The effect of ballistic training exercises according to the anaerobic energy production system in the development of certain Strength forms for the arms and the Execution of Disc throwing to players

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Abstract: The effectiveness of disc throwing is from the athletic events that need strength and speed at once, the researcher found that the most appropriate types of exercises for this event is the method of ballistic training, which is used to overcome the lack of speed resulting from traditional weight training, and the researcher chose research sample from the players of the Faculty of Education Physical and sports sciences for girls, they were (5players) and she used explosive force tests and the strength of speed and the Execution of Disc throwing and concluded that there is a significant difference in the search tests as a result of exercise and applied to the members of the research sample and recommended similar studies On other activities in the square and the field.
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Keywords: effect; ballistic training; exercise; anaerobic energy; production system; development; Execution of Disc throwing; player

Introduction and the importance of research:

Sports training is the best way to reach athletes to levels that qualify them to compete in the tournaments and competitions through preparing them in various fields, including physical qualities that have a notable role in developing other areas by complementing each other to lead skillfully or effectively to a high level during competition. This did not come in vain, but came through the use of modern and objective methods which have been developed by specialists and researchers who have violated all the doors of modern science in various aspects through research and precise tests that are carried out to get sports activity and events to the level of progress and development.

The effectiveness of disc throwing from the events of athletics that need force and speed at once, and because the effectiveness of throwing is considered ballistics, so it need a kind of exercises help in the development of strength and speed at the same time, and after detailed research researcher found that the most appropriate types of exercises for this Effectiveness is the method of Ballistics training, which is used to overcome the lack of speed resulting from traditional weight training, as well as the development of active, corresponding and stabilized muscles. It also describes the movements that are characterized by increasing speed to the maximum extent with throwing the tool or weight in vacuum.

The traditional weight training accelerates the weight in a typical way during the first third of the movement, but during the last two thirds the weight begins to slow to protect the joint from injury, unlike the ballistic training, the athlete accelerates during the full range of movement. This training is used as an anti-slow action that occurs in traditional forms or jumps with it.

Light weight training which has high speed that affects different parts of the force and speed curves. The main goal of lightweight training is to increase explosive output, while traditional training using heavy weights increases the maximum strength of the players, and ballistic training which has high speed leads to the speed of the performance more than the performance of the traditional heavy weight training. Among these courses between the other training methods and the method of ballistic training, the researcher decided to develop exercises in ballistic training in the development of explosive force and speed of the arms and the execution of throwing the disc to players.

Research Problem

The effectiveness of disc throwing involves fast movements and a very high ability. The player can have the strength but may lack the explosive ability to ensure the application of its power at high speed. The ballistic training uses force economically, improving the series of contractions and relaxation of the moving units, and the players are trained to master the series of constriction and relaxation based on increased strength, which helps the muscles to adapt to contract very strongly and quickly. And because the researcher is a teacher in the Faculty of Physical Education and Sports Science, she decided to study this method in the training methods as it is a method that fits with the movements of disc throwing and helps to produce the greatest strength in the least time through its contribution to the speed of constriction of muscle fiber so the researcher wanted to identify the solution

of the problem of research through studying the effect of This technique according to the anaerobic energy system in the development of the force that has speed and explosive force of the arms and the execution of disc throwing to players.

Research Goals

1- Preparing exercises specific to the ballistic training according to the anaerobic energy system in the development of explosive force and speed of the arms and the execution of throwing the disc to players.

2-Identifying the effect of Ballistic training according to the about the effect of exercise Ballistic training according to the anaerobic energy system in the development of explosive force and speed of the arms and the execution of throwing the disc to players.

Research Assignments

1-There are statistically significant differences between the pre and after tests in the research tests of the research sample.

Research Fields:

1-Human domain: A sample of the players of the team of the Faculty of Physical Education and Sports Science for girls and they are 5 players.

2-Time domain: for the period from 4/1/2017 until 27/2/2017.

3-place domain: Scout Stadium: The outdoor playground at the Faculty of Physical Education and Sports Science for Girls.

Phrases Detentions

1-Ballistic training: is the ability of the muscles to perform movements as fast as possible witha slight and moderate resistance of 30 - 50% and it has the advantage of increasing in speed to the maximum extent with throwing a tool or weight in the vacuum and it includes lightweight lifting exercises and high speeds, medical balls, Jacket weights, Weight Bands[1]

2- The force that has speed: is the ability to perform movements against resistances one level from maximum extent with a high degree of speed[2].

3- The Explosive Force: is the ability to achieve maximum strength in the less possible duration[3].

2-Research methodology and field procedures

2-1Research Methodology:

The choice of a scientific approach to solving research problems is essential as it is the research problem that dictates the approach that can be used.

Therefore the researcher used the experimental method for being suitable to the research problem.

2-2 Research sample:

The researcher selected the research sample by the deliberate method of the players of the team of the Faculty of Physical Education and Sports Science for girls. They were 5 shooting player and the researcher made a homogeneity for them as shown in Table (1).

