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THE EFFECT OF CROSS FIT TRAINING ON SOME PHYSICAL AND PHYSIOLOGICAL ABILITIES AND THE ACHIEVEMENT OF 400-METER MEN'S RACE

Dr. Wael Abdullah Hussein Al-lami
Al-Qadisiyah University, College of Physical Education and Sports Sciences. Iraq
wael.abdullah@qu.edu.iq

Abstract
The introduction of the research dealt with identifying the effect of CrossFit training on some physical and physiological abilities and the achievement of 400 meters for men, as the research sample consisted of an elite group of players from the Army Sports Club who won advanced positions in the official Iraqi athletics championships. The number of sample members was (10) players who were deliberately selected from the research community and were randomly divided into two groups, with (5) for the control group and (5) for the experimental group, as the researcher used the experimental method, which is considered the closest to obtaining results, and the application of the method took (10) weeks with two training units distributed during the week, and the results of the study showed that the application of the CrossFit training program had a positive effect on developing the physical characteristics of the legs as well as some physiological variables (resting pulse, effort pulse) and also a noticeable development in the digital level (achievement). The researcher recommended the necessity of using this type of CrossFit training and including it in training units because of its effective impact on developing players in various sports.

Keywords: CrossFit, physical abilities, physiological abilities, achievement, 400m runner.

Introduction

Physical fitness is one of the important elements in sports training, as it is relied upon to develop and grow beginners or professionals. "Physical fitness is defined as the ability to perform a muscular work or motor task in a satisfactory manner [1]", "Muscular strength is considered one of the important pillars of physical fitness, as muscular strength is one of the most important physical qualities that, along with speed and endurance, form the backbone of these competitions, and the level of its development determines the level of achievement" [2]. Sports training through exercise and all its forms is the most disruptive to the body's internal environment, as most of the functional responses that we notice during physical effort, from increased heart rate to increased breathing times and energy conversion processes, as well as what happens in the body after performing physical exercises, such as pain in the muscles and joints, etc., are all manifestations of these disorders. "The imbalance in the body's internal environment resulting from the effect of physical exercises leads to the occurrence of the phenomenon of chronic adaptation, whereby the body becomes able to change the work of

vital functions in a way that reduces the negative effect of physical exercises and at the same time increases the ability of functional systems to tolerate a greater effect without causing a major imbalance or imbalance in the body's internal environment" [3]. Here the importance of the research in applying a standardized training method according to (CrossFit) training on runners of the 400-meter freestyle event for youth emerges.

Research Problem:

The CrossFit training system is considered one of the modern methods that have spread recently and which includes competition between two or more people in performance, as it crystallizes on the use of various training with high loads and intensity through resistance exercises with high weights compared to other training methods. As the researcher is one of those interested in the field of training in athletics, he found that some training specialists do not mix this type of method, which forms the main structure in building the elements of physical fitness, which led to weakness in performance and the level of the game, which prompted the researcher to apply these trainings as an attempt to raise the digital level of the 400-meter freestyle event for youth.

Research objectives: The study aims to

1. Create a standardized training method using the (CrossFit) training method.
2. Identify the impact of the method and the digital achievement of 400-meter freestyle players for youth.

Research hypotheses:

There are statistically significant differences between the average of the pre- and post-measurements of the control and experimental groups in favor of the experimental group.

Research areas:

1. Human field: Players of the Army Sports Club, youth category.
2. Time field 1/7/2023 to 20/9/2023.
3. Spatial field: The stadium of the College of Physical Education, University of Baghdad and the Youth and Sports Stadium in Baghdad.

Definition of terms:

CrossFit exercises: Functional movements that are constantly changing and are performed with high intensity[4].

Sports achievement: Reaching the maximum level of elements that determine raising the level in the effectiveness of the specialty with high readiness for the required level.

