

## Effectiveness of Using Training Methods to Develop Some Physical Requirements Special for Long-Distance Players at The Future Academy of Athletics

**Nader Ismail Halawa,**

Associate Professor of Sport Training at Al-Aqsa University, Former Head of the Palestinian Athletics Federation - former member of the Arab Athletics Federation

E-mail: [ni.halawa@alaqsa.edu.ps](mailto:ni.halawa@alaqsa.edu.ps)

### Abstract

The research aims to identify the effect of using some training methods to develop some special physical abilities of long-distance players. The sample of the research consisted of 16 players who were chosen intentionally from the Future Academy for Athletics, the sample was divided equally into and control and experimental groups. The researcher used the experimental method through applying (pre- and post-test) for each group as this suits the nature of the research, the application of the training program took 8 weeks with 3 training sessions per week.

The results showed that there were differences in the average scores between the two groups, in addition to an improvement in the training methods tests between the pre and post measurements of the experimental group in favor of the post-measurement, where the improvement rates ranged between (3.33 - 4%), and the average overall improvement rate for the variables was (17.4%). This indicates a significant improvement in the level of training methods tests, which confirms that the training program contributed to improving the physical characteristics and the digital level of the sample members.

The research has shown that the training program using training methods affected the improvement of performance level in the research sample. Additionally, the training program by containing elements of suspense, excitement, and reinforcement has shortened the learning and training process compared to usually used methods. The researcher recommends that training programs using the three training methods exercises will improve both the physical abilities and the digital level of players.

**Keywords:** *Training methods - Some special physical requirements*

and most influential educational theories, which is education through practice, where physical and sports education can be described in many different ways (Al-Khouli, 2001: 29).

The purpose of sports training is to strive to achieve the highest level of athleticism possible in a specific type of sport, so sports training lays the general foundation on which the sport of levels or competitive sports is based, and for this to be achieved we must always strive for the development of public and private physical qualities (Allawi, 1992: 50).

It is noteworthy that professional preparation programs for physical education and sports have been developing rapidly, particularly in the latter half of the 20th century. Multiple developments have taken place as a

### Introduction

Sport is a pillar upon which countries and institutions rely for success and development in their respective societies. This explains the importance of physical education and sports in general, given the positive effects they have on the physical and health advancement of individuals, and the development of countries culturally, athletically and financially.

Physical education is no longer restricted for physical or athletic training practiced by the individual in the form of exercises, just exercises to move the body's organs a number of times, for the purpose of strengthening muscles, or just acquiring a specific motor skill. It is also distinguished by its use of the latest

considerations that must be taken into account when choosing the appropriate tools for various exercises.

Cross-training refers to a long training program created from different activities based on many variations that reduce the risk of injury, while improving the components of physical fitness.

It is clear that training methods are one of the most important modern trends in training and developing some of the special abilities of players, as the various physical exercises include many devices and tools, including different training mediums such as (weight lifting, sand dunes exercises, and poly-metric exercises).

Mcevoy (1998:101) indicates that training with weights enables the athlete to increase the acceleration of the limited muscle contraction by more than the first third of the lift and during the other two-thirds of the lift the weight becomes slower and the velocity contraction of the weight then stops.

There is also the importance of training with weights, represented by the following: (Hammad, 1996)

- Develop and develop muscular strength of all kinds.
- Increasing the strength of bones, ligaments, and cartilage thickness and preventing injuries.
- Improving the functions of the respiratory and circulatory system.
- Improving the metabolism process.

• It works to increase self-confidence and improve the individual's external appearance, which increases his feeling of happiness. There are weight training that is done in gyms, and there are some that are done freely, as in the following pictures that the researcher has done in the practical side of this research.

(Abdul-Rahman, 1999) believes that the movement of the two legs in sand dune

result of the evolution of the philosophy that guides the profession and the system. This is summarized in the tremendous expansion of the profession in terms of its goals and social services (Abdullah, 2010:3).

Shaan and Abul-Ela (1994) consider that reaching the level of players to the degree that enables them to achieve the requirements of modern playing with all its various elements requires raising the player from childhood according to programs that are codified physically, skillfully, psychologically and mentally, in addition to more advanced content of training that is compatible with the abilities and potentials of young people, which puts The right foundation for building the base from the young and creating a generation of people with special talents and abilities.

(Maleh et al, 2011) found that physical characteristics play an important role in the development of the player's functional devices because they increase the size of the heart, cardiac impulse force, and blood flow in each heartbeat, which affects the heart's pressure. The athlete's blood increases the heart's pressure, distinguishing it from humans without athletic abilities. Furthermore, it increases the vital capacity of the lungs, expands the rib cage, slows down the breathing rate and deepens it, as well as developing the muscular system by increasing the thickness and strength of the muscle cover, as well as increasing the amount of tissue inside the muscle, increasing its size and strength, and growing endurance.

