International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 08, 2020
ISSN: 1475-7192

A study of some special physical characteristics and their relationship in developing rhythmic steps to achieve a javelin throwing activity for beginners

Ahlam Shaghati Muhsen[1]

Abstract:

Research Objectives*: The study aimed at the importance of physical characteristics in the development of rhythmic steps and achievement for the effectiveness of javelin throwing. Some special physical specifications are required; therefore, the* ***importance of the study*** *is to emphasize the relationship of physical characteristics with the development of rhythmic steps for the effectiveness of javelin in an attempt as a guide for some specifications when selecting beginners for this event. As for the* ***research problem****, it was to give the greatest and first importance to the physical and physical specifications and the mechanical bay by the coaches during the selection of the players and some of the coaches for the physical characteristics and mobility capabilities in order to raise the level of sports.* ***Conclusions*** *:There is a significant correlation between the explosive power tests of the two arms and legs with the achievement of javelin throwing , There is a significant correlation between the maximum speed test and achieving javelin throwing.* ***Recommendations****: Conducting similar studies to identify the correlations of other physical characteristics that were not covered in the study , Conducting a similar study and on other activities in athletics that have not been studied , Conducting a similar study on all age groups and both genders.*

Keywords*: physical characteristics, rhythmic steps, javelin throwing.*

I. Definition of research:

1-1 Introduction and importance of research:

Sports excellence signifies the intellectual and scientific advancement of society, as it is the result of training based on science and experience for individuals with physical fitness and physical

[1] College of Physical Education and Sports Sciences , University of Baghdad , menasport49@gmail.com .

Received: 18 Apr 2020 | Revised: 09 May 2020 | Accepted: 02 Jun 2020

characteristics. They are also distinguished from others by many attributes that lead them to the highest levels of optimal achievement.

In light of the scientific facts that we live in, we must catch up with the context of science, its discoveries and methods. Nations are racing every day to provide the maximum that they can discover scientific facts in every sector, including the sports sector.

And because the physical characteristics are considered to be one of the important factors that have to do with athletic excellence, because it is related to the skill aspects that every athletic activity requires in general and javelin effectiveness in particular. Therefore, getting to know them is one of the important pillars to guide studies in developing the effectiveness of javelin throwing.

The effectiveness of javelin is constantly evolving. Like other sports, as it belongs to the group of games in which performance is required until the player has distinctive physical characteristics and special physical abilities. Because it plays an important role in selecting players for the javelin game, it gives the possibility of anticipating potential sporting results.

Numerous studies provide the link between muscle strength and muscular speed in the muscles as one of the important things and the most important requirements in athletic performance. The characteristic of the explosive power is one of the important physical capabilities of the javelin. It aims to be the technical performance of the event by requiring the performance of the throw with strong power, high speed and the most distant distance.

Therefore, the importance of the research lies in the researcher's attempt to identify the type of relationship that binds to the special physical characteristics and the development of the level of rhythmic steps in achieving the effectiveness of the javelin in an attempt to overcome some obstacles when upon random selection of the effectiveness of the javelin.

1-2 Research problem:

It is known that each sporting activity has specifications that differ according to the type of activity practiced. These qualities must be available to practicing individuals, especially activities that require explosive power, as well as physical characteristics and physical characteristics of archers in athletics.

The study of factors affecting athletic performance has become an important issue that researchers in the sports field and physical training address. And when research and studies have shown the effect of these factors, whether they are functional, psychological, physical, or bio-mechanical in improving athletic performance, despite the existence of a lot of research and studies that give structural factors to the human body of physical characteristics and physical properties the first importance in raising the level of athletes on Other factors, as well as some studies that give the greatest importance to mechanical variables. On this basis, many studies have identified the most important physical, physical, and biomechanical specifications for athletes and the variables that occur in the composition of these specifications during training, especially in

pre-competition periods, as they are considered the cornerstone for selecting athletes, each according to his preferred sport. Whatever the capabilities of the coaches, he cannot be considered a hero without providing the appropriate physical and physical specifications that are appropriate for that activity.

