



Article

The Effect of Exercises Using The Vertimax Device on Developing Special Strength and The Skill of Hitting The Back Smash in Volleyball for Juniors.

Nabil Kazem Haribd ¹, Haider Qasim Kazem ², Dargham Abdel Azim Abbas ³

¹ Student Activities Department

^{2,3} Al-Qasim Green University, Babylon 51013, Iraq

* Correspondence: haedertrehe111@sport.uoqasim.edu.iq, duurgham@sport.uoqasim.edu.iq

Received: April 11, 2024
Revised: April 29, 2024
Accepted: July 22, 2024
Published: August 10, 2024



Copyright: © 2024 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

Abstract: The effect of exercises using the Vertimax device on developing special strength and the skill of hitting the back smash in volleyball for juniors Researchers: Prof. Dr. Nabil Kazem Haribd M.M. Haider Qasim M. M. Dargham Abdel Azim.

The modern volleyball game is characterized by speed and strong performance throughout the match, and this requires players to possess a high level of special strength that qualifies them to continue positive performance until the end of the match and achieve victory. Through the experience of the researchers, as they are former players and coaches of this game, and its current presence in the scientific and practical field, and their continuous follow-up of Al-Qasim Sports Club in volleyball, they noticed a weakness in the back smash, in addition to the great development of the blocking wall. Which made it difficult to perform a close front smash, and this gave importance to the back smash as it is performed from the back area. Therefore, the player needs a high level of special strength in the arms and legs in order to succeed in the back smash skill, so the researchers decided to develop specific exercises using the Vertimax device. To develop the special strength of the arms and legs and the skill of backhand smashing for junior volleyball players. The research aims to:

1- Preparing exercises using the Vertimax device to develop special strength and the skill of hitting the back smash in volleyball for juniors.

2- Knowing the effect of exercises using the Vertimax device to develop special strength and the skill of hitting the back smash in volleyball for juniors. The most important conclusions were

1- The specific exercises used on the Vertimax device have a positive effect on the development of the explosive strength of the legs and arms and the skill of backhand smashing for junior volleyball players.

2- The method followed by the coach has a positive impact on the development of the explosive power of the legs and arms and the skill of backhand smashing for junior volleyball players.

Keywords: exercises using the Vertimax device, special strength, back smash skill with volleyball.

1. Introduction to the research and its importance

The amazing progress witnessed by various sports in the world has reached high levels of performance and achievement is certainly due to the coaches' reliance on the sound scientific rules of the science of sports training and keeping pace with them and their quest to discover more different training and scientific methods and means, as well as revealing the prevailing theories of the science of sports training and contributing to the development and development of fitness elements and raising the level of general physical fitness, which in turn leads to the development of technical, tactical and psychological performance of the player in various sports, so Specialists, researchers and workers in the

field of sports had to find everything new to benefit from it in supplementing sports events to keep pace with the development taking place in them.

The game of volleyball is one of the games that need the physical and skill sides, which are two sides that are constantly in dire need of muscular strength of the arms and legs, which gives the privacy of strength to the players of this game, as the player needs the strength of the legs and arms in jumping and also needs the strength of the arms in the overwhelming beating, and the performance of skills, especially those that require stairs

The look of modern training has become the interest in all aspects, whether physical or skill, to achieve the required level, through the use of modern training methods more specialized away from the general and traditional methods and tools, and these training methods are exercises using (Vertimax), as the exercises in this way depends on dealing with the high training intensity of the exercises within the training unit and imposes high intensity on the organs of the body, as well as accustoming players to continue to perform for as long as possible and face fatigue during training and matches, The importance of research through the preparation of qualitative exercises using the device ((Vertimax in the development of the special strength of the arms and legs, which contribute to the performance of the skill of beating the back crush of juniors volleyball being one of the decisive skills in the match because it is a difficult skill and requires performance of special explosive abilities to produce the best performance.

2. The problem of research

The modern volleyball game is characterized by speed and strength of performance throughout the game and this requires the players to have a high level of special strength that qualifies them to continue positive performance until the end of the match and win. M

3. Research Objectives

- 1- Preparing exercises using the (Vertimax) device to develop special strength and the skill of beating the back crushing volleyball for juniors.
- 2- Knowing the effect of exercises using the (Vertimax) device to develop special strength and the skill of beating the back crushing volleyball for juniors.

4. Imposition of research

Exercises using the device (Vertimax) positive effect to develop the special strength and skill of beating the back crushing volleyball for juniors.

5. Research Areas

5.1 Human field: Al-Qasim Club players junior volleyball category for the season 2023-2024.

5.2 Time Domain: Period (10/9/2023) until (20/2/2024).

5.3 Spatial area: the closed hall in the Al Qasim Youth Forum.

6. Research Methodology and Field Procedures:

6.1 Research methodology: The researchers used the experimental method because it fits the nature of the research problem.