Tnaka (1994) believes that diversified training is a term that refers to many types of sports activities, as well as sports that are not among the individual's basic interests; cross training is another method to improve fitness in the areas that serve the basic sports.

Jermyn (2001) also thinks that diverse form of training can be of great benefit to young athletes who are below championship level, especially in the preparation period.

Pedersen (2000) reported that various cross-training exercises with basic exercises will give a tremendous improvement in muscle endurance, flexibility as well as agility, each of which will improve performance in basic sports.

Stone & Bryand (2000) stated that the various exercises should serve the specificity of the sport in question, as the specificity of training includes the form and mechanics of performance, as it is one of the most important

ground, but there must be a change in running speeds and for variable distances, ranging between high and medium intensity.

There are also benefits to training on sand dunes in an open environment represented in its positive psychological impact on the player when changing training locations from the enclosed halls to the open atmospheres. In addition to reducing costs when training on the beach sand, especially in the morning time, it gives a great benefit to the player where the sea water is and the Ultraviolet rays emitted from the sun (Braiqi', 2004) . The researcher took the following pictures when applying on the practical side.



require maximum strength combined with maximum muscular speed, as this method has helped to resolve the problems that occur with developing strength and speed together (James: 1995).

(Morten, 2001) indicated that Polymetric exercises are used to develop the additional explosive power to be used to improve the relationship between the maximum force and the explosive force, through the best

exercises must be confronted by pushing a surface; in turn this surface determines the amount of thrust produced by the body in proportion to the amount of resistance to this surface. Thus, the body faces great resistance in training in sand whose degree is not the same as in the resistance resulting from working on hard ground, and thus it becomes clear how effective training in sand dunes in strengthening the muscles of the legs.

As (Abdul-Khaleq, 1994) indicated that one of the most important requirements for training on sand dunes is “endurance, speed, strength”. The player must not run continuously with the same intensity when running on sandy

Poly-metric exercises have achieved remarkable success because of their importance when there is a lack of strength and strength training characterized by speed, because it is performed in the explosive movements necessary in jumping, throwing, sprinting and other activities that their nature require jumping high (Adams, 2002).

Polymetric training has also become one of the most widely used methods for developing muscular ability in many sports activities that

strength training are lacking, due to its ability to perform the necessary explosive movements with jumping, throwing, and sprinting competitions, as well as tasks that require jumping high performance.

Rode (1985) also noted that polymetric training involves a great deal of effort and can damage muscles, joints, and tendons, and that there are general principles that apply to all training methods, including: (excess load, training effect, Diversity, hospitalization, privacy, material differences, progression of pregnancy, continuity), as evidenced by the following pictures made by the researcher when applying on the practical side.

use of rubber energy or what is known as the lengthening and shortening cycle.

(Al-Aqra', 2009) also sees the use of polymetric exercises with its well-known exercises by many trainers under other names without using the term polymetrics.

(Daniel, & Arnheim, 2002) suggested that polymetric training can improve the athlete's ability to produce dynamic movements linked to muscular ability, and the ability to generate force very quickly - a vital skill for many sports activities.

Lutfi (1998) also noted that polymetric exercise has been gaining impressive success in recent years in the United States of America, due to its significance when strength and



well-studied and codified scientific theories, and which have been specifically designed to meet the needs of long-distance players.

### **Objectives of the research**

The purpose of this study is to develop some of the physical abilities of long-distance athletes using specific types of training (weight training, sand dunes, polymetric training) through sub-goals such as these:

1- Recognizing the effect of weight training on the development of some special physical abilities of long-distance athletes.

2- Recognizing the effect of sand dune training on the development of some special physical abilities of long-distance players.

3- Recognizing the effect of polymetric exercises on the development of some special physical abilities of long-distance players.

### **Hypotheses**

1- There are statistically significant differences between the averages of the pre and post measurements in the development of some special physical abilities of long-distance athletes in weight training.

2- There are statistically significant differences between the averages of the pre and post measurements in the development of some special physical abilities of long-distance players in sand dune training.

3- There are statistically significant differences between the averages of the pre and post measurements in the development of some special physical abilities of long-distance players in polymetric exercises.

### **Terminology**

**-Training Methods:** varying physical exercises and different training mediums, most rely on the use of tools and devices in open spaces or closed halls, with the goal of enhancing players' special abilities (Al-Ajouri, 2009: 9).

**- Special physical requirements:** they refer to the vital functional characteristics that progress when the body develops sufficient effective means that are healthy and used when performing skill movements as part of its stored movement (Hussain, 1998).

**-Weight training:** It is a set of exercises performed with free weights or stationary weight machines in order to increase strength, ability, muscular endurance and flexibility (Mahmoud, 1997).

