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Research Article

# The Effect of Qualitative Physical Exercises in Developing Some Components of Physical Fitness and Anaerobic Ability of Young Handball Goalkeepers

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**Abstract**

The position occupied by the goalkeeper differs from his performance from the rest of the players. In addition, the goalkeeper who enjoys these components has the ability to be a difficult number with the rest of the team members if we know that he is the only one who has the right to defend the goal within the 6m area. The study aims to identify the effect of various physical exercises in developing some components of physical fitness (kinetic flexibility, speed of response to the arms and legs and agility) and the anaerobic ability of young goalkeepers in handball. The researchers used the experimental method for its suitability and the research problem to ascertain the effectiveness of specific exercises The method of the experimental group with two tests, before and after, where the researchers chose the research sample by the intentional method represented by the young handball goalkeepers of the new Solaf club, which numbered (6) goalkeepers. A set of specific physical exercises that affect the variables that were targeted for the purpose of developing goalkeepers were used. The exercises contributed to developing flexibility and kinetic speed of the arms and legs, as well as developing good anaerobic ability.

**Keywords**

Qualitative physical exercises, physical fitness, anaerobic ability, youth goalkeepers

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# Introduction

The training programs inhalers which are implemented regularly rapid developments regularly occur in the functional and physical competence and skill of the athlete ,and thus lead to the achievement of the objectives of the training process, and for the purpose of the training programs of various sports events put on the coach to rely on the principle of the quality of training, i.e. ,he Determines what the athlete needs in that event .In this regard ,(Mohamed Maree 2004 ) indicates that training programs should be built in order to achieve the development of the special physiological capabilities required to perform the sports activity practiced by the individual, and this is what is called the specificity of training, and modern sports training depends on the focus of its goals for the development of energy production systems and the accompanying functional changes Whenever the aerobic and anaerobic ability of the athlete improves, this is directly reflected on the level of physical and skill performance.

This prompted the researchers to find exercises qualitative in nature serves the specialized sporting event which will lead to the development of the physical side of similar performance indicates (Fisher 1990 ),Peterson (that the principle of privacy in training means that the training contains movements similar to the performance in the exercised sports activity.

Goalkeepers are one of the most important players in the team in handball, and the responsibility that falls on their shoulders is very great, because the first and last thing will be in the hands of the goalkeeper if he is able to stand in the goal and defend it.

It indicates both( ERDAL , MUSA , NİLÜFER ) Although the goalkeeper is a member of the team, we need to know that the process of training goalkeepers with different responsibilities is a very difficult and never ending process and that the goalkeeper should not be satisfied with routine training, but also needs good training, especially to be able to be an effective player in the team .( Jörg Madinger , 2020) Guards the net are part not an integral part of the team may have their effect significant with regard to the outcome of successful game . But in the exercise's routine daily ,not from easy to support guards the goal is enough .You can achieve that of through units training special or exercises for the guard's goal.

Is the flexibility and speed of response and agility as well as anaerobic capacity is one of the variables important that every guard must goalkeeper enjoy them in order to be able to defend his goal with all the bravery , especially if we know that the ingredients received wide attention because of its payoff is good on the level of performance technical and schematic points) Gina Harney 2015 (Physical fitness exercises have spread their effectiveness and great impact in most countries, which have achieved impressive and positive results. Therefore, there are great trends to develop and develop physical fitness.

Through the foregoing, it shows the extent of the impact of the physical aspect of physical fitness, which has the most prominent role in developing other complementary aspects of the training process.

The lie of the research problem that goalkeepers need to train physically diversified and to develop the components of fitness the private them to the fact that the center occupied by the goalkeeper his performance is different from the rest of the players Moreover, the goalkeeper who has these components shall have the ability to be number is difficult with the rest of the Team members if we know that he is the only one who has the right to defend the goal within the 6 m area.

The study aims to identify the effect of the exercise of the fitness of the variety in the development of some of the components of fitness (flexibility of motor and speed of response to the arms, legs and fitness) and anaerobic capacity of the goalkeeper's young hand reel.

The researchers hypothesize that there is a statistically significant relationship between the two pretests in the development of some components of physical fitness and anaerobic ability among young handball goalkeepers.

# Method and Tools

The researchers used the favor of c experimental suitability and research problem to make sure of the effectiveness of the exercise of the quality has S serving researchers The method of the experimental group with two tests, before and after, as the researchers chose the research sample in the deliberate way represented by the young handball goalkeepers of the

new Solaf Club, which numbered (6) goalkeepers, and the tests for the study were determined after looking at the sample level and the appropriate tests for them ,as shown below Kinematic (dynamic) flexibility test:

-The **name of the test** : lower and lateral touch) Mohamed Sobhi Hassanein 2004).

