

THE EFFECT OF REBOUND FORCE TRAINING BY THE DOUBLE-OPPOSITE PYRAMID METHOD IN DEVELOPING THE EXPLOSIVE ABILITY OF THE LEGS AND THE ACCURACY OF THE BLOCKING SKILL IN VOLLEYBALL FOR YOUTH

Assist. Prof. Dr. Ghaith Muhammad Karim ⁽¹⁾, Assist. lec . Ahmad Hamid Aliwi ⁽²⁾ , Ahmad Hassan Abdullah ⁽³⁾

ghaithm.karim@uokufa.edu.iq , Ahmedh.hameed@uokufa.edu.iq ,
ahmedsport161@gmail.com

⁽¹⁾ Faculty of Physical Education and Sports Sciences / University of Kufa, Iraq

⁽²⁾ Faculty of Physical Education and Sports Sciences / University of Kufa, Iraq

⁽³⁾ Faculty of Physical Education and Sports Sciences / University of Kufa, Iraq

Abstract

The purpose of this paper is to preparing rebound force exercises in the double-opposite pyramid style to develop the explosive ability of the legs and the skill of blocking the in volleyball for youth, and identify the statistical differences between pre- and post-tests in developing the explosive ability of the legs and the skill of blocking the in volleyball for youth. The researchers use of the one-group experimental method, The researchers identified the research population, namely the young Kufa volleyball club players, who numbered (12). The research sample was chosen intentionally and numbered (8) players and (2) players for the exploratory experiment after excluding the defensive players (libero), and homogeneity was carried out in the influential variables. One of the most important results reached by the researcher is that: Both of the rebound force exercises using the double-opposite pyramid method used by the coach have a role in the process of bringing about development in the variables under study for volleyball players , and the development of the explosive ability of the legs contributed to the development of the players' kinetic capabilities and capabilities, and this can be easily observed when they move on the field. One of the most important recommendations recommended by the researchers is that : Necessity of relying on rebound force exercises using the double-opposite pyramid method in training the physical and kinetic abilities of volleyball players and all skills , and necessity of developing high physical fitness in volleyball and focusing on the explosive ability of the legs and quick or explosive force exercises to move towards the ball.

Keywords: Rebound Force Training, Opposing Double Pyramid Style, Explosive Ability Of The Legs, Blocking, Volleyball.

Introduction:

The advancement of the level of volleyball that was witnessed in the last years of the twentieth century came as a result of the progress in the training process, the upgrading of the level of training methods, the availability of equipment, and the preparation of coaches technically and practically, which must keep pace with the features of this game, which requires different fast situations and high physical abilities throughout the matches of the match, and that the studies Research related to the training process helped the trainer to develop his knowledge of the methods and methods that can affect the success of the training process, including high-intensity combined training, which is a complex system of work that integrates different abilities and which works at moderate intensity, in which the work is continuous and the rest is relatively few due to the decrease in intensity and the increase in volume. The continuation of work on a frequent basis and on this basis is called high intensity, which aims primarily at continuous change in the methods used in training the athlete, each according to his level of performance. The game of volleyball is among the sports games and events that have received great attention from scholars and experts.

From the above, the importance of the research becomes clear for specialists and workers in the field of volleyball training to become acquainted with the rebound force exercises in the double-opposite hierarchical method and to benefit from the results of the study and from designing structural plans as a time indicator for organizational work that depends on the use of progressive frequency in the continuity of training loads by trying A serious process of investigating modern training alternatives using force exercises and the double-opposite pyramid method to achieve good technical performance of basic skills.

Research problem:

Through the experience of researchers in the field of volleyball training, their practice, their participation in training courses, and their follow-up of most of the matches in the Iraqi youth volleyball league, they noticed that most young volleyball players suffer from slow reaction and control of their movements in a harmonious and harmonious manner, and weak jumping in different circumstances during training or Competition causes weakness in the blocking , and this is what called for the researchers to address the case and investigate the use of an alternative method by preparing rebound force exercises in the double-opposite pyramid style to develop the explosive ability of the legs and the blocking skill in forms that were not previously used in their training.

