

The Effect of Kettlebell Training on the Level of Muscle Strength and the Digital Level of the Discus Race

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Introduction and research problem

Studies and research in the field of sports have focused on studying the impact of sports training and training programs on improving the level of achievement for all activities of every sports activity in general and athletics in particular.

Ahmed Saad El-Din Omar and Tariq Abdel-Samad Younes (2004 AD) affirm that special physical abilities are among the important foundations that have a fundamental role in achieving the highest possible level of sports performance and achievement in accordance with the specialized sports activity associated with it, where every sports activity is characterized by a set of physical abilities that distinguish it from Other sports activities and the detection of those physical abilities in each of the various sports activities is one of the most important scientific duties and research problems facing specialists in the field of sports in general and the field of training in particular because of its great importance in the development of sports training programs (3: 153). - 154)

Essam Abdel-Khaleq (2003) states that muscular strength, flexibility and muscular endurance are among the most important elements of physical fitness for players, and they are the elements that distinguish one player

from another and are decisive in the results of competitions. (7:2)

Smir Abbas (2000 AD) adds to the need to pay attention to the different types of muscular strength so that the player can perform the skills in an appropriate manner and with a high ability to help him overcome the external resistance. (6:28)

The kettle bell appeared in Russia at the beginning of the nineties and was used by the Russian special forces for a large period until it spread in the rest of the world in various forms according to the training goal for which it is used. of physical and skill exercises.(41:19) (69:22)

Pavel Tsatsouline (2006 AD) sees that the Kettle bell is a tool that works to develop static strength in the position of the body and different positions, and its training can be codified by applying the interval training method. (83:19)

The Kettel bell has many benefits, including the development of strength, endurance, agility and balance in the body, aerobic and anaerobic capacity, and helps reduce the chances of injury as a result of its use in improving muscle tone, and is used to develop muscle balance and muscle strength for different muscle groups, and is used to develop better physical fitness than forms of weights

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Regular bar, dumbbells and belt. (21:44-49) (47:18)

The Kettel bell appears in different sizes from 1-46 kg, and there are many different shapes of the Kettel bell, including one part designed in the form of a jug with different weight categories and this form is the most widespread, and the other form consists of the Kettel bell handle and cylinders of different weights are installed. (12:14)

The discus throwing competition is one of the main field competitions that has been accompanied by great development in order to reach the best possible achievement and level. (43:5) Perhaps the observer of the results of the recent world and Olympic championships in various competitions, especially in the throwing competitions, finds the extent of their progress in an amazing way, which raised the question of specialists and researchers in the sports field about the reasons that led to this huge boom in the digital levels of the discus throwers, and in an attempt to answer this question was one of the most The most important reasons behind this progress are the adoption of the contents of training programs on the scientific method, which is related to sports training programs and the methods and means used in each competition. (54:6)

The researcher believes that the disc throwing competition is one of the important and interesting events that attract a lot of attention, especially in local and international sports festivals.

Therefore, the athlete requires a high level of physical preparation, technique, will and determination to win. This event is also one of the events characterized by the components of physical fitness that are characterized by speed and strength Flexibility and endurance, so I came back from the activities that occupied the interest of researchers in the field of training science, mainly in the training of discus throwing through the use of self-training exercises. At the level of performance, the movement of throwing the disc is characterized by the full performance of the variable movements, which creates a wider range of the arms and rapid twisting of the torso, especially the hip, as well as in the movement of the legs and feet when throwing

Despite the tremendous development in the field of sports training in general and training with weights in particular, some coaches do not pay special attention to this type of training during their training programs in order to overcome the shortcomings of the players and develop their physical and skill abilities. There are deficiencies in many players in throwing performance, and given the importance of the discus throwing skill as one of the most important precedents in the field, and with reference to previous studies analyzing the final roles in the republic's championships to know the level of digital achievement of the discus

throwing players, from which it was concluded that there is a decrease in the level of digital achievement compared to the African championships or Global training has developed through weights using tools in the direction of muscular work in order to work on improving muscle strength and skill level in the same exercise and this is achieved by training using the kettle bell and this is what was indicated by the study of both Nick Beltz and others Nick Beltz, et all (2013 AD) (18), David K. Spierer et all (2013) (12), Ronal (2013) (20), and through the previous presentation, the researcher saw Research on the latest tools used in sports training that will rapidly develop muscle strength as well as improve the disc shot technique for female players due to the possibility of doing iron-ball exercises similar to the motor performance of the race, thus improving the technique of each stage of the race besides the muscular strength, which is reflected in the improvement of the digital level.

Search objective

The research aims to identify the effect of kettlebell training on the level of muscle strength and the digital level of the throwing disc race.

