EFFECT OF MUSCLE STRENGTH EXERCISES ON THE DEVELOPMENT OF ELECTRICAL ACTIVITY (EMG) OF UPPER LIMB MUSCLES AND ITS RELATION TO THE ACCURACY OF THE OVERWHELMING VOLLEYBALL

Omar Sabah Jameel, Ahmad Khaleefah Mejbel
Omar_sabah2006@yahoo.com, ahmadcom84@yahoo.com
Iraqi University of Arts Directorate of Education Baghdad Karkh first

ABSTRACT: *The aim of this study is to investigate the effect of muscular strength exercises on the electrical activity of the upper limb muscles on the one hand and to determine the relationship between the electrical activity of the upper limb muscles and the voluminous velocity of the volleyball. The search hypothesis lies in the differences between the tribal and remote test and the correlation between the electrical activity of the upper limb muscles the overwhelming transmission in the search variables.*

The researchers used the experimental method to design a single group of tribal and remote tests for a sample of (10) players from the Hit Sports Volleyball Club. The tribal test was conducted and then physical exercises were implemented. The training included 16 training units distributed over 8 weeks, 2) two units per week, and exercise was used in the main section, with a capacity of 40 minutes.

1. DEFINITION OF RESEARCH

1.1 INTRODUCTION AND IMPORTANCE OF RESEARCH:

The scientific progress witnessed by the world at present is still one of the main reasons for the progress of human life in all aspects of life .This progress has helped to achieve great achievements. However, It is known that volleyball needs special features that require physical and movement abilities that give the player enough strength for make a jumping, and there are many abilities play a large role in the performance of the player, the strength is one of the most important physical abilities in volleyball and the importance of most of the skills of mobility for the requirements of jumping, jumping and striking and these qualities of the body power, which reflects positively to other skills [1].

The stages of training are closely related to each other. Each stage is complementary to the previous stage and cannot be arranged in sequence. The duration of each stage varies depending on the type of skill and level of performance as well as changes in the electrical activity of the muscles that function when performing motor skills.

In spite of the many studies that have taken place in this field, it is also necessary to look for new methods to detect the place of imbalance and weakness in motor performance and electrical activity associated with that performance, and through the use of the device (EMG) and its programs in the measurement and analysis of electrical activity of the muscle, The device records the electrical activity of the skeletal muscles and their analysis and is important for many sports for the need for a nervous system to assess the stability of nerve impulses to the muscles and speed, as well as knowledge and guess the units of motor movement in the skeletal muscles, which studies and photographs and record the frequency D and range during muscle contraction.

This is reflected in the importance of research in the development of exercises that contribute to the impact on the electrical activity of the upper limb muscles, especially exercises, which play a key role and importance in training and upgrading performance.

1.2 THE PROBLEM OF RESEARCH:

Through the researchers' knowledge of research and scientific sources, as well as the discussion of a number of coaches and through watching the players of the Heat Sports Club and focus on the performance of the overwhelming skill of transmission and very weak in the accuracy of performance and since the overwhelming transmission can get a point in the case This is considered an important skill, hence the problem of research. Therefore, the researchers decided to use the EMG to determine the reality of electrical activity when performing upper limb muscular activity and, in light of this, to develop scientific and practical solutions and treatments through the preparation of exercises to develop the level the electrical activity of the upper limb muscles and its impact on the accuracy of the crushing send [2].

1.3 SEARCH TARGETS:

1 - To know the effect of muscle strengthening exercises on the electrical activity of the muscles of the upper limbs in the members of the research sample.

2 - Know the relationship between the electrical activity of upper limb muscles and the overwhelming transmission accuracy of the members of the research sample.

1.4 ASSUMING RESEARCH:

1 - There are differences between the results of tests tribal and remote electrical activity of the upper limbs of the members of the research sample.

2 - There is a relationship of statistical significance between the electrical activity of upper limb muscles and the overwhelming transmission accuracy of the members of the research sample [3].

