



The effect of an aquatic training program on the efficiency of rehabilitation junior football players

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Abstract:

Presently, there's a consistent rise in the demands placed on the training and competitive engagements of young athletes. Consequently, there's a growing necessity to employ increasingly efficient methods to facilitate swift athlete recovery and enhance their performance. Utilizing diverse recovery techniques, especially in the training regimen of young footballers, is gaining prominence. This piece explores the efficacy of aquatic training and its influence on the recovery phase of football players.

Keywords (rehabilitation, aquatic training, junior football players)

تأثير برنامج تدريبي مائي على كفاءة تأهيل لاعبي كرة القدم الناشئين
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خلاصة:

في الوقت الحاضر، هناك ارتفاع مستمر في المتطلبات المفروضة على التدريب والمشاركة التنافسية للرياضيين الشباب. وبالتالي، هناك ضرورة متزايدة لاستخدام أساليب فعالة بشكل متزايد لتسهيل التعافي السريع للرياضيين وتحسين أدائهم. إن استخدام تقنيات التعافي المتنوعة، وخاصة في نظام تدريب لاعبي كرة القدم الشباب، يكتسب أهمية كبيرة. تستكشف هذه القطعة فعالية التدريب المائي وتأثيره على مرحلة تعافي لاعبي كرة القدم.

الكلمات المفتاحية (التأهيل، التدريب المائي، لاعبي كرة القدم الناشئين)

Introduction:

the researchers note, The connection between fatigue and recovery processes is the physiological basis of continuous and long-term work of the body with physical and sports exertion. The use of different means and methods after training and competitive loads is considered part of athletes' training [2].

Identifying post-match recovery methods in young soccer players is key to improving soccer performance. Competitive football causes severe exercise-induced muscle damage (EIMD), persistent myalgia (DOMS), chemical changes and neuromuscular changes [6]. The busy match schedule in elite football leads to



fatigue and poor performance in subsequent competitions due to lack of recovery time [3], so it is essential to have a clear understanding of a player's recovery during these short periods of match congestion [4], and also determine the balance between training and recovery to achieve the required adaptations in athletes.

Although recovery techniques are currently considered a hot topic, the impact of various recovery strategies on youth soccer players remains under-investigated in the scientific literature.

There are two types of normalization of the player. Passive rest, which is a complete rest from exercise, and active rest, where you do low-intensity exercise. Active recovery is an exercise technique with a lower intensity than your usual exercise (such as swimming or jogging) with the aim of speeding up recovery [5]. Active recovery is important for a number of reasons, including reducing fatigue and improving blood flow to muscles and joints for better recovery. Active recovery occurs immediately after exercise during the recovery phase, such as a slow jog after a run. It may also include techniques such as massage and self-myofascial release using foam rollers.

The recovery benefits of swimming include low-impact, full-body exercise with plenty of ways to move all muscle groups and joints that you might not be able to do on land.

As part of this study, a water training program was developed aimed at active recovery of football players.

1- Purpose of the study

The aim of the study was to examine the impact of a 6-week strength training regimen on enhancing aquatic training in young football players.

2- Method and Procedure:

The experimental method was used

2-1 Research Sample:

An experimental investigation was undertaken to assess the influence of aquatic training technique in football. Participants comprised football players aged 17-19 years from the Diwaniya football club. The study involved 10 players in both the experimental and control groups selected from this club.



Control tests were conducted both before and after the pedagogical experiment to gather quantitative data on the technical proficiency of the athletes. Prior to implementing the training program, initial assessments were performed to gauge the athletes' proficiency in executing lateral throws. Following the completion of the pedagogical experiment, subsequent control tests were conducted to assess the presence or absence of positive changes in performance.

2-2 Tools and equipment used in the research:

- football stadium
- Footballs
- Metric tape measure
- Signs
- Colored adhesive tape
- A football goal with accuracy test squares on it
- Photography cameras
- Pool trining

2-5 main experiment

2.5-1 Pretest:

With the help of the work team, members of the two study groups were tested on Friday and Sunday at 5 pm at the Diwaniyah Club Stadium and were tested on the two variables of the study (aquatic training).