So, the researcher carried out the study to find out the most important physical characteristics that javelin thrower enjoys and its relationship to the development of the level of rhythmic steps and the achievement of the effectiveness of the javelin throwing in order to reach final results that may serve researchers and coaches in developing the game.

1-3 Research Objectives:

1- Identify some special physical characteristics of javelin throwing effectiveness for talented athletes.

2- Finding a correlation between some physical characteristics related to developing the level of rhythmic steps to throw javelin for talented athletes.

1-4 Research hypotheses:

1- There is a statistically significant relationship between some special physical characteristics, rhythmic steps, and javelin achievement.

2- There is a variation in the contribution rate of some special physical characteristics and rhythmic steps

1-5 Research areas:

1-5-1 The Human Domain:

Players of the specialized school athletic talents, Ministry of Youth and Sports.

1-5-2 The time domain:

The period from 15/1/2018 to 25/4/2018.

1-5-3 Spatial domain:

The stadium and field of the Ministry of Youth and Sports.

II. Studies of theory and similar:

2-1 Theoretical study

2-1-1 Explosive power:

Most sports include the use of explosive power, where successful athletes exercise to produce this power. It is a mixture that combines strength and power ratio to the speed of movement. Different games,

such as hitting a baseball ball, hitting the ball in tennis, throwing a disc, hammer, javelin, wide jump..etc, are all examples of hiring explosive power in favor of these games (9 :).

And the explosive power is an important physical ability in developing the effectiveness of javelin. (Ali Salloum) adds, "The link between strength and kinetic speed in muscle work is one of the requirements for athletic performance at high levels. This work is one of the most important characteristics of outstanding athletes, because they have a great amount of strength and speed and have the ability to link them in an integrated form of events. Rapid movement and in order to achieve superior performance, so it has become important to develop muscle strength to ensure the development of the speed characteristic and the development of its impact on performance "(6: 38).

In sum, it is possible to express the ability to control the speed, change of direction and acceleration to be achieved by using a high speed of the explosive power that the athlete possesses.

Finally (Hussain and Muhammad 1998) defined her as Cratty as "the ability to exert maximum energy in making one variable" (76: 3).

2-1-2 Maximum speed:

The maximum speed depends on the role of the acts and the dynamic muscle contraction and flexibility and the method of performance and endurance as it is an attempt to move from one place to another at the maximum possible speed or cut a certain distance in the shortest possible time (101: 10).

(Adel Abdul-Basir 1999) defined the maximum speed as "an attempt to move or move from one place to another as quickly as possible, which means overcoming a certain distance in the least possible time (46: 7)."

It is also "performing a movement with a specific objective for one time or for a consecutive number of times in the least possible time (12:89).

The stage of the maximum speed is characterized by the arrival of the length of the steps and the speed of the frequency to the optimum state, indicating that some experts continue it (4-5 seconds) of the maximum work for a period of between (2-3 seconds) to reach top speed (36: 7).

Therefore, top speed has an active role in many sports and it is indispensable, whether in individual or team games. The maximum speed is the important aspect of the long jump players when implementing the round run and jumping stage, as it is one of the aspects of the jump, as the hopper must run as fast as possible to enable him to get up and get as far away as possible (13 :).

The researcher also believes that speed has the maximum effective role in the effectiveness of javelin, as it constitutes the important aspect for players when implementing the round run, stopping and throwing the distance as far as possible.

2-1-3 The javelin throwing effectiveness:

The common characteristic of all shooting competitions, and despite the fact that the technical determinants differ greatly between these competitions, is that the body of the rider and the tool are accelerated before reaching the shooting movement. The main goal of the javelin competition is to get the highest possible speed the moment you get rid of the tool to get the most distance possible. The throwing movement begins in the javelin contest with the thrust landing on the front of the metatarsal and shortly thereafter the fixation man usually lands on the ground on the inner edge or on the sole of the foot. And sometimes the drop on the heel occurs in the javelin contest to the two stages as follows:

The first stage / from the moment when the thrust feet fall to the ground until the fixation feet drop to the ground.