The **purpose of the test :**To measure kinetic flexibility, as it measures the flexion, extension and rotation of the spine.

-A **tools** : clock off, the wall.

**Performance specifications :**draw a mark] X on two points:

**The first :**on the floor between the feet of the laboratory.

**The second :**On the wall behind the back of the laboratory (in the middle).
When you hear the signal last forever E the laboratory bend the trunk Amama down to touch the ground with your fingertips when you sign] X [Between the two legs, and then extended high trunk with rotation to the left hand to touch the mark [located behind the back with the tips of the fingers, then rotate the torso and bend it down to touch the mark[X]The one between the feet again, then extends the torso while turning to the right to touch the mark[X [located behind the back repeat this action as many times as possible in (30) seconds .Noting that touching the mark behind the back once is on the left and the other on the right, as shown in the figure.

***Test conditions:**

The feet should not be moved during the performance.
-must follow the specified sequence to touch , according to a stated in the specifications as shown in Figure.( 1 )
-You should not bend the knees permanently in the course of performance.

**Recording :**The laboratory records the number of touches made on the two marks within (30) seconds

Shape (1) Describes how to perform a kinetic flexibility test

Test the speed of the motor response of the arms) BATAK MICR (Optronics LTD 2001)

**<u>The purpose of the test: To</u>** measure the speed of the motor response of the arms.

**<u>Tools used) :</u>**BATAK **MICRO (**British - made device, record the results form.

# Device Description

The external description of the device is a lightweight electronic panel, containing (12) pressed circular buttons distributed regularly on the panel. It works by charging or by direct electrical connection. Internally, the device contains a central processing unit and a charging battery that works for several hours without the presence of an electric current, and it contains fast-glow lamps )LED is installed on the buttons from the inside, and the device has a huge number of switching and powering maps so that a specific map is not recognized when performing the tests, and the device has the ability to prepare (17) cases according to the type of test.

## Performance Method

The device is hung on the wall and fixed well or placed on a table at an appropriate height above the ground and in proportion to the length of the tested player (where the height of the device above the ground is determined according to the length of the research sample members), then the player stands facing the device, and when it is prepared to start, a flash and sound will appear Standby, and when the buttons start to glow, the player turns off the lights with his favorite hand or with both hands according to the location of the light, and so on until the time prepared for the test is completed, and the number of responses within (60 seconds) appears on the main screen, and the recorder records the score obtained by the player The laboratory, then the device is reconfigured to test another player.
Registration method:
The laboratory score appears on the device screen, represented by the number of responses within (60 seconds), and the recorder records the score in the special form for this test, as shown in Figure(2)

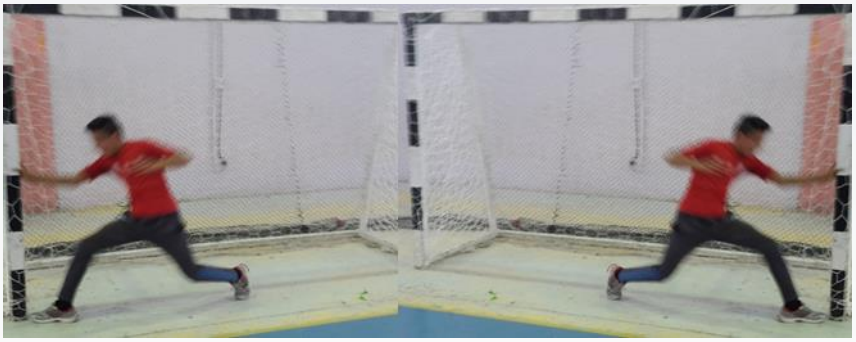

**Shape (2)** shows device) BATAK MICRO (to measure the speed of the motor response of the arms

A test to measure the speed of the motor response of the two legs) Ahmed Mahdi Saleh 2008(
The objective of the test: To measure the speed of the motor response of the legs

**Tools :**Handball goal, 2 hand balls, 2 hand stopwatch, 2 small ball nets

## Description and Method of Performance

The goalkeeper (the laboratory) stands in the middle of the goal and at a distance of (5 cm) from the goal line, and is ready to perform with the word right or left, where the goalkeeper stabs the leg to the ground angles of that side required to reach the ball and touch it with the foot and then return to the initial readiness position in the middle of the goal Then repeat the challenge to the ball in the corner of the other side of the goal, then return to the initial position in the middle of the goal.



