

# The effect of cross-fit exercises on the development of the force characteristic of speed for the precision skill of shooting with hand ball

Maha Hasan Moslem<sup>1</sup>, Alaa Khalaf Hayder<sup>2</sup>

<sup>1,2</sup>University of Dyala/ physical education and sport science

Email: <sup>1</sup>Maha.hassan@ uodiyala.edu.iq, <sup>2</sup>alaa.khalaf@ uodiyala.edu.iq

**Abstract :** *Handball is one of the games that are directly affected by physical numbers as a basis for developing the skill aspect after applying the various conditions associated with skill performance, whether these conditions are technical or mechanical and in accordance with the rules of the game, and from the Olympic Games that brought increased attention in terms of their representation in continental competitions, And internationalism, and Olympic is the game of handball, as it had and still has a distinguished position among sporting events in achieving higher results, which require a high level of physical fitness and special abilities, especially the special force represented by the characteristic force of speed, because it is the main and determining factor In the performance and achievement of that sport, and one of the modern methods of developing the physical abilities of the handball game using the Cross Fit method, which contributes to the development of the elements of physical fitness and the development of the physical abilities of handball players. , As it has a fundamental role in practicing sports activities to achieve sporting goals and athletic achievement, and physical abilities mean the efficiency of the body in meeting the requirements of achievement, and this requires the efficiency of the nervous and muscular systems, as it requires a good body and physical measurements that are consistent and free of diseases.*

## 1. INTRODUCTION AND IMPORTANCE OF RESEARCH:

Sports training aims to upgrade the various foundations and factors that have an effective role in developing the athletic level of various sports, and one of these foundations is the physical numbers, which is the main pillar for upgrading the various physical and physiological characteristics of the players, whether in team games or individual games, whose development inevitably affects the skill level for them. (Qasim Hassan Hussein and Abd Ali Nassif., 1987, 157). Handball is one of the games that is directly affected by physical numbers as a basis for developing the skills aspect after applying the various conditions associated with skill performance, whether these conditions are technical or mechanical and according to the rules of the game And one of the Olympic Games that brought increased attention in terms of its representation in continental, international and Olympic competitions is the handball game, as it was and still has a distinguished position among sporting events in achieving the highest results, which need a high level of physical fitness and special abilities, especially The special force represented by the characteristic force of speed, because it is the main and determining factor in the performance and achievement of that sport, and it is one of the modern methods of developing the physical abilities of the game of handball using the

cross-fit method, which contributes to the development of the elements of physical fitness and the development of the physical abilities of handball players. , As it has a fundamental role in practicing sports activities to achieve athletic goals and athletic achievement, and physical abilities mean the efficiency of the body in meeting the requirements of achievement, and this requires the efficiency of the nervous and muscular systems, as it requires a good body and physical measurements that are consistent and free of diseases, and the skill of accurate correction of The skills that the players have with special physical capabilities and abilities, in order to achieve high and advanced levels of performance, and since the handball game is characterized by the distinctive dynamic action, explosive force and force characterized by speed, in addition to other abilities, so the research problem was identified in the presence of weakness in the performance of the players' correction accuracy The team of Diyala University, which is the result of a weakness in the strength distinguished by the speed that would achieve victory in the match, and this weakness results from the reluctance of most coaches to use modern methods to develop physical abilities, including the use of a modern training method, which is CrossFit, and the adoption of some trainers using traditional traditional exercises. on her. The researchers noted the lack of use of this modern method, which contributes to the development of strength and characteristic of speed, and from here the research problem appeared, so the two researchers decided to use cross-fit exercises in developing the force characteristic of speed for the skill of crushing with a hand ball, and the importance of the research lies in knowing the extent of the effect of using cross-fit exercises on The development of the force characterized by speed of the skill of precision aiming with a hand reel.

## **2. RESEARCH METHODOLOGY:**

Choosing the appropriate approach is one of the necessities of scientific research, as it must fit or harmonize with the method of the problem to be researched in finding solutions to it, and explaining the reasons to obtain high results of consistency and objectivity, so the researchers used the experimental method, for its suitability to the origin of the problem and the design of tight control for the two groups, The first: experimental, and the second: a control group with two pre and post tests.

Research community and sample:

The research sample was deliberately chosen from the Diyala University handball team for the academic year 2019-2020, which represents (100%) of the community's origin, and was distributed intentionally by lot to two groups (experimental and control), and the research sample was selected from the entire community, and the researchers conducted The homogeneity and equivalence of the research sample in the pre-tests and as shown in Table (1), as it was found that the research community is homogeneous, because the Levin value achieved an error level greater than the significance level (0.05) and for all tests.

*Devices and tools used in the research:*

1. A Japanese-made Casio electronic stopwatch.
2. A Swedish (Olympic) legal weight lifting device.
3. Electronic balance, German made.
4. Video camera, number (2), type Canon.
5. A multi-purpose device (multi gym) American made.
6. A Chinese-made electronic manual calculator.
7. A tape measure (7 m) in length.
8. Various floors, Chinese-made.
9. Wooden floor (drum) with Chinese-made rubber parts.

10. Various Iraqi-made iron bras.
11. Rubber discs of various weights made from Switzerland.
12. Thai-made CDs.
13. Chinese medicine balls.
14. Long and short lips, Swedish made.
15. Dumbbells large and small, Chinese made.

Tests used:

First: The test of the distinctive ability to speed with the arms:

Test name: Forward support test for a period of (10 seconds).

The aim of the test: to measure the velocity characteristic of the muscles of the arms.

Tools: stopwatch, registration form.

Method of performance: The laboratory performs from a sloping (front support) position, bends the elbows and extends them to the maximum number possible within a time of (15 seconds), and is not allowed to stop during the performance. Full on boarding.

Recording method: The tester records the number of valid attempts that he executed within a time of (15 seconds).

Second: The test of the distinctive ability of speed for the two men:

Test name: Full Dubai for a period of (15 seconds).

The aim of the test: to measure the ability to characterize the speed of the two men.

Tools: stopwatch, registration form.

Method of performance: From standing with feet open shoulder width apart, bending the knees to taking a sitting position and rising directly, arms can be placed behind the head.

Scoring method: The scorer records the correct number of times to repeat the performance in (15 seconds) in the registration form for the information, and the player is given two attempts, and the best is taken.

Tha-test the accuracy of the aiming with the hand roller.

Correction accuracy test from a distance of (9) meters in one step.

The purpose of the test: to measure the accuracy of aiming.

Tools used: a legal handball goal, five legal handballs, precision squares measuring 50 x 50 cm, number two attached to the top two corners of the goal.

Performance specifications: Correction is done from a right point with the middle of the goal line moving away from it by (9 m), provided that the correction is preceded by taking the ball placed on a line 2 m from the line of execution and then taking one step and jumping to aim so that it does not cross the line drawn for implementation Trying to insert the ball into the squares, and the correction is on the right square once and on the left square once, and the fifth attempt is optional.

Scoring: Each ball inside the suspended square in the goal counts as a hit, and the number of times a successful shot is scored for both squares out of those five attempts.

Exploratory experience:

The two researchers conducted the first exploratory experiment on 01/27/2020 on players from the main sample community, and the aim of this experiment was to identify:

1. The time taken for each physical test.
2. Ensure the validity of the tools and devices used in the tests.
3. Training the auxiliary work team on the tests and how to implement them and record the results.
4. Validity of the field tests selected, and their relevance to the research sample.

The main experiment procedures:

Pre-tests:

The pre-tests were conducted on the members of the research sample and the experimental and control groups on Wednesday 10/2/2019 at nine o'clock in the morning in the Sports Training Hall of Diyala University / College of Physical Education and Sports Sciences and with the help of the work team (\*), and it was followed:

1. 10secs forward stand test.
2. A test of the characteristic speed of the two men
3. Test the accuracy of aiming with the hand ball.

The procedure before the pretest:

1. Explain what is required of each athlete from the research sample and the assistant work team.
2. Do a good warm-up before training.

*Cross Fit Exercises:*

The two researchers prepared, based on personal interviews with coaches and experts (\*) in the field of sports training for handball, CrossFit exercises, which were carried out over a period of (eight weeks) and over (2 units) per week (and Monday and Wednesday) of a week, the time of the training unit (90 minutes), CrossFit exercises were carried out with a time of (10 minutes) within the physical preparation in the main section of the training unit and after the skill preparation and by (4-5 stations) in each training unit, and these stations are executed continuously without stopping Except for the transition time from one station to another, then those stations repeat between (6-8 times).

The two researchers did not intervene in the components of the training unit except for the physical section (independent variable - cross-fit exercises) that were applied to the experimental group of the athlete of the Diyala University team and under the supervision of the researchers. As for the control group represented, it takes the components of the training unit itself, except for the physical section at a time of (10 minutes). In it, traditional special strength exercises using weights are carried out, under the supervision of the researchers.

The training curriculum started on October 6, 2019, until December 6, 2019.

Post- tests:

After completing the application of the vocabulary of the proposed training curriculum over a period of eight weeks, the post tests were conducted for the research sample, the experimental group, on Sunday 8/12/2019 at nine in the morning, and the post tests were also conducted for the control group on Monday, 12/9/2019 at It is nine o'clock in the morning, and the two researchers have followed the same conditions and procedures for the pre-tests in terms of place, time, the tests used, their sequence, the tools used, and the assisting work team to maintain the absence of any change that may affect the search results.

*Statistical means:*

The researchers used the statistical bag (SPSS) according to the following laws.