The second stage / from the moment the mounting feet land on the ground until the rider's hand leaves the tool.

Javelin throwing

Description of the technical stage in the manner of performance:

1- Holding the Javelin, carrying it, and preparing to approach.

2- Approaching.

3- Weighted rhythmic steps.

4- The final throwing step and preparing for the throwing.

5- Throwing and javelin disposal.

6- Stability and balance.

1- Javelin Holding:

There are two ways to hold the javelin. In the first method, the upper javelin is held with the thumb and middle finger. The index finger is along the longitudinal axis of the javelin. As for the second method, the fist is held with the thumb and forefinger, and in both ways the javelin (the rest of the fist) is shown on the palm of the hand with a deviation that surrounds the rest of the finger with the fist. As for the basic requirements in the grab, it is that the grab should allow the shooter to perform the throwing motion in a manner similar to hitting the whip and give the javelin a rotational movement at the moment when it starts from the hand. This ensures its steady position during flight. The muscular tension in the palm of the hand when holding the javelin and carrying it, prevents the shooter from performing the movement of the throwing method using a whip. The javelin is caught when the approaching running over the shoulder starts at an appropriate height.

2- Approaching run:

Received: 18 Apr 2020 | Revised: 09 May 2020 | Accepted: 02 Jun 2020

The length of this run for men ranges between (25 to 35 m) and for women between (20_28 m). This run is divided into two parts: the distance from the starting point to the signal of the rhythmic steps (the introductory section) is cut (9_14) step (12_23) and from the rhythmic steps signal to the throwing line (9_15 m) that the ratio between the length of the two sections of the approximate run depends on the length of the steps In the run, speed and power, Javelin throwing continues to move forward after the tool is launched.

Javelin thrower mission in the first section of the run is to reach its top speed, the start of the run to the control mark, and its exact position on it through his left leg in the case of (4-6) rhythmic steps or his right leg in the case of (5-7) rhythmic steps and up Running speed for men is 8.5 m / s and for women to 6 m / s.

As for the athlete's duty in the second part of approaching, it is to perform the movement of the javelin from not reducing the running speed, taking the most suitable position before throwing, and performing the throw without delay. The use of a high running speed allows the archer to move his body faster in the final stage and precedes the performance better in the final movement of the Javelin , which allows an increase in the distance of the throw distance.

The last step is performed after the end of the rhythmic steps so that these rhythmic steps are such that this step is good in terms of balance and maintaining the highest possible speed, which is stopped by the leader leg (left leg). It is straight towards the throw, after which the athlete pulls the Javelin in one go, with a whip movement from the shoulder to the hand, to give the shooter a spin after that.

Final throwing mode: After the athlete has reached the last rhythmic step, and as mentioned earlier, the Javelin is launched horizontally at an angle of 30-40 (in connection with the direction of the wind). The initial starting velocity is more than 35 m / s in men and 25 m / s in women. In order to obtain a high result it is important for the final voltage to be compatible with the longitudinal axis of the instrument, and for the final movement to be one complete movement.

3- Stability and balance:

For the purpose of maintaining balance after performing the pitch, the athlete dampens and stops the movement of his body forward, by switching the legs and moving to the right leg.

Note the image in Figure (30) that shows the kinetic performance sequence in detail.

III. Research methodology and field procedure:

3-1 Research Methodology:

The descriptive method was used in a survey method to suit its nature and objectives of this study, as it is the most appropriate scientific method for the nature of this study.

3-2 Research Sample:

The members of the deliberate sample of the athlete of athletics school were chosen for the Athletics Association / Ministry of Youth and Sports, and the number of (25) players as a working sample and (3) players as an exploratory sample, and (2) players were excluded because they were missing from the training units .

3-3 Means, equipment and tools used in the research:

3-3-1 The researcher used the following methods to obtain the required information:

1- Arab and foreign references.

2- Tests and measurement s.

3- International Information Network.

4- Individual registration form for the results of physical tests.

5- Individual registration form for javelin effectiveness test results.

3-3-2 Hardware and tools:

1- Metric tape measure.

2- Weight of (900) kg.

3- A medical ball weighing (2) kg.

4- Electronic stopwatch number (3).

5- Statistics and computer numeracy laws. (Gii Honeywell Bull .

6- Javelin throwing field.

3-4 steps to implement the research and its field procedures:

The researcher designed the physical tests from the scientific sources and presented them to a group of expert and specialized professors in the game and in the areas of tests and measurement, arena and field, and they number (10). After collecting the data and in light of the opinions of the experts, the tests that got a greater percentage of (50%) were chosen, and physical tests that got a percentage less than (50%) were also excluded, as shown in Table (1).

Table (1)

Shows the percentage of tests recommended for application

Excluded tests	Relative importance	Tests	Physical characteristics
	%70	1- Throwing the weight of (900) grams from the shoulder level	The explosive power of the arms
	%80	2- Throwing a medical ball weighing (2) kg with two hands over the head from the position of sitting on the chair	
	%35	3- Bending and stretching the arms (Shenau) from the oblique flatness position (10) w	
	%20	4- Paying a medical ball weighing (3) kg with two hands from the sitting position on the chair	
	%40	5- Paying a medical ball weighing (3) kg of the arrested person	
	%60	1- The vertical jump of Sargent	The explosive power of the two men
	%70	2- The long jump from the stationary	
	%20	3- Three records for the largest distance for each man separately	
	%30	4- High jumping stability without using arms	
	%40	1- Running 4 seconds from high start	maximum speed
	%40	2- Running 30 meters from the starting position	
	%80	3- Running 6 seconds from high start	

Thus, the final work was settled on the following physical tests:

First / the explosive power tests for the two arms:

1- Throwing a weight of (900) grams at the shoulder level. (114: 11)

Received: 18 Apr 2020 | Revised: 09 May 2020 | Accepted: 02 Jun 2020

2- Throwing a medical ball weighing (2) kg with two hands over the head from the position of sitting on the chair. (59: 8)

Second / explosive power tests for the two men:

1- Long jump from fortitude (2: 37).

2- The vertical jump of Sargent (84:16).

Three / Maximum speed test:

1- running 6 seconds from the start of the starting position (16: 184).

3-4-1 Cardiac tests for the individuals in the research sample:

3-5 The pilot study:

The researcher conducted the pilot study in order to extract the scientific treatments for the physical tests nominated for the application by applying it to a sample similar to the research sample, which is (3) players on 20/1/2018 until 24/1/2018, and for the purpose of extracting the validity transactions, the validity factor has been extracted for all tests as shown in Table 2, which indicates that all of them enjoy a high degree of validity.

For the purpose of identifying the reliability of physical tests, the tests were re-applied three days after conducting the first experiment on the same sample and on the date of 24/1/2018, and the simple correlation coefficient of Pearson was used between the results of the first and second tests and as shown in the table (2), as it becomes clear that all physical tests are statistically significant due to the fact that all the values of the level of significance (Sig) for it were of the smallest value (0.05) which is the value approved in the SPSS statistical program, which indicates that it has a degree of reliability.

3-5-1 pre tests for the individuals in the research sample:

3-5-1-1 Weight throwing test (900) gm at shoulder level. (144: 11)

The object of testing / measuring the explosive strength of the arms.

Instruments used / tape measure, medical ball (900 g).

Performance specifications / the student stands behind the line and throw a medical ball weighing (900 g) with one arm from the shoulder level - three attempts are given and the best is counted.

Method of recording / recording as far as possible.

3-5-1-2 Test of throwing a medical ball weighing (2 kg) with hands over the head from the position of sitting on the chair. (59:80)

The object of testing / measuring the explosive power of the arms.