Research objective:

- Preparing rebound force exercises in the double-opposite pyramid style to develop the explosive ability of the legs and the skill of blocking the in volleyball for youth.
- Identify the statistical differences between pre- and post-tests in developing the explosive ability of the legs and the skill of blocking the in volleyball for youth.

Research hypotheses:

- There are statistically significant differences for the post-tests in developing the explosive ability of the legs and the skill of blocking the in volleyball for young people.

Research fields:

- Human field: Kufa Youth Volleyball Club players for the 2022-2023 sports season
- Time field: (1/11/2022) to (1/2/2023)
- Spatial field: The closed sports hall of the Kufa Sports Club.

Research methodology and field procedures:

Research Methodology:

Choosing the correct scientific method must be consistent with the problem to be studied, and because the nature of the problem that researchers must study necessitates the use of the one-group experimental method, “the most sufficient means of arriving at reliable knowledge” (Diop van Dalen, 1984, 84).

Community and sample research:

The researchers identified the research population, namely the young Kufa volleyball club players, who numbered (12). The research sample was chosen intentionally and numbered (8) players and (2) players for the exploratory experiment after excluding the defensive players (libero), and homogeneity was carried out in the influential variables. In the study and as shown in Tables (1). In order to reach a single level for the research sample and to avoid indicators that may affect the results of the research in terms of individual differences existing among the players, the researchers conducted homogeneity before starting training in the variables related to the variables (weight, height, age, training age), as shown in Table (1) .

Table (1) shows the arithmetic means, standard deviations, and skewness coefficient for the purpose of homogeneity of the sample in the variables (mass, trunk length, chronological age, training age)

Variables	Measuring unit	Mean	Median	Std. Deviation	Skewness	Result
Mass	Kg	71.11	72.40	3.56	0.565	Homogeneity
Length	Cm	185.55	185	2.61	0.461	Homogeneity
Chronological age	Year	21.11	21	0.83	0.224	Homogeneity
Training age	Year	3.77	4	0.64	0.230	Homogeneity

From the previous table we see that all values of the skewness coefficient came within (± 1). This means that all sample members are homogeneous in the variables mentioned in Table (1).

Means, tools and devices:

- Arab and foreign references and sources.
- Personal interviews.
- Assistant work team attached (4).
- Statistical methods.
- Metal measuring tape, 5 m long, number (1).
- (10) legal playing balls (volleyball), Mikasa type.
- Playing net number (1).
- Whistle number (1).
- Office tools (paper and pens).
- Medical scale.

Field research procedures:

Determine the tests for the research variables:

After identifying the variables related to the research topic, the researcher conducted a group of interviews with experts and specialists in the field of training and volleyball for the purpose of determining the most important tests for the variables under study.

1- Explosive ability of the legs:

Vertical jump test from a standstill: (Muhammad Sobhi Hassanein, Hamdi Abdel Moneim , 1996, 119)

- Purpose of the test: To measure the explosive ability of the legs to jump upward.
- Tools :
 - A wooden blackboard painted black, 50 cm wide and 150 cm long, with white lines drawn on it, and the distance between each line is 2 cm.
 - A smooth whose height is not less than 3.60 meters from the ground.
 - Pieces of chalk or lime powder, a piece of cloth to wipe off lime marks after reading each attempt made by the tester.
 - The blackboard can be dispensed with by using a graduated piece of wood fixed to the .
 - Medical scale.
- Performance specifications :
 - The board or piece of wood is fixed on the so that its lower edge is at a height that allows the shortest tester to perform the test. Care should be taken to fix the board away from the at a distance of not less than 15 cm so that no friction with the occurs while jumping up.
 - Draw a line on the ground perpendicular to the , with a length of (30) cm.
 - The laboratory holds a piece of chalk no less than (2.5) cm long, then stands facing the board, extends the arms as high as possible, marks a mark with chalk or magnesium powder on the board, and extends the arms on the board, noting that the heels touch the ground.

