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Dr. Haider Sabih Najm Al-Tamimi
Assistant Professor,
Department of Applied
Sciences, College of Physical
Education and Sport Sciences,
University of Misan, Amarah,
Iraq

The effectiveness of compound exercises in developing the values of some biomechanical, physical and kinetic variables for the skill of crushing hitting the back-facing diagonal volleyball, (Missan players 20-25 years old)

Dr. Haider Sabih Najm Al-Tamimi

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Abstract

In the researcher's pursuit of the effectiveness of using compound exercises represented by muscular work angles exercises and similar to skill performance in developing some biomechanical variables (kinematics and kinetic) that constitute the basic essence of the technical performance of the skill of the Qatari back crushing skill, in addition to the exercises of kinetic abilities represented (compatibility and agility) in achieving and reaching accuracy in performance by exploiting the principles, foundations, mechanical laws, and economy with effort to reach the highest possible height from the back area to hit the ball over the opponent's block wall and land in the front area and achieve a valuable point and thus reach the best performance in the offensive skill from behind the front line volleyball. As for research problem In that there is a clear weakness in the performance of the players for this type of crushing beating in most teams, specifically the stage of linking between the maximum strength of the legs and the explosive strength of the arms, and this requires the player to possess a high degree of compatibility and agility, as well as the distance between the implementation area and the areas of accuracy, and this causes the player to unalign correct posture during the skill sections, which causes a loss of balance, and this increases the amount of during the approaching phase, causing an incorrect momentary stop effort expended that is not commensurate with the required speed. As for research aim Preparing complex exercises according to some biomechanical, physical and kinetic variables for the skill of the accuracy of the smash hit, the diagonal rear facing of the volleyball. As for hypothesis of Research: There are statistically significant differences in the values of some biomechanical, physical and kinetic variables in the tribal and post tests of the skill of crushing hitting the back facing volleyball in favor of the post tests of the experimental group. The researcher used the experimental method by designing the experimental and control groups for a period of (8) weeks and each week (3) training units. The back smash players numbered (14) players (7) players for each group, and the sample percentage was (77,77 %) from the original population, while (4) players were chosen for the exploratory experiment and were excluded in the main experiment. 1- 5 Researcher's Conclusions: It appeared that there is a development in the values of biomechanical, physical and kinetic variables as a result of the compound exercises that you applied to the research sample. As for recommendations of researcher The researcher recommends the use of compound exercises, as it works to develop some of the values of biomechanical, physical and kinetic variables for young volleyball players.

Keywords: Developing, biomechanical, physical, kinetic variables, Missan

Introductions

Despite the scientific progress in the field of training, more research and studies must be conducted to reach many scientific facts in order to reveal the best methods and methods to develop each sporting event optimally in an attempt to invest human energy to its fullest extent. And volleyball in particular is one of the games that can be trained in different and varied ways and methods according to the age group and the type of competition, and that compound exercises are appropriate with the youth group, as they are Physical and motor exercises similar to the actual performance and skills of the angles of muscular work for the type of specialized activity at the same time. The backhand crushing skill is considered an offensive skill that has an effective and clear role in resolving the game points. Therefore, workers in this field resort to raising the level of efficiency of the players in their performance and thus raising the level of technical performance of the team through the diversity of offensive skill performance by striking from different playing areas, especially

Corresponding Author:
Dr. Haider Sabih Najm Al-Tamimi
Assistant Professor,
Department of Applied
Sciences, College of Physical
Education and Sport Sciences,
University of Misan, Amarah,
Iraq

background, which leads to the dispersal of the opposing team's defenses represented by the blocking wall and the defense of the stadium, and thus the result of the match can be guaranteed. In turn, it directly affects the skillful performance of the back smasher in volleyball, which should be noted here. that what It occurs from wrong timings in the strength, path, and time of performing the crushing blow during its execution, which leads to the depletion of the energy of the striking player, which leads to poor accuracy in performing the skill of the back crushing blow. This is from biomechanical variables that naturally lead to a difference in performance from one player to another, and in order to build movement on solid foundations that the player is aware of, it is necessary to use the science of biomechanics, this science that records the highest degrees of connection with the rest of the other sciences, on top of which is the science of sports training, as the mechanism of the causes of movement, weaknesses and strengths is referred to The role of modern technologies in measuring and monitoring the development accompanying all development processes is not hidden. It is provided that Importance search The importance of the research lies in the fact that the researcher sought to study the most important biomechanical variables to perform the accuracy of the crushing beating back facing to reach the variables to achieve the ability to control and control the muscular work and this is done by studying the parts of the skill (approaching - rising - hitting - landing) under study and methods of increasing the effectiveness Performance in a biomechanical environment, as well as preparing complex exercises for skill, as well as knowing the impact of these exercises in achieving ideality in performance by exploiting biomechanical principles and laws and saving effort to reach the highest height to hit the ball from the highest point from behind when performing it and trying to find logical solutions to problems Wrong performance through it with the aim of improving technical performance For an athlete and access doing to a better level.

