Effects of functional strength exercises on the performance level of some physical variables and defense skills of handball goalkeepers

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Introduction and problem of research

In recent years, there has been a practical explosion in the field of sports. The scientific progress has helped in the use of training technology, the development of training programs and the development of solutions to many problems related to the field of sports. The reality is that the Egyptian and Arab sports lack well planned physical and skill preparation programs, Muscular fitness training and maximum strength and muscular endurance as well as flexibility.

Handball is considered one of the most important sporting activities in most countries. It aims to build and shape the body and raise the level of fitness. Muscle strength is one of the important physical attributes of handball. The various resistors during performance, as well as that the muscle strength of various types fall within the general requirements of handball sport and is the basis for the performance of different skills of the force required.

Mounir Gerges (2004) and Mohamed Al-Waili (2004) note that physical preparation is one of the most important elements of the training process for the handball player. It is one of the important bases that combine with the kinetic skills in the player's physical formation. The player is not physically contagious. The player who is physically fit can finish the game as effectively and physically. The purpose of the player's numbers is to master the skillful side by focusing on the flexibility of the joints and strengthening the muscles that are frequently used during the game. (16: 57), (13:50.)

The performance in all sports activities depends on how the body and body move by the muscles. The stronger

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the muscles are, the more muscular contractions are, and the greater the strength, the more effective it will be in physical variables such as muscular ability, agility and compatibility. Balance and flexibility as well as technical variables and also contribute to the development of muscle strength in preventing injury to different joints of the body(8:8)

According to the World Health Organization (WHO) Health Design Group (2008), attention has recently become evident in the training of functional power. It stimulates the improvement in the functional capacity of bodies related to specific motor patterns in sports. Its emphasis is on increasing muscle strength, size and clarity. Functional strength training programs enhance the ability to perform daily activities and exercises to be more challenging with greater force Efficiency. (20: 3)

Scott Gaines (2003) and Fabiocomana (2004) confirm that all training programs should include job training and demonstrate that all players during competition in various sporting activities do not base themselves on both feet evenly on one line For a few periods, muscle balance is a key element in the functional exercises. It improves the balance of the fixed and moving muscles, speed, flexibility and compatibility in varying degrees, as well as improving the level of skill performance(19:57)(22:45)

The goalkeeper is considered one of the most important centers of play in the defense team or a special attack in the defense of his goal has a very important role in the course of the game and is the biggest responsibility of the team because it is the final and final obstacle to the attackers and therefore must be characterized by high strength of muscle and muscle capacity The flexibility and the speed of the reaction and fitness and balance as the possession of the keeper of those qualities of physical help him to raise the level of skill and the end of the game satisfactory result goalkeeper decides the fate of the team has a clear impact on the course of the game. (2: 191, 192), (7: 91, 9)

And the performance of defensive skills for handball

goalkeepers requires two main aspects the first side is the defensive is the last line of defense and the last center in the team decides the fate of the attack that ends with the correction and the second side is the offensive is the first to lead the attacks to his team and when the distinct can end the attack with a direct goal in the opponent's goal Therefore, the ball must be pursued through various defensive moves. The wrong movement causes a lot of different injuries (10:13) (9:383).

Hence, the researcher believes that the goalkeeper of the handball is the most important element in the handball team, but it is half the team and play an effective role in the outcome of the game whenever the goalkeeper of the game with the required muscle strength in particular ability to master the skill he has the advantage of using all parts of his body to prevent balls The goal is to take care of the physical changes of the goalkeeper to achieve the best technical results during the course of the match, which is the line between defeat and victory.

The results of several specialist references agreed that the defensive skills of the handball goalkeeper include defense readiness, defense, defense, arms defense, arm and foot defense, foot defense, foot and arm defense, body defense, arm defense, foot defense, head defense, jump defense, defense and dueling (11:418) (7:11) (10:59) (12:17)

Charity of diabetes, Mohammed Bareka (2010), Abdel-Aziz Al-Nimr and Nariman Al-Khatib (2005) mentioned that the use of muscular strength training requires a high effort from the training providers and the need to design training programs according to established scientific rules and rules for their effective effect in improving the skill performance. (3: 98) (8:10)