Table (1): Explains the homogeneity of the research sample

Variables	measruing unit	Arithmetic mean	standard deviation	Mediator	Torsion factor
Weight	Kgm	65,98	13,32	66	2,88
length	cm	164,13	24,52	164	2,097
The chronological age	year	19,83	5,67	20	1,93
The training age	year	3,1	1,02	3	2,79

It was found that the members of the research sample were naturally distributed. The values of the torsion factor were limited to +, indicating the homogeneity of the sample of the research sample.

Means and tools used in research

-Arabic and English sources
-Internet Information Network
-Measuring Tape
Medical Scale-
-Stopwatch
-Lightweight dumbbells
-Heavyweight Jacket (heavy Vest)
-Medical balls of different weights (1, 2, 3 kg)
-Rubber ropes
-Tests and measurement
-Questionnaires Forms

Tests used in research

The researcher surveyed the opinions of the experts that are specialized and have Experience with in selecting the research tests and it was as follows:

Test of throwing (2Kg) medical ball [4]

Purpose of the test: Measure the muscular capacity of the arm and shoulder area.

Tools used, medical balls, measuring tape.

Performance description: The tested stands in the area of approach between the two lines, placing the medical ball on one hand, and the other hand relays on the ball. The tested moves in the direction of the approach line within a limited distance and when he reaches the line pushes the ball from the side as in pushing the weight So that it does not exceed the approach line.

Calculations: for each tested has three consecutive attempts and the wrong performance counts as an attempt. The tested best result is calculated from the three attempts.

Test for bending and extending the arms from the front-relaying position during 10 seconds

Purpose of the test: measuring the force that has speed.

Performance description: The player takes the front-relaying position, the distance between the hands

is chest width and when the start signal is heard, the player will bend and extend the arms.

Calculations: The player counts the number of folds and tides during 10 seconds Each player has three attempts the best one is calculated.

Completing throwing the disc test

The aim of the test: measuring the completion of throwing the disc.

Performance description: The player stands in the place selected for throwing (Disc throwing circle) the player takes the correct position for performing the throwing and when giving instructions to start the player performs the throw by doing the technical stages of the performance, and when the disc falls in the throwing area the player exit the throwing circle from the allowed exiting place.

Calculations: Calculating the distance from the iron edge of the throwing circle to the distance reached by the disc during throwing, three attempts are given the best one is calculated.

2-5Exploration experiment:

The exploratory experiment is considered a scientific training for research to find out the negative and the positive aspects through the test to avoid.

The researcher conducted the experiment on a sample of (2) players from the college team they were not excluded from the main experiment, which was conducted on 4/1/2017 at ten o'clock a.m. and at the Scout Stadium the purpose of the experiment was the following:

-Difficulties faced by the researcher and the assistant staff

-The negatives and positives that accompany the execution process

-The suitability of machines and tools used for the nature of the tests and the level of the members of the research sample

-The required time and the level of the members of the research sample

-The time required to complete the tests on the sample members

-The required time to complete the training units on the sample members

Pre Tests

The researcher conducted the pretests on 11/1/2017 at 10 a.m. in the indoor hall of the Faculty of Physical Education and Sports Science for Girls. On 12/1/2017 the test of the execution of throwing the disc was conducted at the Scouts Stadium in Baghdad.

Training Program

The researcher prepared exercises in the method of ballistic training using scientific sources and assisted by expert opinions in the field of training and the effectiveness of the arena and field. Based on that, the field procedures for physical exercises were prepared according to the anaerobic energy system.

-The training units were implemented on 13/1/2017. They were implemented for six weeks with three training units per week and the total number of units becomes (18) units.

-Training was done according to the anaerobic energy system.

-The exercises included special exercises to develop explosive force and the speed force of the arms.

-The weights were extracted based on the weight of each player for the heavy jacket and dumbbell exercises.

-The intensity of the ballistic exercise (resistance) was extracted 30% -50% of the maximum intensity of the exercise.

-The researcher used the maximum load levels, and the lowest of the maximum according to the anaerobic energy system to develop the explosive power and speed of the arms.

-Rest periods were set according to the anaerobic energy system according to the pulse measurement.

The rest period was set when the pulse returned to 120 pulse per a minute between the frequencies and groups .

Post tests

The researcher conducted post tests on 25/2/2017 at 10 am in the indoor hall of the Faculty of Physical Education and Sports Science for girls for tests (explosive force, the speed force of the arms) And on 26/2/2017 at 10:00 am, execution of throwing the disc was conducted at the Scouts Stadium.