- The tester then stands facing the board to the side so that his feet are on the 30 cm line.
 - The tester swings the arms down and back while bending the torso forward and down and bending the knees to a right angle position only.
 - The laboratory extends the knees and pushes with the feet together to jump upward, while swinging the arms strongly forward and upward to reach the maximum possible height. He makes a mark with chalk on the board or at the highest point he reaches.
 - The tester swings the nearby arm forward and down to adjust the timing of the movement in order to reach the maximum possible height.
 - The laboratory gives three consecutive attempts, and the result of the best attempt is calculated.
 - Measurements are taken not close to 1 cm.
 - Jumping up is done with the feet from a stable position and not by taking a step or rising.
 - The piece of chalk must not be extended beyond the fingers so that this does not affect the results, as shown in Figure (1).
- Registration:

Power is measured in watts and equals kg/m/s

According to the following equation:

$$\text{Vertical explosive power} = \frac{\text{mass} \times 9.8 \times \text{distance} / \text{flight time}}{\text{time}}$$



Figure (1) shows the vertical jump test from a standstill

2- Testing the accuracy of the blocking skill: (Nahida Abdel Zaid Al-Dulaimi, 2011, 48)

- Test name: Accuracy of the Blocking skill.
- Purpose of the test : to measure the accuracy of the skill of blocking the in volleyball.
- Tools used: a legal volleyball court, 5 legal volleyballs, and colored adhesive tape to divide the opposite court.
- Performance specifications: The tester stands in center (3) in front of the net, at a distance of (50) cm from the net, and in a position of preparation for the blocking process, the teacher performs the smash hit skill from the opposite court, and the tester performs the blocking skill upon hearing the sound, as shown in the figure (2).
- Performance conditions: Each tester has (5) consecutive attempts. The smash must be good in each attempt. Grades are calculated according to where the ball landed, as follows:
 - In the center 2 degrees.
 - In position 3, there are three grades.
 - In the center 4 degrees.
 - Outside these areas there are zero degrees.
- Registration: The tester will be credited with the grades obtained in the five attempts, noting that the maximum grade for the test is (15) grades.

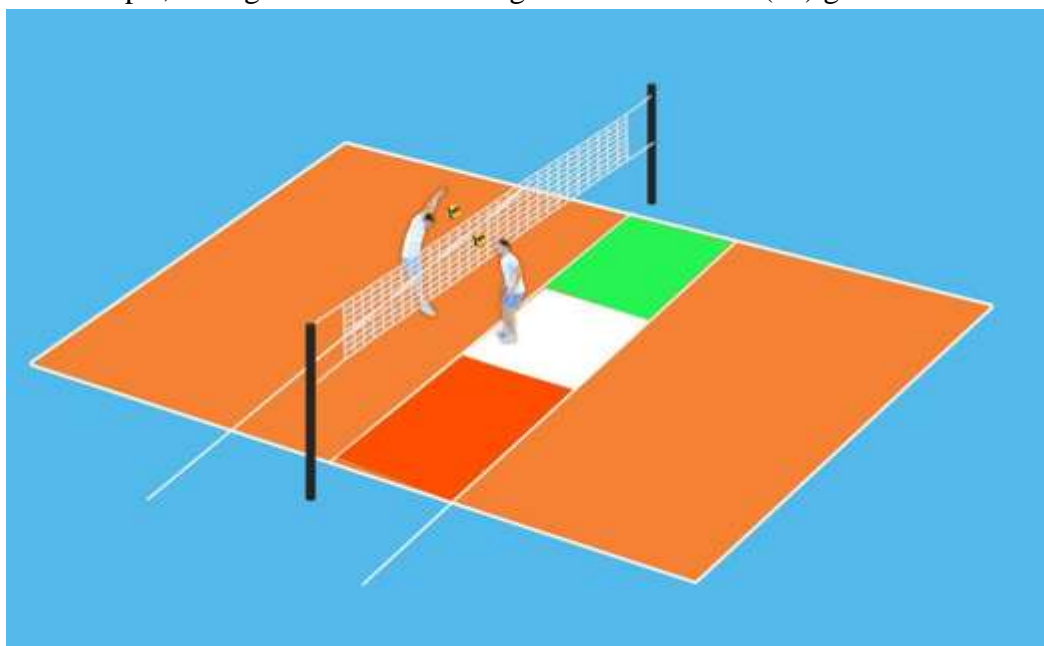


Figure (2) shows the accuracy of the blocking skill volleyball

Exploratory experiments:-

The exploratory experiment is one of the most important necessary procedures before researchers carry out their final experiment, with the aim of choosing research methods and tools and indicating the requirements for accurate, correct, and difficulty-free work. The exploratory experiment is “practical training for the researcher to identify for himself the negatives and positives that he encounters while

conducting the tests in order to avoid them in the future” (Qasim Al-Mandalawi , 107, 1989). Exploratory experiments were carried out on a sample of (2) players, and the experiment was conducted at (3) in the afternoon on Friday, November 11, 2022, in the closed sports hall of the Kufa Sports Club, to test the explosive ability of the legs and the skill of blocking the with volleyball, and the goal was Of which:

- Ensure the efficiency of devices and tools.
- Know the time each test takes, as well as the total test time
- Adequacy of the supporting work team.
- The level of difficulty of the tests for members of the research sample
- Knowing the difficulties facing researchers in order to avoid them in the future

Then the researchers re-conducted the exploratory experiment after (7 days) at exactly (3) in the afternoon on Friday, i.e. on (18/11/2022) in the closed sports hall of the Kufa Sports Club. The experiments were conducted on the same players and under the same conditions, and through them Re-applying the tests on the explosive ability of the legs and the skill of blocking the in volleyball. The aim was to extract the scientific parameters of the tests, which are (coefficients of honesty, consistency and objectivity).

The researchers also conducted an exploratory experiment for rebound force training using the double opposing pyramid method at six o'clock in the afternoon on Saturday, November 19, 2022, in the closed sports hall of the Kufa Sports Club on members of the research sample. The purpose of this experiment is to codify training loads in terms of...

- Knowing the time allocated for rebound force training in the double-opposite pyramid style.
- Knowing the difficulties facing researchers in order to avoid them in the future
- Know the number of repetitions for each exercise.
- Knowing the rest periods between repetitions, groups and cycles

Main experience:

Pre-test:

The researchers conducted pre-tests on Friday, November 25, 2022, for members of the research sample. The tests include the explosive ability of the legs and the skill of blocking the with volleyball, by controlling all variables in terms of time, tools and devices, as well as the supporting work team, to be applied when conducting the (post-test) after implementing Exercises.

Specifications of rebound force exercises using the double opposing pyramid method:

After reviewing the sports training literature, in addition to surveying the opinions of experts and specialists in the field of volleyball training, rebound force exercises were prepared using the double-opposite pyramid method, as follows:

First: General principles of exercises:

- 1- The main goal of preparing rebound force exercises is to develop explosive ability and the skill of blocking the after experts in the game of volleyball have determined.
- 2- The system for managing rebound force exercises using the double-opposite pyramid method ends the training climb with all its details and then moves to the other pyramid.
- 3- The researchers took into account the progression from easy to difficult, in addition to using guidance and follow-up
- 4- The researchers intended for the organization of the method within the force exercises to be different from one training unit to another in terms of sequence, while keeping the goal of that training constant in order to avoid the boredom that afflicts the players as a result of the constant repetition of the training routine.
- 5- Include rebound force exercises in the double-opposite pyramid style if they are applied in a manner that serves the development of explosive ability in the training unit.