Scott Gaines (2003) points to the importance of functional strength training for the goalkeeper in that it indirectly affects the muscles by converting the increase in the force produced from a movement that can be used to improve the performance of the nervous system and reduce the resistance caused by the

muscles during defense performance than Contributes significantly to the ability of the working muscles to produce more strength (22: 54)

The researcher learned that most of the previous studies dealt with the skill aspect of the goalkeeper in terms of evaluation and the identification of defensive skill duties and omitted the necessity and importance of training the functional force as a requirement Physical strength is important and necessary for the various physical elements of the goalkeeper. The training of the functional force includes the muscles of the abdomen, back and sides, which is the physical and muscular position of the movement distribution in the human embodiment, which leads to easy control of movement and reflected on the skill performance Defense of the goalkeeper.

The researcher also noticed a clear decrease in the level of performance of the defensive skills of goalkeeper in handball, especially in situations that need strength, balance and compatibility as the goalkeeper should be strong in the muscles of the lower limb and the upper end is known that the lower limb muscles produce a large amount of strength and ability But it does not reach the upper end as a result of weak muscle area of the center, the strength of the physical capabilities should be enjoyed by goalkeeper and show peak in the performance of defensive skills goalkeeper who has the muscle strength be able to organize the game and control the score goals for

A team created from the muscular work of all members of the body in a single result, the goalkeeper to face the ball and the performance of defense skills more effectively and genealogically in performance while maintaining the lack of power from the center area and generate strength in the center area, increasing the strength of the goalkeeper from bottom to This is what called on the researcher to design a training program for the functional strength and its impact on the level of performance of some physical variables and defense skills of the handball goalkeeper.

Research goals:

The research aims to design a training program

using functional strength training to identify:

1-The impact of the training of the functional force on some physical variables of the goalkeeper of the goal (muscle strength, reaction speed compatibility balance flexibility agility) under consideration.

2- The impact of the training of the functional force on the level of performance of some of the defense skills of the goalkeeper of the game (defensive move defense of the arm foot defense arm defense foot defense of the arm and foot) under consideration.

Research hypotheses:

1-There are statistically significant differences between the pre-measurement and post-measurement of the experimental group in the physical variables in question for the benefit of telemetry.

2-There are statistically significant differences between the pre and post-measurement of the experimental group in the defense skill variables under consideration in favor of the post.

Search terms:

Functional strength exercises It is an integrated, multi-level (frontal, cross-sectional) movement that includes acceleration, stabilization and deceleration, with the aim of improving motor ability, central force (ie, spine and mid-body) and neuromuscular efficiency. (19: 87.)

Scientific Research Procedures:

Research Methodology:

The researcher used the experimental method using experimental design of the experimental group in the method of pre measurement and telemetry to suit the nature of the research.

Basic Study Sample:

The research sample:

The sample of the research was deliberately chosen among the handball goalkeepers registered with the Egyptian Federation of the Central Delta for the 2017-2018 training season under 18 years of age, 3 goalkeeper at the Tanta Sports Club and 3 goalkeepers in the municipality of Mahalla. The total sample of the study is 6 goalkeepers Handball.

Sample Survey Study:

A total of 3 handball goalkeepers registered with the Egyptian Federation for the 2017-2018 training season were selected under 18 years of age at the Ghazal Al Mahalla Club for conducting the exploratory study.

Table (1)

The arithmetic post, the standard deviation, and the Smirnov sample values in the basic variables under consideration in pre measurement (N = 6)