Research problem

of hitting the back requires harmony and consistency for the work of the physical and motor capabilities and adjusting the values of the biomechanical variables, and as it is known that the goal of the skill under consideration is to reach the ball With an appropriate speed during the approaching stages, which the player must keep from starting to move from behind until a moment Colliding with the ball and sending it to the opponent and landing on the front side of his court. And be a researcher Teaching and academic Following the training of many local clubs and national teams, he noticed that there is weakness evident in the player's performance For this kind of crushing beating in most teams, specifically the stage of linking between the maximum strength of the arms and the explosive power of the two legs, and this requires the player to have a high degree of compatibility and agility capabilities, as well as the distance between the execution area and the accuracy areas, and this is the reason why the player does not adopt the correct position during the skill sections Which causes a loss of balance and a decline in the level of performance, and this increases the amount of effort exerted during the approaching phase, which causes an incorrect momentary stop that is not commensurate with the required speed if we

know that the players have physical and motor capabilities It is suitable if these capabilities are exploited with the mechanical principles and laws that limit the movement, then there will be an aspect of saving effort and performing the skill with high accuracy and the required form, so the researcher wanted to identify Biomechanical variables affecting performance and work on developing them By preparing exercises Vehicle (mechanical, physical and kinematic) own and thus approximate the performance under consideration With global perfect performance and then The contribution of these variables in achieving economical mechanical burdens located on the joints of the body related to the mechanical movement of the required technical performance and bringing the performance to the best level.

Target search

1. A number Compound exercises according for some biomechanical, physical and motor variables | Accurate back slamming skill with volleyball.
2. Get acquainted on the effect of compound exercises in pre and post tests to evaluate some biomechanical, physical and motor variables for the skill of back smashing volleyball.

Research hypothesis

There are statistically significant differences in the values of some biomechanical, physical and motor variables. In the pre-test, post-test, and post-test of the skill of the back smash hit in volleyball, in favor of the post-test of the experimental group.

Research areas

- Maysan youth volleyball players in Maysan Governorate, Amarah district.
- Time range: 11/8/20 22 - 1/11/20 22. _ _ _
- Spatial field: the closed hall of the martyr Luaibi

Research methodology and field procedures

Research Methodology

The researcher used the experimental method in one group design

Research community and sample

The research community consisted of the young players of the Maysan volleyball team, whose number is (18) players. As for the research sample, it was chosen by the deliberate method, and they are the back slamming players and their number is (7) for each experimental and control group of players, and the percentage of the sample was (77.77%) from the original community and for the purpose of verification From the homogeneity of the sample and avoiding individual differences that affect the results of the research, the researcher took some measures to control the variables. For this, a statistical treatment was conducted using (the arithmetic mean, the standard deviation, the coefficient of difference) for anthropometric measurements to find out the reality of the difference or not, and Table No. (1) shows this. The value of The coefficient of variation (15.62%) is less than 30 %. The sources mention that whenever the coefficient of variation is less than 30 %, this means that the sample is homogeneous. (1)

Table 1: It shows the homogeneity of the research sample in anthropometric measurements.

T	Measurements and variables	Measuring unit	Arithmetic mean	Standard deviation	Coefficient of difference
1	training age	year	44,5	1,43	3,21 %
	chronological age	year	19,71	0,275	1,40%
2	Bloc	kg	78	2,15	2,75 %
3	height	poison	181,7	4,19	2,31 %
4	arm length	poison	72,43	1,38	1,91 %
5	trunk length	poison	61,05	1,42	2,33 %
6	The length of the legs	poison	97,94	1,68	1,71 %

In order to know the reality of the biokinematic and physical variables under study in the experimental and control groups, the researcher measured these variables and in order to identify the significance of the differences in the mentioned variables and to ensure the equivalence of the control and experimental groups, the (t) test was used for independent samples between the two groups, as shown in the tables below, This is what qualifies the researcher to do

his research and apply the special vehicle exercises. Schedule (2)

It shows the equivalence of the values of the arithmetic mean, standard deviations, and the computed and tabulated (t) value of the values of the bio- kinematic and physical variables of the pre-test for the control and experimental groups in the overwhelming transmission.