1.5 RESEARCH AREAS:

1.5.1 Human Field: A sample of the Hit Sports Volleyball Club of Anbar province - Hit.

1.5.2 Time domain: for the period from 1/4/2018 to 1/8/2018.

1.5.3 Sphere: The Sports Hall of the Athletics Club of Anbar Province.

2. RESEARCH METHODOLOGY AND FIELD PROCEDURES

2.1 RESEARCH METHODOLOGY AND STUDY DESIGN

The researchers used the experimental approach to design one group with the tribal and remote tests to suit the nature of the research problem.

2.2 THE RESEARCH COMMUNITY AND ITS DESIGN:

The research community was chosen in a deliberate manner. It consisted of 18 players. The sample of the research consisted of (10) players representing (45.45%) of the research community. The players were selected for the

exploratory experiment from outside the research sample. research community [4], as shown in the table (1).

Table (1): Shows community and sample research

Players experience exploratory	Ratio of the sample to the research	Sample experimental research	research community
2 players	%55،55	10 players	18 players

2.3 HARDWARE, RESEARCH TOOLS AND MEANS OF GATHERING INFORMATION

2.3.1 Hardware and research tools

1. Electrophysiological device (EMG) • Sensors for the transmission of the electrical signal during electrolysis of muscles • Electric cable for transmitting an electrical signal from sensors to the calculator.
2. Aircraft balls number (10). watch timing. Metric tape measure and colored adhesive tapes.

2.3.2 Methods of gathering information

1. Arab and foreign sources.
2. Tests used.
3. Assistant staff.
4. International Information Network (Internet).

2.4 TESTS USED IN RESEARCH

The first test is EMG.

The researcher uses an American-made device (EMG) and works with a Wi-Fi signal. This device consists of an HP type calculator, a receiving battery, an explanation of the electrical signal and a connecting cable, as well as small batteries attached to the sensors. The test is installed by the sensors on the muscles to be measured (three-head brachial and musculoskeletal wrist muscle) and the signal battery is installed and sensors on each muscle, provided that the batteries are charged well and are delivered to the calculator via a Wi-Fi system Reference distance (50) meters maximum, and b Install sensors and secure signal tuning between the sensors and the calculator is preparing the player, when you hear the whistle the player performs transmit overwhelming skill and repeat the player performance again after rest for 20 seconds and try to take the best. The calculator contains a system that reads and analyzes the data and converts it into numeric values to extract the values of the electrical muscle variables under study [5].

The second test: the crushing accuracy test (4: 240).

OBJECTIVE OF THE TEST:

Test the accuracy of the volleyball.

Tools: Five plane balls, divides the pitch as shown in Figure (1).

PERFORMANCE SPECIFICATIONS: The player stands in the middle of the final line of the stadium (the half facing the half of the plot) 9 meters away from the net. In this place, the player is holding the ball to perform the overwhelming transmission to pass the ball to the other half of the stadium.

Conditions Performance: If the ball touches the net and its passage and if it falls outside the boundaries of the stadium is an attempt to the student tested (among the five attempts).

Registration: The player takes the score of the area where the ball is located for each correct attempt. Each player has 5 attempts, and the scores are spread over the regions (1 - 5). The maximum score for this test is 25, In the event that the ball falls on the dividing line between the two regions, the player is counted as the top zone score.

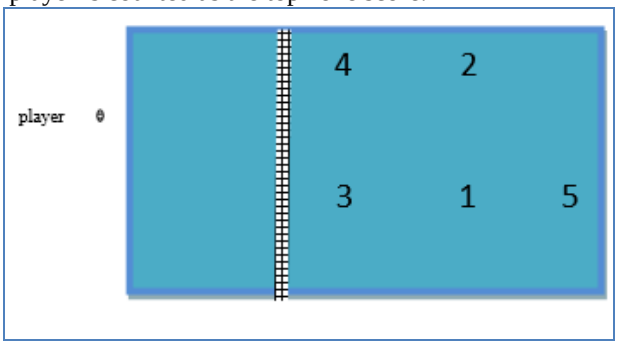

Figure (1): The test demonstrates the absolute transmission accuracy

2.5 EXPLORATION EXPERIMENT The exploratory experiment is a mini-experiment of the main experiment and must meet the same conditions and conditions in which the main experiment is possible so that the results can be taken. Therefore, the team assisted in conducting the exploratory experiment in the gymnasium at 4 pm on Tuesday, April 10, 2018, on a sample of players from outside the sample. The main objective of the experiment is to determine the suitability of the tests with the level of sampling, the time required to carry out the tests, Exercise muscle power Imams sample research and efficient assistant team and its efficiency [6].

