The effect of healing with water after exertion on some physiological and biochemical variables in football players

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Abstract
The purpose of this paper is to study is to prepare means of healing with water after the effort for football players and to know the effect of these methods of healing on the physiological and biochemical variables of football players, and the researcher assumed that there are statistically significant differences between the two pre- and post-tests and in favor of the post-tests, the researcher used the experimental approach and It was appropriate to the nature of the research, and the sample consisted of (10) football players who were deliberately chosen (Wasit football clubs first degree), the duration of the prepared program was (24) training units for two months with two units per week, as the total number of units was the program (24 units) and after the completion of the program, post-tests were conducted, and one of the most important conclusions they reached was that the use of water healing methods brought about a marked improvement in the functional and biochemical variables of football players, and the researcher recommended the need to use water healing methods after effort in the stage of special preparation because of its impact on reducing the recovery period for the player in this training period in football. Where the use of healing means with water among the members of the research sample of football players Wasit clubs first class.

Keywords: Physiological variables, Biochemical variables.

Introduction:
The scientific development that took place in all areas of life and in its various fields came as a result of correct scientific planning, as the scientific renaissance included the field of physical education and sports sciences, as the goal of it was the process of sports advancement to reach the best achievements in addition to preserving the athlete in terms of physical, physical and functional aspects of injury occurs.
The football event, which is one of the quick events that combines speed, strength and agility, is one of the popular sports that is characterized by a high diversified load, which this results in an increase in special abilities and the occurrence of muscle contractions and an increase in energy resulting from high loads, which will inevitably lead to fatigue and lack of availability opportunity constructive processes and thus leads to a weakening in the responses of functional organs and the accumulation of energy waste, and then a decrease in the level hence exposure injury.

In order to continue the training process in its correct forms, the researcher decided to research and investigate the use of a training method by means of water healing that helps to maintain work performance during training, through the use of means of water healing as a means of recovery, which can be used after the effort in the special training phase, as hospitalization is considered Water is one of the important preventive and healing means, which works to quickly get rid of fatigue, as well as provide relaxation and reduce muscle tension, which is of benefit to the handball athlete. Hence, the importance of the research lies in shedding light on the use of water healing in the swimming pool, which is a form of physical therapy through which it works to relieve pain and get rid of muscle tensions and spasms, and then remove the stress of the muscle and speed recovery from nervous muscle fatigue and thus return the athlete to The normal position in order to be able to complete the next training unit with vigour and vitality.

**Research problem:**

Healing with water after sports exercises, especially in football training, which is characterized by high training loads, is very important because it reduces the time period in healing recovery, and the athlete acquires better physical changes in the physiological responses of the athletic body’s organs and thus improves sports performance in football, as the use of Means of recovery works to make the athlete in the next training unit more active and effective. And this is a problem that must be stopped, as most athletes do not care much about this part, which is a second part of the training section, which is the use of water recovery in order to quickly remove the waste resulting from high effort and return the devices to the
normal situation that they were previously and thus continue to Training, raising the level of performance and progress in the level, as well as avoiding any kind of injury. Rehabilitation of the body to perform in the upcoming work actively and lively.

**Research objective:**
- Preparing water healing means for football players, Al-Kut clubs, first class.
- Knowing the effect of these exercises on some physiological and biochemical variables for football players in Baghdad clubs.

**Research hypotheses:**
- There are statistically significant differences between the results of the pre and post-tests in the physiological and biochemical variables of football players.

**Research fields:**
- Human field: Wasit Governorate first class club players.
- Time field: (21/7/2020) to (21/9/2020)

**Research methodology and field procedures:**

**Research Methodology:**
The researcher used the experimental method for its suitability with the research problem, as it is “the attempt of all the basic factors affecting the variable or dependent variables, except for one factor that the researcher controls and changes in a specific manner with the intention of determining and measuring its effect on the dependent variable or variables (1).