2-5-2 Training Curriculum:

After completing baseline testing, participants in the experimental group participated in a six-week program (three times per week).

The following exercises were used as part of the preparation:

- - Classic 100m with one kick and two kicks..
- 100-meter classic backstroke;
- swimming 100 meters, breathing every three with your arms, and then every five strokes;
- 50m backstroke freestyle leg rotation: It is important to use only leg movements to rotate back to your stomach approximately every 7 seconds.

Next, perform the following exercises twice:



- 50 m swim with dolphin kicks
- 50-meter breaststroke swim with arms and dolphin movements
- 100m breaststroke with enhanced arm stretching

Completing the workout

- 50m freestyle swimming
- 50-meter classic backstroke.

To evaluate the influence of the developed training system in water on the recovery efficiency of football players, an experimental study was conducted.

1. Sample PWC170. In the PWC170 test, there are two patterns. The first is: the increase in heart rate during muscle work is directly proportional to its intensity, and the degree of increase in heart rate during any physical activity is inversely proportional to the functional capabilities of the muscle. It is an indirect measure of physical performance. The basis of the test is to determine the intensity of physical activity at which the heart rate reaches 170 beats / min, that is, the level of optimal functioning of the circulatory system.

2. The data obtained are assessed on the basis of the relative values of the PWC170 indicator, which are calculated as the quotient of dividing the absolute values per kg of body weight. The higher the PWC170 values, the higher the physical performance.

2. Harvard step test. The theoretical basis is the physiological pattern according to which the duration of work at a pulse of 150-170 beats/min and the rate of heart rate recovery after performing such physical activity quite reliably characterize the functional capabilities of the cardiovascular system and, as a consequence, the level of general physical performance of the body.

2-3-2 Post-test:

Following the implementation of the training curriculum components, the researcher administered post-tests for both the experimental and control groups. Performance data was collected under identical conditions to those of the pre-test.

2-6 Statistical means:

The statistical package was used to analyze the study data

3- Present, analyze and discuss the results:



3-1 Introduction and discussion of the pre- and post-test results of relevant proficiency tests.

Participants completed the number of repetitions and sets presented in Table 1 for each of the aquatic training exercises.

(Table 1)

Results of tests on the for-strength training during the six-week protocol of impact in the experimental and control groups

The results of the study at the initial and control stages are presented in the table

Tect	Group	First stage	Control stage
Sample PWC170	experimental	17,2±0,75	17,9±0,52
	control	20,4±0,82	18,2±0,58
Harvard step test	experimental	72±6,34	73±7,12
	control	81±7,2	74±7,46

Consequently, from the primary diagnosis results, it can be inferred that both groups exhibited average recovery rates. Following the program implementation, control tests were conducted using identical methods, indicating an enhancement in the restoration process efficiency within the experimental group. A high level of improvement in selected parameters has been shown during repeat diagnosis. No significant changes were observed in the control group.

To identify the significance of differences, the Wilcoxon T-test was used, which showed the presence of statistical significance in the experimental group (Temp =11.2** at $P \leq 0.05$). However, no significant differences were found in the control group.

4.1 Conclusions

The swift recuperation of athletes during both training and competitive periods holds significance in enhancing sports performance effectiveness. Consequently, a water training regimen was devised for young footballers, targeting the acceleration and enhancement of the recovery process. Over a span of 6 months, the experimental group underwent the training program, which encompassed specialized swimming sessions lasting 20 minutes. Meanwhile, the control group adhered to the standard program. Analysis of the control diagnostics outcomes revealed a statistically notable upsurge in the efficiency of the recovery process



within the experimental group, whereas no significant alterations were noted in the control group.

4.2 Recommendations

1. When preparing young football players, rehabilitation must be meticulously planned, considering the nature of their activities, the athletes' functional condition, and the distribution of training and competitive burdens.
2. Employing high-intensity water training can significantly enhance the effectiveness of the recovery process.
3. Key exercises applicable in training young football players in water comprise breaststroke incorporating dolphin leg movements, short-distance freestyle swimming,

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