2.6 FIELD ACTIONS:

2.6.1 Tribal Tests The pre-test of the research sample was conducted at the gymnasium of the Athletics Club of Anbar province on Thursday, 12/4/2018, at 4:00 pm. The researchers followed the same conditions «spatial and temporal» and then install the conditions of Time, tools, tools and auxiliary staff so that the same conditions can be created for the search sample and adjusted when performing post-tests.

2.6.2 The main experiment After completion of the pilot experiment and conducting tribal tests, the main research experiment was applied. The main research experiment was implemented on Sunday 15/4/2018 and ended on Wednesday 6/6/2018, The training units were prepared by the researchers and some of the scientific sources that help in their effect on the electrical activity of upper limb muscles and the overwhelming accuracy of the volleyball of the members of the research sample. The working group followed the exercises on the research sample and included (16) training units distributed over (8) weeks and the rate of (2) two units per week, and the exercise was used for the sample of the research in the main section, and the time (40) minutes.

The course continues with exercises in the repetitive training method (90-100%) and in the method of telemetry training. The main objective of the study is to develop the electrical activity of the upper limb muscles by developing the maximum strength of the upper limbs and their relation to the accuracy of the crushing performance. The exercises were carried out on the sample of the research by the assistant working team and under the supervision and follow-up of the researchers, and using the method of rippling and gradation of the training load using the 1: 1 configuration between the units and the weeks, ie the load unit is high and the second is less as well as the weeks.

2.6.3 Post-tests

The post-test of the research sample was conducted at the gymnasium of Hit Sports Volleyball Club in Anbar province on Saturday, 9/6/2018, at 4:00 pm. The researchers followed the same steps as the tribal tests, under the same conditions «spatial and temporal» and under the same conditions and using the devices, tools and tests previously installed.

Statistical methods. (2)

Arithmetic means Standard deviation Test (s) of interrelated samples Correlation coefficient (t) Pearson.

3. PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

3.1 PRESENTATION AND ANALYSIS of EMG results for research sample and discussion

Table (2): The statistical parameters in-kind of research in the testing of the electrical activity of muscles in the tests of the tribal dimension.

Muscle	Electrical muscle activity	test	Arithmetic mean	standard deviation	x	xh	Calculated value (T)	Statistical significance
muscle Three-pronged head	the top	after	611,1	121‹58	132‹8	126‹39	5‹01	Spiritual l
		before	743‹9	104‹50				
	Area	after	146‹4	31‹24	16‹1	29‹43	7‹75	spiritual
		before	162‹5	28‹37				
muscle Wrist ligament The Capricorn	the top	after	703‹1	108‹93	119‹5	114‹38	4‹86	spiritual
		before	822‹6	31‹96				
	Area	after	144‹3	26‹76	16‹2	26‹19	3‹8	spiritual
		before	160‹5	25‹74				

T value (2.26) in front of the degree of freedom (9) and the level of significance (0.05)

In Table 2, the mean of the top variable of the three-headed muscle in the tribal test was 611.1 and the standard deviation (121.58). In the post-test, the mean, the same variable and the muscle (743.9) and the standard deviation (104)), While the difference in the computational (P-) (132,8) and the standard deviation of the groups of the media (126,39) and the statistical treatment for the calculated value (T) is 5.01 and the T- The degree of freedom (9) and the level of significance (0.05) and the value of (T) calculated greater than the tabular and this means that the difference is significant and for the benefit of the post-test.