Tools used / medical ball weight (2 kg), chair, tape measure.

Performance Specifications / The student sits on a chair and throws the medical ball from the sitting position with one arm over the head and gives (3) attempts and counts the best.

Method of recording / recording as far as possible.

3-5-1-3 Sargent Vertical Jump Test. (84:17)

The goal of testing / measuring the explosive power of the two legs.

Tools used / blackboard installed on a wall with a lower edge elevated from the ground a distance of (1.50) meters, to be included after that (1: 51_4: 00) meters - magnesium.

Performance specifications / the student immerse fingers in magnesium from a standing position and the laboratory faces a wall. The student tries to jump the vertical to the maximum distance that you will be able to reach to make a mark above the blackboard or wall with two hands, and each laboratory is given (3) attempts to find the best

Method of registration / a first mark is placed before jumping (extending the arms high from standing facing the wall) A second mark is by jumping and the distance between the feet is about the degree of Muhammad Subhi Hasanin Measurement and presentation in physical education and sports Helwan University Faculty of Physical Education Dar Al-Fikr Al-Arabi Part 1 i 3 b 199 p. 395 Test Exam (jump amount)

3-4-1-4 Running test (6 sec) from the starting point (16: 184)

The goal of testing / measuring the maximum speed.

Tools used / Running - Stopwatch - Timer - Whistle.

Performance specifications / the student stands behind the starting line and when the beep is heard to start, it runs fast during the 6 sec time.

Registration method /

3-4-1-5 Javelin Throwing Test:

The goal of the test / performance measurement is to throw the javelin at the distance.

Tools used / Javelin throw field - Javelin.

Performance specifications / the student stands in the field of javelin throwing to perform approaching and throwing performance as far as possible. He performs three attempts.

Recording method / the best attempt is calculated for the farthest distance.

As for the objectivity of physical tests, the researcher used the degree of arbitrators for the results of physical tests in the second measurement of the exploratory experiment, on 24/1/2018. Accredited and (0.05), this indicates that the physical tests are highly objective, as shown in Table (2)

Table (2)

Statistical data for the veracity and reliability of objective physical tests

Sig	result	validity	Sig	Reliability	physical tests	No
0.00	significant	0.92	0.01	0.85	Throw a weight of (900) grams from the shoulder level	1
0.02	significant	0.90	0.00	0.81	Throwing a medical ball weighing (2) kg with hands over the head, from a position of sitting on the chair	2
0.00	significant	0.93	0.00	0.88	Vertical jump of Sargent	3
0.00	significant	0.93	0.02	0.88	Long jump from fortitude	4
0.03	significant	0.91	0.00	0.84	running 6 seconds from starting point	5

3-7 The main experiment:

The researcher performed all physical tests in addition to measuring the achievement of the javelin throwing effectiveness of the research sample on 15/2/2018 and 18/2/2018.

3-8 Statistical means:

The data was statistically processed by SPSS Vr22 to extract the following:

(Means, standard deviations, median, coefficient of torsion by means of the moment (third moment), ratio, self-honesty, simple correlation coefficient of Pearson).

IV. Presenting, analyzing and discussing the results:

This section includes the presentation, analysis and discussion of results according to the data obtained.

4-1 Presenting specifications for some special physical characteristics and javelin throwing achievement:

The researcher extracted the means, standard deviations and the median value in addition to the value of the torsion coefficient by the method of isolation (third moment) for all the tests some of the special physical characteristics and accomplishing the effectiveness of the javelin throwing as shown in Table (3) and it was reached that all the values of the torsion coefficients were smaller than (+1) This is evidence of good sample distribution and homogeneity.

