



## The Impact of the Design of Cooled Suit in the Recovery and Get Rid of Lactic Acid in the Handball Players in Karbala Club

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### Abstract

The game of handball rely heavily on anaerobic energy production system, and many of the sediments produced when working within the system to produce the necessary muscular contraction of energy, the most important (lactic acid), so the return of the player natural state has become one of the important things to familiarity with them from Before coaches and sports workers. Here lies the importance of research in the design of the suit refrigerated and their impact in the process of healing, which helps restore the player to its natural state, and as soon as possible. The research aimed to design suit refrigerated, and to identify the extent of the efficiency of the suit cooled in the speed of recovery and get rid of lactic acid after the first half and the game players Karbala club handball, and to identify the advantage experimental and control groups in the speed of recovery and get rid of lactic acid after the first half and the game players club Karbala handball. It was the use of the experimental method with the two groups equalizers experimental and control, and select the research community my players Karbala Sports Club handball category of applicants and the number 16 player, "was chosen as a sample of them-style comprehensive inventory after excluding (4) players who are goalkeepers and injured, were divided into Two equal groups Each group includes (6) players. The researchers concluded that the cooled suit is suitable for the recovery process and the elimination of the accumulation of lactic acid. The use of the cooled suit after the first half and the second run hastened the elimination of the accumulation of lactic acid and the healing, and the use of cooled formula is much better than the procedures used by the players and trainers in the process of recovery quick.

**Keywords:** *Design, Cooled suit, Recovery, Lactic acid and handball.*

### Introduction

The game of handball is a collective sport that has physiological requirements depending on the type of performance performed by the player, whether physical or skill, and these requirements play an important role, and is also a key indicator to determine how well the players performance through changes in the functional organs of the player.

In the heart, circulatory system, respiratory, nervous and muscular, depending on the type of training that must be characterized by the intensity of the training target. In the exercise of handball, the player needs biochemical energy to appear on the court in the form of physical exertion.

The energy of the handball player has two basic images as needed to dispense it, anaerobic bioenergy, the energy produced at the beginning of the training effort, And then less ability to participate as a main system followed directly by aerobic bioenergy and the rest of the duration of training and matches, and depends on the presence of oxygen to complete the chemical steps in the body [1].

Handball from the difference games that have developed a "clear" at the global level and this development but it is considered the result of efforts of the widespread interest in movie earned by specialists in the field of sports and the field of sports training where he entered the training methods and

scientific methods and training curricula to improve the quality of this game and achieve the best process achievement. Since the process of sports training in its precise concept requires the preparation of athlete physical preparation, skill, planning, mental and psychological to reach to the highest level in achievement, as well as training in handball, it is working on the development and development of the player and the coach can through the training of sports to increase the efficiency of the player in the performance requirements handball and power-dependent production of anaerobic system, this is due to the increased ability of the anaerobic energy production systems.

Many of the sediments are caused by the lack of energy needed for muscle work, especially lactic acid. Therefore, the player's return to the normal situation is important to be learned by trainers [2].

As a result of the nature and speed of performance in the game of handball, as the liberation of energy in accordance with the anaerobic system and leave the remnants of the emergence of fatigue, and decrease the physical abilities of players, especially the accumulation of lactic acid in the muscles and blood, so the problem of research was manifested in the lack of use of the means of recovery during games and exercises And the researchers and practitioners of this game so they saw the design of a refrigerated suit and use as a means of recovery and the elimination of lactic acid after the first half and the game, in an attempt to benefit from the rapid return of the natural situation as much as possible [3].

Here lies the importance of research in the design of the suit refrigerated and their impact in the process of healing, which helps restore the player to its natural state, and as soon as possible.

### Research Objectives

- Design of cooled suit.

- Know the proportion of lactic acid in Karbala player's handball before and after the effort.
- Recognition of the efficiency of the cooled suit in the speed of recovery and the elimination of lactic acid after the first half and the match for players Karbala handball club.
- Recognition of the superiority of experimental and control groups in the speed of recovery and elimination of lactic acid after the first half and the match for players Karbala handball club.

### Research Hypotheses

- There are significant differences in the accumulation of lactic acid before and after recovery and for the benefit after recovery for players Karbala club handball.
- There are significant differences between the experimental and control groups in the accumulation of lactic acid after recovery and for the benefit of the experimental group.

### Material and Methods

#### Research Methodology

The researchers used the experimental approach to suit the search problem.

#### The Research Community and the Sample

The research community was determined by the players of Karbala Sports Club in handball for the category of applicants (16) players. "A sample was selected in a comprehensive inventory method after excluding (4) players, goalkeepers and injured, and divided into two equal groups each group of (6) players. The researchers conducted homogeneity and equivalence of the two groups in physical measurements (length, mass, age of training) as well as other search variables as in Table (1) and (2).

**Table 1: Shows the homogeneity among the research sample in the mass, length and age of the training**

Variables	Measurement units	Mean	Median	STD.EV.	Skewness
Mass	Kg.	65.30	64.62	7.80	0.88
Tall	Cm.	181.2	180.9	4.25	0.41
Training age	Year	5.2	5.4	3.90	0.77

Since all values of the torsion coefficient for the variables (length, mass, training age) range from  $\pm 1$ , this indicates that all the

members of the sample are homogeneous in length, weight and age of training.