Second: The special principles of rebound force exercises using the double-opposite pyramid method.

- 1- The duration of the training unit was (90) minutes, including the three sections (preparatory, main, and final).
- 2- The duration of the exercises was (18) training units, at (3) units per week, according to what the experts determined was the sufficient period to train these groups.

Post-test:

The post-test was conducted for the research sample, following the same steps and conditions as the pre-test, under the circumstances and possible variables as much as possible, and the results were recorded on Friday, January 27, 2023, under the same conditions as the pre-test.

Statistical methods: The search data was processed through the Statistical Package for the Social Sciences (SPSS).

Results and discussion:

Presentation and analysis of the results of the research sample in the pre- and post-tests of the explosive ability of the legs and the accuracy of performing the blocking skill in volleyball:

Table (2) shows the arithmetic means, standard deviations, the (t) value calculated for the correlated samples, the (Sig) value of the test, and the significance of the difference for the pre- and post-tests of the research sample.

Variables	Measuring unit	Pre		Post		Sig	T value Calculated	Type sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
Response speed	Watt	1309	6,24	1379,8	8,4	0,000	10,65	Sig
Blocking	Degree	9,00	0.82	12,43	1,40	0,000	8,85	Sig
At degrees of freedom (6), significance level (0.05), and standard error (sig) \geq (0.05)								

Through Table (2), in which the results of the pre- and post-tests of the research sample are presented for the research variables, we notice an improvement in the results of the explosive ability of the legs and the blocking skill under study through the differences in the arithmetic means of the pre- and post-tests.

The researchers attribute this development in this ability to the type of exercises adopted (rebound force exercises in the double opposing pyramid method) and their effective effect in improving the level of explosive ability of the legs and the nature of performing these exercises with high intensity and in the shortest possible time, relying on the phosphogine energy system (CP-ATP).) which contributed to improving the speed of performance of special skills, as the association of force exercises with speed of performance in unexpected situations helped stimulate the two central nervous systems, as the nervous system plays a major role in creating the required compatibility between nerves and muscles so that contraction occurs at the required moment and at the speed possible for performance. Because “the basis of speed training is the appropriate state to stimulate the central nervous system, and this is done only through the athlete’s previous and fatigue-free activity” (Qasim Hassan Hussein and Abd Ali Nassif, 315, 1979).

The explosive ability of the legs is an important ability in the results of the game of volleyball, as the physical, skill and tactical performance in modern volleyball has become indispensable in one of its parts based on this ability. The player is required to focus performance in two directions, one of which is the correct performance of the skill and the other is the force of advancement, as it is the most important skill in volleyball. It depends on the force of the jump to accomplish the required skill, and good knowledge of the method of explosive ability of the legs and their mastery of the ball is one of the factors of confidence for the defensive player and the speed of performing the blocking in different situations. The explosive ability of the legs is of great importance in this game, and many specialists agree that a good player in volleyball is the one who He has high jumping power to succeed in various skills, whether in defense or attack, which distinguishes a high-level volleyball player.

The researchers also attribute this development in the explosive ability of the two men to the training curriculum that was developed to obtain this result by allocating time for this ability in the curriculum from its beginning to its end, as performing any skill requires a certain amount of force, on the one hand, and on the other hand, he sees Researchers said that the development of this ability was the result of training in basic skills and the accompanying change in directions, positions, and situations, as well as the connection of its performance with many other abilities, such as transitional speed and agility, which helped develop the functioning of the nervous system, as confirmed by (Mufti Ibrahim, 157, 1998). Which confirms its vital and important role in agility through the efficiency of receiving information from the training or competitive environment and issuing kinetic commands to the executing muscles.

