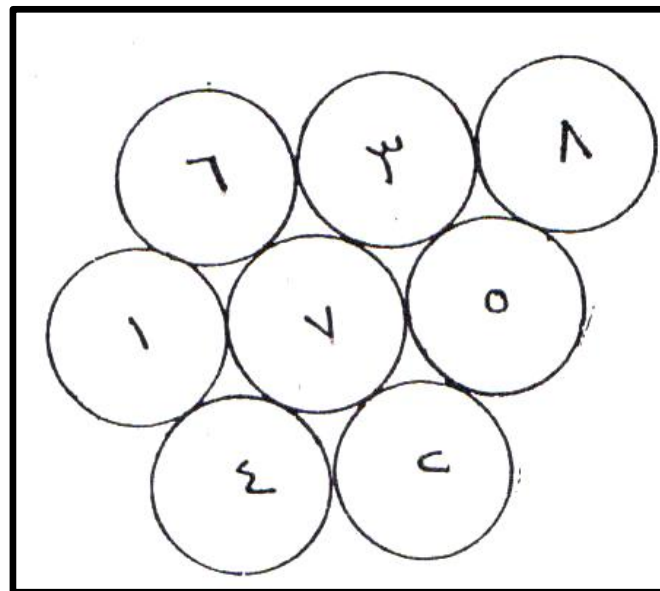


Figure (2)

Compatibility Test Demonstrates

2.5. Exploratory Experience:

The reconnaissance experiment was conducted on (10/3/2025) on Monday at (3:00) pm on a player outside the research sample, to identify the suitability of the test used, exercises, and the possibility of the assistant team.

2-6- Pre-test:

The pre-test was started on Saturday (12/3/2025) at (3:00) pm on the research sample, which are the libero players of Shahrban Sports Club, and the researcher sought to confirm all the conditions related to the research by creating the same conditions in the post-test.

2-7. Main Experience:

On Saturday, 15/3/2025, the main experiment and the application of the training modules in the main part of the training unit was started with three training units per week (Saturday, Monday, Wednesday) for (4) weeks, as the total training units reached (12) training units, the exercises prepared by the researcher for motor response speed were implemented in the main part of the training period of (60) minutes, and the duration of applying the exercises was between (40-60) minutes. The exercises focused on developing the speed of motor response by libero players, as they were varied and exciting, as well as applying the principle of gradation in them, and the last training unit was on Wednesday, 9/4/2025, and the researcher used the method of high-intensity and repetitive interval training, and the intensity used ranged from (80%-100%).

2.8. Post-Testing

After the completion and completion of the main experiment, the post-test of the research sample members was started on Saturday (12/4/2025) at (3:00) pm, and the researcher took into account the provision of the same conditions in which all the pre-tests were conducted for the purpose of obtaining highly credible results.

2.9. Statistical Means:

The researcher used the statistical bag (SPSS) to extract the results.

3. Presentation and discussion of the results

- Presentation of the results of the experimental group in the pre- and post-tests

Table (1)

The arithmetic media, standard deviations , sample number, and standard error value of the variables under study in the pre- and post-tests of the experimental group.

Significance	Error Ratio	Calculated value	Standard Deviation	N	Arithmetic mean		
Moral	0.000	9,750	1.169	2	7.167	Pre-test	degree
			1.330		11.935	Post-test	
Moral	0.000	6.958	1.791		9.47	Pre-test	time
			0.915		6.53	Post-test	

Discussion of the results of the experimental group:

Through Table (1) and Figure (3), significant differences emerged between the pre- and post-tests and in favor of the post-test in the tests used (motor compatibility and the skill of defending the field), which the researcher attributes to the effectiveness of sports training based on modern scientific foundations that leads to the development of players' abilities, and this is confirmed by (Mahdi, 2009, 15) that "the process of preparing the individual physically, skillfully, strategically, psychologically, and according to scientific foundations and principles and for a certain period of time to raise his competence and abilities in reaching the higher levels or Achieving Records", and the training of the variable motor response speed is necessary for the volleyball player through the repetition of the exercises of the reaction to the stimulus and the change in the directions and order of the response led to the development of the research sample, and this applies to what he pointed

out (Hossam El-Din, 1997, 32) "Any player must have a good motor response accompanied by a good motor behavior, and have the ability to be honest in anticipation and intuition in different playing situations, as well as the speed of thinking about changing situations during play." The researcher attributes these differences to the exercises that were developed and adapted to the research sample and graded from easy to difficult and varied that increased the players' desire to perform and commit without interruption and not to feel tired and bored. This was confirmed by Darwish (1998, 22) that "diversity in exercise renews the activity of the game and the motivation for the continuity of performance, as well as the opportunity to face the changing playing situations that occur in competition."

4. Conclusions and Recommendations

- Conclusions

1. Through the results, we can see the clear role of motor response speed training in the improvement and development of the research sample in the research variables.
2. The gradualism and diversity in the preparation of the exercises highlighted their effectiveness through the interaction of the research sample during its application, which led to these positive results for the research sample in the studied variables.

- Recommendations

- 1- The researcher recommends training the free player individually to develop his physical and skill abilities because of the importance of this player in defending the area and delivering balls.
- 2- The researcher recommends the use of motor response speed training in the development of other variables.

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