Table 2: Shows the equivalence of the values of the arithmetic mean, standard deviations

	Biomechanical variables physical, and movement	Overwhelming beating (pre-female)		Smashing multiplication (pre-experimental)		Calculated value	Significance level	The result
		s	p	s	p			
1	Approach speed	3.35	0.240	3,22	0,169	1.78	0.05	Random
2	Advance angle	65.40	1.97	67,20	1,75	1.56		Random
3	The maximum height of a body's center of mass in air	1.30	0.167	1,32	0,147	2.01		Random
4	Speed aviation	2.30	0.29	2,31	1,15	1.52		Random
5	Linear momentum	249,60	11.27	251,32	11.09	1.89		Random
6	Work at an angle	1345,31	6.91	1348,34	7.79	198		Random
7	Kinetic energy at the moment of rise	2243	11,89	2247,20	11.28	2.07		Random
8	Potential energy at maximum height (m.s.j)	921,90	7.10	925,49	6.21	1.38		Random
9	Skill precision	16.4	1.55	17.9	1.39	1.26		Random
10	Maximum strength of the arms	10	1,980	12	2,220	0.89		Random
11	Distinguished by the speed of the two men	4,55	0,349	4,35	0,670	1,25		Random
12	Agility	21,12	0,982	22,10	0,978	2,00		Random

*Tabular value (2.179)

It appears from Table (2) that all calculated (t) values are less than the tabular value of (2,179) under the level of significance (0.05) and the degree of freedom (14-2=12), which indicates the equivalence of the control and experimental groups in the indicators of constraint. search.

Means of collecting information, devices and tools used
It is represented by "the means by which the researcher can collect data and solve his problem to achieve the research objectives, whatever the tools with data and devices." (2)

Means of collecting information

- Arab and foreign sources.
- Observation and analysis.
- Internet information network.
- Personal interviews with professors specialized in volleyball, biomechanics, tests and sports training.
- And the applications used in the computer and the Kenova program.
- Test and measure.
- Equipment and tools used
- Medical scale.
- Mobile device (iPhone 11 pro max), American made, (240) images per second, number (2).
- Electronic stopwatch. Illegal parallel device, wood blocks (4)
- 2) Laptop computers.
- Laser discs (CD) and (DVD).
- A measuring tape with a length of (5 m) meters for anthropometric measurements.

- Measuring tape for measuring distances (5 m).
- Volleyball (5) type (Mikasa) Japanese made.
- field research procedures
- biomechanical variables

Biokinematic variables

Approach speed: It is the approaching distance traveled per unit of time and its unit of measure is (m/s), It is the ratio between the approaching distance represented by the beginning of the movement of the feet from his movement on the ground to before leaving the ground to ascend over the time of this distance.

Advance angle: It is the angle confined between the horizontal plane and the connecting line between the fulcrum point of the standing foot on the ground and the point of the player's hip joint in the last picture before the foot leaves the ground, and it is measured from the front.

- Maximum height of the center of mass of the body: It is the perpendicular distance between the center of mass of the body at the moment the ball hits it and the surface of the earth.
- Flight speed: It is measured by the distance traveled at the moment the body takes off from the back area of the landing perimeter in the front area over its time Its unit is m/sec.
- Linear momentum: it is got to hit Mass the body in the speed and I united measured she kilo love.