**Shape (3)** Demonstrates the speed of the motor response of the legs

## Registration Method

The laboratory is given three attempts, and the time taken from the beginning of the instructing is calculated to return to the main position in the center of the goal, where the best time is taken from among the three attempts.

agility test

-The name of the test :Run Zakzak) Mohamed Sobhi Hassanein 2003(

The purpose of the test: to measure agility.

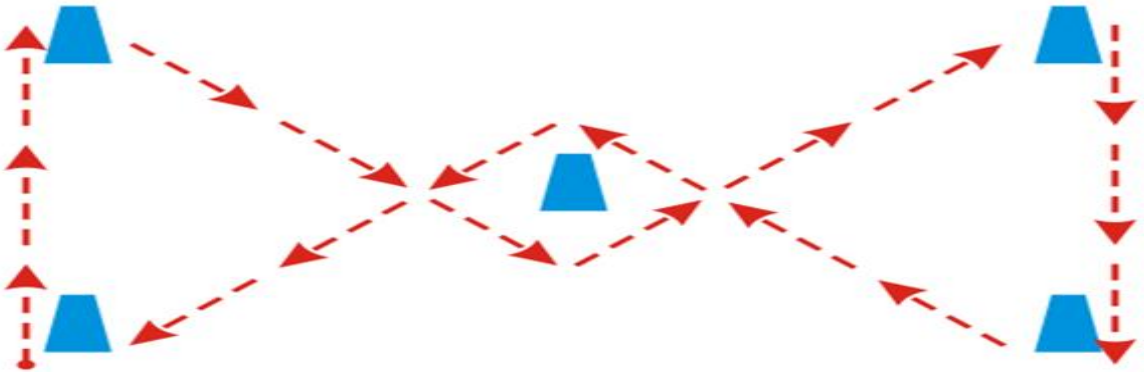
**-tools :**lists the number of five or five cones, an hour to received, a rectangle length (10 × 16 feet .( Establish four lists vertically on the ground in the four corners of the rectangle, and proves the fifth based in the middle of the rectangle.

**-Performance specifications: the** laboratory at the starting point stands (next to one of the four lists the specific rectangle, and when you hear the start signal being lab run Zkzak form ) 8 (in English and the laboratory performs this work three times until it reaches the starting point after the three sessions. See Figure.(4)

**-Test conditions:**

1. The specified itinerary must be followed, and in case of violation, the attempt is repeated after complete rest.
2. The legs should not be touched while running.
3. The laboratory must perform (3) complete courses.
4. The laboratory starts running from a standing position.

***Recording :**records the time during which the laboratory cuts the three cycles.



**Shape(4)**

Explains how to perform the agility test

**Vertical jump test (work)** to measure anaerobic ability) Mohammed Nasr El-Din Radwan, 1998(.

$$Anaerobic\ capacity\ =\ 2.21\ x\ body\ weight\ x\ jump\ distance$$

**Shape(5)**

## Demonstrates Anaerobic Capacity (Work) Test

**Pretest:**

The researchers conducted the pre - test on a sample totaling (6) goalkeepers ,and the presence of the team assistant on Thursday in the indoor hall of the sports activity in the province of Kirkuk ,at four o'clock in the afternoon ,as was the procedure for testing the study to obtain data for both) flexibility and motor speed Response to arms, legs, agility and anaerobic ability).

## The Exercises Used in The Research

A set of qualitative physical exercises that affect the variables that were targeted for the purpose of developing goalkeepers were used, as the exercises lasted for two months (two medium circles) and for eight weeks, and each week three training units, and the goalkeeper performs in each training unit four exercises aimed at developing some the components of physical fitness and anaerobic ability of goalkeepers as shown in Table(1)

**Table 1**
Shows The Exercises Used

| The form of exercise used | Maximum exercise time in seconds | The goal of the exercise | exercise name |
|---|---|---|---|
|  | 30 | kinetic flexibility | Flexibility exercises |
|  | | | |

| | | | |
|---|---|---|---|
|  | 30 | kinetic flexibility | |
|  | 30 | kinetic flexibility | |
|  | 10 | Kinetic speed of arms and legs | Kinetic speed exercises for arms and legs |
|  | 10 | Kinetic speed of arms and legs | |
|  | 10 | Kinetic speed of the legs | |
|  | 10 | General fitness multi-characteristic | fitness exercises |
|  | 10 | point fitness workout | |