**-Sand dunes training:** These are exercises that take place on sandy ground and

(Allawi and Radwan, 2001) mentioned that muscular strength develops some physical qualities such as speed, endurance and agility. Strength is related to speed to produce fast, strong movement, or what we can call the force that is characterized by speed, starting force, or explosive power.

Here, the researcher aims to find out the effectiveness of using the aforementioned training methods in developing some special physical abilities in terms of (broad jumping from stability, measuring the strength of the muscles of the legs and back muscles, as well as the test of sitting from lying down in the knee-bending position, and the test of bending the trunk forward from long sitting The oblique prone test from standing.

Therefore, the researcher preferred, in order to complete the form of the targeted exercises to develop some of the players' physical abilities, to include various suggested exercises on exercises in different and diverse mediums such as weight training, sand dunes, and polymetric exercises. As well as the use of different and various devices and tools so that the various means of training are selected with great care in order to serve the special physical abilities to develop some of the physical abilities of the long-distance players.

The researcher has noticed that sports libraries lack the research related to the proposed training methods to develop some special physical abilities of long-distance players, as these exercises give two basic aspects of skill development according to performance according to the physical abilities that are developed using the proposed training methods.

Hence, the research problem became clear in the mind of the researcher as a former player of athletics, a lecturer at the College of Physical Education and Sports, and his presidency of the Palestinian Athletics Federation, where he noticed that a large percentage of players lack to practice open exercises, including playing in weight training, sand dunes and polymetric exercises because of their positive and tangible impact on the development of some special physical abilities of long-distance players, and these exercises are complementary to the rest of the exercises in influencing the development of the physical and technical side.

Furthermore, it is imperative to use the latest methods of training that are based on



program using the blending method had a positive and effective impact on all variables of the experimental research.

**Al-Mutaiani (2009)** also conducted a study which aimed to know the effect of a mixed training program (ground and water) to improve the level of some elements of physical fitness (endurance, muscular strength, speed, agility, flexibility) among deaf football players at the Prince Ali Bin Al Hussein Club in Irbid Governorate, and to identify the impact of the difference of the medium in improving these variables. The study sample consisted of 14 players, and the researcher used the experimental method in the designs of the pre and postmeasurements for the experimental group and the control group. Both groups demonstrated a significant improvement in physical and functional fitness elements after the post-measurement in all variables studied. The post-measurement resulted in a higher level of fitness for both groups than the pre-measurement result.

**Al-Ajouri (2009)** study aimed to find out the effect of using suggested training methods (water medium, open medium, closed medium, polymetric exercises, and volleyball) on developing some physical abilities related to crushing strike skills. The researcher used the experimental and descriptive approaches. He designed a questionnaire to identify the trends of young players towards training by various means. This study was applied on an intentionally chosen sample of young volleyball players from Al Salam Sports Club in the Gaza Strip. One of the most important results was that both programs followed in the study (various and regular) recorded effectiveness in improving the level of physical abilities related to the performance of the skill of the square strike in the sport of volleyball, and the results also showed that the skill of the crushing strike in different circles, especially training in sand and inside water, led to a better improvement of the skill due to the advantages of these circles in increasing the natural resistances of the medium (sand, water).

**Abdul-Aal (2000)** studied the effect of weights, polymetrics and mixed training techniques on the dynamic development of muscular strength and the level of achievement for the long jump competition, Where the researcher used the experimental method, and the study sample was chosen in intentionally, which consisted of 100 university students. One

can be classified as resistance exercises to external environmental factors, such as running to climb hills, for example (Amer, 1995).

**-Polymetric training:** They are exercises through which the muscle is able to reach the maximum production of force in the least possible time, and it uses the force of gravity to store energy in the muscles and this energy is used directly in the reaction in the opposite direction to produce muscle work with a strong contraction that depends on the central contraction and decentralized (James, 1995).

#### **Previous studies**

**Younes (1994)** used an experimental method to investigate whether polymetric exercises would affect the physical abilities of long jump and triple jump competitors. Two equal groups (experimental and control )were analyzed. The sample of the study consisted of 28 players chosen from Zamalek, Al-Tersana, Al-Ahly, Al-Sikka and Al-Nasr clubs, and one of the most important results of the study was the superiority of the experimental group over the control group in all dimensional measurements.

**Halawa (2011)**, tried to find out the effect of a training program by mixing weights, polymetric and ballistic training on some physical characteristics and the digital level of short-distance runners. 14 players from the Palestinian national athletics team were chosen intentionally by designing two groups, (experimental and control), in addition to 6 players from the same research community, as well as 6 junior athletes in athletics to conduct the exploratory study. Of the most important findings of the study was that there was a positive effect of the mixed program between weight training, polymetric training and ballistic training on the physical characteristics of the experimental group among short-distance runners.