Serial	Variables	Measure unit	SMA	standard deviation	The value of Kolmogorov–Smirnov test	P Probability of error	Significance
Variable rates of growth indicators							
1	Age	Year	17.100	0.155	0.998	0.272	Non significance
2	Height	Cm	165.533	6.920	0.998	0.272	Non significance
3	Weight	Kg	66.000	0.894	0.494	0.968	Non significance
4	Training age	Year	6.933	0.103	0.998	0.272	Non significance
Physical training							
1	Test throwing a legal handball for the farthest distance	Cm	28.590	0.358	0.508	0.959	Non significance
2	Vertical jump test from stand still	Cm	36.500	0.447	0.494	0.968	Non significance
3	Nelson test for kinetic response	S	3.350	0.134	0.494	0.968	Non significance
4	Test the trunk tilt to the farthest distance	Cm	50.100	0.089	0.494	0.968	Non significance
5	Torsion of the trunk to the back of the supine position	Cm	41.833	0.258	0.998	0.272	Non significance
6	Eight shape test to measure kinetic balance	No	4.323	0.251	0.949	0.329	Non significance
7	Test of numbered circuits	S	6.833	0.258	0.998	0.272	Non significance
8	Test of the backside running of the side	Step	14.867	0.207	0.998	0.272	Non significance
Defense skills tests							
١	Move forward, backward and side 5 times	S	20.217	0.229	0.688	0.731	Non significance
٢	Defense of balls with feet	No	5.167	0.408	1.205	0.110	Non significance
٣	Defend the arms from the top 5 corners	S	9.583	0.129	0.998	0.272	Non significance
٤	Defend the adjacent balls With footers	S	9.350	0.161	0.706	0.700	Non significance
٥	Defend the upper corner of the arm 5 times	S	9.433	0.052	0.998	0.272	Non significance
٦	Defense the arm and foot to the lower corners of the bow 5 times	S	9.533	0.052	0.998	0.272	Non significance

The z value of the scale is significant at 0.05 = 1.96

Table (1) shows that the values of the for the Kolmogorov–Smirnov test measurement of each sample in the basic variables are less than the original value of z. It is also shown that the value of P> 0.05 at a significant level of 0.05 indicates that there are no statistically significant differences between the degrees of individuals the study group in these variables and the values follow the normal distribution

Data collection methods:
First: References Research related studies:

The researcher reviewed many specialized scientific references in the field of handball training in general and studies that dealt with the training programs of the functional force in particular to benefit from these studies and references in designing the training program and selecting the physical and skill changes of the handball goalkeeper and selecting appropriate tests to measure those Variables.

Second: The tools which used in the research:
- Ratameter for measuring length. Handballs.

Measuring Device.- Susseria balls.
Dynamometer device. Medical Balls -Stopwatch for measuring time. - baffles.
-Buzzer. - Swedish seats.
-Legal handball field. - Astatic rubber.
Cones.

Third: Tests used in research:
(A) physical testing facility (4)
1-Test throwing a legal handball for the farthest distance.
2-Vertical jump test of stability.
3- Nelson's motor response test.
4-Test the tilt of the trunk behind the farthest distance.
5- Test the bend of the trunk behind.
6- Eight shape test to measure kinetic balance.
٧- Test numbered circuits.
8- Side-run backstroke testing.
(B) Defense skills testing facility (4)
1-Test the defense of the arm and foot of the bottom corner of the goal 5 times.
2-Test the defense of the arms at the corners of the upper stage 5 times.

3- Test move forward and backward and to the side 5 times.

4- Test the defense of the upper corners of the arm by 5 times.

٥-Test the defense of balls connected to the foot.

٦-Test the defense of balls with feet.

Research Areas:

1-Spatial field: This study was postponed and the training program was implemented at the handball field at Tanta Club Sportive. The survey was also conducted at the handball field at the Ghazal Mahalla club and the Municipal club of Mahalla.

2-Time domain:

-Survey study: The survey was conducted in the period from 17/5/2017 to 20/5/2017.

- Pre measurement: Pre-measurement of the sample in the basic variables (length, age, weight of age) and physical, skill and defense variables of the handball goalkeeper after the completion of the survey and confirming the validity and stability of the research tools were carried out on Monday 22/5 2017 to Wednesday 24/5/2017.

-The training program: The researcher applied the proposed training program on a sample of 6 players from the handball goalkeeper in the Tanta Sports Club and the Club of Al-Mahalla for the under-18 stage for the 2017/2018 training season using the training of the functional force, which took 10 weeks from Saturday, 27/5/2017 to Monday, 14/8/2017, three training units per week and a total of 30 training units on Saturday, Monday and Wednesday of each week.

-Post-Measurement: The researcher conducted the post-measurement of the sample in question after the completion of the proposed training program on Wednesday, 16/8/2017 to Saturday, 19/8/2017.

Functional Strength Training Program:

The researcher developed the program of training the functional force and varied its objectives between the physical and defensive variables of the handball goalkeeper Objective of the training program:

The training program aims to improve the level of performance of the physical and skillful defense variables

under consideration by using functional strength training.

Contents of the Functional Strength Training Program Attachment (6)

The training content included the training of the functional force on the number of (55) physical training and the number of (48) training skills defensive handball goalkeeper distributed in the number (30) training units (3) units weekly during the preparation period.

Timetable for the implementation of the training program:

The training program was implemented for 10 weeks, 3 training units per week with a total of 30 training units, training time ranged between 50-60 and total training time during the program period (1650 s) and using weekly pregnancy cycle (2: 1). The average, The resting time between groups is between 15 and 90 w depending on the difference in the severity and size of the pregnancy.

In addition, the warm-up time (5-10 minutes) and the calm from (3-5q), which is outside the time of the training module.

View and discuss the results:

Table (2)

Mean of Differences between the Median and Pre Measurements in the Sample of the Study Using the Non - Parametric Wilcoxon Test in Physical Tests (N = 6)

Serial	Physical tests	Pre measure		Post measure		Signs	No	Ranks average	Total of ranks	Valve of z	Error probability P
		S	±E	S	±E						
1	Test throwing a legal handball for the farthest distance	28.590	0.358	41.633	0.568	Neg.	0	0.000	0.000	2.220	0.026
						Pos.	6	21.000	3.500		
2	Vertical jump test from stand still	36.500	0.447	42.667	0.516	Neg.	0	0.000	0.000	2.271	0.023
						Pos.	6	21.000	3.500		
3	Nelson test for kinetic response	3.350	0.134	2.400	0.089	Neg.	6	21.000	3.500	2.220	0.026
						Pos.	0	0.000	0.000		

Follow Table (2)
Mean of Differences between the Median and Pre Measurements in the Sample of the Study Using the Non - Parametric Wilcoxon Test in Physical Tests (N = 6)

Serial	Physical tests	Pre measure		Post measure		Signs	No	Ranks average	Total of ranks	Valve of z	Error probability P
		S	±E	S	±E						
4	Test the trunk tilt to the farthest distance	50.100	0.089	59.967	0.225	Neg.	0	0.000	0.000	2.220	0.026
						Pos.	6	21.000	3.500		
5	Torsion of the trunk to the back of the supine position	41.833	0.258	52.967	5.228	Neg.	0	0.000	0.000	2.220	0.026
						Pos.	6	21.000	3.500		
6	Eight shape test to measure kinetic balance	4.323	0.251	2.533	0.052	Neg.	6	21.000	3.500	2.220	0.026
						Pos.	0	0.000	0.000		
7	Test of numbered circuits	6.833	0.258	3.967	0.052	Neg.	6	21.000	3.500	2.271	0.023
						Pos.	0	0.000	0.000		
8	Test of the backside running of the side	14.867	0.207	19.867	0.137	Neg.	0	0.000	0.000	2.220	0.026
						Pos.	6	21.000	3.500		

The z value of the scale is significant at $0.05 = 1.96$

Table (2) shows the significance of the statistical differences in the Wilcoxon non-parametric test between the pre and the subdivision measurements for the individuals of the research sample in the physical capacity laboratories. It is clear that the value of P <0.05 indicates that there are statistically significant differences between the pre and the artifacts in favor of the telemetry. 0.00) while the negative signal levels (21.00) were in the Nelson test for kinetic response and the eight shape test to measure the motor balance and the numbered circuit test while the total number of positive signal levels was (21.00) while the

negative signal levels (0.00) The test Indicating that the members of the research sample performed better in the telemetry measurement in the pre measurement by (100.00%) in those tests.

Table (3)

Significance of the differences between the average of the pre and the substandard measurements in the sample of the research using the non-parametric Wilcoxon test in the defensive skill tests (N = 6)

Serial	Defense skills tests	Pre measure		Post measure		Signs	No	Ranks average	Total of ranks	Valve of z	Error probability P
		S	±E	S	±E						
1	Move forward, backward and side 5 times	20.217	0.229	16.133	0.207	Neg.	6	3.500	21.000	2.220	0.026
						Pos.	0	0.000	0.000		
2	Defense of balls with feet	5.167	0.408	6.833	0.408	Neg.	0	0.000	0.000	2.333	0.020
						Pos.	6	3.500	21.000		
3	Defend the arms from the top 5 corners	9.583	0.129	8.287	0.362	Neg.	6	3.500	21.000	2.220	0.026
						Pos.	0	0.000	0.000		
4	Defend the adjacent balls With footers	9.350	0.161	8.467	0.270	Neg.	6	3.500	21.000	2.271	0.023
						Pos.	0	0.000	0.000		
5	Defend the upper corners of the arm 5 times	9.433	0.052	8.150	0.134	Neg.	6	3.500	21.000	2.220	0.026
						Pos.	0	0.000	0.000		
6	Defense the arm and foot to the lower corners of the bow 5 times	9.533	0.052	8.333	0.103	Neg.	6	3.500	21.000	2.220	0.026
						Pos.	0	0.000	0.000		

The z value of the scale is significant at $0.05 = 1.96$

Table (3) shows the significance of the statistical differences of the Wilcoxon non-parametric test between the pre and the barrages for the members of the research sample in the defense skill tests. It is clear that the value of $P < 0.05$ indicates that there are statistically significant

differences between the pre and the barometric measurements in favor of the telemetry. 0.00) while the total of the negative signal levels (21.00) in the defense test of the ball in the feet while the total rank of positive signs (21.00) while the total rank of negative signals (0.00) in the rest of the tests, indicating that the members of the research sample performed better In dimension measurement in Premeasuring rate (100.00%) in those tests.

Discussion of results:

In light of the results of the statistical analysis, and within the limits of the measurements used, and through the research objectives, the researcher was able to discuss the results as follows:

Discussion of the first hypothesis, which states (there are statistically significant differences between the pre measurement and the post-measurement of the experimental group in the physical variables in question for the benefit of post measure)

The results of the statistical analysis from Table (3) showed that there was a noticeable improvement in the muscular strength of the arms and the muscular capacity of the two men, which are the following tests: (test of throwing a legal handball for the farthest distance- vertical test of stability.)

The researcher attributed this improvement in the level of muscle strength to the training of the functional force in question, which contains training directed directly to the development of muscle capacity, which is one of the most important physical qualities required by the performance.

The results of this study are consistent with the study of Rami Salama Abdul Hafeez (2011) (4)

Essam Abdel-Hamid, Marawan Ali Abd – Allah (18)(2014)، Tarek Salahuddin Sayed Mustafa (6), which showed that the central power Core Power, which is one of the elements of functional programs include movements characterized by the production of power and converted to the speed of immediate and this is an important interactive feature in the job training.

The performance improves better when the training is specific to the type of skilled performance, in which the same muscular action and the same speed of movement required for competition. The best way to improve muscular ability is the technique that is similar to the musculoskeletal track During training and during competition. (8: 190)

The results of the statistical analysis of Table (7) showed a significant improvement in the elasticity of the strands in the torsion bending test. The post measurement (41.833) and the post distance measurement (52.967) in the trunk tilt test, (50.100), and the post distance measurement (59,967), there is a clear improvement in the elasticity test of the experimental group in the dimension measurement in the pre measurement. The researcher attributed the improvement to the use of strength training and the variety of exercises with a stick, We find flexibility and agility N the most important elements of physical fitness in various sports activities.

Munir Jirjis (2004) and Mohammed Al-Walyli (2004) emphasize that the elements of the elasticity of the shoulders and the backbone are necessary elements for the handball goalkeeper. The nature of the performance in the handball is exposed to different positions. The more the goalkeeper is able to change the position of his body from one place to another easily and easily unlike the goalkeeper who was not flexible and agility is vulnerable to many different injuries.(13:102) (16:29(
(١٠٢ :١٣) ،(٢٩ :١٦)

This is in line with the results of the study of Rami Salama Abdel Hafiz (2011), 4 Essam Abdel-Hamid, Marawan Ali Abd-Allah (2014), and Tariq Salahuddin Syed Mustafa (2015)

The results of the statistical analysis of Table (7) indicated a significant improvement in the level of compatibility in the test of numbered circuits where it reached in the pre measurement (6.83) and in the dimensional measurement (3.967). The researcher attributed this development to the use of different functional

strength training such as colored balls, numbered circles, Different،

In this regard, Mohammed Allawi, Mohamed Nasr El Din (2001) emphasizes that the various sports activities depend on the element of compatibility and in the group activities in particular. The player needs to match the hand, the eye and the foot so that he can perform and integrate more than one movement in one direction and thus lead to a smooth and improved the performance. (14: 42)

This is consistent with the results of Rami Salama Abdel Hafiz (2011), (4), Mohamed Osman (2012), 15 Essam Abdel-Hamid, Marawan Ali Abd - Allah (2014) (6) where they found that functional strength exercises positively affect the compatibility component, which is one of the most important elements that must be enjoyed by the handball and depends heavily on the diversity of the exercises used. Marwan Ali Abdall, Mahmoud Abd El-Mohsen (21)(2014).

As shown in Table (4), there is a significant development in the Nelson test

for the kinetic response to measure the reaction speed of the goalkeeper, where the average of the pre measurement (3.350) and the average of the measurement dimension (2.400), and that test is under the negative grade signals, To use functional strength training, the functional strength training reflects the actual performance of the handball goalkeeper. This gives him the opportunity to quickly make the right decisions in the different defensive positions and the reaction speed in repelling the balls from the opposing team and thus achieving and recording the best results.

Yasser Dabour (2007) confirms that the goalkeeper of the handball needs to quickly respond to the movement as it plays an important role in the end of the game with a satisfactory result as the goalkeeper of the handball to defend the goal area quickly, the better the team scored the best results(17:58)

This is consistent with the study of Rami Salama Abdel Hafiz (2011), (4), Ashraf Yahya (2013), (1) Sharif Ali Taha (2009) (5),

Tariq Salahuddin Sayed Mustafa (6.)

It is also evident from Table (7) that there is an evolution in the regression test of the side to measure the fitness of the handball goalkeeper. The post measurement (14.867) and the post distance measurement (19.867) Measurement of the dimension in the pre measurement by (100%)

According to Mohammed Alawi, Muhammad Nasreddin Radwan (2001), Yasser Dabour (2007) that the physical education scientists agreed that fitness linked to other physical elements such as accuracy and balance and speed of reaction and require the safety of the musculoskeletal system, the handball goalkeeper to the element of fitness to modify The positions of his body from one movement to another, and these positions are constantly repeated to the goalkeeper depending on the circumstances of the match. (14: 44), (17: 85)

This is consistent with the study of Rami Salama Abdel Hafiz (2011), 4 Ashraf Yahya (2013), 1 Sharif Ali Taha (2009), 5 Marwan Ali Abdall, Mahmoud Abd El-Mohsen (2014)

The results of the statistical analysis of Table (7) showed a significant improvement in the eight shape test for measuring the motor balance. The post measurement was 4.23 and the post distance measurement was 2.533.

The researcher traces this development to the functional strength training using rubber acetate, Swiss balls, free exercises and weights, as it is based on its work on the center area and has a positive effect on improving the balance, which helps to develop the motor performance of the various defensive skills of the goalkeeper.

In this regard, Fabio Comana (2004) emphasizes that balance is a key element in job training and depends on different posts such as standing on one foot. The player can move the body without falling. This is an important interactive feature in the job training. The sense of place and maintain the stability of the body in the performance of different defense skills. (19:55)

The results of this study are consistent with the study of

Salama Abdel Hafiz (2011), (4), Ashraf Yahya (2013), (1) Sherif Ali Taha (2009), (5) Functional strength training has an effective way with various dental stages and athletic activities to strengthen the muscles of the abdomen and back, and play an important role in the development of skilled performance

Discussion of the second hypothesis, which states (there are statistically significant differences between the pre-measurement and the post-measurement of the experimental group in the defense skill variables in question for the benefit of post measure)

The results of the statistical analysis from Table (8) showed a significant development in the defense skill variables in the results of the defense test of the balls in the feet. The post measurement was (5.167) and the post distance measurement (6.833) The sample showed a good performance in telemetry compared with the pre measurement (100%.)

The researcher attributes this improvement in the defensive skill variable of the experimental group members to the effect of job training positively on the skill variables of the goalkeeper. The physical exercise is very similar to the functional strength of handball skills. It is based on the use of the muscle group used in skill Basic, through the training of the functional force, which included many exercises that allow the goalkeeper the possibility of the correct time division of the game and the ability to move the defense of the feet in a positive and influential in the way the game. This is consistent with the results of the study of Salama Abdel Hafiz (2011), 4 Ashraf Yahya (2013), 1 Sharif Ali Taha (2009), 5 Tarek Salahuddin Syed Mustafa (6) The use of strength training exercises, it develops the defense skills of the goalkeeper, including the skill of the defense of feet, the goalkeeper can move quickly and achieve the best results in the game.