Table (3)

Arithmetic Averages, Architectural Deviations, and Torsional Coefficient Value For testing some special physical characteristics and accomplishing javelin throwing

Coefficient of torsion	SD	median	mean	Tests	No
0.490-	0.37	4.70	4.68	Throw a weight of (900) grams from the shoulder level	1
0.302-	1.30	7	7.15	Throwing a medical ball weighing (2) kg with hands over the head, from a	2

				position of sitting on the chair	
0.146-	2.55	22.50	22.10	Vertical jump of Sargent	3
0.471	0.23	2.05	2.14	Long jump from fortitude	4
0.532	1.235	46	50	running 6 seconds from starting point	5
0.428	1.846	9.5	11	Achieving javelin throwing	6

4-2 Presentation and discussion of the simple correlation between testing some special physical characteristics and accomplishing javelin throwing:

The researcher used the simple correlation coefficient of Pearson between the results of tests of some special physical characteristics with the achievement of javelin throwing, and the results presented in table (4) there is a correlation between all tests of some special physical characteristics with javelin throwing, because all calculated (R) values (0.692, 0.751, 0.732, 0.644, 0.710) were with the level of significance (Sig), respectively (0,000, 0.00, 0.001, 0,000, 0,031) which is less than the approved value of (0.05).

Table (4)

Correlation coefficients for tests of some specific physical characteristics with completion of javelin throwing

result	**Approved level**	**Sig**	**R value**	**javelin throwing**	**No**

				variables	
significant	**0.05**	**0.000**	**0.692**	**Throw a weight of (900) grams from the shoulder level**	**1**
significant		**0.000**	**0.751**	**Throwing a medical ball weighing (2) kg with hands over the head, from a position of sitting on the chair**	**2**
significant		**0.001**	**0.732**	**Vertical jump of Sargent**	**3**
significant		**0.000**	**0.644**	**Long jump from fortitude**	**4**
significant		**0.031**	**0.710**	**running 6 seconds from starting point**	**5**

Discuss the results:

The result reached by the presence of a correlation relationship for the tests of some special physical traits of both arms and the legs is consistent with indicated by him (Dick, W. Frank1997) “There is a correlation when the muscles’ strength of the legs increases with the results of the explosive power expressed by vertical jumping ”(192 : 17). Also, exercises are training methods for the effectiveness of javelin throwing during the training unit of the two legs and arms and its benefits in developing the explosive force have become clear that it is the main reason for developing this trait. Also the result is consistent with what he mentioned (Muhammad Nasr al-Din and Ahmad al-Mutwali 1999) "from the point of view Specialists in the field of measurement in physical education are a complex ability, where strength and speed are primary components in relation to this ability, which is one of the most important kinetic capabilities necessary for the physical performance of special skills in sports activities and competitions in the championship sector "(9:14).

If he finds the significant relationship to the tests of some physical characteristics related to the achievement of javelin throwing is a logical result of the fact that the special physical characteristics that were examined in the study are all of the important physical capabilities in developing the javelin throwing. Because the effectiveness when performing it requires a large explosive power when throwing the javelin from the area designated for the throwing .It also needs at the same time to the strong kinetic and transitional

speed when performing, and this is consistent with what (Steven2000) mentioned that "The speed of movement is the result of rapid explosive force and is used as a basic function in performing the kinetic skills that depend on the transitional speed and kinetics, lightness and direction change Who works on stopping explosive "(233: 233).

It also agrees with what mentioned by (Al Allot 2003) who reported that "The explosive force is one of the most important basic structural capabilities that must be found in activities where performance requires vertical jumping and throwing (1:18).

The researcher notices that the increase in the speed of the feet, the strength of the ankle elasticity, the strength and expansion of the hip, the starting strength, the development of change in directions, the reaction movements, the lightness and flexibility, the increase in the movement and movement speed, as well as the expansion of the explosive force while throwing the javelin in the arm.

The result also agrees with what (Muhammad Abdul Rahim 1998), who indicated that The explosive force has a prominent role in achieving good results when playing sports, especially with regard to the production of instant power and direct speed, where the concentration of strength with increasing speed is one of the distinguishing characteristics of performance Good Skills (44: 159).