Research hypotheses

-There are statistically significant differences between the averages of the tribal and remote measurements in the level of muscular strength of the female discus throwers.

-There are statistically significant differences between the averages of the tribal and dimensional measurements at the digital level of the discus throwing players.

Some of the terms included in the search:

-Petanque: kettle bell

It is an iron ball with a handle and it works to develop the fixed force in the position of the body and different positions, and its exercises can be codified by applying the periodic training method. (83:16)

Research Methodology:

The researcher used the experimental method with pre- and post-measurement for one experimental group in order to fit the nature of the study.

Society and research sample:

The researcher chose the research sample in a deliberate way from the 18 female players in the Betuffel Best Club in Saudi Arabia. The best (10) female players were selected as a basic sample, in addition to (8) female players to conduct the exploratory study of the research.

Description of the research sample:

The researcher found the arithmetic mean, standard deviation, median, and skew coefficient for the population and sample of the research in the descriptive variables (age - height - weight) (muscular strength, right and left - ability - numerical level) in order to ensure the moderation of the sample.

Table (1)
Arithmetic mean, standard deviation, median and torsion coefficient for the population and sample of the research in the descriptive variables (age - height - weight) (muscular strength, right and left - ability - numerical level(n=18))

Variables	Measure unit	Arithmetic mean	standard deviation	median	torsion coefficient
basic variables					
Age	Month year	18.32	0.20	18.30	0.38
Height	Cm	167.20	0.17	167.00	0.32
Weight	Kg	68.65	0.65	68.50	0.18
physical variables					
Arm muscle strength	Kg	27.20	0.36	27.00	1.66
Leg muscle strength	Kg	51.52	1.81	51.00	0.861
agility	S	13.25	0.15	13.10	2.04
Transition speed	S	7.70	0.50	7.50	1.20
Muscular strength of the legs	M	1.54	0.85	1.50	0.141
numeric variables					
Disc extrusion digital level	M	26.15	0.33	24.00	0.0312

It is clear from Table (1) that the skew coefficients give a direct indication that the society and the research sample are free from the defects of non-moderate distributions, as the skew coefficient approaches and ranges in all variables between (± 3), which indicates the homogeneity of the society and the research sample in the variables under study.

Research steps:

The researcher took several steps to reach the actual research procedures, which are:

- Obtaining administrative approvals from the female players to apply the search to the female throwing players.

Data collection:

In determining the data collection, the researcher relied on several sources, which are:

- A questionnaire form for experts in the field of athletics to determine the muscles working in the skill of throwing the disc, attached (2)

- The digital level of the discus throwing competition: the rules set by the International Amateur Athletics Law have been applied for the discus throw competition, and the researcher was satisfied with three attempts for each contestant

Through the reference framework and reference studies, the researcher reached the most important measurements, tests and devices that

achieve the objectives of the research, which are as follows:

1- Measurements of the basic variables under consideration:

- Age (year)
- Weight (kg)
- Height (cm)

2- Physical abilities tests:

Table (2)

Physical variables, test name and unit of measure

physical variable name	Test name	Measure unit
Arm muscle strength	Lifting a barbell for one time	Kg
Leg muscle strength	dynamometer	Kg
agility	Shuttle running	S
Transition speed	Running 30 meters from the high start	S
Muscular strength of the legs	wide jump	M

Preparing the content of the proposed program :

Since the content of the training program represents the backbone for achieving the objectives of the research, so the researcher took into account the scientific foundations and principles of sports training when preparing the content of the program, which were agreed upon by the scientific references and reference studies, as well as identifying the working muscles that enabled the researcher to develop the content of the training programs, following the following steps:

1- Defining the training period:

Through the theoretical readings of the researcher and reviewing many scientific references and previous studies, it was found that the proposed training programs that were tried before ranged from (6) to (12) weeks, and given that the training system is (4:3) times a week. And based on what was indicated by Ibrahim Salama (2000) (1), Abu Al-Abed Al-Fattah (2000 AD) (2) that a period of (6)

weeks is sufficient for the appearance of physical and physiological effects, and the researcher believes that a period of (6) weeks by (4) training units per week is sufficient to achieve Research objectives, so that the number of training units becomes (24) units.

The expert opinion survey form for the proposed training program, and the number of experts was (7) seven
Tools and devices used: Used articles and apparatus

A-The devices used: apparatus Used

The name of the instrument The attribute to be measured The unit of measure

- 1- dynamometer of muscle strength kg
 - 2- Flexibility device from sitting lengthwise flexibility cm
 - 3 -Medical balls weighing 4 kg, the power of speed is cm
 - 4-A path to a 30-meter sprint from the start flying speed again
 - 5- 5x 10m track agility again
 - 6- The length of the rheostat is cm
 - 7- Medical scale weight kg
- B- Tools used: Used articles

-Multi-height chests- Swedish benches
 -Legal and Training Jalal- A Wall
 Mind
 3 -and 4 kg medicine balls - parallel
 Height-adjustable barriers - cones

-Electronic stopwatch - Rubber cords
 attached to the wall
 tape measure
 Presentation and discussion of results
 View results

Table (2)

The significance of the differences between the pre- and post-measurement of physical tests for Disc throw racers n = 10

Variables	Measure unit	Pre measure		Post measure		value (t)	Indication level
		M	±e	M	±e		
Arm muscle strength	Kg	27.20	0.36	35.21	0.24	3.58	Indicated
Leg muscle strength	Kg	51.52	1.81	58.51	0.53	3.65	Indicated
agility	S	13.25	0.15	10.25	0.22	3.28	Indicated
Transition speed	S	7.70	0.50	5.80	0.17	3.85	Indicated
Muscular strength of the legs	M	1.54	0.85	1.64	0.11	3.34	Indicated

•Tabular (T) value at the significance level (0.05) = 1.250

It is evident from Table (2) that there are statistically significant differences at the level of significance 0.05 between the tribal and remote

measurements of the research sample in favor of the dimensional measurement in the physical variables of the discus throwers.

Table (3)

The percentage of improvement between the pre- and post-measurement of physical tests for Disc throw racers n = 10

Variables	Measure unit	Pre measure		Post measure		The difference in averages	improvement rate
		M	±e	M	±e		
Arm muscle strength	Kg	27.20	0.36	35.21	0.24	8.01	%22.74
Leg muscle strength	Kg	51.52	1.81	58.51	0.53	6.99	%11.94
agility	S	13.25	0.15	10.25	0.22	3.00	%22.64
Transition speed	S	7.70	0.50	5.80	0.17	1.90	%24.67
Muscular strength of the legs	M	1.54	0.85	1.64	0.11	0.10	%6.09

It is clear from Table (3) that there are differences in the level of

improvement percentage between the tribal and remote measurements in the

level of some physical variables, and the value of the improvement was

limited from (11.46% to 39.76%)

Table (4)

The significance of the differences between the pre- and post-measurement of the digital level tests Disc throw contestants n = 10

Variables	Measure unit	Pre measure		Post measure		value (t)	Indication level
		M	±e	M	±e		
throwing distance	M	26.15	0.33	30.21	0.28	4.65	Indicated

Table (T) value at significance level (0.05) = 1.250

It is evident from Table (4) that there are statistically significant differences at the level of significance 0.05 between the tribal and remote

measurements of the research sample in favor of the dimensional measurement at the digital level for the female discus throwers.

Table (5)

The significance of the differences between the pre- and post-measurement of the digital level tests Disc throw contestants n = 10

Variables	Measure unit	Pre measure		Post measure		The difference in averages	improvement rate
		M	±e	M	±e		
throwing distance	M	26.15	0.33	30.21	0.28	4.06	%39.76

Table (T) value at significance level (0.05) = 1.250

It is clear from Table (5) that there are differences in the level of improvement percentage between the pre- and post-measurement at the digital level, and the value of the improvement was limited (39.76%)

tribal and remote measurements in the level of some physical variables, and the value of the improvement was limited from (11.46% to 39.76%)

Discuss the results

It is evident from Table (3) that there are statistically significant differences at the level of significance 0.05 between the tribal and remote measurements of the research sample in favor of the dimensional measurement in the physical variables of the discus throwers.

The researcher attributed the occurrence of these changes to the good planning of a training program using the Kettel ball tool and the legalization of training loads in a scientific manner suitable for the age and training stage of the research sample and to the use of Kettel ball exercises as a major part of the proposed exercises with the aim of developing muscular strength, where the researcher considered training with gradual loads during the application of the program by training The different

It is clear from Table (4) that there are differences in the level of improvement percentage between the

muscle groups, especially the muscles of the arms and legs, and the researcher's focus on the working muscle groups during the throwing skill, as this led to the improvement of the physical variables.