**Al-Aqra' (2009)**, conducted a study which aimed to know the effect of the circular method on mixing qualitative training and polymetrics to improve the level of digital achievement by pushing the shot put for students of the Department of Physical Education at Al-Aqsa University. the researcher used the experimental method for the pre and post measurement of the three experimental groups, the study sample consisted of 116 students from the Department of Physical Education at Al-Aqsa University, the results of the study have shown that the proposed training

**Stemm (1995)** performed a study that aimed to identify the effect of water jumping and polymetric exercises, the researcher used the experimental method, and the study sample was chosen intentionally, and one of the most important results of the study was the superiority of the polymetric training group over the water training group as well as over the control group.

#### Methodology

The researcher used the experimental method with an experimental design for two groups, (experimental and control groups) using the pre and post measurement for its suitability to the nature of this study.

#### Community and sample of the research:

The sample of the research was chosen intentionally from the Future Academy for Athletics, where the sample size consisted of (16) players, and the sample was divided into (8) experimental players and (8) control players.

#### The homogeneity of the research sample:

The homogeneity of the research sample was carried out for all the research variables (height, weight, age) to ensure that the sample members fell under the moderation curve. The homogeneity of the research sample:

The homogeneity of the research sample was carried out in all the research variables (height, weight, age) to ensure that the sample members fell under the moderation curve. The researcher performed homogeneity among the study sample in some selected variables, such as growth rates, physical variables, and numerical level. This was done by finding the means, median, standard deviation, and extracting the skew coefficient. Table (1) illustrates this.

of the most important results of the study was that the use of training methods had a positive impact on the dynamic level of muscular ability and the level of achievement for the long jump competition.

The study of (**Fatouros *et al*, 2000**) aimed to find out the effect of polymetric exercises and weights with polymetrics on the strength of the muscles of the legs and the achievement of the vertical jump. The researchers used the experimental method, where the research sample consisted of 41 players. The results of the study show that the training program for the experimental groups led to the development of strength and improvement in the vertical jump, and the mixed group showed a greater improvement in strength and jump.

(**Wilson *et al*, 1999**) study aimed to find out the effect of weights and polymetrics on central and decentralized work, where they used the researcher's experimental approach by designing three groups (two experimental groups and a control group), the study sample included 41 players from the Faculty of Physical Education In Sydney, the results showed that the group that used polymetric training was better than the group that used weight training, especially in developing strength for the lower body.

The study of (**Holcomb *et al*, 1996**) aimed to identify the effect of the modified polymetric program on strength and vertical jump, where the researchers used the experimental method, and the study sample was chosen intentionally from 51 players who graduated from colleges of physical Education. One of the most important results of the study was that all groups improved in strength, jump and vertical jump, reaching the maximum degree of strength for all groups except for the control group.

Table (1) Homogeneity of the study sample for growth rates, physical and skill variables (n = 16)

| No  | Variables                  | Unit   | Mean  | Median | SD   | Skew Factor |
|---|----------------------------|--------|-------|--------|------|-------------|
| <b>First: Parametric Variables (growth rates)</b> |                            |        |       |        |      |             |
| 1   | Height                     | CM     | 1.74  | 1.72   | 0.06 | 0.41        |
| 2   | Weight                     | KG     | 70.50 | 70     | 4.07 | -.333-      |
| 3   | Age                        | Year   | 17.69 | 17.7   | 0.52 | -.351-      |
| <b>Second: Physical Variables</b>                 |                            |        |       |        |      |             |
| 1   | flying start from 30m time | second | 3.65  | 3.81   | 0.42 | -.112-      |
| 2   | digital level of 100 meter | second | 12.15 | 11.48  | 0.90 | 0.683       |
| 3   | digital level of 200 meter | second | 27.85 | 28.91  | 3.59 | -.523-      |



|    |  |        |       |       |       |        |
|----|--|--------|-------|-------|-------|--------|
| 4  | digital level of 400 meter                                       | second | 1.17  | 1.21  | 0.06  | -.655- |
| 5  | 600 meter time   | second | 1.43  | 1.44  | 0.04  | -.643- |
| 6  | Throwing a ball weighing 4 kg from a long sitting                | meter  | 3.41  | 3.19  | 0.34  | 0.882  |
| 7  | A dynamometer to measure the strength of the muscles of the legs | cm     | 74.31 | 73    | 12.11 | 0.626  |
| 8  | Wide jump of stability   | meter  | 2.18  | 2.16  | 0.07  | 0.916  |
| 9  | Forward torso flexion test from sitting too long                 | cm     | 10.50 | 11    | 2.16  | -.567- |
| 10 | Shuttle running test 4*10 meter                                  | second | 12.58 | 12.86 | 0.50  | -.842- |

Table (1) presents clearly the statistical description and the skew coefficient of the study sample for the variables under study, which range between (-.842- and 0.41), which indicates the homogeneity of the sample in those variables, which were between (-3, and +3).