6.2 The research community and its sample: The researchers determined the selection of the research community with the players of Al-Qasim Club, the junior volleyball category for the season 2023-2024, and their number was (18) players, and the research sample was selected in a simple random way, and their number was (12) players, and they were divided into two control groups

Homogeneity of the sample Equivalence of the two research groups:

To complete the requirements of the experimental design followed, the researcher resorted to achieving homogeneity between the members of the research sample, and in order to reach a fixed level of the research sample and to avoid indicators that may affect the results of the research in terms of individual differences between the players, homogeneity was conducted for the two groups using the torsion coefficient in terms of (height, mass, age, training age), and the results of homogeneity of the two research groups have been distributed normally, and then there are no abnormal values, as the values of The torsion coefficient between (± 1), as shown in Table (1). In order for the researchers to attribute the differences to the experimental factor, parity was conducted between the two research groups in the tests of the studied variables, as the appropriate statistical method was used, represented by the test ((t) for the independent samples in which the value of the significance level appeared. (SIG is greater than (0.05) and for all tests confirming the equivalence of the two research groups, as shown in Table (2).

Table 1: Equivalence of the two research samples

Extraneous variables	Q-p	mode Torsion	coefficient	Length (cm)	Mass (kg)	Chronological age (years)	Training Age (Month)
74.35	1.66	75.60	2.52	177.12	76.38	14.05	3.11

Table 2: Equivalence of two control and experimental research groups in the studied variables

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	37.29	2.73	38.48	2.61	1.47	0.629

Table 3: Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	7.62	1.11	7.88	1.26	1.58	0.736

Table 4: Rear Crush Strike Skill

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	2.48	0.83	2.63	0.89	0.73	0.527

Table (2) shows that the values of (Sig) are greater than the level of significance (0.05) and this means that the differences were random between the two research groups in some of the studied variables and this indicates the equivalence of the two groups.

Means, tools and devices used

- Arab and foreign sources.- For tests and measurements.

2 American-made Vertimax. - Video camera number (1) / speed (150) r / s. - Laptop HP) Korean number (1), electronic calculator manual type (CASIO).- Legal playground .- Whistle number (2).- Adhesive tape measure for the planning of the stadium and determine the test areas.- Legal handballs number (12).- Plastic cones of different sizes number (10).- Medical balls weighing 800 kg (6) .- Lamps number (8).

Field Research Procedures:

Determining the validity of special strength tests for the legs and arms and the skill of beating the back crush:

For the purpose of determining the validity of the special strength tests for the legs and arms and the skill of beating the back crush volleyball for juniors, and after the researcher was briefed on the various and diverse scientific sources, the tests were identified and presented to the experts and specialists in the field of volleyball, who numbered (13) and after collecting the results and

Table 5: the legs and arms and the skill of beating the back crush

Tests	Validity	Ka2 Calculated	Significance	Vertical jump test of stability	Sargent Vertical Jump Test	Creative Test
	2.48	0.83	2.63	13	0	13

Table 6: Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	4	13	7	12	1	9.30

Exploratory Experiment

The researchers conducted the exploratory experiment on (4) players from Al-Qasim Club, junior volleyball category, and the experiment was conducted at exactly (5) pm on (15/9/2023) in the yard of the Al-Qasim Youth Forum for studied tests, and after (7) days, the exploratory experiment was repeated on (22 | 9 | 2023) on the same individuals and under the same conditions, and the aim was:

- 1- Ensure the efficiency of devices and tools.
- 2- Identify the time taken for each test as well as the time of the total tests.
- 3- The level of difficulty of the tests for the research sample.
- 4- Knowing the difficulties facing the researchers in order to avoid them in the future
- 5- Knowing the best area that gives the correct reading and the best location for the device.

Scientific foundations of tests

Validity of the test: Honesty is "the accuracy in which the test measures the purpose for which this test was developed".

Stability of the test: In order to extract the stability coefficient of tests must apply the principle of static test "which is the

Objectivity: Objectivity is defined as "the extent to which the arbitrator or examiner is free from subjective factors". The researchers used the Spearman correlation coefficient for the ranks for the objectivity of the tests between (the degrees of the first judgment and the second judgment)* as shown in Table (7).

Objectivity

Objectivity is defined as "the extent to which the arbitrator or examiner is free from subjective factors". The researchers used the Spearman correlation coefficient for the ranks for the objectivity of the tests between (the degrees of the first judgment and the second judgment)* as shown in Table (7).

Table7: shows the stability coefficient and the objectivity coefficient of the tests

Tests	Validity	Ka2 Calculated	Significa nce	Vertical jump test of stability	Sargent Vertical Jump Test	Creative Test
	0.93	0.000	0.95	Moral	0.000	Moral

Table8: Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T
	0.85	0.000	Moral	0.88

Table 9:Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T
	0.000	Moral	0.91	0.92

Pre-test.