Table (2) shows that the computational mean of the area variable under the curve of the three-headed muscle in the cardiac test (146.4) and the standard deviation (31,24). In the post-test, the mean (162.5) and the standard deviation (28.37), While the difference in the computational (P-) (16.1) and the standard deviation of the media groups (29,43) and the statistical treatment for the calculated value (T) were (7,75) (9) and the significance level (0.05). Since the value of (T) calculated is greater than the scale, this means that the difference is significant and for the sake of the post-test. Table (2) also shows that the mean of the top variable of the wrist muscle was 70,1 and the standard deviation (108,93). In the post-test, the mean of the variable and the muscle (822.6) and the standard deviation (96, 31), while the difference in the computational (P-) (119.5) and the standard deviation of the media groups (114,38) and the statistical analysis of the calculated value (T) were found to be (4.86) (2.26) in front of the degree of freedom (9) and the level of significance (0.05) and where the value of (T) calculated greater than the tabular, it means that the difference is significant and in favor of the post-test. Table (2) shows that the computational mean of the area variable under the curve of the wrist muscle in the tribal test (144.3) and the standard deviation (26,76). In the post-test, the mean (160.5) and the standard deviation (25.74) , While the difference in the computational (P-) (16.2) and the standard deviation of the media groups (26,19). In the statistical analysis of the calculated value (T), it was found that their value (3.8) 2.26) in front of the degree of freedom (9) and the level of significance (0.05) and the value of (T) calculated greater than the tabular, it means that the difference is significant and for the benefit of the post-test. The researchers attribute the difference in the value of the wave to all muscles, as well as the area under the curve of the research sample, to the commitment of the research sample with the training tools used and the implementation of the duty at the training unit and the repetition of exercises. The stimulation of the largest number of motor units in the exercise contributes to a significant improvement in the level of electrical signal For the variable area, which plays a role as an indicator of the effectiveness of the muscle trained and this leads to the rapid transfer of nerve impulses within the muscle lobe for the purpose of contraction as the greater the regulation of motor units improved nerve function towards stimulating the muscles to perform its work Especially when training strength, because "the development of muscle strength is accompanied by several important functional aspects, such as increasing the nerve capacity during the recruitment of the largest number of motor units as well as synchronized constriction of these units with increased capabilities of nerve stimulation in neurons" (7: 164), in addition to providing "There is a small period of time between the emergence of electrical activity within the muscle and the appearance of movement of one of the parts of the body, as this period lasts about (30) part of a second is insignificant when it comes to the analysis of menstrual muscle activity" (5: 197). Part of the reason for this period is attributed to "chemical changes that occur before the muscle can contract, as well as the need for the muscle to remove looseness before the movement of the joint or part of the movement of the body" (6:28).

3.2 PRESENT AND ANALYZE THE RESULTS OF THE OVERWHELMINGbeating accuracy of the research sample and discuss it

Table (3): shows the statistical parameters in-kind research in the test of the overwhelming transmission accuracy in the remote tribal tests.

Skill	Measure unit						Calculated value (T)	Statistical significance
		test	Arithmetic mean	standard deviation	x	xh		
The accuracy of the transmitter is overwhelming	degree	after	5‹10	3‹43	3‹8	3‹82	4‹82	spiritual
		before	14‹3	3‹56				

T value (2.26) in front of the degree of freedom (9) and the level of significance (0.05)

From Table (3), the mathematical mean for the accuracy of the overwhelming beating accuracy in the tribal test was 10,5 and the standard deviation (3.43). In the post-test, the mean (14.3) and the standard deviation (3.56) (3.82) and the statistical analysis for the value of (T) calculated is (4.82) and the T tabular value is equal to (2.26) in front of the degree of freedom (9) And the level of significance (0.05) and the value of (T) calculated greater than the tabular and this means that the difference is significant and for the benefit of the post-test. Table (3) shows that there are statistically significant differences between the results of the tribal and remote tests of the sample of the study in the skill of the overwhelming transmission. The researcher attributes these differences statistically to the exercises used in the training units prepared by the researchers and from some scientific sources. Where the time allocated and the organization of exercises used easy to hard and each exercise according to the goal of the unit and the use of exercises in training is one of the important methods that serve to achieve the goal of the process with the least effort and time as well as improve and develop the level of physical and professional performance and this A number of the basic tasks of the process and training and the use of exercises within the training unit of the workers in the field of sports, and in particular those interested in the field of sports training, is essential to be built on the basis of scientific correct for its effective impact in achieving what was planned, whether physical or skilled was Has played a major role in influencing the accuracy of the overwhelming volleyball of the players, as well as the repetition of exercises that help in the process of mastering the movement and avoid the errors expected and this is what actually happened, and confirms Kurt Mainl, "The repetition of the form of sports movements is to install the field mechanism and images The direction is clear and the goal is to improve motor mobility "(3: 93).