### Setting the study variables

The researcher has limited and controlled the study variables that may play a role in the results of the study and affect its objectivity, as follows:

#### First: Setting the variables

Table (2) Means, standard deviations, t-value and significance level

| Variables  | Group   | N | Mean  | SD    | T-value | Sig.     |
|--|---------|---|-------|-------|---------|----------|
| Height   | Exp.    | 8 | 1.73  | 0.06  | 0.888   | Not sig. |
|  | Control | 8 | 1.75  | 0.06  |         |          |
| Weight   | Exp.    | 8 | 69.50 | 4.60  | 0.988   | Not sig. |
|  | Control | 8 | 71.50 | 3.46  |         |          |
| Age  | Exp.    | 8 | 17.76 | 0.56  | 0.514   | Not sig. |
|  | Control | 8 | 17.63 | 0.51  |         |          |
| flying start from 30m time                                       | Exp.    | 8 | 3.72  | 0.44  | 0.602   | Not sig. |
|  | Control | 8 | 3.59  | 0.42  |         |          |
| digital level of 100 meter                                       | Exp.    | 8 | 12.22 | 0.92  | 0.268   | Not sig. |
|  | Control | 8 | 12.09 | 0.94  |         |          |
| digital level of 200 meter                                       | Exp.    | 8 | 28.20 | 3.30  | 0.378   | Not sig. |
|  | Control | 8 | 27.50 | 4.05  |         |          |
| digital level of 400 meter                                       | Exp.    | 8 | 1.17  | 0.05  | 0.21    | Not sig. |
|  | Control | 8 | 1.16  | 0.07  |         |          |
| 600 meter time   | Exp.    | 8 | 1.43  | 0.05  | 0.487   | Not sig. |
|  | Control | 8 | 1.42  | 0.04  |         |          |
| Throwing a ball weighing 4 kg from a long sitting                | Exp.    | 8 | 3.36  | 0.33  | 0.635   | Not sig. |
|  | Control | 8 | 3.47  | 0.37  |         |          |
| A dynamometer to measure the strength of the muscles of the legs | Exp.    | 8 | 73.13 | 11.05 | 0.381   | Not sig. |
|  | Control | 8 | 75.50 | 13.74 |         |          |
| Wide jump of stability   | Exp.    | 8 | 2.18  | 0.08  | 0.131   | Not sig. |
|  | Control | 8 | 2.19  | 0.08  |         |          |
| Forward torso flexion test from sitting too long                 | Exp.    | 8 | 10.88 | 2.10  | 0.682   | Not sig. |
|  | Control | 8 | 10.13 | 2.30  |         |          |
| Shuttle running test 4*10 meter                                  | Exp.    | 8 | 12.57 | 0.52  | -.019-  | Not sig. |
|  | control | 8 | 12.58 | 0.52  |         |          |

The tabular value of "t" at the degree of freedom ( $n-2 = 14$ ) and at the level of significance  $0.05 = 2.10$  and at the level of  $0.01 = 2.88$

The T-test in Table (2) shows that the value of "t" for all tests is not statistically significant at the significance level (0.05). This indicates that there is no statistically significant difference between experimental and control groups in all research variables, and this indicates that the two groups are equal in all research variables.

Table (3) Physical and skill abilities under study and tests used for measurement (n = 7)

| No | Variable   | M. Unit | Percentage | Agreement |
|----|--|---------|------------|-----------|
| 1  | flying start from 30m time                                       | CM      | 85.71 %    | Agree     |
| 2  | digital level of 100 meter                                       | KG      | % 100      | Agree     |
| 3  | digital level of 200 meter                                       | Year    | 71.43 %    | Agree     |
| 4  | digital level of 400 meter                                       | second  | 71.43 %    | Agree     |
| 5  | 600 meter time   | second  | 100 %      | Agree     |
| 6  | Throwing a ball weighing 4 kg from a long sitting                | second  | 100 %      | Agree     |
| 7  | A dynamometer to measure the strength of the muscles of the legs | second  | 85.71 %    | Agree     |
| 8  | Wide jump of stability   | second  | 100 %      | Agree     |
| 9  | Forward torso flexion test from sitting too long                 | meter   | 100 %      | Agree     |
| 10 | Shuttle running test 4*10 meter                                  | cm      | 85.71 %    | Agree     |

measures honestly and uniformly to meet the goals that the researchers had set. The objectives of the tests were clearly defined, so the researcher presented the proposed tests to a group of arbitrators and experts in the field of curriculum, teaching methods, testing, measurement, athletics and sports training (N= 7) arbitrators and they were asked for their opinions and suggestions. The arbitrators were unanimously agreed that these tests reflect the motor and skill reality to be measured, and several sources were also referred to that proved these tests measure this trait.

#### **Differentiation (Distinction) Validity:**

The researcher determined distinction validity of the tests under study by comparing two groups (opposing groups) in which one group is distinct and contains (6) players, while the second group lacks distinction and is composed of (6) players from the research community.