Kinetic variables

Work at an angle: It is the amount of force in terms of the second instantaneous force in the displacement moved by the body multiplied by the cosine of the angle between the force and the displacement line and measured from the moment of getting up to the moment of hitting the ball (work = force x g x cos of the angle). (3)

2- Kinetic energy at the moment of pushing the support leg For the player's elevation: it is half of the body mass multiplied by the square of the player's speed, which was extracted from dividing the amount of the vertical distance between the body center of gravity (hip) of the image (1) and the center of gravity of the image (18) by the total time of the image (1 - 18), and the distance was measured and time by the analytical apparatus. Kinovea 0.819).1

A full turn of the obene = $-k \times x^2$, the unit of measurement (joules) or (kg / m / s)..... (4)

3- Potential energy at the maximum height (m.s.g) at the moment of hitting the ball: It is the product of multiplying the weight by the maximum vertical height from the ground that the player's body reaches at the zero point in flight, and the weight = mass x ground acceleration, Therefore, the law is (c = k x g x p), (51) And as in the image of the highest height (m, s.g) of the player that was mentioned previously,

and its unit of measurement is the joule.

Select a test Skill

Back Smash Test from Center (1) (Haider Shamkhi Jabbar, 2009, 95):

The purpose of the test: measuring the accuracy of the back crushing stroke from the center (1)

Tools

- Volleyball court.
- 3 volleyballs.
- Adhesive tape.
- Measuring tape.
- The conditions:
- The player performs the back smash skill from (1) position legally.
- The player performs (5) attempts.

Register

- If the ball falls in square (a) 5 degrees
- If the ball falls in square (b) 3 degrees
- If the ball falls within the shaded area 2 degrees
- If the ball falls outside the designated area (zero), the maximum score for the test is (25) degrees

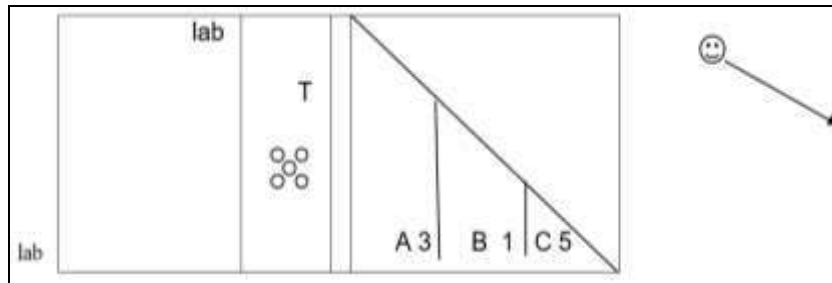


Fig 1: Demonstrates the achievement test for the skill of crushing the diagonal volleyball

Select a test Physical

The first test: the test of bending and extending the arms on the parallel (6):

The purpose of the test

- Measuring the maximum dynamic muscle strength of the arms and shoulders during the push-up movement, especially the muscles of the arms, during 30 seconds.
- Used equipments:
- Parallel apparatus at a level slightly higher than shoulder height and chest width for any lab that allows him to bend and stretch without his feet touching the ground and a wooden bench.
- Test procedures:
- At the signal, the tester begins to bend the arms downward until the elbows take a right angle and extend the arms to reach the initial position.

Score calculation

1. One kit shall be calculated for each valid and complete payment
2. The test ends and counting stops when the time reaches 30 seconds. Two attempts are given and the best attempt is counted
3. The second test, three hopscotch, my husband's rise with both legs together. (7)

The aim of the test

Measuring the strength characteristic of the speed of the right and left leg together.

Tools used

- Flat area, tape measure, whistle, drawing on the ground Line for a start.

Test instructions

- The tester stands behind the starting line with both feet on which the hopscotch is being performed, and the tester performs three consecutive hops for the farthest possible distance without any delay with the three hops.

Test conditions

- The feet must be pushed from a standing position with a high speed of performance, as measurements are taken to the nearest (cm), two attempts are given to each laboratory, and the result of the best is taken.

Score Calculation

- The degree of the laboratory shall be to the nearest (cm) between the starting line and the farthest point after the third hop, and it is measured from the heels of the feet.

Select a test Kinetics

4x9m Shuttle Run Test (8)

The aim of the test

Measuring the speed of changing direction (agility)

Tools used

- An empty space area of (10 x 10 m). And the number of cubes (4) of wood. Number (2) stopwatches for time

Test instructions

- The tester takes a ready position behind the starting line (standing position), and when the start signal is given, it runs at full speed towards the cubes, picking up one of the cubes and returns at full speed to put the cube behind the starting line, then sets off again to pick up the second cube and returns with it to cross the starting line as quickly as possible.
- Score calculation
- The results of each attempt are calculated to the nearest 1/10 of a second, i.e. a time is calculated for the tester until the completion of placing the four cubes behind the starting line, and the result of the best attempt is calculated for the tester.