**Table 2: Shows the parity between the experimental and control groups in length, weight and accumulation of lactic acid**

Variables	Control group		Experimental group		(t) Value*	P value	Significant
	Mean	STD.EV.	Mean	STD.EV.			
Tall	182	5.9	180.3	3.6	1.2	0.350	Non sig.
Mass	65	9.5	66	8.5	2.21	0.310	Non sig.
Lactic before effort	1.347	1.85	1.133	2.45	0.29	0.282	Non sig.
Lactic after the first half	4.472	0.541	4.750	0.876	0.604	0.274	Non sig.
Lactic after the second half	7.761	0.724	7.086	1.038	1.193	0.115	Non sig.

\*The value of (t) calculates, below the indication level (0.05) degree of freedom (10).

### Hardware and Tools Used in the Search

- Cooled Suit.
- Lactate pro LT-710, a measure of the concentration of lactic acid in the blood, Japanese origin (3).
- Laptop type (hp).
- Note.
- Testing and measurement.

### Research Procedures

#### Description of the Tests used in the Research

#### Measuring the Concentration of Lactic Acid in the Blood:[4]

#### The Objective of the Test

Is to measure the non-oxygen capacity.

#### Tools Used

Three Lactate Pro LT-1710 devices manufactured by Japanese company Arakray (Fig. 3) and Annex 6 were used, three Abrasive drill (3), Check Strip (3) Calibration Strip, 3 Test Strips, medical cotton, sterile materials, auxiliary team, 4 hand balls, registration form.

#### Performance Description

A formal match is played. The level of lactic acid concentration in the blood is measured after the first half and the second half of the game. The telemetry is given after 8 minutes of the first measurement.

The researcher followed the following steps for testing

Configure the device to work by

- Put the Check Strip, and then remove it.

- Put the Calibration Strip, and then remove it.

- Put the Test Strip, and install it into the device.

Dry the finger to withdraw blood, preferably finger index, and then sterilized sterile materials.

Ting ling the tip of the finger by means of the needle drill with the device.

After the blood is out of the finger, a drop of blood is placed on the measuring tape installed in the device.

The device will display the sound (ringtone) after which the device will start counting down from (59 seconds) to (one second) to show the measurement result on the screen of the device in a unit of measurement is (m.moll / L).

#### Registration

The reading that the device shows after the measurement for each laboratory is recorded in the registration form.

#### Pilot Study

The pilot study was conducted on Sunday, 1/3/2015 and at 4:00 pm in the closed martyr hall in the holy province of Karbala to control the method of using the device to measure lactic acid, and how to organize the work in terms of blood sample and the mechanism of placing the three tapes of the device and time (3) players were tested outside the sample to conduct the experiment.

#### Pre-test

The pre-test was carried out on the research sample and with the assistance of the

auxiliary team at the Kufa Sports Club Hall. The test was conducted on Thursday 5/3/2015.

### Main test

The researchers tested the cooled suit on the research sample on the first day of the assembly (intensive), which was held on the club hall of Kufa sports, after the lactic was measured in the tribal test immediately after the first half and the end of the second half, and wear it for eight minutes while listening to the directions of the coach (Between the two halves) after being equipped by the team filled with ice bags covering the muscles of the chest, abdomen, back, biceps, forearms, hip, thighs and legs, after the expiration of this period is measured after the test and install the results of the tests in a form prepared for this purpose, The players played

warm-up exercises before going into the second half. The test after the game was the length of wearing the suit goes a little to reach (10) minutes and then the measurement of lactic after.

### Post-test

The post-test was carried out on Thursday 5/3/2015. The researcher followed the same procedures used in the tribal testing in terms of the tools used in the measurement, the method of implementation and the supporting team in order to avoid the variables that may affect the results the exams.

### Result and Discussion

Presentation and analysis of the results of pretests and post of the two sets of research and discussion

**Table 3: Shows the mean and standard deviations of the concentration of lactic acid in the blood before and after a period of recovery and the value of (t) calculated the level and type of significance for the control group**

Measurement	Pre-test (After effort)		Post-test (after recovery)		(t) Value*	P value	Significance
	Mean	STD.EV.	Mean	STD.EV.			
Lactic after the first half	4.472	0.541	3.984	0.516	3.536	0.003	Sig.
Lactic after the second half	7.761	0.724	6.624	0.450	4.476	0.001	Sig.

\* Below the level of significance (0.05) degree of freedom (5).

Table (3) shows the statistical indicators of the results of the tests in the tribal and remote measurement of the research variable that the members of the control group underwent. The results showed that the values of the computational circles for all the variables were lower in the post-test than the tribal test. There was a significant change

between the tests and for the benefit of the dimension, since these variables have an inverse value, the lower the arithmetic mean the better the level. This is indicated by the levels of significance as they were less than the level of significance (0.05) for both halves, indicating that there are significant differences between the two tests.

