

# The Effect Of A Codified Training Curriculum For Developing The Explosive Power Of Handball Players

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## Abstract:

The aim of the research is to develop a codified training curriculum to develop the explosive power of young handball players by identify the impact of the codified training curriculum in developing explosive power in handball, the researchers used the experimental method, which is one of the most adequate means in reaching reliable knowledge. Research (32) young players (16-18 years). Where the sample was divided into two control and experimental groups by drawing the names in a random way and choosing one experimental and the other controlled by lottery, each group 16 players. The researchers reached the following results: The standardized training curriculum, through the results of the pre-tests, led to the development of the explosive power of the legs and arms. The various jumping exercises in the standardized training curriculum led to the development of the results of the post-tests of the vertical jump test from stability to the experimental group. The exercises of the medical balls used in a style in the training curriculum The standardized to a noticeable development in the strength of the muscles of the arms for the dimensional results of the test throwing a medical ball weighing 800 grams to the maximum distance for the experimental group.

**Keywords:** Effect, codified training, curriculum, developing and explosive power.

## Introduction:

Handball is one of the team games that depends mainly on different sciences such as training science, kinesiology and others, and it is one of the games that is characterized by its various basic skills in attack and defense. It depends on the player's physical, skill, planning and psychological capabilities to achieve the best results. The continuous development of the handball game requires an evolution in preparing players in all physical, skill, psychological and other aspects that are related to the game through different training methods and methods.

Explosive power is one of the important special physical attributes in handball, so researchers dealt with the development of explosive power because of its impact on the development of basic skills in handball. Under conditions of conflict with the opponent or through the force of the throw that he needs to shoot or to perform long-distance passing.

## Research problem:

The researchers found, through their observation of the youth team matches in the

Qatar Clubs League, that most of the team players do not have sufficient physical abilities to perform individual and group moves, especially that there is a significant weakness in the explosive power of the muscles of the legs and arms, and the reason for this is that many coaches and workers in this field work To give defensive skills and duties away from working on developing the special physical abilities of handball players, knowing that the world is currently witnessing a great development at the offensive level in terms of teams possessing players with sufficient capabilities to shoot from far from the goal

From the above, the researchers decided to design a codified training curriculum to develop the explosive power of young handball players.

## Research Aims:

- 1- Develop a codified training curriculum to develop the explosive power of young handball players.

- 2- Recognizing the impact of the standardized training curriculum on developing explosive power in handball.

### Hypothesis:

There are statistically significant differences in the development of explosive power between the pre and post-tests in favor of the experimental group.

### Research Methodology:

The researchers used the experimental method, which is one of the most sufficient means to reach reliable knowledge.

### The research sample:

The research community was chosen in an intentional way from the players of the Specialized School for the Care of Sports Talent in Handball, the youth category, as the research sample amounted to (32) players from the youth category (16-18 years). Where the sample was divided into two control and experimental groups by drawing the names in a random way and choosing one experimental and the other controlled by lottery, each group 16 players.

### Equipment, tools and means used in the research:

- Arab and foreign sources.
- Observation and experimentation.
- personal interviews.
- Tests and measurements.
- The staff and trainers of the training center.
- Metal tape measure (to measure length).
- Sticky tape.
- Leather tape measure.
- Handball court.
- 10 hand balls.
- Medical Balls (800 gm).
- 15 Metal and plastic poles.
- 4 wooden boxes.
- 4 manual stopwatches type (Saxon and Casio).
- Medical scale (for measuring weight).
- Computer.

### Tests:

#### I- Throwing a medicine ball weighing (800) grams to the maximum distance. (1:280)

The objective of the test: To measure the explosive force of the muscles of the arms.

Tools: An outdoor playground, a medicine ball weighing (800) grams, a metric tape measure, and an adhesive tape.

Test procedure (performance description): From a standing position, the player takes a pivot step and then throws a medicine ball weighing 800 grams not a distance from behind a drawn line, noting that the player's leg does not leave the ground during the throw.

Instructions:

- The tested player is given two attempts and the result of the best attempt is calculated for him.
- The referee stands near the starting line.
- The scorer stands in the center of the field to record the distance.
- Record for the laboratory the distance in meters and its parts from the starting line to the place where the ball falls on the ground.

#### 2- Vertical jump test. (2:352)

The objective of the test: To measure the explosive force of the muscles of the legs.

Tools: A smooth wall with a height of not less than 3.60 m from the ground, a board of wood painted in black and white lines drawn between each line and the last two centimeters, magnesium powder, a piece of cloth to wipe the marks of the powder after reading each attempt made by the laboratory, and draw A line on the floor perpendicular to the wall, 30 cm long.

Test procedure (performance description):

- The laboratory holds a piece of chalk, its length is no less than 1/22 cm, then stands facing the board and extends the arms as high as possible and marks a mark with chalk or magnesium powder on the board, noting the heels on the ground.
- The laboratory then stands facing the board on the side, so that the feet are on the 30 cm line.
- The tester swings the arms down and back with the torso bent forward and down and the knees bent to a right-angle position only.
- The lab extends the knees and pushes the feet together to jump up while swinging the arms strongly forward and upward to reach them to the maximum possible height where he marks the powder on the board at the highest point he reaches.
- The laboratory swings the proximal arm forward and down when descending.

It is preferable for the referee to stand at a table near the board so that he can clearly read the results of the attempts.

- The distance is recorded in (cm) after extracting it from the difference between the length of the upper arm and the jumping distance.

Test management:

- Recorder: He calls the names and records the results.
- Arbitrator: Calculate the grades and note the performance.
- Calculation of degrees: The laboratory score is the number of centimeters between the line reached from the standing position by extending the arm and the mark indicated by the result of the jump up close to the nearest centimeter.
- The tested player is given two attempts and the result of the best attempt is calculated for him.