Exploratory experience

For the purpose of standing on the performance of the devices used, testing them and knowing the negative aspects and variables that will face the work, the researcher conducted a first exploratory experiment on Monday corresponding to (15/8/2022) in the evening in the closed hall of the martyr Luaibi in Maysan on a sample of the research community (4) players while they were outside The research sample was intended to:

- Knowing the appropriateness of the test for the research category.
- Know the time taken to perform the test and measure the variables.
- The readiness of the testers to take the test.
- Introduce the supporting work team to the nature of work and procedures.
- Identify the distances and heights that cameras and scales should be placed according to, as well as determining the appropriate lighting. And ensure the efficiency of the auxiliary work team.

Tribal imaging tests and measurements

Got up researcher conducting Photography tribal Damn search on the date 8/20/2022 Sat. On _ _ Hall the games enclosed in martyr for my game And that For the extraction Accuracy And Valuable variants biomechanical for skill under consideration And he has reached number Attempts (3 5) Attempt He was share all Player (5) attempts And done filming try The best using machine mobile iPhone male former, And he has it was completed situation the tomboy on Height (1.5 7) meters his girth from the earth and even lens Machine Photography and on After (7, 50) meters from place performance I play With what guarantee dart appearance player since start the movement and even phase Landing And laid Machine Photography in the tomboy iPhone at an angle vertical and on the side right for the player during his performance The overwhelming beating in front of the opponent's blocking wall, and who then Procedure Tests Physical and motor abilities Sunday 8/21/2022.

The main experience

- In order to obtain exercises with good effectiveness, it was necessary to look at the modern sources and references in the science of sports training, which would be sufficient to enrich the researcher with information that would help him in developing complex exercises. In addition to the opinions of some specialists in the field of sports training science, biomechanics science, and the game of volleyball. In addition, the researcher took into account all the conditions and characteristics of raising the training load and rippling in it. The application of the exercises began on (2 2/8/2022) on Monday until (10/18/2022) on Tuesday for a period of eight weeks, with three training units per week
- In the following are some explanations of the method
- The training stage that fits the curriculum (the stage of special preparation) at the beginning of the middle of the main section of the trainer
- The number of training units per week (3) units (Saturday, Monday and Wednesday).
- The total number of training units (24) training units.
- The time of the exercises in the main section is (25-40) minutes.
- The method of forming successive pregnancy degrees, the researcher used model (1-2).
- The researcher adopted the training method (high-intensity and repetitive interval), where the stresses used ranged from (75% - 100%) in the implementation of the exercises set.
- The researcher adopted the ratio of work to rest in regulating the intensity of the training load.
- The average intensity researcher extracted the research sample to standardize the severity and start with one starting line.
- The training curriculum adopted comprehensiveness in the goal (diversity of the goal of exercises similar to performance, angles of muscular work, strength and agility).
- The researcher took into account the scientific foundations in the relationship between the components of the training load (intensity, volume and rest).
- Test and dimensional measurements
- The post-test for the research sample was conducted on Friday 10/21/2022. In the same hall after the completion of the period of applying the curriculum, which took (8) weeks, and the researcher was keen to provide the same pre-test conditions and procedures used to conduct the skill test and measurement of the studied biomechanical, physical and motor variables.

Statistical means

- The researcher used the necessary statistical methods that help in processing the results and testing the research hypotheses through the use of (21 SPSS) program, including:
- Presentation and analysis of the results of differences in the values of some biomechanical, physical and kinetic variables for pre and post tests:

Schedule (3)

It shows the values of the arithmetic mean, standard deviations, and the calculated (T) value for the values of some variables under study for pre and post tests.

Table 3: Shows the values of the arithmetic mean, standard deviations, and the calculated (T) value for the values of some variables under study for pre and post tests