**Community and sample research:**
One of the things that must be taken into account in the field of research is to choose the sample that represents a real representation, as it is (the part that represents the community of origin, or the model that the researcher conducts the entirety of the axes on) (2), so the research sample was chosen in a deliberate way from football players For the sports season (2019-2020) players of Wasit football clubs (Al-Zaeem, Al-Suwaire, and Al-
Mazraa clubs) and if the number of the sample members was (15) players out of (75) players, and thus the percentage was (75%).

**Exploratory experience:**

The researcher conducted his first exploratory experiment on 7/18/2002 at exactly six o’clock in the afternoon in Wasit governorate on players from outside the original sample, as its purpose was to prepare the work and identify the time taken for the work of medical devices and the medical assistant team was able to know the procedures followed by Taking samples and conducting laboratory tests, as well as the researcher conducted a second reconnaissance experiment on 19/7/2020 at three o’clock in the afternoon in the Essaouira Sports Club on a sample of football players using and applying research tests and the purpose is to know the difficulties that the researcher may face when implementing the tests and knowing the time taken And control the assistant work team and the extent of understanding of the tests.

**Tests used in the research:**

Measurement of lactic acid in the blood

The researcher used a hand-held lactic acid analyzer, as the tester sits on the chair, whether he is in a resting position or after (5) minutes of exertion, “because it is suitable to ensure the transfer of lactic acid from the muscles into the blood” for the test taker holding the hand of the tester. The laboratory, specifically the fingers of the thumb, presses the used piercing and penetrates the skin, then extracts a drop of blood to be placed by the laboratory on the lactic acid measuring tape, which is placed in the measuring stones of the device, and after a period of (60 seconds), a sound signal is heard in the device and the appearance of the concentration of lactic acid on the device.

**Recording:** The reading shown by the device after the measurement is recorded for each sample in the recording form.

**Test concentration enzyme (CPK) in the blood**
Special tests are carried out to measure an enzyme in the blood, by drawing blood at rest time by the specialized biologist at the time of rest from the sample members, then they are placed in tubes with the player’s name written on them, and the tubes are kept in a cool box, then transferred to the laboratory, where the serum is separated from the blood and it is read by special devices, as the level of concentration of (CPK) in the blood is one of the best biochemical indicators to identify the level of excess creatine phosphate compound in the body.

**Test of percentage red blood cells (RBC)** (6)

**Test name:** Measuring the percentage of red blood cells in the blood.

**Purpose of the test:** Measuring the percentage of red blood cells in the blood

**Description of performance:** The test is performed by drawing blood from the members of the research sample by the specialized biologist before the effort in a state of rest, through the athlete sitting and placing the hand in a comfortable place and straightening it so that the hand is facing up and then linking the hand (by means of a compressor) with sufficient strength above the elbow with a distance Two fingers approximately between the elbow and the muscle until the vein is clear, and then the blood is drawn in an amount of (5 cc) and it is placed in a cooler box and then moved to the laboratory.

**Pulse heart rate test** (7)

**Purpose of the test:** To measure the pre-exercise pulse rate at complete rest.

Tools used: stopwatch, data recording form.

**Description of performance:** In order to obtain accurate results, the test was conducted for the athletes from a sitting position after each of them was given the number recorded in the form, as it is measured by palpating the pulse on the radial artery on the lateral side of the forearm directly in the ailed area of the Wrist, It can be measured easily through (10 seconds), then multiply the result by (6) to find the amount of pulse during rest.
Pre-test:

The pre-tests were conducted on the members of the research sample on 20/7/2020 at four o'clock in the afternoon in the Essaouira Sports Club, and they are as follows: the pulse was chosen at rest time, as well as the lactic acid test, red blood cell test, and cpk enzyme test.