#### **Scientific coefficients for the tests in question:**

The researcher also conducted the first exploratory study concerning the exploratory research sample in order to determine the stability coefficient for the test under discussion and to calculate the validity of the test using the sample unique to the Palestine athletics team, and in the same conditions as the first exploratory study.

#### **Validity of the Instrument (Tests):**

##### **Validity of the arbitrators**

"The test is considered valid if it measures only what it was intended to measure, and does not measure others, and it can distinguish between individuals in the measured trait" (Uwais, 1999:53).

As a way to ensure the validity of the tests, the researcher relied on the validity of the arbitrators, as well as the extent to which the test represents the situations and aspects that it

| NO | TESTS  | DISTINCT GROUP |      | Non- Distinct group |      | Dif.  | T-value |
|----|--|----------------|------|---------------------|------|-------|---------|
|    |  | M              | SD   | M                   | SD   |       |         |
| 1  | flying start from 30m time                                       | 3.70           | 0.36 | 4.08                | 0.05 | -0.38 | 2.57    |
| 2  | digital level of 100 meter                                       | 12.29          | 0.63 | 13.50               | 0.55 | -1.21 | 3.54    |
| 3  | digital level of 200 meter                                       | 21.93          | 0.46 | 30.37               | 1.05 | -8.45 | 18.02   |
| 4  | digital level of 400 meter                                       | 1.77           | 0.33 | 1.15                | 0.07 | 0.62  | 4.53    |
| 5  | 600 meter time   | 1.43           | 0.00 | 1.16                | 0.05 | 0.27  | 13.57   |
| 6  | Throwing a ball weighing 4 kg from a long sitting                | 4.04           | 0.19 | 3.38                | 0.37 | 0.66  | 3.87    |
| 7  | A dynamometer to measure the strength of the muscles of the legs | 75.67          | 2.66 | 61.17               | 1.47 | 14.50 | 11.69   |
| 8  | Wide jump of stability   | 2.28           | 0.15 | 2.00                | 0.01 | 0.28  | 4.47    |

| NO | TESTS  | DISTINCT GROUP |      | Non- Distinct group |      | Dif.  | T-value |
|----|--|----------------|------|---------------------|------|-------|---------|
|    |  | M              | SD   | M                   | SD   |       |         |
| 9  | Forward torso flexion test from sitting too long | 9.00           | 0.01 | 7.17                | 0.41 | 1.83  | 11.00   |
| 10 | Shuttle running test 4*10 meter                  | 11.38          | 0.86 | 12.92               | 0.11 | -1.54 | 4.35    |

The tabular value of "t" at the degree of freedom ( $n-2 = 14$ ) and at the level of significance  $0.05 = 2.10$  and at the level of  $0.01 = 2.88$

players, which is from the study community, and from outside the original study sample chosen from the Future Academy for Athletics taking into account the unification of the same measurement conditions and using the same tools and assistants. The correlation coefficient between the first and second applications was calculated using the Pearson correlation coefficient. Table (5) shows the reliability coefficients of the physical and skill tests under study.

Table (4) shows that there are statistically significant differences between the distinct group and the non-distinct group, which indicates the validity of the tests under consideration to distinguish between the two groups.

#### Test Reliability

The researcher used the method of applying the test and then re-applying it within (15) days interval between the two applications on the same first test-retest sample of (6)

Table (5) Re-application reliability coefficients for the skill tests under study

| Variables  | M.<br>Unit | 1 <sup>st</sup> test |      | 2 <sup>nd</sup> test |      | Rel.<br>coefficient | Sig. |
|--|------------|----------------------|------|----------------------|------|---------------------|------|
|  |            | M                    | ± SD | M                    | ± SD |                     |      |
| flying start from 30m time                                       | Sec.       | 3.50                 | 0.40 | 3.49                 | 0.41 | 996                 | 0.01 |
| digital level of 100 meter                                       | Sec.       | 11.68                | 0.51 | 11.67                | 0.52 | 998                 | 0.01 |
| digital level of 200 meter                                       | Sec.       | 28.41                | 2.80 | 28.39                | 2.79 | 999                 | 0.01 |
| digital level of 400 meter                                       | Sec.       | 1.17                 | 0.05 | 1.18                 | 0.05 | 960                 | 0.01 |
| 600 meter time   | Sec.       | 1.38                 | 0.09 | 1.35                 | 0.10 | 998                 | 0.01 |
| Throwing a ball weighing 4 kg from a long sitting                | M.         | 3.23                 | 0.12 | 3.23                 | 0.12 | 970                 | 0.01 |
| A dynamometer to measure the strength of the muscles of the legs | CM.        | 75.63                | 5.24 | 76.00                | 4.96 | 998                 | 0.01 |
| Wide jump of stability   | M.         | 2.15                 | 0.06 | 2.13                 | 0.02 | 965                 | 0.01 |
| Forward torso flexion test from sitting too long                 | CM.        | 11.63                | 1.30 | 11.50                | 1.20 | 998                 | 0.01 |
| Shuttle running test 4*10 meter                                  | Sec.       | 12.25                | 0.43 | 12.14                | 0.35 | 975                 | 0.01 |

Tabular value of t (degrees of freedom  $n-2 = 4$ ) at the level of  $0.05 = 0.811$ , and at the level of  $0.01 = 0.917$

- Pearson correlation coefficient to ensure reliability.
- Shapiro-Wilk test to test if the data follow a normal distribution or not?
- T-test to show the significance of the differences between the means of two independent samples.
- T-test for the differences between the mean scores of two related samples.