Wizards Statistical biomechanical variables and tests physical and performance	Measuring unit	Experimental group				The control group				value (T)		Significance of differences		
		Pretest		Post-test		Pretest		Post-test		T calculated		Tabular	Workout	Female officer
		Middle of my account	Average deviation	Middle of my account	Average deviation	Middle of my account	Average deviation	Middle of my account	Average deviation	T	Officer			
										workout				
Skillful	Number	12	2,220	15	1,077	10	1,025	11	1,135	5,30	2,37	2,447	D	not
	cm/m	4,35	0,670			4,55	0,349			4,80	3,42		D	D
	Tha	21,12	0,982	5,95	0,109	22,10	0,978	5,20	0,350	5,05	1,87		D	D
	m / s	3,22	0,169	18,18	0,25	3,35	0,240	21,68	1,27	4,20	1,03		D	non d
	Degree	1,32	0,147	4,08	0,22	1,32	0,147	3,62	0,31	3,74	2,24		D	non d
Extreme powers	Degree	67,20	1,75		1,93	65,40	1,97	1,39	1,89	4,73	1,92		D	not
Distinguished by speed	m/cm	2,31	1,15	1,57		2,30	0,29	67,32	0,94	4,05	1,36		D	D
Agility	kg/m/cm	251,32	11,09	72,27	0,78	249,60	11,27	2,78	2,23	5,39	2,65		D	non d
Approach speed	Joule	1348,34	7,79	3,25	3,20	1345,31	6,91	256,03	7,76	7,65	2,77		D	non d
Max height (m.s.g) the moment he touched the ball	Degree	12,5	1,33	288,03	6,479	12,3	1,34	1388,02	7,39	9,21	2,10		D	D
The angle of rise	Joule	2247,20	11,28	1486,49	8,95	2243	11,89	13,1	1,43	6,97	2,39		D	D
The player's flight speed	Joule	925,49	6,21	16,1	1,79	921,90	7,10	2255	13,03	6,45	2,23		D	non d
Linear momentum	degree	17,9	1,39	2344	12,85	16,04	1,55	944,45	12,06	4,43	2,29		D	non d

Presentation and analysis of the results of differences in the values of some biomechanical, physical and kinetic variables for post-tests: Table (4)

It shows the values of the arithmetic mean, standard deviations, and the calculated (T) value for the values of some variables under study for post - tests.

Table 4: Presentation and analysis of the results of differences in the values of some biomechanical, physical and kinetic variables for post-tests

Wizards measurements	Measuring unit	(Post-experimental)			(After me - female officer)			T calculated	Sig	The result
		s	p	Development	s	p	Development			
	M / s	4.08	0.22	21,07	3.62	0.31	7,46	6,08	0,006	Moral
Approach speed	D 0	72.27	0.78	7,02	67.32	0.94	2,85	4,86	0,007	Moral
Advance angle	M / cm	1.57	1.93	15,82	1.39	1.89	5,03	4,90	0,005	Moral
The maximum height of the body's center of mass	M / s	3.15	3.03	26,66	2,78	2.23	17,26	8,12	0,002	Moral
Flight speed	Kg m/s	288,03	6,479	12,75	256,03	7,76	2,51	8,89	0,000	Moral
Linear momentum	Joule	1486,49	8,95	9,30	1388,02	7,39	3,07	10,89	0,020	Moral
Work at an angle	Joule	2344	12,85	4,13	2255	13,03	1,0	7,27	0,035	Moral
Kinetic energy	Joule	1020,77	11,34	9,33	944,45	12,06	2,39	5,92	0,023	Moral
Potential energy	Number	15	1,077	20	11	1,135	9,10	5,99	0,000	Moral
Extreme powers	M/cm	5,95	0,109	26,9	5,20	0,350	12,5	6,56	0,000	Moral
Distinguished by speed	Tha	18.18	0.25	16,17	21,68	1,27	1,94	9,20	0,003	Moral
Agility	Degree	21,3	1,45	16	18,02	2,57	11	7,15	0,000	Moral

* At a degree of freedom (n-2) (14-2=12) and a level of significance (0.05).

Discussion of the results of some A values of post biomechanical tests and variables for the experimental and control groups:

Through Table No. (4) there appeared significant differences in the values of some biomechanical variables and in favor of the post-tests of the experimental group, with regard to the approach speed variable. Raising the ability of the muscles of the lower extremities and harnessing them for the introductory stage (represented by the speed of the pelvis) for the skill of crushing the back diagonal, as the introductory stage is directly related to the goal of the skill, as it is performed in order to provide the maximum possible benefit from the preparation for the main stage. Especially if we know that achieving the required goal in performing the skill under study must take into account the characteristics of the ideal technique for the skill So that it reflects the good