Laila Farhat (2001) and David (2003) confirm that muscular strength is one of the most important physical elements that female players need, since all of his movements depend on how his body moves, and muscles are the ones that control this movement. Through contraction and relaxation from one position to another, and the stronger the muscles, the greater the effectiveness of these contractions and help in carrying out the skillful duty. (14:8) (13: 351-360)

In this regard, Michael (2004 AD) confirms that the Kettel ball training system is an integrated one of its most important goals to develop the elements of physical fitness, including muscular strength, muscular ability, agility and flexibility, because it contains scepter exercises as a major part of the training system, which depends on the three schemes of movement because it contains circular swings for the arms. (74:14)

This is what was agreed by "Ahmed Shaarawy" (2017), that training for performance exercises that match the movements of the skill using the muscles working in the required performance has an effective effect in improving and developing special physical characteristics and thus the effectiveness of motor performance. (32:4)

This can be explained by the fact that the reason for the improvement is

that the research sample members were subjected to training for a period of six weeks and by four training units weekly, which led to the arrival of the sample members to the stage of adaptation to high loads represented in training by the circular force system, and that the effectiveness of circular strength training is the highest degree of specialization in strength development. Muscular quantitatively, qualitatively and timing, meaning that the development of muscle strength according to the momentary uses of muscles within the skilled performance is a decisive factor in the success of the process of employing neuromuscular work for this performance.

This is consistent with what was indicated by the study of Ahmed Shaarawy (2017) (4), Muhammad Zakaria (2018) (9), Hani Jafar (2017) (10) that the training program using Kettel ball exercises had a positive impact on the level of improvement of special physical abilities and the level of digital achievement.

Thus, the first hypothesis of the research has been achieved, which states that there are statistically significant differences between the averages of the tribal and dimensional measurements in the level of some physical variables in the players who throw the disc.

It is evident from Table (5) that there are statistically significant differences at the level of morale of 0.05 between the pre- and post-measurement of the research sample in favor of the post-measurement at the digital level for the female discus throwers.

It is clear from Table (6) that there are differences in the level of improvement percentage between the pre and post measurement at the digital level, and the value of the improvement was limited (39.76%)

The researcher attributed this result to the use of the proposed training program for Kettel ball exercises, which affected the level of physical variables and thus led to an improvement in the digital level of the discus throwers.

This was pointed out by Ahmed Saad, Tariq Abdel-Samad (2004 AD) that there is almost agreement between many expert opinions that every movement skill in sports requires its performance certain types of physical abilities and therefore qualitative exercises in order to raise the level of its performance, and that it prefers the development of physical abilities Specific to sports through the use of motor performance of exercises similar to the nature of motor performance of those basic movements. (7:3)

In this regard, both Christine Chasin (2000 AD) (11) and Larry (2011 AD) (15) agree that many researchers and specialists in the sports field agree that there is a strong correlation between physical abilities and the level of skill performance, as the athlete cannot master the basic skills of the type of sport. The sports activity in which he specializes in the event that he lacks the physical capabilities for this type of activity.

Samir Abbas (2000 AD) indicates that research has proven in the last era that focusing on the development of muscular strength as

one of the physical elements has a major role in progressing the digital level of discus throwers, and on the importance of the bone strength element and the extent to which it is related to the element of speed "explosive ability" to improve the level of thrust, and as a result of levels The high that was achieved in the field of throwing, there is a significant correlation between the throwing level and the speed level of 30 meters, whether from the flying start or the low start, as the speed has a positive effect on the ability of the tool to acquire a "starting speed", which is the most important factor affecting the distance of the push. (416:6-417)

The researcher explains this result that the training group using Kettel ball exercises excelled in all variables, in addition to the improvement of the numerical level, which the researcher used to indicate the level of performance as a numerical outcome that increases the practical benefit of the Kettel ball training method.

This can be explained by the fact that the reason for the improvement is that the research sample undergoes training for a period of six weeks and by four training units weekly, which led to the arrival of the sample members to the stage of adaptation to high loads represented in Kettel ball exercises, and that their effectiveness leads to the response of the muscle spindles in the muscles through which the muscle spindles can be Determining the elastic strength of the muscle and it depends on the efficiency of the reflex response to the sensory

receptors of the muscles extensor of the joints and this occurs during the contraction by lengthening in the jump or jump, as well as because the modification and change in the program according to the plan established, which means the continuation of the effect with the safety of the course of the training process in accordance with the principles and rules of the science of sports training, which Ultimately, it aims to improve the training process.

Thus, the second hypothesis of the research has been achieved, which states that - there are statistically significant differences between the averages of the tribal and dimensional measurements at the digital level among the discus throwers

Conclusions

-The use of Kettel ball exercises leads to an improvement in the level of muscle strength of the female discus throwers.

-The use of Kettel ball exercises leads to an improvement in the performance level of the digital level of the discus throwers.

Recommendations:

- 1- Relying on Kettel ball training system with the same intensity, repetitions and comfort between players in different throwing competitions.
- 2- Conducting similar studies at different age groups.
- 3- Conducting such a study in other games and comparing it with track and field competitions.
- 4- The need for coaches of field competitions to include in their

training parts of the Kettel ball training system.

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