Water healing program:

The water healing program was designed after reviewing many references and books and relying on the basic principles of healing methods, as well as the physiological and biochemical principles through which the researcher believes that they will have a positive impact on the research variables, which leads to the preventive variables of the current study, as well as commensurate with the period. The duration of the training program for athletes, as the hospitalization program consists of (24) hospital units and the time of each unit is (20) minutes, and it included a set of water healing methods inside a swimming pool with the following specifications (depth 1.20-2.60 m, length and width 35 meters 17 meters) at a rate of three units per week, Which was distributed to healing means with water, which aims to develop and strengthen the loose and weak muscle tissue, which helps the player from ruptures or injury, as well as to use healing methods for breathing that help provide sufficient oxygen to the athlete's body, which also speeds up the disposal of energy waste, as well as the use of means of healing. Healing with water, which helps to quickly restore the player’s body and thus quickly return the body to its normal position and be able to return to the next training unit. Water healing has been applied for a period of four weeks, three units per week (Saturday, Monday, Wednesday).

Post-tests:

After the completion of the implementation of the program of healing means with water, post-tests were carried out on the members of the research sample under the same conditions as the tribal tests on 22/9/2020.
**Statistical methods:** - The search data was processed through the Statistical Package for the Social Sciences (SPSS).

**Presentation, analysis and discussion of the results:**

Table (1) shows Arithmetic means, standard deviations, mean difference, deviation difference, calculated (T) value and the significant significance of the sample individuals

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Difference between arithmetic mean</th>
<th>Difference between standard deviations</th>
<th>T value</th>
<th>Level Sig</th>
<th>type Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>standard deviation</td>
<td>Mean</td>
<td>standard deviation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red blood cells</td>
<td>5,93</td>
<td>0,15</td>
<td>5,69</td>
<td>0,33</td>
<td>0,22</td>
<td>0,29</td>
<td>2,43</td>
</tr>
<tr>
<td>Heart rate</td>
<td>63,32</td>
<td>2,39</td>
<td>59,84</td>
<td>2,01</td>
<td>30,43</td>
<td>2,23</td>
<td>4,80</td>
</tr>
<tr>
<td>CPK</td>
<td>228,13</td>
<td>3,01</td>
<td>224,57</td>
<td>3,05</td>
<td>2,53</td>
<td>3,41</td>
<td>2,34</td>
</tr>
<tr>
<td>lactic acid</td>
<td>1,74</td>
<td>0,02</td>
<td>1,71</td>
<td>0,02</td>
<td>0,02</td>
<td>0,03</td>
<td>0,03</td>
</tr>
</tbody>
</table>

Level Sig (0.05) and a degree of freedom (10-1=9)

Table (1) shows the measurement of red blood cells in the research sample before using the healing program, where the arithmetic mean was (5.93) and the standard deviation was (0.15), and the value after using the program was the arithmetic mean of the pre-test reached (5.69) The standard deviation was (0.32) and the mean value for the differences was (0.32) and the standard deviation for the differences was (0.29) and the calculated T value was (2.43) which is greater than the tabular value at (0.02) and therefore the difference is in favor of the post-test.

As in the test of measuring the heart rate of the research sample before using the program, the arithmetic mean was (63.32) and the standard deviation was (3.3), while after using the program, the arithmetic mean before the effort was (59.86) and the standard deviation was (2.01). The arithmetic mean value of the differences was (3.43) and the standard deviation of the differences was (2.23), and the calculated T value was (4.80), which is greater than the tabular value at (4%), and therefore the difference is in favor of the post-tests.
While the results were an enzyme test (ck) in the blood, as the arithmetic mean value in the pre-test was (228.13) and the standard deviation was (3.01), but after using the program, the arithmetic mean in the pre-test was (225.57) and the standard deviation (3.05) and the mean value of the differences was (2.53) with a standard deviation for differences (3.41) and by extracting the calculated T value (2.32), which is greater than the tabular value at (5%), and therefore the difference is in favor of the post-tests.

In the test (lactic acid), the mean was (1.74) and the standard deviation was (0.02), and after using the preventive program, the mean value was (1.71) and the standard deviation was (0.02), and the mean value of the differences was (0. And the standard deviation of the differences was (0.03) and the calculated T value was (0.03) which is greater than the tabular value at (5%), and therefore the valid differences are the post-test.