exploitation of the principles of biomechanics and the main goal at this stage, which is Achieving a great approach speed so that the player reaches the best use of the thrust force during the get-up phase, and the development of a variable approach speed is necessary to overcome the inertia of the body, which can then be invested to increase the flight speed, As for the development of the angle of rise variable, it came as a result of the positive and effective effect of the curriculum exercises that included jumping with weight, agility, and extreme forces, which were "weightlifting exercises suitable for developing the strength of the muscles working in the joint movement of the lower extremities, which increased their efficiency in resisting great flexion at the moment of fixation to prepare for getting up to perform the crushing blow, ((10) " The compound exercises work to develop the excitability of the nervous

system and increase the effectiveness of the nerve nutrition of the working muscles," (11) Thus, a clear improvement appeared in the player's ability to reach the best angle of rise during the performance, and the researcher agrees that the appropriate angle of rise is the one that achieves the best outcome for the speed of the center of gravity, " as the direction of the center of the body during the rise depends on converting the horizontal speed into a vertical speed commensurate with the nature of the specific activity." (12) As for the variable of the maximum height (m.th.g), the development in it was a result The variety of exercises of the prepared curriculum is similar to performance, angles of muscular work, and plyometric exercises, as they had a major role in helping the players to master the correct transition between the moments of support and push, ensuring a kinetic path for the center of body mass in these two moments, and the higher the height of the body mass center, the more opportunity there is for the player To hit the ball quickly, with high accuracy, and at an acute angle in the opposing team's arena, and this variable is of great importance. In the starting angle of the ball and directing it to the opposing team's court in order to ensure control of the ball and its direction because the higher the jump height, the greater the accuracy, because the good height gives the hitter control over the areas of accuracy and ensures that he hits the ball at an acute angle, which results in an increase in the speed of the ball. (13) As for the significant differences that appeared in the flight speed variable, it was the result of the effect of plyometric exercises, iron bar, rubber ropes, and jumping over boxes, successively, on the lower extremities of a sample. The research was suitable for developing the strength of the muscles working in the movement of the joints, which " increased their efficiency in resisting the great flexion at the moment of fixation to prepare for getting up to perform the research skill, and this flexion is usually in the knee and pelvic joints, as the larger it is, the player takes a long time to extend it, and this is not good in Executing quick movements " (14) In addition, the vehicle exercises contributed to the development of neuromuscular compatibility through muscular contraction, opposite to the required movement, and this helped to enhance the resulting force, and this was evident through the high value of the flight speed, "as the push of the force determines in particular the amount of change in the amount of movement of the body, and therefore it is determined by the change in velocity. (15) The speed at which the projectile body takes off is directly proportional to the distance it achieves, so the higher the speed of approach, the greater the flight speed, and thus the increase in the momentum of the body and its movement towards the ball as a result of the increase in the vertical speed values of the body at the moment of its launch, which is considered one of the most important variables in determining the height unless any forces interfere. external,

As for the significant differences that appeared in the values of the vertical work variable for the two men and in favor of the post-test, the researcher attributes the reason for that to the prepared vehicle exercises and their impact on the development of It is clear in the muscles of the lower extremities, and therefore their contribution to increasing the values of strength, and that the exercises that were applied have given their positive results from the biomechanical point of view, and this was confirmed by the results of the vertical work variable for the two legs in the

post-test, where the strength jumping exercises contributed to the development of rapid strength according to angles Correct muscular work, which was positively reflected in obtaining a good technical position before getting up, in addition to that, the high degree of compatibility between the parts of the body helped facilitate the movement of movement and the conversion of the horizontal speed gained from approaching in the vertical direction and achieving the best levels of jumping, i.e. achieving the best values for vertical work and according to the requirements Skillful performance, and this confirmed it. The interconnection between the parts of the body contributes to the transmission of the force generated as a result of the good timing of bending and extending the knees with the rest of the body parts by increasing the vertical and horizontal distance traveled through the height of the center of gravity of the player's body and in proportion to the requirements of skill." (16)

As for the significant differences in the results of the values of the linear quantity of movement variable in the post-tests, the researcher attributes this to the vehicle exercises and their impact on improving the efficiency of producing the internal force of the lower extremities, which in turn enables the player to overcome the external forces affecting, and thus increase the movement speed of the player (speed The approach and the speed of the overall performance) and agree, "The increase in speed is proportional to the force that causes movement if the mass is constant." (17)

