The Effect Of Using Special Nutritional Supplements Accompanying Weight Training Exercises On The Development Of Muscular Activity Of The Leg Muscles And Achievement On The Effectiveness Of The Triple Jump

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Abstract: Athletics events today are among the most comprehensive and widespread in the countries of the world because of their popularity and interest for all age groups, and because of their importance in the Olympic Games. The jumping and jumping competitions are also among the exciting competitions for the player and scenes, and the triple jump competition that requires a great deal of muscle strength related to speed (the characteristic strength of speed) and also requires the player to have complete control over performance and physical ability and possess some special physical characteristics. The importance of research lies in the interest in athletics activities, including the triple jump. Therefore, scientific methods must be adopted in training and the need to use appropriate methods to explore the physical and functional capabilities inherent in the player's body represented by strength and the level of muscular activity during sports training, as well as providing the requirements for muscular work.

1. INTRODUCTION

At the present time, a number of scientific devices have appeared, as the exercise physique has come to measure most of the functional indicators in the direct way and with accurate results almost free of errors in the case of correct use of them, and from these devices or supplies is the (EMG) device, as through it we obtain the values of the muscle activity of the target muscles And help by providing training programs and improving achievement. The importance of research lies in the interest in the activities of athletics, especially the effectiveness of the triple jump. Therefore, scientific methods must be adopted in training and the need to use appropriate means to explore the functional capabilities inherent in the athlete’s body, represented by the functional capabilities of the nervous and muscular systems during sports training, as well as providing the requirements for muscular work. The research problem was discovered through the observation and follow-up of the researchers and the knowledge of what the world uses in terms of methods and means in
training players, especially players of jumping and jumping activities. Therefore, they proceeded to try this on the research sample to identify the characteristic of strength and the level of electrical muscle activity of the two men and what is going on inside the muscle and develop it first and improve the level of achievement. Secondly, the level of physical capabilities is also recognized through physical tests for effectiveness. Accordingly, the researchers aspire to find effective programs in training and nutrition through the use of weight training exercises and nutritional supplements to raise the functional and physical level and to improve the level of achievement of the research sample. The study aimed to identify the level of electrical activity of the leg muscles and the level of achievement of the research sample under study, as well as the effect of some nutritional supplements associated with weight training exercises on the level of electrical activity of the leg muscles and the achievement of the research sample.

As the researchers assumed the existence of statistically significant differences between the pre and post tests in the values of electrical activity of the target muscles and the level of achievement in favor of the post test of the research sample under study.

The human field consists of a group of players who represent Diyala club players for the event of the triple jump, which is 4 players, and the time period for the search is from 9/1/2020 Until 11/15/2020 at the Al-Kateen Forum and the yard of the College of Physical Education.

2. RESEARCH METHODOLOGY AND PROCEDURES:

Research methodology: The researchers used the experimental approach with pre, inter- and post-test for one group for its suitability with the nature of the research problem. Research sample: The selection of the sample is the main thing for the researcher's work, as it is considered one of the basic matters in scientific research. On this basis, the sample was chosen from Diyala club players for the triple leap within the athletics team, and the total number of the sample was (6) runners who were chosen by the deliberate method. The researchers selected (4) players from them for the purpose of the study and tests. One of the total sample was excluded after a week due to lack of commitment to training, and one of them had had an exploratory experiment.

Table (1) shows the median values for each of the chronological and training age and the values of height, weight, and body mass index, for each group.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Chronological age</th>
<th>Age of training</th>
<th>Length</th>
<th>weight</th>
<th>Body mass index (BMI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>the sample</td>
<td>21 Years</td>
<td>4 Years</td>
<td>176cm</td>
<td>69kg</td>
<td>23.5</td>
</tr>
</tbody>
</table>

Research tools, devices and means of gathering information:
- HP p4 Portable Calculator.
- Electronic electromyography (E M G) device.
- Italian height and weight measuring device.
- Electronic stopwatch.
- Camera phone to record the exams
- And the references.
- The global network of information (the Internet).
- Personal interviews.

Search procedures:
Determine the studied variables in the research:
The researchers, according to their expertise in the field, have identified the most important functional and physical indicators under study that are related to the players' activity and that pertain to the nervous system, in agreement with the trainer concerned with training.

Exploratory experience:
The researchers conducted an exploratory experiment at 4:30 pm on Wednesday (2/9/2020) due to the importance of this experiment in order to obtain accurate results.

And it was conducted on a player from outside the research sample under study and from the research community itself, and testing them on using the (E M G) device to closely examine the obstacles or problems that may arise in the stages of testing, as well as to ensure their safety when applying the tests.