**Table 4: Shows the mean and standard deviations of the concentration of lactic acid in the blood before and after recovery, the calculated value of (t) and the level and type of significance of the experimental group**

Measurement	Pre-test (After effort)		Post-test (after recovery)		(t) Value*	P value	Significance
	Mean	STD.EV.	Mean	STD.EV.			
Lactic after the first half	4.750	0.876	2.892	0.492	5.370	0.000	Sig.
Lactic after the second half	7.086	1.038	5.167	0.324	6.190	0.000	Sig.

\*Below the level of significance (0.05) degree of freedom (5).

Table (4) shows the statistical indicators of the results of tests in the tribal and remote measurement of the research variable that the members of the experimental group underwent. The results showed that the values of the computational circles for all the

variables were lower in the post-test than the tribal test. There was a significant change between the tests and for the benefit of the dimension, since these variables have an inverse value, the lower the arithmetic mean the better the level. This is indicated by the

levels of significance as they were less than the level of significance (0.05) for both halves, indicating that there are significant differences between the two tests. The researchers attributed the reason to taking a period of rest after the effort works to get rid of the causes of fatigue and work on recovery by removing some of the accumulation of lactic acid in the muscles and blood and transferred to the heart or kidneys or liver or skin, which confirmed (Mohammad Hassan Allawi and Abu Alaa Ahmed) that the elimination of the body of lactic acid during the period of recovery and return to normal way, "several methods, including the use of fuel by the muscles of the heart, or oxidation of the same muscle or in other tissues, or transmitted to the liver to be converted to a class, Lactic with urine and sweat.[5] In addition, the load of the training is lead to fatigue and then the body to get rid of these effects during the period of recovery and thus the desired adaptation occurs.[6] Amrallah

said that the effort exerted by the player affects the organs and organs of the functional body, and then shows fatigue and a gradual decline in the level of functional capacity of these devices due to the accumulation of waste and consumption of energy sources, which necessitates the need to give the player a period of rest to recover healing (to get rid of these wastes). [7] The process of taking the appropriate rest and associated with one of the means of recovery works to find a significant difference between the tests of tribal and remote in the concentration of lactic acid, as the state of relaxation accompanying the cooling method served as an external assistant facilitated the flow of blood through the blood vessels, so was removed lactic acid and converted to claykogen.[8]

### Presentation and Analysis of the Results of Meta-tests for the Two Sets of Research and Discussion

**Table 5: Shows the mean and standard deviations of the concentration of lactic acid in the blood after the period of recovery and the calculated value of (t) and the level and type of significance of the two research groups**

Measurement	Control group		Experimental group		(t) Value*	P value	Significant
	Mean	STD.EV.	Mean	STD.EV.			
Lactic after the first half	3.984	0.516	2.892	0.492	3.423	0.003	Sig.
Lactic after the second half	6.624	0.450	5.167	0.324	5.875	0.000	Sig.

\*Below the significance level (0.05) degree freedom (10).

Table (5) shows the statistical indicators of the results of the remote tests of the lactic acid concentration variable for the two research groups (experimental and control), which represent the nature of the acid concentration after the end of the period of recovery. The results showed that the values of the experimental mean of the experimental group were better than the control group. There was a significant change between the two groups for the benefit of the experimental group and for both halves. This is indicated by the significance levels, which were less than the significance level (0.05), indicating significant differences between the two groups.

The researchers attribute the reason that when the player covers his body in the cooled suit, the ice cold works to shrink the blood vessels located under the skin and blood vessels in the muscles and around the

muscles and push the blood inside which contains the residues of energy and waste, including lactic acid inward to the heart and the heart pump The second time around the body to the functional organs such as liver, kidney, brain and other functional devices to get rid of them by converting them to sources of energy or to get rid of them and put them out of the body as is the case of lactic acid, where the largest part is converted to each.

The chemical changes do not occur in normal conditions. When the player does not use one of the methods of recovery, the residues are accumulated in the muscles and blood, but these studies occur very effectively with the use of ice. Only to treat aches, pain, swelling, inflammation, tissue damage and stimulate muscle cells to start repairing any rupture, but to accelerate and shorten the recovery period by eliminating waste, renewing energy sources and eliminating aches and pains. No inflammation in the muscles and provides

optimal conditions for your body to achieve recovery and recovery [9].

In addition to the accumulation of lactic acid increases after the second half, the end of the game for the first half because the player after the first half and after the rest did not get rid of full of lactic acid and then after the player makes another effort during the second half is originally has a percentage of acid in this is why there is a greater difference in the elimination of lactic acid after the end of the game, as confirms (Risan Khreibt and others), which is the result of the effort accumulated during the second half of the game.

"The intensity of the game is maximum and a repeat The rapid and high physical exertion during the game increases the activity of the circulatory system, increasing the amount of blood reaching the working muscles and thus increasing the resulting lactic acid. Which spreads outside the working muscles and in the bloodstream where it is transported to the liver, heart and other non-functioning muscle fibers [10].The use of the refrigerant

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