**Pre-tests:**

After testing the sample and dividing it into two groups, the number of them is (32 players) in each group (16) players. The researchers conducted pre-tests for the research sample in the hall of the Ministry of Youth and Sports, where measurements were made (height, weight) and then the search tests were applied, namely (vertical jump test from stability and testing of throwing a medicine ball weighing (800) grams to the maximum distance.

The researchers tried, as much as possible, to establish the conditions related to the test in terms of (time, place, tools used, method of implementation and team work) in order to work on its availability in the post tests.

**Training Curriculum:**

In order to achieve the objectives of the research, the researchers, after reviewing the available scientific sources and using the scientific and practical experiences of the supervisor, as well as some experts in the field of sports training and handball, set up a codified training curriculum for the development of explosive power as follows:

- Duration of the training curriculum in weeks: 8 weeks.
- Number of training units per week: two training units.
- Total number of training units: 16 training units.
- Weekly training days: Saturday and Wednesday.
- The duration of the training unit is: 90 minutes.

- Researchers in the experimental group used medical balls of different weights 1 kg and 2 kg and boxes
- The heights used in the deep jump that were used in the plyometrics method were determined, as experts in this type of training recommend that the heights range between 50 cm - 80 cm up to 70 cm - 115 cm at high levels, and since the players have never trained in this type from the training, the researchers used the heights from 30 cm to 4 cm, based on the following test that determines the height that the players start using at the beginning of the training curriculum. The test is performed as follows:

The player falls from several heights, for example 30 cm, 35 cm, 40 cm, 45 cm, and the players are asked each time to jump after landing as high as possible and put a sign on the board hanging on the wall. He fell from it and scored the highest height, pointing it on the board in order to avoid loading excessive effort on the muscles and joints, and in a way that the athlete can overcome the resistance while maintaining the correct performance because landing from high altitudes increases the possibility of injury and then affects the stopping phase and is long, which loses the purpose of the exercise is its specificity.

Thus, the researchers used the gradient in heights from the lowest height proportional to the sample to a higher level, so that the muscle activity developed on the rapid change from eccentric contraction to central contraction in the shortest possible time.

The training intensity (40% - 60%) was used in the training program prepared using the weights method

**Post-tests:**

The researchers conducted post-tests for the research sample and the same pre-test conditions were established

**Statistical means:**

The statistical system (SPSS) was used.

**Table 1**

Control Group

#No	Test	Mean	Std	t
1	throwing a medicine ball	9.25	1.342	27.578
2	Vertical jump	14.31	2.750	20.818

**Table 2**

Experimental Group

#No	Test	Mean	Std	t
1	throwing a medicine ball	17.94	1.879	38.193
2	Vertical jump	21.94	3.750	23.400

The results presented in the table for the test of throwing a medical ball weighing (800) grams to the maximum distance and the test of vertical jumping from stability showed a significant development in favor, so the research hypothesis was achieved, meaning that this training method works on developing the explosive power of both the muscles of the legs and arms, researchers attribute this development to the exercises used in the specific standardized training curriculum. Edinghtin and Edgerton (3:810) confirm that structured training results in an increase in the individual's performance ability as a result of performing physical exercises for several days, weeks, or months, by imprinting the body's systems On the optimal performance of those exercises, meaning that the effect of the exercises stimulates the muscle cells to normalize, and that the use of heavy weight exercises used in the training curriculum develops the fast-intensity muscle fibers that are responsible for explosive muscle work, and weight training can be directed to certain muscle groups to bring about development in them. And the use of a resistance intensity ranging from 40% - 60% of the athlete's maximum ability, which the researchers used, can improve the achievement.

The researchers attribute this development as a result of preparing a special training program for the development of explosive power by plyometric training method for the legs and arms and for the development of the explosive ability, which is of paramount importance for handball players, which is used extensively in shooting, deception and defense. Studies and research have indicated and discussed the possibility of storing mechanical energy in muscles. And tendons, the lengthening of the antagonistic muscles and tendons results in a stock of kinetic energy in the form of potential energy or thrust energy, which is released when the antagonist muscles contract. The performance of rapid reciprocating movements and the reciprocating movements appear in passing and defensive movements, where they are called single movements (4:5) After relying on the opinions of experts and theories of training and trainers, and that the training program inevitably leads to the development of achievement, if it is built on an organized and programmed practical basis. In terms of using appropriate and gradual intensity, as well as observing individual differences, using optimal repetitions, appropriate heights, and period of rest time all under good training conditions (5:1056). All

these factors lead to the development of explosive power, And that this method is practiced for the first time from the research sample, and the researchers attribute this development to the plyometric exercises for developing the explosive force of the muscles of the arms that were used by throwing medical balls with different weights and positions (which was done from the sudden lengthening of the muscle under tension (eccentric contraction) and it is accompanied directly By shortening a very fast contraction" (central contraction), the main purpose of the exercise is to take advantage of the relaxation mechanics, and the mechanical properties of the muscle fibers under the influence of stretching, and in this way the force production is enhanced (6:58).

### Results:

- 1 -The standardized training curriculum, through the results of the tribal tests, led to the development of the explosive power of the legs and arms.
- 2 -The various jumping exercises in the standardized training curriculum led to the development of the results of the post-tests of the vertical jump test from the stability of the experimental group.
- 3- Because of the medical ball exercises used in a method in the standardized training curriculum to a remarkable development in the strength of the muscles of the arms for the dimensional results of the test throwing a medical ball weighing 800 grams to the maximum distance for the experimental group.

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