Determine search tests:
1- Electromyography device (E.M.G).
The goal of the device: to measure the variable peak electrical activity of the target muscles.
Description of the device and method of measurement: The electro-microphone device, symbolized by the acronym EMG, is used to study the electricians of the muscles, this device has the ability to detect, record and store the EMG signal, which is a biological signal that represents the electrical currents generated within the muscle during its contraction. The measurement is done by installing the electrodes of the device on The target muscle during the effort, and it is linked to the portable calculator via Bluetooth for a specific distance.

Wide jump stability test:
The purpose of the test: to measure the strength of the leg muscles.
Tools: rough, flat ground that does not slip the individual, draw the starting line, tape measure
Performance specifications:
The laboratory is standing behind the starting line, the feet are slightly apart and the arms are high. Then the laboratory swings the arms forward down behind with the knees bent and the torso tilted forward until it reaches what resembles the starting position for swimming, then swings the arms forward strongly with the legs extending along the torso and pushing the ground with the feet strongly with an attempt Jump forward as far as possible.

Scoring: The laboratory is given two attempts and the best attempt is scored for him (Ali Salman Abd: 2013: 56).

Achievement test:
The purpose of the test: the triple jump achievement test.
Equipment: a court with legal measures triple jump, a tape measure.
Performance specifications:
The tester stands on the close-up range and perform the triple jump.

Scoring: Each laboratory is given two attempts and the best attempt is scored.

The main experiment:
Pre-test:
After the preparations made by the researchers, including recording and recording information about the research sample such as age, height and weight. The pre-tests for the research sample were conducted in the arena of the Al-Kateen Sports Forum in Diyala, as the pre-test took place at 4:00 pm on Sunday 6/9/2020 when the functional (electrical activity) and physical tests were taken for the research sample.

Exercise and nutritional supplements:
The researchers used, in agreement with the trainer, a set of special exercises that depend mainly on weight training, which is the process of using weights added to the torso and legs of the subjects of the research sample, gradually increasing the weights and starting from one kilogram of weight per man or adding weights to the player's torso through the pectoral for carrying weights It is added as it is distributed and arranged according to the training units during the research study period.
During the training units, doses of nutritional supplements are given twice a day and four
days a week for protein. It is Gold Standard Whey Protein: it contains high levels of all
essential amino acids. Taking it as a dietary supplement may raise the level of muscle growth
by more than 40%. The dose is for the players one time during the training unit and the length
of the study period of eight weeks.

Post-test for research indicators:
The post-test of the research sample was conducted after 8 weeks from the date of the pre-
test, and after training within the prepared program, the sample was subjected to regular
training units with doses of nutritional supplements. The post-test took place at three o'clock
in the evening also on the corresponding Saturday (11/7/2020) in the external yard of the College of Physical Education at the University of Baghdad with the same procedures that were followed in the pre-test.
The results or data extracted from the used device and the physical test were collected,
unloaded and arranged for the purpose of treatment statistically.

Statistical means:
The researchers relied on the SPSS statistical package, using the parameter statistics in
processing the results of the values of the studied functional indicators under study.

Presentation and discussion of results:
Display the arithmetic mean and standard deviations of the functional index values of the
research sample.

| Table (2) shows the arithmetic mean and standard deviations in the test (pre and post) for the
values of the peak electrical activity index of the studied muscles of the research sample. |
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Statistical processors</td>
<td>The test</td>
<td>Pre</td>
<td>The test</td>
<td>Post</td>
</tr>
<tr>
<td>Electrical activity (Microvolt)</td>
<td>Arithmetic mean</td>
<td>standard deviation</td>
<td>Arithmetic mean</td>
<td>standard deviation</td>
</tr>
<tr>
<td>Right leg 1 Twins straight</td>
<td>361.08</td>
<td>7.27</td>
<td>370.9</td>
<td>3.10</td>
</tr>
<tr>
<td>Right leg 2 Twins straight</td>
<td>280.00</td>
<td>3.88</td>
<td>320.13</td>
<td>14.76</td>
</tr>
<tr>
<td>Left leg Twins straight</td>
<td>318.93</td>
<td>8.10</td>
<td>334.35</td>
<td>12.37</td>
</tr>
</tbody>
</table>

The above table shows the arithmetic mean and standard deviation of the peak electrical
activity index for the target muscles of the legs, which is the straight thigh muscle and the
twin muscle in the leg, as the vertex was calculated when the two legs were sequenced in
(partial - step - jump) and with the measurement unit of microvolt.