#### Interpretation and discussion of the results

The 1<sup>st</sup> hypothesis: **There are statistically significant differences between the averages of the pre and post**

Table (5) shows that the reliability coefficients between the scores of the first and second applications of the skill tests ranged between (0.965–0.999), which are significant and of high values that indicate that the tests are characterized by a good degree of reliability.

#### Statistical treatments

To verify the validity of the hypotheses, the researcher used the following statistical treatments:

- Means, median, and standard deviations.
- skew modulus.

the players in the sample ( $n = 16$ ) on the training methods in pre and post measurements, using the t-test for the differences between mean scores of two related samples (as shown in Table 6).

Table (6) Means, standard deviations, "t" value and the level of significance to identify the differences between the mean scores of the experimental group in the two measurements, the pre and post measurements in the training methods ( $n = 16$ )

| Variables  | Test | N | M     | SD    | T-value | Improvement rate. | Sig.        |
|--|------|---|-------|-------|---------|-------------------|-------------|
| flying start from 30m time                                       | Pre  | 8 | 3.72  | 0.44  | 3.003   | 14.4              | Sig at 0.01 |
|  | post | 8 | 3.18  | 0.25  |         |                   |             |
| digital level of 100 meter                                       | Pre  | 8 | 12.22 | 0.92  | 2.34    | 7.1               | Sig at 0.01 |
|  | post | 8 | 11.35 | 0.49  |         |                   |             |
| digital level of 200 meter                                       | Pre  | 8 | 28.20 | 3.30  | 5.491   | 23.1              | Sig at 0.01 |
|  | post | 8 | 21.70 | 0.58  |         |                   |             |
| digital level of 400 meter                                       | Pre  | 8 | 1.17  | 0.05  | 7.59    | 12.3              | Sig at 0.01 |
|  | post | 8 | 1.03  | 0.01  |         |                   |             |
| 600 meter time   | Pre  | 8 | 1.43  | 0.05  | 2.486   | 4.0               | Sig at 0.01 |
|  | post | 8 | 1.37  | 0.05  |         |                   |             |
| Throwing a ball weighing 4 kg from a long sitting                | Pre  | 8 | 3.36  | 0.33  | 3.851   | 18.3              | Sig at 0.01 |
|  | post | 8 | 3.97  | 0.31  |         |                   |             |
| A dynamometer to measure the strength of the muscles of the legs | Pre  | 8 | 73.13 | 11.05 | 2.296   | 18.3              | Sig at 0.01 |
|  | post | 8 | 86.50 | 12.22 |         |                   |             |
| Wide jump of stability   | Pre  | 8 | 2.18  | 0.08  | 2.3     | 5.5               | Sig at 0.01 |
|  | post | 8 | 2.30  | 0.13  |         |                   |             |
| Forward torso flexion test from sitting too long                 | Pre  | 8 | 10.88 | 2.10  | 2.877   | 33.3              | Sig at 0.01 |
|  | post | 8 | 14.50 | 2.88  |         |                   |             |
| Shuttle running test 4*10 meter                                  | Pre  | 8 | 12.57 | 0.52  | 6.318   | 11.0              | Sig at 0.01 |
|  | post | 8 | 11.19 | 0.34  |         |                   |             |

The tabular value of "t" at the degree of freedom ( $n-1 = 15$ ), at the level of significance  $0.05 = 2.10$  and at the level of  $0.01 = 2.88$

research skills as well as that these differences did not happen by chance.

The researcher attributes these differences to the training program and its contents of training methods related to study skills, which were affected by the stimuli within the program, which led to the continuous improvement in the performance of the training methods.

The 2nd hypothesis: **There are statistically significant differences between the averages of the pre and post measurements in the development of some special physical abilities of long-distance players in sand dune training.**

An independent t-test was used to reveal the significance of the difference in performance between experimental and control groups, as shown in Table (7).

### measurements in the development of some special physical abilities of long-distance athletes in weight training.

The validity of this hypothesis was investigated by comparing the average scores of

It is clear from Table (6) that there are differences in the mean scores and an improvement between the pre and post measurements in the training methods tests in the pre and post measurements of the experimental group in favor of the post measurement, where the improvement rates ranged between (4-33.3%), and the average overall improvement rate for all the variables was (17.4%). This indicates that the improvement observed in the level of tests of training methods confirms that the training program contributed in improving this skill among the sample members.