The arithmetic means, standard deviations, the calculated (t) value, and the significance of differences for the tests (post-post) for the experimental and control groups.						
Variables	Experimental group		Control group		Calculated value (t)	significance
	A	STD	A	STD		
The force is the speed of the arm	12.24	1,16	11,05	1,18	9.57	sign
The power of two men's	33.,52	1,79	30.35	2,72	3.34	sign

speed						
Handball aiming accuracy test.	23.45	5.35	20,05	3.33	4.56	sign

### 3. DISCUSS THE RESULTS

By observing the results, there are significant differences between the results of the pre and post tests between the two experimental groups, and the researchers attribute the significance of these differences in the distinctive ability to speed to the specificity of weightlifting training, which works to develop the two components of ability and speed, that the exercises that the previous two abilities were subjected to, and their It influenced the development of the ability element, but at a rate different from the previous two abilities with different iterations, in addition to that the researchers believe that the ability characterized by speed has a great influence in developing the ability endurance, because both depend on the principle of repetition in performance but with different times, and this is confirmed by (Barbara & Charles, 2010) “that endurance ability is a complex characteristic, so the exercises that develop the ability element will have a percentage in developing this ability” (), while (Bruce Lee, 2016) asserted that “endurance ability is used to develop the ability of the player. To continue to perform muscle contractions with high intensity, and to develop endurance ability, station training should be used for weight training exercises ()

As for the strength of the characteristic velocity of the arms and legs of the experimental group, the researchers attribute the proposed approach that succeeded in developing the characteristic force with speed, and that the weight training exercises had a direct effect on raising the level of the experimental sample in terms of the strength characteristic of speed that is characterized by overcoming various resistances with high degrees of acceleration as far as the members of the experimental sample can In order to develop this important characteristic in the game of handball, the power characteristic of speed is the "ability of an athlete to overcome resistance by rapid muscle contractions" (), and this is what Iyad Hamid Rasheed referred to in that "the development of muscular strength of the leg muscles and the development of arm muscle strength depends Mainly on weight training of different weights and the use of medical balls, with a performance that depends on strength and speed, all of this has led to the development of the force characterized by the speed needed by the motor work in the overall performance of the handball "(). This is consistent with what Essam Abdel Khaleq believes is that weight training is one of the main and important methods in developing and developing all forms of muscular strength, whether it is a maximum force, a force characterized by speed, an explosive force, or an elongation of strength, so it occupied part of the training curricula for players in various activities. Sports "(). And the use of the training loads for this (cross-fit) exercises helped in the adaptation of the players that helped in the development of muscle capacity, and the development of explosive ability, and endurance ability, and this is confirmed by (Kamal Al-Rabdi) that the use of "weights, medical balls, jumping and jumping exercises in the development of Explosive power, and the stamina of athletes "(). Then the adaptation obtained by them in these exercises that were used for the first time during their daily exercises and the exercises used in the daily training of the Crossfit, which aims to develop the work of the muscle group used in correcting the handball, and the introduction of the adaptation process on these muscle groups, especially the arms, legs, and trunk And this is what was confirmed by (Mr. Abdul-Maqsoud, 1999) ((If the athlete desires to reach a new positive effect (a new adaptation), he must increase the level of loads again .. So we must go back to the escalation and challenge the level of functional forces, and the level of loads must be resumed. " ()

As for the results related to the force characteristic of speed for the control group, it indicated a clear development in the force characteristic of speed for the arms, which means that the approach that the control group was subjected to was effective in developing this characteristic to meet the requirements of the game, especially since the handball game needs this special characteristic of the arms greatly in several skills, such as correction that is characterized by strength and high speed to surprise the opposing team, as "Mr. Abdel Maqsood" mentions that the handball player "needs quick power when performing a correction movement on the goal as a throwing force, ..., and the higher the level of the player, the higher his ability levels. The different rapid force "(), and on the other hand, the approach to which the control group is subjected has failed to produce clear physical adaptations for its members in the force characterized by the speed of the two men, which indicates a weakness in the course of the vocabulary of this curriculum in not taking into account the development of the physical capabilities of the two men, including the distinctive strength of the two men's speed, which a handball player needs during the match, as in defensive moves, as how can defense players protect the field or cover their teammates when they do not have sufficient ability to the speed of movement, the speed of reaction and the strength of the muscles of the legs ". As for the strength test of the speed of the two men, we see the insignificance of the differences. Kind of special power.

#### 4. CONCLUSIONS:

Based on what the research results have shown in light of its objectives and hypotheses, the two researchers have reached the following conclusions:

1. The crossover exercises positively affected the development of physical abilities of the experimental sample members.
2. The traditional exercises with weights helped to develop the physical abilities of the members of the control group.
3. CrossFit exercises affected the development of physical abilities better than traditional weight training.

From what was stated in the conclusions that were reached, the researchers recommend the following:

1. Confirm the use of the modern method of cross-fit in the game of handball, considering it one of the most recent modern training methods.
2. The trainers in charge of the training process must develop the physical and functional levels by using the modern training method.

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