It was found in the table that there are differences in the activity peak indicator between the
pre and post test for most of the results of the research sample players.

| Table (3) shows the arithmetic mean, the standard deviation of the differences, the standard
error, the calculated (T) value, the error rate and the type of significance for the two tests
(pre-post) in the studied research variables for the research sample. |
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>A difference α</td>
<td>difference</td>
<td>Standard</td>
<td>Degree</td>
<td>Calculate</td>
<td>Standard</td>
<td>Significance</td>
</tr>
<tr>
<td>Twin right 1</td>
<td>9.83</td>
<td>5.81</td>
<td>2.91</td>
<td>3</td>
<td>3.38</td>
<td>0.043</td>
<td>Sign</td>
</tr>
<tr>
<td>The straight right 1</td>
<td>40.03</td>
<td>15.50</td>
<td>7.75</td>
<td>3</td>
<td>5.17</td>
<td>0.014</td>
<td>Sign</td>
</tr>
<tr>
<td>Twin</td>
<td>8.50</td>
<td>2.69</td>
<td>1.35</td>
<td>3</td>
<td>6.32</td>
<td>0.008</td>
<td>Sign</td>
</tr>
</tbody>
</table>
Discussing the results of the peak electrical activity indicator for the research sample:
Through the results obtained from Table (3), which refers to the search index, the top of electrical activity, it was found that there is a clear change and a significant difference for this indicator when comparing the error rate with the value (0.05) between the pre and post test, which is a positive indicator indicating improvement. The activity of the target muscles of the research sample thus indicates an improvement in the level of muscle strength of the rectus thigh muscle and the twitch muscle of the right leg in the hopscotch stage. The level of muscle strength of the twin muscle in the right leg of the right man also improved in the step phase, and in the end the researchers see through the results an increase in the muscle strength of the right leg of the research sample players during the period of using special exercises and the period of administering the nutritional supplement doses used on the players of the research sample. And because of that, the sample adheres to the units. The daily training during that period and to the effectiveness of nutritional supplements and exercises prepared by the researchers and used by the coach, which thus represents a positive response to the muscles of the players and he achieves the goal of this study.
Concerning this, (Abu Al-Ela Ahmed Abdel Fattah: 1997) indicates that electro-mapping for muscle activity (E.M.G) is an important method or method for studying the characteristics of the activity of the muscular nervous system, and this method mainly depends on recording the electrical activity of muscles during their contraction).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Measuring unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumping stability</td>
<td>Mean: 2.33 deviation: 6.29</td>
<td>Mean: 2.37 deviation: 4.76</td>
<td>Meter</td>
</tr>
<tr>
<td>achievement</td>
<td>Mean: 14.44 deviation: 0.34</td>
<td>Mean: 14.88 deviation: 0.39</td>
<td>Meter</td>
</tr>
</tbody>
</table>

Table (5) shows the arithmetic mean, standard deviation of the differences, the standard error, the calculated (T) value, the error rate and the type of significance for the two tests (pre-post) in the variable of jumping from stability and achievement of the research sample.

<table>
<thead>
<tr>
<th>Variables</th>
<th>A difference</th>
<th>ξ difference</th>
<th>Standard error</th>
<th>Degree of freedom</th>
<th>Calculate d (T)</th>
<th>Standard error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumping stability</td>
<td>3.25</td>
<td>3.5</td>
<td>1.75</td>
<td>3</td>
<td>1.86</td>
<td>0.160</td>
<td>Non-Sign</td>
</tr>
<tr>
<td>achievement</td>
<td>0.44</td>
<td>0.26</td>
<td>0.13</td>
<td>3</td>
<td>3.35</td>
<td>0.044</td>
<td>Sign</td>
</tr>
</tbody>
</table>
Discussing the results of physical tests (jumping from stability and achievement) for the research sample players:

Through the results obtained by the researchers from Table 4 and 5 for the above physical variables, it was found that there is a marked change in the result of the jump from stability between the arithmetic mean between the pre and post test, but the differences were not significant.

As for the triple jump achievement variable, as the results showed that there are significant differences between the pre and post test of the players' performance in the research when comparing the error rate with the error level (0.05).

This indicates a clear improvement in the performance and achievement of the players, and this confirms the existence of a clear effect by nutritional supplements and weight training exercises or added weights on the improvement of achievement, according to the researchers' opinion.

This achieves the study objective.

3. CONCLUSIONS:

Through the results obtained by the researcher through the statistical treatment of the data, he reached several conclusions, which are:

1- The nutritional supplementation associated with weight training exercises a clear effect on the improvement of the work of the muscles targeted in the study through the results in the post-test.

2- The presence of a clear development and improvement of the peak electrical activity index of the rectus thigh muscle and the twitch muscle of the right leg in the hopscotch stage and the step in the post test.

3- There is an effect of used exercises and nutritional supplements on improving the level of achievement of the triple jump for the studied sample.

Recommendations:

In light of the findings, the researcher recommends the following:

1- The use of weight exercises in other jump and jumping activities in view of the positive results achieved by these exercises, including adaptations of the nervous and muscular system.

2- The necessity of using periodic job tests and measurements by coaches to predict the effectiveness of the training curriculum used on the players and the level of achievement.

4. REFERENCES:


