

THE EFFECT OF USING PLYOMETRIC TO DEVELOP EXPLOSIVE POWER OF THE ARMS AND LEGS ARTISTIC GYMNASTICS

Rana Abdul Sattar Jasm *, **AlMutasem Bellah Waheeb Mahdi****, **Mohammed Waheeb Mahdi *****

** Ph.D. college of Basic Education Department of Physical Education, Diyala University*

*** Assistant Lecturer college of Basic Education Department of Physical Education, Diyala University*

**** Assistant Lecturer Belad Al-Rafideen college Department of Physical Education*

Abstract

The research aims to prepare Effect of Plyometric Exercises to develop of Explosive strength for players artistic gymnastics , the researcher used the experimental method With design group equal on a sample of players student teacher training institute in the province of Diyala number (6) students. year (2013-2014), as well as the use of methods, tools and devices appropriate to the procedures of search and selection tests for some of the skills of volleyball under discussion , after which the researcher conducting the tests tribal and then apply the exercises own for a period of 8 weeks and by 3 units training in the week, and then testing a posteriori the circumstances and conditions the same as that carried out the tests tribal , was then manipulate search results by statistical means of their own, and through these results have been reached several conclusions of them , Plyometric Exercises to develop of Explosive strength for players artistic gymnastics under discussion.

One of the most recommended by the researcher emphasized the need to use, Plyometric training that have been applied in research units within the training curriculum due, with similar studies for the preparation of such exercises and use in the development of the rest of the other games.

KEYWORDS: Plyometric Explosive. Gymnastics.

1. INTRODUCTION

The athletic progress that we observe in these days of global spectacularly, especially at the Olympics and World Championships has led to the emergence of the new training methods based on advanced scientific methods, both in the collective or individual games. Training methods, which are all designed to develop the level of physical performance in order to achieve advanced positions in the various activities and seeks instructors to choose the best and the application of the most suitable and the use of the latest tools that are commensurate with the type of activity Specialist have multiplied in order to access to the achievement of investment the most important physical abilities own type specific activity because of its direct impact in high physical performance level, and the game of gymnastics is one of the sports the distinctive urged the Nation's attention because they are games in which the performance arrived limit creativity and innovation, and is also working on the psychological and mental courage and the courage and the development of physical capacity characteristics of development.

This means that the sports training, itself a means and not an end which show the importance of relying on the quality of the exercises, which take the form of performance and the nature of the muscle work artistic gymnastics and thus the economy in locomotors performance through the development and improvement of public and private physical condition muscle groups that participate in the performance and see these need diversification of the training methods used and the methods to achieve that purpose, where a combination of these methods and techniques to achieve several training goals at one time, and therefore maintain a high level of performance for the longest possible period.

For this reflected the importance of research in the use of exercises polymeric in developing explosive power of the player's artistic gymnastics.

Research Problem: The efforts in the field of athletic training as a result of various studies and research has undergone in the game gymnastics, though there is still a list associated with the training process that requires scientific solutions rests with the coaches and specialists in the game gymnastics also requires Find all modern means and methods of scientific problems enhanced experiences help to raise the level of physical performance among the players, prompting researchers access to this problem and the number of exercises Plyometric in the development of the explosive power of the arms and legs of the players, artistic gymnastics, the contribution of researchers with the help of the coach to raise the level of the team.

Research Aim:

1. Prepare Plyometric exercises to develop explosive power of the arms and legs of the player's artistic gymnastics.
2. To identify the differences between pre and post tests for members of the research group.

Research Hypotheses:

1. That the exercises Plyometric a positive impact in the development of the explosive power of players artistic gymnastics.
2. There are no statistically significant differences between tribal and dimensional tests and for the post-test.

2. MATERIAL AND METHODS

Research Methodology The nature of the problem required the researcher to choose the appropriate approach, and it has been used experimental method, which is "more of the adequacy of the means of access to reliable knowledge. (Deopoldvan Dalen: 1985)

Sample Researcher: The research sample selection is closely linked to the objectives set by the researcher for consideration, so the "goals set by the researcher for consideration and procedures used will determine the nature of the sample, which will be chosen by(Resan Kahribt: 1988) , so he chose Researcher: Students Teacher Preparation Institute in Diyala province, and the number (8) students and the way it was intentional exclusion (2) players for being involved in the exploratory experiment was the choice of this group for the following reasons: -

- 1 - That members of the sample representing the research community believe representation.
- 2 - To ensure the presence of the sample to represent the performance of the tests used them.
- 3 - To ensure continuous supervision of the conduct of the experiment.

Steps conduct research:

Determination physical tests for explosive power

For the purpose of determining the most important physical tests of the strength of the explosive, the researcher organized form questionnaire and then presented to a group of experts and specialists in the field (science training) to their opinions on the identification of the most important physical tests and after unloading forms and extract percentage were the tests that I got on the proportion of the nomination (80) and more "and a researcher's right to choose the ratio at which it deems appropriate selection of indicators.(Mohammed Hassan :2000)

Table 1: Shows the percentages of tests candidate for explosive power, according to the views of experts and specialists

Character Movement	Tests	unit of measurement	Percentage	Selected tests	
Explosive power	Arms	Throw the ball talents medical test (3 kg) of hands above the head from a standing position to the farthest distance.	m	%60	X
		Throw the ball talents medical test (3 kg), however, one of the stand to the maximum distance.	m	%85	√
		Throw the ball talents medical test (3 kg) of hands above the head from a sitting position to the farthest distance.	m	%65	X
		Throw the ball talents medical test (3) kg of sitting on the chair position.	m	%90	√
	Legs	Test Vertical jump of fortitude.	m	%100	√
		Test Broad jump of fortitude.	m	%80	√
		Test successive leaps in place 15 seconds	m	%30	X
		Test Triple jump of fortitude	m	%20	X

Tests used in the search:

The first test (Ali Salloum: 2004): Throw the ball talents medical test (3 kg) hands.

The Second test (Ali Salloum: 2004): Test the explosive power of the arm.

Third test: (Mohamed Sobhi: 1997): Vertical jump test of fortitude.

Fourth test: (Mohamed Sobhi: 1997): Broad jump of stability Vertical jump test of fortitude.

Exploratory experience: The researcher conducting exploratory experiment on Thursday, a brief summary (14/02/2014) on a sample of players prepare teachers Institute of Diyala province, gymnastics and the number of players (2) and the goal of the experiment was as follows:

1. Make sure the place of the tests and its suitability for their implementation.
2. Know how to perform the research sample tests ready.
3. Determine the appropriate tests for the research sample.

Procedures Search:

Test tribal: The researcher conducting tribal tests on sample members (Monday) on 17/02/2013 at ten o'clock in the morning in the inner hall in phase School and with the help of assistant staff was attended by all members of the research sample's (6) players have been performing the following tests: Day Monday, 02/17/2013.

1. Ball pay for medical testing (3 kg) hands.
2. Test the explosive power of the arm.
3. The vertical jump test of fortitude.
4. Broad jump of stability.

The main experience: After being displayed stomach exercises on a group of experts and specialists and workers in the field of athletic training in order to avoid some of the mistakes that falls out.

The experiment has been applied in the day on Tuesday (18 - 2-2014) and end on (13/04/2014) The total duration of the experiment (8 weeks) of (3) training module in the week in terms of total training units throughout the experiment was (24) unit training.

Tests after me: Was performed after me tests on Monday and dated 14/04/2014 has followed the same method followed by the tribal tests after the completion of the planned duration of the experiment, which lasted eight weeks, was keen to find all the conditions of the tests tribal and requirements when you make the post tests in terms of time and the place and the means test.

Statistical methods used in the research: The researcher used the following according to the statistical ready bag SPSS statistical means.

3. RESULTS AND DISCUSSION

Table 2: Displays the arithmetic mean and standard deviations for the two tests pre and post teams arithmetic mean and the percentage of development of physical abilities tests for explosive force

Character Movement	Tests	unit of measurement	Before		After		M.df	Percentage
			M	S.D	M	S.D		
Explosive power	Arms	Throw the ball talents medical test (3) kg of sitting on the chair position.	2.366	0.053	2.455	0.058	0.089	%3.76
		Throw the ball talents medical test (3 kg), however, one of the stand to the maximum distance.	3.928	0.059	3.990	0.052	0.062	%1.57
	Legs	Test Vertical jump of fortitude.	2.171	0.034	2.220	0.043	0.049	%2.25
		Test Broad jump of fortitude.	1.901	0.037	1.956	0.030	0.055	%2.89

Table (2) shows us the arithmetic mean and standard deviations for the two tests pre and post teams circles calculations and rate of evolution of the physical capacity tests for explosive power and values as follows:

- **the ball talents medical test (3) kg of sitting on the chair position**

It is found that the arithmetic mean of the values reached in the pre-test (2.366) and standard deviation of (0.053), while the total mean (2.455), and in the post-test and a standard deviation of (0.058). The teams reached circles (0.089) and by the evolution of (3.76).

- **Throw the ball talents medical test (3 kg), however, one of the stand to the maximum distance**

It is found that the arithmetic mean of the values reached in the pre-test (3.928) and the deviation of (0.59), while the total mean (3.990) and in the post-test and a standard deviation of (0.052). The teams reached circles (0.062) and by the evolution of (1.57).

- **Test Vertical jump of fortitude**

Is found that the arithmetic mean of the values reached in the pre-test (2.171) and the deviation of (0.034), while the total mean (2.220) and in the post-test and a standard deviation of (0.043). The teams reached circles (0.049) and by the evolution of (2.25).

- **Test Broad jump of fortitude**

It is found that the arithmetic mean of the values reached in the pre-test (1.901) and the deviation of (0.037), while the total mean (1.956) and in the post-test and a standard deviation of (0.030). The teams reached circles (0.055) and by the evolution of (2.89).

Table 3: Displays the arithmetic mean and standard deviation of the difference and the value of t calculated tabular and significance of the differences between pre and post -tests of physical capacity for explosive strength values

Character Movement		Tests	unit of measurement	M.df	S.D	value T		Sig.
						Calculated	Tabulated	
Explosive power	Arms	Throw the ball talents medical test (3) kg of sitting on the chair position.	m	0.088	0.011	18.508	2.571	Significant
		Throw the ball talents medical test (3 kg), however, one of the stand to the maximum distance.	m	0.061	0.014	10.262		Significant
	Legs	Test Vertical jump of fortitude.	m	0.048	0.011	10.127		Significant
		Test Broad jump of fortitude.	m	0.055	0.010	12.845		Significant

* Value (t) tabular (2.571) at the level of (0.05) and the degree of freedom (5)

Table (3) shows us the arithmetic mean of the differences and the standard deviation of the difference and the value of values (t) calculated in tabular and the significance of the difference between the pre and post -tests of physical capacity tests for explosive power and as follows:

- **the ball talents medical test (3) kg of sitting on the chair position**

Show a significant difference between the results of the pre and post tests and reached the arithmetic mean of the difference between the results of pre and post- tests (0.088) and the total standard deviation of the difference (0.011) The value (t) calculated (18.508), while the value (t) Indexed (2.571) at the level of (0.05) and the degree of tribal and posttest and in favor of the post test.

Due to the reason that this development in the explosive power of the muscles of the arms through the methods used in training exercises in which Plyometric (such as tide, and bending, medical balls, ropes, rubber), which helped to develop the physical aspects. This was confirmed by (Muhammad Brgia: 2000) The use of various techniques in training has become the latest ways and means of training in the world because of the influence of large contributions to the achievement of the overall fitness and also helps in the performance included the development of various sports activities.

This was also confirmed by (Abdul Ali Nassif: 1988) rising level of achievement quickly during use of new exercises did not get used to it sports "and also researchers agree with (Zaki Mohamed Hassan: 1997) The performance of these exercises using tools make it more difficult performance, in order to raise the efficiency of the player. "So it is the duty of workers and specialists in the field of gymnastics attention with the tools and means modern training that will raise the level of their players physically and Mharria, and attributed the cause to the increased medical balls and exercises ropes rubber weight led to increased capacity in the organs of the body, especially the arms and thereby ensure and improve the result of an athlete.

- **Throw the ball talents medical test (3 kg), however, one of the stand to the maximum distance**

Show a significant difference between the results of the pre and post tests and reached the arithmetic mean of the difference between the results of pre and post- tests (0.061) and the total standard deviation of the difference (0.014) The value (t) calculated (10.262), while the value (t) Indexed (2.571) at the level of (0.05) and the degree of freedom (5) Since the value of (t) the calculated value is greater than tabular indicates that the moral difference between the two tests tribal and posttest and in favor of the post test.

Due to the reason that this development in the explosive power of the muscles of the arms have been using a variety of exercises that work to raise the necessary muscle fibers resulting in increased power, because the muscle when exposed to an influential they may be affected by the whole or part of. This depends with the nature of the case the distinctive Intensity for this exciting, as well as the role played by exercise Plyometric prepared by researchers in the training curriculum, which was instrumental in for this development to the group, and this has been confirmed by (Bear Jessie Bob: 1990) The nervous muscular compatibility and the ability to recruit the largest possible number of muscle tissue and in a way the court in a timely manner of the ability to jump.

- **Test Vertical jump of fortitude**

Show a significant difference between the results of the pre and post tests and reached the arithmetic mean of the difference between the results of pre and post- tests (0.048) and the total standard deviation of the difference (0.011) The value (t) calculated (10.127), while the value (t) Indexed (2.571) at the level of (0.05) and the degree of freedom (5) Since the value of (T) the calculated value is greater than tabular indicates that the moral difference between the two tests tribal and posttest and in favor of the post test.

Significant differences attributed the cause of the pre and post- tests of the group to the training curriculum followed in a scientific manner as well as it contains physical and mobility exercises of power, speed and agility, which plays a key role in the development of explosive power. This was confirmed by Harrah's in 1975 that "education technically elements and improve the scalability requires a high concentration by the player."

In addition to the number of training units, as was (3) units per week as well as the use of Intensity related to the number of iterations that are commensurate with the severity of each exercise, which was very important in his development as well as the use of the appropriate method, which is very close to the conditions of the competition effect.

Also due this evolution performance of the group commitment and seriousness training and good relationship between the coach and his players and hurtled towards the implementation of the curriculum in place that have had the effect of in the hearts of the players, the group, which led to good protection by the players, and this was confirmed by a conciliator happiest in 2011 "that the foundations of success the training process is keen commitment to the players and their enthusiasm and cooperation with the coach in the implementation and application of the training program, and the good relationship between the coach and his players and their role in influencing and urged them to adhere to the dates of training and carry out their duties properly.

- **Test Broad jump of fortitude**

Show a significant difference between the results of the pre and post tests and reached the arithmetic mean of the difference between the results of pre and post- tests (0.055) and the total standard deviation of the difference (0.010) The value (t) calculated (12.845), while the value (t) Indexed (2.571) at the level of (0.05) and the degree of freedom (5) Since the value (t) is greater than the calculated value tabular dl on the moral difference between the two tests tribal and posttest and in favor of the post test.

Through the presentation of the previous results found that the curriculum prepared according to scientific controls has resulted in the development of the explosive power of the muscles of the legs as the use of strength training and methods of training and different in a scientific as well as the use of different Intensity and rest periods sufficient to restore the healing and the number of its replication fits with the intensity of exercise as well as the use of body weight at elevations varying has led to the development of the explosive power of the muscles of the legs and this, which led to the development aspects of physical, psychological and reflected this development on the technical performance and this was confirmed by the good debt "that the special exercises are aimed at the physical and mental qualities associated with the type of sports activity development (almoktar : 1985).

4. CONCLUSION

1. Exercises Plyometric used led to the improvement of the explosive power of the arms and legs of the gymnasts.
2. The organization of exercise and thrill that it contained modules contributed to the effective implementation of its vocabulary by the players and their continued commitment to the length of experience is reflected in the evolution of explosive power .

5. REFERENCES

1. Abdul Ali Nassif; Principles of training, (Baghdad, Higher Education Press, (1988).
2. Abu Taleb Mohammed Saeed; science research methods, C 1 (b G. 1990).
3. Asaad Mahmoud al-Hiti, a conciliator; the basics of sports training: T: 1 (Damascus, Dar Al Arab studies, publishing and translation), (2011).
4. Barjsu Bob; Volleyball global levels, translation (Resan Kahribt and Hamidi Abdul-Zahra), Higher Education Press in (1990)
5. Deopoldvan Dalin; research in education and science curricula self-Translation: Mohammed Nabil et al., (Cairo, Egyptian Anglo printing office (1985).
6. Harrah's ' Assets of training, (Translation) Abdul Ali Nassif, Baghdad: Baghdad University Press (1975).
7. Khaireddin; the impact of the proposal for the special program of exercises on the progress of the digital level triple jump (Physical Education for Boys Research Journal, Zagazig University, Volume II Issue 4.3, 1985) .
8. Mohammad Hassan Allawi and Mohammed Nasreddin Radwan; Measurement in Physical Education and Psychology; (Cairo, the publishing house to print, (2000).
9. Mohammed Jaber Briva ' the concept of training and its applications in the collective and individual games, the International Scientific Conference on Sport and globalization, Helwan University, (2000)

10. Mohamed Sobhi Hassanein and Hamad Abdel Moneim; scientific basis for volleyball and methods of measurement, (the book and publishing center of Cairo, (1997).
11. Resan Khrbit glorious; research in the physical education curriculum. (National Library of Printing and Publishing Directorate, University of Mosul, (1988).
12. Salum Ali Jawad ; measurement and statistical tests in the field of sports, (University of Qadisiya) (2004).
13. Talha Hussein (and others); scientific encyclopedia training Nasr City Press Amon (1997).
14. Wajih Mahjoub (and others). Motor learning, Mosul: Dar thought for printing and publishing (1989).
15. Zaki Mohammed Hassan; volleyball coach .alqahirh knowledge House (1997).

Address for correspondence

First author: Ph.D. **Rana Abdul Sattar Jasm**, Diyala University - college of Basic Education, Department of Physical Education.

E-mail: rana_rh2007@yahoo.com

Second author: Assistant Lecturer: **AlMutasemBellah Waheeb Mahdi**, Diyala University college of Basic, Education Department of Physical Education.

E-mail: mutasimwmw@yahoo.com

Third author: Assistant Lecturer: **Mohammed Waheeb Mahdi**, Belad Al-Rafideen college Department of Physical Education.

E-mail: mohammed_wmw@yahoo.com