Discuss the results:

Through table (1), the results indicated that there were significant statistically significant differences between the tribal tests and the tests after the use of water healing means in the variables of research and goodness. The posttest pre-tests, as the researcher attributes this to the dependence mainly on the water healing means for hospitalization, and the flexibility it contained. Preventive breathing and healing with a variety of water, which helped to quickly get rid of the waste resulting from high exercises . As the results showed the use of water healing methods, the characteristics and effects on the internal organs of the sample members were taken, and it helped to speed up the healing. As the process of restoring healing and rest after healing hours, especially healing with water with water means, is one of the very important things in the recovery process as it shortens the period of recovery and gives the athlete the best responses, adaptation, physical changes and function of the organs and organs of the body and thus leads to an improvement in the level of athletic performance, as well as Hospitalization operations of all kinds aim to make the player in the next unit more active and more effective in performance, as the use of healing with water has contributed to improving the work of red blood cells and also
caused a positive change in the pulse rate of the research sample, in other words that the use of healing with water affected the muscles of the lungs, heart and blood vessels, and worked to raise the amount of oxygen in the blood and work to pump it to the parts of the body, especially the working muscles, which led to raising the physical efficiency of the next unit, the speed of waste disposal and the speed of recovery. This is consistent with the study of (Sally Tawfiq), which indicates that the healing means with water leads to an increase in the efficiency of the circulatory and respiratory systems, which led to a decrease in pulse and blood pressure and an increase in physical efficiency, as the heart rate was within the normal range, and the researcher attributes that The reason for this is that the heart condition of the players was good due to the adaptation in the heart muscle resulting from the use of the healing program with prepared water, which contributed to the rapid return of the heart to its normal state among the sample members. This is in agreement with (Aqil Abdul-Hussein) that (the use of organized hospital means leads to a decrease in the heart rate during rest compared to people who do not exercise regularly, as well as the study (terry & werner) showed that the use of a water medium increases the resistance on the two devices The circulatory and respiratory system, which results in an increase in the requirements of oxygen consumption, but this effort leads to adaptations in the circulatory and respiratory systems.

As in the test (cpk enzyme concentration), it showed an improvement in the concentration of the enzyme and its return to its normal state after using the healing methods with water, as the implementation of the used healing methods, which included relaxation units and flexibility exercises, contributed to improving the work of the cpk enzyme and returning it to the natural state in the least time, as The use of water recovery methods that speed up the recovery process after high effort with high tension is one of the necessary things in the training process as it shortens the recovery period and gives the athlete the best responses and adaptations in the internal functional variables and thus improve performance, while the results of the (lactic acid) test were that The exercises prepared by the researcher had a clear impact on the results of the lactic test, as lactic acid is one of the important indicators to identify the improvement in performance, and when
using water healing, it helped to speed up the disposal of waste and energy production, the most important of which is lactic acid, which was found to be low on The sample of the research and this is thanks to its use to measure the ability of the athlete from the physical point of view (9).

Through what has been presented, the researcher believes that the use of healing means with water at this stage is beneficial in terms of psychological and physical, as well as may speed up the disposal of waste resulting from physical effort and thus help to return to the normal situation and reduce the incidence of injury, as well as the researcher attributes This improvement is due to a number of factors, including the nature of the water medium, which provides relaxation, reduced muscle tension, and increased range of motion as a result of buoyancy assistance by raising the working part. In addition, the water temperature plays a role in increasing the elasticity of the muscles. This result agrees with the study by Awad , Kaneda and Wang (3,8,10).

Conclusions and recommendations:

Conclusions:

- The healing program with the prepared water has clearly affected the speed of recovery of physiological and biochemical variables among the football players of the research sample.
- A noticeable improvement occurred in the results of the statistical processes and the validity of the post-tests of the sample members who used the means of healing with water.