Statistical Methods

Arithmetic mean-

-Standard deviation

-Torsion factor

-T test for corresponding samples

Presentation, analysis and discussion of research results

Presentation, analysis and discussion of the results of force tests for the arms

Table (2): Shows the Arithmetic means and standard deviations and the computed and tabular (T) values of the pre and posttests of force tests for the arms of the research sample

Significance	T values		Post test		Pre test		Variables
	tabular	computed	P	S	P	S	
Moral	2,78	3,093	0,49	4,81	0,78	3,4	Test of throwing (2Kg) medical ball
Moral	2,78	2,88	1,76	11,48	1,12	7,24	Test for bending and extending the arms from the front-relaying position during 10 seconds

Table (2) shows the Arithmetic means and standard deviations and the calculated and tabular T values for the pre-and post-tests of the explosive force and the speed force. The calculated value of t-test of the medical ball was (3, 093). This means that the difference is significant while the value of T calculated for bending and extending the arms is 10 seconds, which is 2.88, which is greater than the score of 2.78. This means that the difference is significant. The researcher attributed the moral differences to the ballistic training exercises according to Anaerobic system in the development of explosive power of the arms where they were effective and the use of external weights and types of muscle contractions by shortening the duration of muscle contraction and thus increase the muscle strength resulting in increased speed of contraction and this was assured by (Mufti Ibrahim Hammad), the greater the compatibility between the muscles involved in motor performance on the one hand and the corresponding muscles on the one hand Other increased production of muscle strength and increased speed of stimulation of muscle fiber to perform rapid muscle contractility[5].

Ballistic training also improves the compatibility between the working muscles and the feeding nerves that feed them by increasing the frequency and speed of the nerve signals of the working muscles. This was indicated by (Abo El-Ala), that neuromuscular compatibility is one of the most important factors associated with rapid force[6].

This means that the ballistic training exercises helped to develop the strength of the speed of the arms. The researcher also believes that the reason for the development of strength tests to ballistic exercises used and commitment by the players and discipline in the performance of strength exercises on the basis of the correct performance and the foundations of scientific and practical training. The researcher took into account the principle of gradual work from where the intensity and rest times between duplicates and totals.

Ballistic exercises have also helped to develop the explosive and rapid force of the arms. These exercises rely heavily on weight training. These exercises have helped to develop evolution within the phosphogeneric system of ATP-CP. As the release of energy within this system leads to the emission of energy very high, but for a short period of rapid force [7].

Mohammad Reza assures that "iron weight training exercises of all kinds are one of the methods of training a successful muscle strength.

3-2 View, analyze and discuss the results of execution throwing the disc test for the research sample.

Table (3): Shows the Arithmetic means and standard deviations and the computed and tabular (T) values of the pre and posttests the results of execution throwing the disc to players

Significance	T value		Post test		Pre test		Variables
	tabular	Calculate	P	S	P	S	
Moral	2,78	3,25	5,78	24,15	5,61	20,93	execution throwing the disc

Through table (3) which shows the Arithmetic meansand standard deviations and the calculated and tabular values of execution throwing the disc to the players. The value of (t) calculated is 3.25 and it is greater than the scale of 2.78 which means that the difference is significant. The researcher attributed to the exercises prepared by the researcher within the ballistic training, which helped in the development of explosive force and the rapid force, which is the outcome of the development and achievement of the disc.

This was assured by (Mohammad Kazem), "The motor skills are achieved only with the existence of special physical abilities and also the technical aspect of sports activity cannot be mastered and improved in the absence of special physical abilities[8]

As a result of execution exercises within the ballistic training it led to develop the muscles of the forearm and the arm and led to the effect of increasing the speed and strength of the working muscles to perform the disk drop as the development of rapid force has been working to develop the speed of motor performance because speed plays an important role in the performance of skills and rely mainly on Muscle strength[9].

Conclusions

1. The effect of positive ballistic training exercises in developing the explosive force of the arms was the study sample.
2. Ballistic exercises have an effective effect on the development of the rapid force of the arms of the research sample.

3-Ballistic exercises have improved the execution of disc throwing for the research sample.

Recommendations

1. Great interest in the development of the types of special forces using various methods because of its great benefit in improving the activities of various athletics games.

2. The need to use static and mobile strength training in improving the speed of the speed of the motor response to the players speed in athletics games.

3. A similar study was carried out in the same manner as ballistic training on other athletics activities.

Suggested Exercises

1. Medical ball handling on the wall.
2. Jump up with both legs with a 3 kg weight.
3. The front-relying of the weight on the shoulders with a weight of 3 kg.
4. the position of the arms weighted in front with a load of dumbbells weighing 3 kg.
5. mutual pushing with 3 kg dumbbells.
6. The front-rely of the rebound.
7. Holding the medical ball with both hands and jumping while bending the knees.
8. Jump with a weightlifting jacket with forwarding and back warding feet.
9. Throwing the weight from laying position to the balcony.
10. Running while jumping right and left on the hoops using a weighting jacket.

Sample for a training unit

Rest between groups	groups	Rest between repetitions	Repetition	intensity	Performance duration	exercise	T
50sec	2	20 sec	5		15 sec	3	1
40 sec	2	15 sec	5		20 sec	6	2
35 sec	2	15 sec	4		15 sec	8	3
50 sec	2	20 sec	5	90 %	15 sec	2	4
40 sec	2	15 sec	4		20 sec	4	5

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