3.3 PRESENTATION AND ANALYSIS of the correlation results between EMG and the overwhelming transmission accuracy and discussion

Table (4): Shows the values of the media and the standard deviations of the remote tests and the correlation coefficient calculated for the variables of the electrical activity of the muscle and the overwhelming transmission accuracy of the sample of the research.

Variables	Value t	indication
Muscle with three heads (the summit)	spiritual	0‹717
Transmission overwhelming accuracy		
Muscle with three heads (area)	0‹740	Muscle with three heads (area)
Transmission overwhelming accuracy		
Muscle connective wrist (top)	spiritual	0‹836
Transmission overwhelming accuracy		
Muscle connective wrist (area)	spiritual	0‹637
Transmission overwhelming accuracy		

(T) value (t) of the table (0,632) in front of the degree of freedom (8) and the level of significance (0.05)

In Table (4), after the statistical treatments, the t-value of the three-tailed muscle and the overwhelming transmission accuracy is (0,717) and the t-value of the table is equal to (0.632) in front of the degree of freedom (8) (0.05) and the value of (t) calculated is greater than the tabular and this means that there is a significant correlation relationship. Table (4) shows that the calculated value (t) of the three-tailed muscle and the crushing accuracy of the transmission is (0.740) and the t-value of the table is equal to (0.632) 0.05). Since the value (t) calculated is greater than the tabular, this means that there is a significant correlation. Table (4) also shows that the value (t) of the variable (top) of the wrist muscle and the overwhelming transmission accuracy is (0.836) and the value (t) of the scale is equal to (0.632) And the value (t) calculated is greater than the tabular and this means that there is a significant correlation. Table (4) shows that the value (t) of the variable (the area under the curve) of the musculoskeletal muscle and the overwhelming transmission accuracy is (0,637) and the value (t) of the scale is equal to (0.632) 0.05). Since the value (t) calculated is greater than the tabular, this means that there is a significant correlation. As shown in Table (4), there is a significant correlation between the muscular activity and the overwhelming transmission accuracy. On this basis, any improvement in muscular electrical activity leads to the development of skill performance. The researchers attribute this relationship to the fact that the electrical planning of the working muscles gives us a clear

picture of the nature of the movement In muscle, "because the locomotor effort is not a fixed site activity but moves along the muscle lobe until it reaches its ends and disappears. During its movement, it creates a magnetic field around the fiber that can be recorded by the device (electrolysis of the muscles) (1: 217) This is what we see in the development of the strength of the muscles of the upper limbs, which have a great need for energy because it depends The higher the regulation of motor units, the better the nerves work towards stimulating the muscles to perform their work continuously.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

1. Effect of exercise in the development of the muscular electrical activity of the muscles of the upper limbs in the members of the research sample.
2. The choice of the repetitive training method (90-100%) and the method of biometric training was the reason for the successful implementation of the exercises.

There is a statistically significant correlation between the muscular electrical activity of the upper limb muscles and the overwhelming transmission accuracy. Any development in muscular activity leads to the development of physical and skill performance.

4.2 RECOMMENDATIONS

1. The researcher recommends the use of EMG and other similar studies to establish the relationship between the activity of the muscular, upper and lower muscles and their impact on the performance of the volleyball skill and other games.

2 - Look for new and effective ways to further develop the skillful performance in volleyball.

3 - the use of exercises in the training modules for volleyball clubs and the introduction of conclusions and research.

EXERCISE MODEL

Game: Volleyball Goal Unit: Develop the level of upper limb muscles Number: 10 players, Unit severity: 94%.

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