It also agrees with what (Suleiman Ali et al 1979) reached when they reported that the succession of the forces involved in the movement and the ones producing them, in addition to equal physical formation, lead to achieving a better distance in the shooting (4: 363).

V. Conclusions and recommendations:

5.1 Conclusions:

1- There is a significant correlation between the explosive power tests of the two arms and legs with the achievement of javelin throwing.

2- There is a significant correlation between the maximum speed test and achieving javelin throwing.

5.2 Recommendations:

1- Conducting similar studies to identify the correlations of other physical characteristics that were not covered in the study.

2- Conducting a similar study and on other activities in athletics that have not been studied.

3- Conducting a similar study on all age groups and both genders.

4- Approving the results reached by the trainers in developing the throwing distance for the javelin effectiveness.

Received: 18 Apr 2020 | Revised: 09 May 2020 | Accepted: 02 Jun 2020

References:

1- The Holy Quran.

2- Ahlam shgaty. The use of complex training in a circular method in the development of rapid strength and the achievement of long jump, Master Thesis, College of Physical Education, University of Baghdad 2002.

3- Hussein Ali and Mohamed Abdel-Hassan: the effect of deep jump exercises at different heights for the landing platform in developing the explosive strength of the two men, Journal of the College of Physical Education, University of Baghdad, Volume 7, 14, 1998.

4- Suleiman Ali Hassan el al. Field and Track Competitions: (Dar Al-Maaref, Alexandria, 1979).

5- Sareeh Abdul Karim and Talib Faisal; Arena and field games (University House for Printing, Publishing and Translation, Baghdad University 2016).

6- Ali Salloum Jawad; Ground-breaking ball and racket games: 0 Al-Qadisiyah University, Spectrum Press, 2002).

7- Ali Sadiq Dhiab; The effect of training using auxiliary methods according to performance in some physical variables or bio-mechanical and the achievement of long jump at the age of (14) years, Master Thesis of the College of Education Physical Mathematical Sciences / University of Baghdad.

8- Abdul-Razzaq Kazem Ali Al-Zubaidi; Her quote, Silva Sahak, The effect of using plyometric exercises in developing the skill of overwhelming hitting across volleyball players: (Unpublished Master Thesis - College of Physical Education. University of Baghdad, 2000).

9- Qassem Hassan Hussein; Jumping and jumping activities: (Dar Al Fikr Printing, Publishing and Distribution, 1998).

10- Muhammad Hassan Allawi; The science of sports training: (Cairo - Dar Al-Maaref, 1993).

11- Muhammad Hassan Allawi and Muhammad Nasr Daid Radwan; Kinetic performance tests, 3rd floor: (Cairo, Dar Al Fikr Al Arabi, 1994).

12- Muhammad Jabbar Abdul Majeed, the effect of using palladium exercises as one of the components of a proposed training program on physical requirements and the digital level for long and triple jump contestants: (Master Thesis, Helwan University, Faculty of Physical Education for Boys, 1994).

13- Mufti Ibrahim Hamid; Modern sports training, 2nd edition: (Cairo, Dar Al Fikr Al Arabi, 2001).

Received: 18 Apr 2020 | Revised: 09 May 2020 | Accepted: 02 Jun 2020

14- Mohamed Nasr El-Din Radwan and Ahmed El-Metwally Mansour; 99 exercises for muscle strength and motor flexibility for all sports activities (Cairo, The Book Publishing Center, 1st edition, 1999).

15- Mohamed Abdel Rahim Ismail; The effect of using a heavy jacket during defensive exercises to improve the speed of performance of defensive foot movements in basketball: for the International Journal of Physical and Physical Education, Faculty of Physical Education for Girls, Alexandria University, No. 15, 1998.

16. Dick, W. Frank Sports Training Prineciples

17. Intemet :// www.AL Allot Reeeiving The Wlde Serve From The All t In Doubles .2003.

18. Soteven , Scalt , Op.ert, 2000 , p233.