The researchers conducted the pre-tests for the research sample on (30/9/2023) before starting the main experiment with all variables adjusted.

APPLICATION OF EXERCISES WITH VERTIMAX:

The researchers prepared exercises using ((VERTIMAX) to develop the special strength of the legs and arms and the skill of beating the back crush with volleyball The beginning of the implementation of the exercises on (1/10/2023) until (30/11/2023) and the exercises were applied in the special preparation stage and the duration of the exercises reached (8) weeks distributed over (24) training units at a rate of three training units per week (Saturday - Monday - Wednesday) and the qualitative exercises were given at the beginning of the main part of the training unit, and after the completion of the exercises they are integrated with the control group To complete the training unit for them under the supervision of their trainer and the time of exercises (36-43) minutes of the size of the training unit and the researchers used the method of interval training high-intensity and the selected exercises were implemented in a variety of methods and changing continuously and the researchers determined the intensity of the exercises between (80-95%) The researcher used the principle of ripple in giving weekly exercises

Post-tests.

The researchers conducted the post-tests in the closed hall of the Al-Qasim Youth Forum on (1/12/2023) and with the same steps and the conditions in which the tests were conducted (approximately).

statistical means

the researchers used the statistical bag (SPSS) in the analysis of the results of the research, including: -

Arithmetic mean. -Standard deviation.-Mode.-Torsion coefficient. -= test (t) for correlated samples .- test (t) for independent samples - Ka2.

Presentation, analysis and discussion of results

Presentation of the results of the pre- and post-tests of the special strength of the legs and arms and the skill of the rear crushing beating of the control group:

Table 10: shows the values of the arithmetic mean and standard deviation of the pre- and post-tests and the calculated t-value of the test results ((control group))

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	38.48	2.61	40.26	2.17	49	0.000

Table 11: Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T
	7.88	1.26	9.10	.15

Table 12: Rear Crush Strike Skill

Tests	Experimental	Group Control	Significance	Calculated T
	2.63	0.89	3.87	0.61

Table (12) shows the values of the arithmetic means and standard deviations between the pre- and post-tests of the control group and through our observation of the arithmetic means and standard deviations we see different between the two tests and accordingly the researchers used the t-test for correlated samples.

2-4 Presentation of the results of the pre- and post-tests of the special strength of the legs and arms and the skill of the rear crushing beating of the experimental group:

Table 13: shows the values of the arithmetic mean and standard deviation of the pre- and post-tests and the calculated t-value of the test results ((experimental group))

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	37.29	2.73	48.18	2.23	7.44	Moral

Table 14: Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T
	7.62	1.11	11.60	1.95

Table (13) shows the values of the arithmetic means and standard deviations between the pre- and post-tests of the experimental group and through our observation of the arithmetic means and standard deviations we see different between the two tests and accordingly the researchers used the t-test for correlated samples. Presentation of the results of the dimensional tests of the special strength of the legs and arms and the skill of the skill of the rear crushing of the two experimental control groups:

Table 15: shows the values of the arithmetic mean, the standard deviation of the post-test and the calculated t-value of the test results (for the two experimental control groups)

Tests	Experimental	Group Control	Significance	Calculated T	Experimental Control Sig	Creative Thinking Test
	40.26	2.17	48.18	2.23	6.85	v

Table 16: Test throwing a medical ball weighing (800) grams from sitting on a chair for the preferred arm

Tests	Experimental	Group Control	Significance	Calculated T
	9.10	1.15	11.60	1.95

Table 17: Rear Crush Strike Skill

Tests	Experimental	Group Control	Significance	Calculated T
	3.87	0.61	4.90	0.71

Table (15) shows the values of the arithmetic means and standard deviations between the post-tests and for the control and experimental groups and through our observation of the arithmetic means and standard deviations we see different between the two tests and therefore the researchers used the t-test for independent samples.

Discussion of the results.

Through what was stated in the previous tables there are significant differences between the tests before and after and in favor of the post-tests of the two groups (control and experimental) for tests of the explosive special force of the legs and arms and the skill of the skill of beating the back crush, and researchers attribute the development of the control group to the impact of the usual approach developed by the coach in addition to the continuation and regularity of the players in training, which had a clear role in the development as he confirms (Saad Mohsen) "The opinions of experts, regardless of the different sources of their scientific and practical culture, The training program inevitably leads to the development of achievement, if it is based on a scientific basis in the organization and programming of the training process and the use of appropriate intensity and gradation and the observation of individual differences as well as the use of optimal repetitions and inter-effective rest periods and under the supervision of specialized trainers under good training conditions in terms of place, time and tools used. Because comprehensive development is the only guarantee of achieving mathematical scientific results (4)