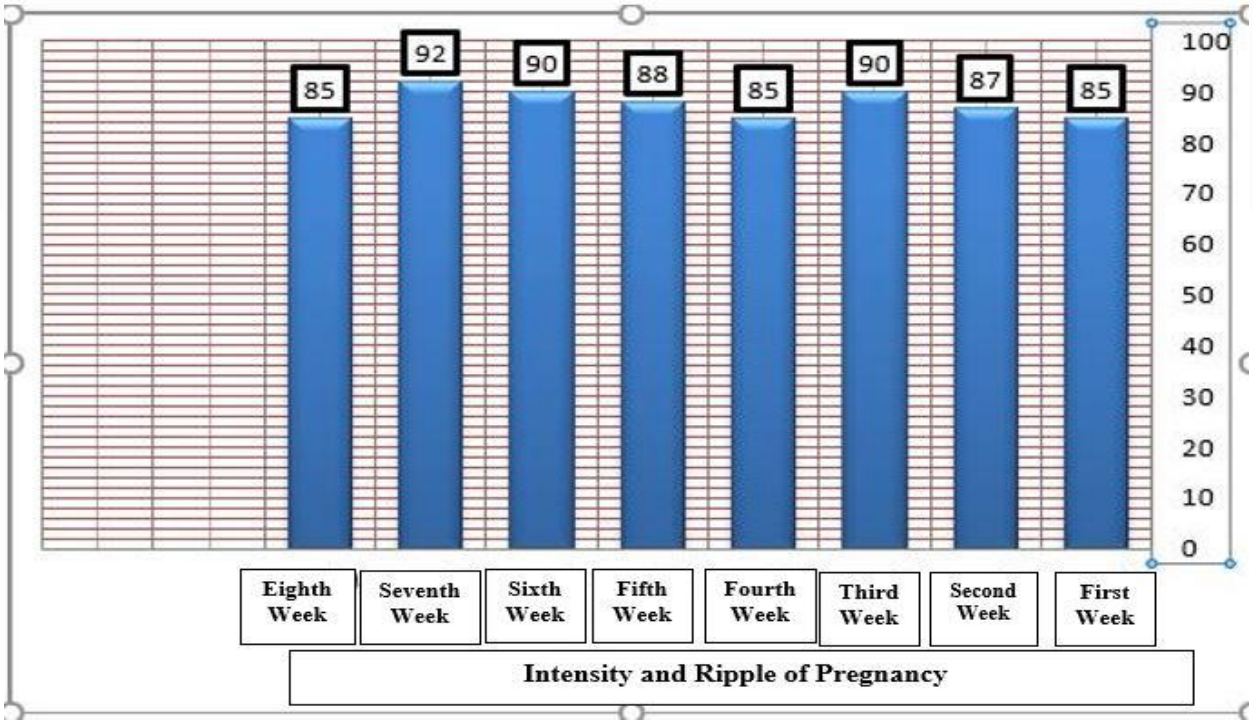



**Figure 6.** Shows the Intensity and Ripple of The Load Used

**Table 2**
A model showing the training load of the specific physical exercises used in the study

| target intensity% | Work time + rest time per second | Total rest per second | Total work per second | Total rest time per second | number of totals | Rest between repetitions per second | Repetition | Target exercise time in seconds | The purpose of the exercise |
|---|---|---|---|---|---|---|---|---|---|
| 90 | 927 | 603 | 324 | 120 | 3 | 27 | 4 | 27 | Kinetic Flexibility |
| 90 | 450 | 342 | 108 | 60 | 3 | 18 | 4 | 9 | Kinetic Speed of The Arms |
| 90 | 450 | 342 | 108 | 60 | 3 | 18 | 4 | 9 | Kinetic Speed of The Legs |
| 90 | 711 | 576 | 135 | 120 | 3 | 18 | 5 | 9 | Agility |
| 90 | 2538 | | | | | | | | Total |
| | 42.3 | | | | | | | | Total In Minutes |

# Results

**Table 2**
It Shows the Arithmetic Mean and Standard Deviation Between the Pre and Posttest of The Experimental Group for The Physical Variables

| post test | | pretest | | Measurement units | Variables |
|---|---|---|---|---|---|
| p | s | p | s | | |
| 2.081 | 52.666 | 1.527 | 41.666 | Tha | Flexibility |
| 6.245 | 120,000 | 4.9328 | 97.333 | Tha | Arm response speed |
| .0854 | 3.300 | 0200 | 4.1500 | Tha | The speed of response to the legs |
| 1.047 | 23.250 | 1.748 | 30.350 | Tha | agility |

**Table 3**
It shows the value of (t) between the pre and posttest of the experimental group for the physical variables

| difference type | The real moral | Calculated t value | q o | NS | Measurement units | Variables |
|---|---|---|---|---|---|---|
| moral | .003 | 19.053- | .577 | 11,000- | Tha | Flexibility |
| moral | .003 | 17,000- | 1.333 | 22.666- | Tha | Arm response speed |
| moral | .002 | 22,451 | .0378 | .850 | Tha | The speed of response to the legs |
| moral | .036 | 5.145 | 1.380 | 7.100 | Tha | agility |