Recommendations:

- Using means for training and healing with water during training, especially in the stages of special preparation, because of its effect in reducing the recovery period of hospitalization, especially for football players.
- It is necessary to conduct a similar study on other activities or different age groups.

Reference

- Aqil Muslim Abdul-Hussein: (2003); A comparative study of some physiological and morphological indicators of the heart according to energy systems, master's thesis, College of Physical Education, University of Baghdad.
- Feryal Sami Khalil: (2005); The effect of the two methods of recovery on some physical and functional indicators of runners who ran 10,000 metres, Master's Thesis, College of Physical Education, University of Diyala.
- Muhammad Ali Al-Qatt: (1999); Functions of Sports Training Members, Application Entry, Cairo, Arab Thought House.
- Muhammad Mahmoud Kazem: (2014); The effect of exercises using the rubber ropes device in developing the explosive power of the muscles of the legs and arms and some biochemical indicators of handball goalkeepers at ages (13-14) years, published research, University of Baghdad.
- terr-ann,s,&werner.w.h.2003.water aerobics.usa;Thomson learning Kaneda, k,hitoshi,w,daisuke,s,tamotsu.u,2007.lower extremity muscle activity during deep-water running on self-determined pace.Ibaraki3305-8574,japan
- Nouri Ibrahim Al-Shawk; Rafea Saleh Fathi: (2004); A detective guide to writing research in physical education. Baghdad.

Appendix (1)
<table>
<thead>
<tr>
<th></th>
<th>Water healing program</th>
<th></th>
<th>5 sec</th>
<th>12 sec</th>
<th>64 sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Walking in the water and breathing with maximum inhalation and maximum exhalation with the arms open and joined to the side, front and back</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Walk forward with arms raised high, outward to the side, and slowly breathe into the basin of water</td>
<td>3</td>
<td>5 sec</td>
<td>12 sec</td>
<td>64 sec</td>
</tr>
<tr>
<td>3</td>
<td>Standing bending and extending the knees together, then raising and lowering the legs forward alternately in the pelvis</td>
<td>3</td>
<td>8 sec</td>
<td>20 sec</td>
<td>60 sec</td>
</tr>
<tr>
<td>4</td>
<td>Lie on the surface of the water with a deep breath, then raise the legs high above the water</td>
<td>3</td>
<td>5 sec</td>
<td>12 sec</td>
<td>64 sec</td>
</tr>
<tr>
<td>5</td>
<td>Waist area, floating in the water on the stomach, and slowly performing chest swimming</td>
<td>5</td>
<td>8 sec</td>
<td>20 sec</td>
<td>120 sec</td>
</tr>
<tr>
<td>6</td>
<td>Leaving a raft and floating from a standing position and performing the movement of the bicycle with the legs and rotating the arms outward</td>
<td>5</td>
<td>8 sec</td>
<td>20 sec</td>
<td>120 sec</td>
</tr>
<tr>
<td>7</td>
<td>Pushing the edge of the pool with the legs and gliding on the back</td>
<td>5</td>
<td>8 sec</td>
<td>12 sec</td>
<td>72 sec</td>
</tr>
<tr>
<td>8</td>
<td>Pushing the edge of the pool with the legs and gliding on the stomach</td>
<td>5</td>
<td>8 sec</td>
<td>12 sec</td>
<td>72 sec</td>
</tr>
<tr>
<td>9</td>
<td>Putting on a raft and gliding in the water, then floating on the back with the body outstretched (20 sec), then squatting (20 sec)</td>
<td>5</td>
<td>10sec</td>
<td>10 sec</td>
<td>160 sec</td>
</tr>
<tr>
<td>10</td>
<td>Holding the raft with the arms and gliding on the belly in the water</td>
<td>5</td>
<td>10sec</td>
<td>6 sec</td>
<td>72 sec</td>
</tr>
<tr>
<td>11</td>
<td>Hold the raft with your arms and glide on your back in the water</td>
<td>5</td>
<td>10sec</td>
<td>6 sec</td>
<td>72 sec</td>
</tr>
</tbody>
</table>