As shown in Table (8), the rest of the defensive tests for the goalkeeper came under the negative signal rank. This indicates that the sample members performed better in

the telemetry than the pre measurement by 100% in those tests (moving forward, Defense of the arms from the corners of the top 5 times - Defending the adjacent balls with the foot - Defending the upper corners of the arm 5 times - Defense the arm and foot to the lower corners of the goal 5 times)
In the test of moving forward and backward and to the outside, the ratio of pre measurement (20,217), and in the dimension measurement was (16.133)

The goal of the goalkeeper's training was to provide a variety of training exercises for both the arm and foot, taking the side steps of the goalkeeper in the middle of the goal or outside of the players to repel the ground balls and the high balls from the ground.

Mohammed Al-Waili (2004), Yasser Dabour (2007) stressed that the goalkeeper must focus on the various defensive moves in general and move in the direction of the ball in particular, especially when the striker is possession of the ball and try their schematic perceptions, The defensive moves of the

goalkeeper is the speed of occupying the appropriate position and taking the standby position towards the path of the match.(13:45)(17:76)

This is consistent with Imad Eddin Abuzaid, Medhat El Shafei (2007) that the goalkeeper uses the defense of the arm and foot and the defense of the arms and defend the foot and arm together to repel the balls corrected in the lower corners of the goal as well as blocking the high balls from the ground to the level of the trunk (9:54)

Table 8 shows a significant improvement in the arm and foot defense test of the lower corners of the goal 5 times, where it reached the post of the pre measurement (9.533) and in the dimension measurement (8.33), indicating the performance of the experimental group better in the post measure than in the pre measurement.

Yasser Dabour (2007) stressed that the goalkeeper of the handball must master some defense skills in general and master the skill of foot and arm defense in particular to the ability to repel the balls hit the goal, whether balls or balls

high to achieve the best results. (17:4)

It is also evident from Table 8 that there is a marked improvement in the defense of the arms from the upper corners of the goal 5 times, as it was the average of the pre measurement (9.583) and the dimension measurement (8.287) The average of the pre measurement (9.433), the dimension measurement (8.150)

In the test of the defense of the balls connected to the footers, the average of the pre measurement (9.350), and in the dimension measurement (8.467), which indicates the performance of the experimental group better in the measurement dimension than in the pre measurement by 100%.

Most of the scientific references in handball training agreed that defense skills (arm defense, foot defense, arm and foot defense, arm defense, defensive moves) are among the most defensive skills a handball goalkeeper must have. The hand is characterized by speed, excitement and changing positions Surprise throughout the game 60 s The goalkeeper is exposed to multiple positions and changing if not mastering the defense skills in the loss of his team in contrast to the goalkeeper of the skill of defense in the search, he scored the best goals and can Ululation prevent the registration of the goals of the opposing team, and achieve the best results for his team. (13: 55), (17: 70), (10: 94), (9: 85)

This is in line with the results of Adel Ibrahim (2006) 7, Salama Abdel Hafiz (2011), 4 Ashraf Yahya (2013), Sherif Ali Taha (2009) (6)

Conclusions:

In light of the research objectives, hypotheses, nature of the sample, interpretation of the results and discussion, the researcher reached the following conclusions:

1- The training program has a positive effect on some physical variables (muscle strength - reaction speed - flexibility - balance - compatibility - fitness) under consideration.

2- The training program has a positive effect on some of the defensive skills of the handball goalkeeper (defensive moves - foot defense - arm defense -

arm defense - foot defense - defense by the arm and foot.)

Recommendations:

Within the research community and the selected sample and in light of the objectives and research hypotheses and the results reached, the researcher **recommends the following:**

1- Implementing the training program for the professional force of handball goalkeepers with youth and similar training age.

2-the need to develop the training of functional force within the training programs sports.

٣-Educating the trainers on how to develop the training of the functional force in line with the different stages of the year.

٤-Procedures studies aimed at identifying the impact of strength training in different sports according to the physical and physiological requirements of the game.

٥-The content of the program should include the rehabilitation and refinement of handball trainers on the concept and importance and how to design the training of the functional force.

٦.To direct the results of this study and training program to the handball training in general and to the training of

goalkeepers in particular to benefit from these results.

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