# Discussion

When we observe Tables (2) and (3), we find that the differences between the arithmetic means, standard deviations, and the calculated (T) value have developed significantly, which showed significant differences in favor of the post-test for physical variables. It is commensurate with the players' abilities, which were applied in a scientific and codified manner, and this was confirmed by) stone.et al. 2015It is not just the amount of work or the number of repetitions completed that affects the training, but rather the appropriate sequence of training that produces superior results .Therefore, researchers find that training has several goals, some of which affect the process in the short term, and others that cause it to affect the goals in the long run. Continuing training in this appropriate sequence leads to a good development of the sample members.

On the other hand, the commitment Balhdd, sizes and frequencies and the quality of comfort affect significantly if they are used in proportion to the category that practice ,and from this perspective ,we find that training programs should be designed for the class to be developed variables by selecting the appropriate training load her and agree these words with what the) .Krzysztofik , Wilk, Wojdała , & Gołaś, 2019 (The training programs include selection of swans Rinat , groups, repetition and even the quality of comfort used, the programs provide details for redundancy and comfort and can include advanced techniques to reach the goal.

The use of speed and agility exercises brings joy, pleasure and excitement, and consequently leads to positive results. The reason is that these exercises are of a competitive nature, and this is consistent with) Sharkey, 2011 (as agility and speed exercises can be the most exciting element in the world of sports, as they require rapid contraction in muscle fibers to obtain acceleration." The researchers find that the exercises needed by the handball goalkeeper must be of a specialized, enthusiastic and fast nature because the goalkeeper's performance is always It is in this way that distinguishes him from the rest of the team members.

We find that the specificity of the exercise has an important and effective role in bringing the player to the best level of readiness .Flexibility exercises of a special nature, which are similar to the conditions of play or performance, and which make the goalkeeper enthusiastic to defend his goal with all he can, and this is consistent with) Fisher 1990 ,Peterson (that the principle of specificity in training means that training should contain movements similar to performance in the

exercised sports activity

**Table 4**
The arithmetic means and standard deviation between the pre and post test of the experimental group shows the anaerobic ability of handball goalkeepers

| Post Test | | Pretest | | Measurement Units | Variables |
|---|---|---|---|---|---|
| p | s | p | s | | |
| 5.017 | 119.365 | 3.023 | 104.795 | kg meter | anaerobic capacity |

**Table 5**
j between the value of (t) between the pre and post test of the experimental group for the anaerobic ability of handball goalkeepers

| difference type | The real moral | Calculated t value | q o | NS | Measurement units | Variables |
|---|---|---|---|---|---|---|
| moral | 0.000 | 15,735 | 2.067 | 14.589 | kg meter | anaerobic capacity |

## Discussion

And when we observe tables (4) and (5) regarding the results of the anaerobic ability of the goalkeeper, we find that the arithmetic means, standard deviations, and the calculated (T) value have shown significant differences between the results of the pre and posttests, and thus this ability has developed through the use of exercises that raise the associated aspect. On the functional side, which helps the goalkeeper to perform his duties in defending the goal in the best way, and this is consistent with) McCardel , 1996 (It is necessary to develop the capacity of not air as a factor helping athlete to carry different burdens of physical, because loads physical located on the individual through the exercise of physical activity leading to the events of functional changes in vital organs, and t count the efficiency of the body of Anaerobic important capabilities required by activity during performance .

Just as the movements of the arms are important for goalkeepers in the blocking operations and the performance of the skills related to the effectiveness of receiving, handling and other skills, the movements of the two legs are of great importance in moving quickly and covering a place during the various blocking operations, especially those that are from jumping, which is often called the (publishing) process) .Peter Robert , 1995 (As "the movements of the two legs are of great importance ,as many specialists agree that a good player is the one who is good at using his legs, so he knows when to run and when to jump" .

And the use of exercises characterized by agility, speed and strength, especially if they are similar and the type of performance of the goalkeeper, this achieves the desired goal, which most coaches want to reach, and this is consistent with) N suresh and PK kavithashri , 2021)Where he indicated that the participants in the exercises ( SAQ (Which is working to raise the physical side and the skill and similar to the type of physical activity their performance improvement in the physical and skill variables.

## Conclusions

The use of quality exercises that suit the individuals of the research sample has contributed to the development of flexibility and kinetic speed of the arms and legs, as well as the development of anaerobic ability well.

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