Since most volleyball skills are open skills, there is a close connection between the explosive ability of the legs and the development in the performance of the skills, which is what the researchers did in developing exercises in a manner consistent with the different playing situations, which contributed to the improvement of the blocking skill, and this development occurred in the performance of the blocking skill. Although it is considered a little progress due to the short period of application, the researchers believe that the development in performing the blocking skill is due to the ease of its implementation and the speed of moving freely between positions, and the player who is well prepared physically and skillfully is in a good condition to perform and implement the skills, so the players who perform this Skills: They must possess explosive ability, reaction speed, agility, and flexibility in performing movement to avoid touching the net (Keith Nicholis, 89, 1979).

This is in addition to monitoring the opponent to create the appropriate, as it is the first line of defense against the attacks of the opposing team, and its success helps to obtain points. It also distracts the opposing team's attention and leads to a lack of concentration and confusion.

Also, the nature of the exercises prepared by the researchers were force exercises using the double-opposite pyramid method, which were complex exercises to improve some levels of force by overcoming the resistance of the ground, which made it difficult to move. Therefore, all resistance exercises contribute to improving force and speed. Therefore, muscular force is one of the most important physical abilities necessary for kinetic performance and has The direct effect on the speed of movement is considered the basis for the rest of the elements of physical fitness because it plays a major role when linked to other physical characteristics to produce complex physical characteristics, which has increased its importance in improving and developing the achievement of sporting events, which agrees with Ali Saleh Al-Harhour's definition of force, "an individual's ability to perform." Overcoming external or counter-resistance by exerting muscular effort" (Ali Saleh A 1994, 260). The exercises used contributed to improving the explosive ability of the legs because they were within the open environment that resembles actual playing situations and thus improved the variables of the study that the researchers sought to achieve.

Conclusions and Recommendations:

Conclusions:

Through the results presented above and the researchers' findings in terms of presentation and discussion of those results, the researchers concluded the following:

- Both of the rebound force exercises using the double-opposite pyramid method used by the coach have a role in the process of bringing about development in the variables under study for volleyball players.
- The development of the explosive ability of the legs contributed to the development of the players' kinetic capabilities and capabilities, and this can be easily observed when they move on the field.
- The development of the variables among the members of the research sample led to the development of the general level of performance of the members of the research sample, who are the players of the Kufa Volleyball Club, physically in volleyball.

Recommendations:

According to the conclusions, the researchers recommend the following:

- Necessity of relying on rebound force exercises using the double-opposite pyramid method in training the physical and kinetic abilities of volleyball players and all skills.
- Necessity of developing high physical fitness in volleyball and focusing on the explosive ability of the legs and quick or explosive force exercises to move towards the ball.
- Relying on the sequence adopted in the study when training the abilities under study for volleyball players, as well as the number of training units for each training goal.
- Necessity of using rebound force exercises in the double pyramid style facing each other for other age groups and in other group games.

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Appendix (1)

A model of rebound force exercises in the double-opposite pyramid style

Intensity	%80	Objective of the training unit	Developing basic volleyball skills for dhi qar committee players						Relative size by repetition	60R	
Main section time	64 minute		Relative volume over time	14minute							
No.	Exercise symbol	Volume		Rest between exercises		Rest between sets		Absolute volume by repetition	Time to perform one exercise	Actual working time	Total time for exercise
		Repetition	Sets	Repetition	Sets	Repetition	Sets				
1	First	4	3	60sec	90 sec	360sec	270 sec	12R	17sec	204sec	13minute
2	Second	4	3	60sec	90 sec	360sec	270 sec	12R	11sec	132sec	12 minute
3	Third	4	3	60sec	90 sec	360sec	270 sec	12R	12sec	144sec	12 minute
4	Fourth	4	3	60sec	90 sec	360sec	270 sec	12R	15sec	180sec	13 minute
5	Fifth	4	3	60sec	90 sec	360sec	270 sec	12R	16sec	192sec	14 minute
Week				First		Unit			First		