Therefore, the experimental group players who trained with the training methods training outperformed the players who trained in the usual way, indicating that the training methods training had an impact on developing

Table (7) Means, standard deviations, t-value and significance level to identify the differences between the mean scores of the control and experimental groups in the post application in training methods (n = 16)

| Variables  | Group   | N | Mean  | SD    | T-value | Sig.         |
|--|---------|---|-------|-------|---------|--------------|
| flying start from 30m time                                       | Exp.    | 8 | 3.18  | 0.25  | 2.527   | Sig. at 0.01 |
|  | Control | 8 | 3.62  | 0.42  |         |              |
| digital level of 100 meter                                       | Exp.    | 8 | 11.35 | 0.49  | 2.901   | Sig. at 0.01 |
|  | Control | 8 | 12.06 | 0.48  |         |              |
| digital level of 200 meter                                       | Exp.    | 8 | 21.70 | 0.58  | 6.98    | Sig. at 0.01 |
|  | Control | 8 | 27.41 | 2.24  |         |              |
| digital level of 400 meter                                       | Exp.    | 8 | 1.03  | 0.01  | 4.224   | Sig. at 0.01 |
|  | Control | 8 | 1.13  | 0.07  |         |              |
| 600 meter time   | Exp.    | 8 | 1.37  | 0.05  | 3.965   | Sig. at 0.01 |
|  | Control | 8 | 1.44  | 0.01  |         |              |
| Throwing a ball weighing 4 kg from a long sitting                | Exp.    | 8 | 3.97  | 0.31  | 2.305   | Sig. at 0.01 |
|  | Control | 8 | 3.60  | 0.33  |         |              |
| A dynamometer to measure the strength of the muscles of the legs | Exp.    | 8 | 86.50 | 12.22 | 2.47    | Sig. at 0.01 |
|  | Control | 8 | 71.38 | 12.27 |         |              |
| Wide jump of stability   | Exp.    | 8 | 2.30  | 0.13  | 2.79    | Sig. at 0.01 |
|  | Control | 8 | 2.16  | 0.06  |         |              |
| Forward torso flexion test from sitting too long                 | Exp.    | 8 | 14.50 | 2.88  | 3.716   | Sig. at 0.01 |
|  | Control | 8 | 9.75  | 2.19  |         |              |
| Shuttle running test 4*10 meter                                  | Exp.    | 8 | 11.19 | 0.34  | 3.46    | Sig. at 0.01 |
|  | control | 8 | 12.02 | 0.59  |         |              |

Tabular value of "t" at a degree of freedom (n-2 = 18), at a level of significance of 0.05 = 2.10 and at a level of 0.01 = 2.88

and diversity in the use of devices And tools, which proceeded according to a well-studied plan that allows players to train on them, and repeat them, as well as the interaction between the players and the training program, continuous reinforcement, and immediate feedback immediately after the completion of the performance, and the players feel comfortable, pleasure and happiness while using the training program, and this led to an increase in their motivation. This result was clearly shown by the players in the post measurement.

### Conclusions

Based on the results of the study, the researcher came to the following

- Using training methods, the training program improves the performance level of the research sample.
- Using training programs in physical education leads to improved performance, and this is indicated in the results of the study with the

It is noticed from Table (7) that there is a statistically significant difference at the level of significance ( $\alpha \leq 0.01$ ) and at the level of significance ( $\alpha \leq 0.05$ ) between the experimental and control groups in the post-measurement of the training methods tests. The differences were in favor of the experimental group that was trained by the program based on training methods.

This refers to the observed improvement in the level of performance by training methods. This confirms that the training program contributed to improving the physical abilities and the digital level.

As a result, the researcher attributes this result to the application of the training program, which had a significant impact on the experimental group as trainers included elements of suspense, fun, and attractiveness to the players, as well as the strengthening of the training program with special exercises of training methods contributed to the superiority of the experimental group, and the adoption of the training program on a variety of activities

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- The presence of the elements of suspense, excitement and reinforcement in the program shortens the learning and training time than in the usual methods.
- Diversification and the proper use of training methods lead to the speed of training, and the employment of meta-knowledge skills such as planning, monitoring and control, and evaluation, before and during the application of skills, reinforced the physical abilities and the digital level.
- 

### Recommendations

Within the limits of the study sample and its characteristics, and upon presenting the results of the study, the researcher recommended the following:

1. Benefiting from the training program which is based on training methods to provide players with physical abilities and a digital level.
2. The necessity of using training methods, as this has a positive impact on improving physical abilities and the digital level.
3. The necessity of using training methods and giving them great priority during the training units in the pre-competition stage.

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