As for the significant differences that appeared between the two variables in the dimension For kinetic and potential energy, the researcher attributes it to vehicle exercises, which had a significant impact on increasing strength And the speed of muscular contractions of the lower extremities, where the researcher took into account the gradient in intensity when preparing the exercises. bodies, their mechanical value remains constant, and since the mechanical energy of the body is a formal sum of the energy (position and kinetic) at any moment in time, it can be expressed through the following equation:- (18)

$$PE + KE = C$$

That is, potential energy (position) + kinetic energy = constant amount

As for the significant differences that appeared between the dimensional tests of the maximum forces and the characteristic of speed, the researcher attributes the compound stomach exercises, and since (the quality of the exercises used in training affects positively on improving the qualities of strength, speed, agility and endurance through the performance of many repetitions, which leads to fixing the correct technique and raising stamina strongly and quickly. (19)

Conclusions

1. It appeared that there was a development in the values of the biomechanical, physical and motor variables as a result of the compound exercises that I applied to the experimental research sample.
2. appeared to be a development in the values of some variables (distinguished by speed and the amount of linear movement) for the control group only, which relied on the coach's usual curriculum.

Recommendations

1. The researcher recommends the use of compound exercises for the angles of muscular action that contribute to the upward jumping operations, the angles of the shoulder and the striking arm, as they work to develop some values of the kinematic and kinetic variables of the youth volleyball players.
2. Emphasis on developing the values of the variables under discussion in a scientific and thoughtful manner because of their positive impact on developing the skillful performance of youth volleyball players.
3. Emphasis on conducting field tests from time to time for motor, physical and skill abilities in a manner commensurate with the capabilities and capabilities of the players to reach the best performance of offensive skills.

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Supplements Daily training unit Composite exercises to develop biomechanical variables for the backhand crushing skill of the players of the Maysan youth volleyball team

Components of the training unit	Abilities used In the main section	T	Exercises used	Exercise time	A period The duration of the exercise	Number		Comforts		Total time for exercises	Forms of exercise
						Repetition	Totals	Between	Repetition		
Main section	Skill style exercises	1-	Standing behind a colleague) Performing the position with the feet without a device by bending the knees and swinging the arms to fly the body backwards with high resistance from the colleague.	3D	8th	t5	-----	35 sec	-----	25 d	
		2-	From the position of the angular support on a parallel ground, raise the hip up and try to pass the two legs between the bent arms and raise them high behind.	2 d	10th	c3	-----	45 sec	-----		
	Maximum strength for the arms	1-	Hanging on the bar, pulling the body up to reach the chin above the bar, and then lowering it For a little body and make a balance by extending the legs forward by repetition	D3	15 sec	4t	-----	40 sec	-----		
		2-	Standing - the arms are high, holding a rubber rope attached to the bar with each arm, moving the arms sideways down	D3	15 sec	4t	-----	40 sec	-----		
	Fit	1-	(Standing-open) The arms are high to drop a handball backwards, with the torso bent forward to catch the ball between the two men.	2 d	10th	3c	-----	45 sec	-----		
2-		(Arms standing in front of the bottom) He carried a handball with both hands, then threw it high behind And pick it up behind the back.	2 d	10th	3c	-----	45 sec	-----			
Powerful speed for the arms	1-	Standing on angular hands and legs resting on a wooden box with a height of (90 cm), forming a right angle with the torso and chest, bending and extending the arms	3D	15 sec	4t	-----	40 sec	-----			
	2-	Walk from a handstand 3m, change direction and walk 2m.	3D	8th	5t	-----	35 sec	-----			
Exercises for the development of muscular working angles	1-	Relying on the right leg bent at the knee and the left knee touching the ground, then straightening the legs while turning towards the throw with a sudden movement and pushing the portable weight (4 kg) to improve the straightening of the legs while pushing with repetition	2 d	8th	5t	-----	20 sec	-----			
	2-	Throwing a medical ball weighing (3 kg) towards the wall, with an emphasis on twisting the torso by repetition towards the wall.	2 d	10th	3c	-----	45 sec	-----			

Week: first Date: 24/8/202

* Training Unit: Second Place: Martyr Laibi Forum - Maysan

* Training objective: Developing skills, maximum strength, and speed for arms, legs, and agility. Number of players: 7 players

* Today: - Monday. Tools: - carpet - parallel ground - barriers

* Training intensity: 70% of its weight (10 kg) - wooden chest

Training unit time: 25 minutes