The results also showed that there are significant differences and preference for the experimental group and in favor of the post-test and the researchers attribute the reason for this development to the effect of exercises using the device (vertimax), which was prepared by the researchers, where these exercises contributed to the development of the development of the special explosive force of the legs and arms and the skill of the skill of beating the back crush volleyball and the special exercises were carried out correctly and with different training stresses commensurate with the age of the sample, and this is confirmed by (Qasim Hassan) that "special exercises or quality These exercises have a major role in improving explosive ability and improving the motor and skill path, and this is what was pointed out by (Hara)", the exercises serve to guide the integration of the level of fitness of a particular element as well as compatibility and a technical or tactical element and link it to build the quality of creation and psychological qualities of the competition". The dimension of the experimental group, to the nature of the exercises used in

The special development of biokinetic susceptibility must be systematic with a direct or indirect impact on other abilities"(3).The superiority of the post-test on the pre-test for physical and skill abilities is due to the content of the exercises given to the sample prepared by the researcher was influential and effective, and this superiority is due to the use of the vertimax device, which played an important role in increasing the training process and contributing to increasing motivation and improving physical abilities and accuracy of correction that gives the player muscle strength, which in turn leads to access To the optimal kinetic path in the implementation of duties during correction, and this is confirmed by (Mohammed Al-Disti) "The use of modern devices and tools is one of the most important methods or alternatives to increase the effectiveness of the training process, which contributes to the development of shortcomings" (2). Al-Khalfi and this is what (Jihan Ahmed Badr) confirmed the necessity of

5. Conclusions and recommendations

5.1 Conclusions

1- The qualitative exercises used on the device (Vertimax) has a positive impact on the development of the special explosive power of the legs and arms and the skill of beating the back crushing of the junior volleyball players.

2- The method followed by the coach has a positive impact on the development of the explosive special power of the legs and arms and the skill of beating the back of the junior volleyball players.

3- The qualitative exercises used on the device (Vertimax) has preference in the development of the special explosive power of the legs and arms and the skill of beating the back crushing players junior volleyball.

4- The organization of exercises and the suspense contained in the training program contributed to the effectiveness of the implementation of the vocabulary of exercises by the players and their continuous commitment throughout the program period contributed and reflected on the physical and skill performance of volleyball players.

5.2 Recommendations

1- The need to use specific exercises using the device ((Vertimax to develop the explosive special force of the legs and arms and the skill of beating the back crush of the players emerging volleyball.

2- The need to conduct periodic evaluation to know the extent of development of the level of physical and skill performance of the players.

3- Using the Vertimax device in other qualities, abilities and activities because of its broad horizon in exercise and training processes

4- Conducting other studies and research for age groups and for both sexes to build a basic base of abilities for players in the initial preparation stage for them.

REFERENCES

1. Badr, Jihan Ahmed. "The effectiveness of using rubber ropes on some variables related to the level of performance of the anchor skill." *Scientific Journal, Helwan University*, no. 63, part 2.
2. Farhat, Laila Al-Sayed. *Measurement and Testing in Physical Education*. 1st ed. Cairo: Al-Kitab Center for Publishing, 2001.
3. Faraj, Gamal Sabry. *Speed and Athletic Achievement, Planning - Training – Physiology Injuries and Rehabilitation*. Beirut: International Book House, 2018.
4. Hara. *Principles of Training*. Translated by Abdul Ali Nassif. 1st ed. Mosul: Higher Education Press, 1990.
5. Hussein, Qasim Hassan. *The Comprehensive Sports and Physical Encyclopedia*. 1st ed. Amman: Dar Al-Fikr Al-Arabi for Printing and Publishing, 1998.
6. Ismail, Saad Mohsen. *The Effect of Training Methods to Develop the Explosive Power of the Legs and Arms on the Accuracy of Long-Distance Shooting by Jumping High in Handball*. Doctoral thesis. Baghdad, 1996.
7. Kash, Youssef Lazim. *Physical Fitness of Football Players*. Amman: Dar Al-Fikr for Printing, Publishing and Distribution, 2002.
8. Muhammad, Sardar Hakim. "The Effect of Competitive Exercises with Numerical Deficiency in Developing Some Physical Abilities and Offensive Skills for Young Handball Players." Master's thesis, College of Physical Education and Sports Sciences, University of Diyala, 2014.
9. Awad, Muhammad Al-Desti. "The Effect of Total Body Resistance Training with the Suspension Device on the Muscular Balance of the Muscles of the Arms and Legs and the Digital Level of 400 m Hurdles." *Assiut Journal of Physical Education Sciences and Arts*, no. 41, part two, 2015.
10. Al-Zyoud, Nader Fahmy, and Hisham Amer Alyan. *Principles of Measurement and Evaluation in Education*. 3rd ed. Amman: Dar Al-Fikr for Publishing and Distribution, 2005.