Research Methodology and Field Procedures:

Research Methodology:

"The method by which a person reaches, in a scientific, logical and coordinated manner, from reality, to realize a fact of the facts that he was ignorant of, and it is the way to acquire certain knowledge" and according to the nature of the problem chosen by the researcher, where he

saw fit to use the experimental method with two groups (control and experimental) to suit the nature of the problem under study.

Research Community and Sample:

The research community was determined from the players of the Army Sports Club for Athletics, youth category, numbering (10) runners, in the intentional manner, as shown in Table No. (1).

Table No. (1)

shows the equivalence between the experimental group and the control group

probability of error	z value	U	Total Ranks	Average Ranks	Control group		Experimental group		Unit of measure	Variables
					a	s	a	s		
0.621	0.664	9.00	36.00	5.00	0.100	17.10	0.900	17.990	Year	Age
0.822	0.131	11.00	26.00	5.44	0.281	4.130	0.152	4.988	Year	Chronological
0.518	0.699	10.00	32.00	5.90	5.150	180.21	4.896	179.1	cm	Training age
0.408	0.798	9.200	32.60	7.10	11.01	67.895	5.877	68.10	kg	Height

Information collection methods:

First: References and previous studies:

The researcher reviewed many references and previous studies that are related to the study in order to benefit from them, as he addressed most of the studies that are interested in the field of 400-meter running effectiveness, as well as the most important physical variables affecting the achievement of short-distance runners.

Second: Devices and tools:

(Restameter device for measuring lengths, stopwatch, free weights, registration form, medical balls, electronic scale for measuring weight, indicators, obstacles, boxes).

Tests used in the study:

The researcher reviewed scientific sources and previous and similar studies to measure the variables under study and was able to reach:

First: Physical tests: They are defined as "the abilities that are related to the physiological state of the various body systems.[5]" The researcher conducted the following tests:

1- Broad jump with a medicine ball[6]

Test name: Broad jump with a medicine ball.

Test objective: To measure the explosive strength of the leg muscles.

Tools: Medicine ball and measuring tape.

Test specifications: The tester stands in a rounded position holding a medicine ball weighing (1 kg) between the knees, where he jumps forward high and returns to the initial position.

Measurement: The distance between the starting point (the starting point) and the landing point (the heel of the foot) is recorded, where the distance expresses the tester's ability to jump forward high.

2- Standing knee flexion and extension test during 20 seconds [7]:
The purpose of the test: To measure the distinctive speed strength of the legs.
Tools: A whistle, a stopwatch.
Test specifications: The tester wakes up from the 50-meter starting line and upon hearing the whistle, he starts running at maximum speed to the end point.
Measurement: The number of times the tester flexes during the test time is recorded.

Second: Digital level and physiological tests:
1- Resting pulse
- The purpose of the test: To measure the number of heartbeats of the tester during the rest period.
- Tools: An oximeter to measure the number of heartbeats.
- Test specifications: The player's number of heartbeats is measured during rest.
- Measurement: The player's heartbeats are recorded during the rest period.

2- Effort pulse
- The aim of the test: Measure the tester's heartbeats during the effort period.
- Tools: Oximeter to measure the number of heartbeats.
- Test specifications: The player's number of heartbeats is measured during physical effort.
- Measurement: The player's heartbeats are recorded during the effort period.

3- Digital level (achievement)
- The aim of the test: Measure the time to run 400 meters.
Tools: Whistle, stopwatch.
Test specifications: When the whistle is heard, the player starts running to cover a distance of 400 meters in the shortest possible time.
Measurement: The time to cover a distance of 400 meters is recorded.

The exploratory experiment:
It is known as "the test experiment before preparing it in its final form more than once [8]", where the researcher conducted the exploratory experiment on the research sample in order to give a realistic picture that clarifies the vocabulary of the tests used that serve the research. The pilot experiment was conducted on a sample outside the original sample, which is the runners of the Najaf Sports Club in Najaf Governorate, on (2-3/7/2023 AD), consisting of five runners. The aim of the pilot experiment was to: -
- Ensure the validity of the devices.
- Ensure the suitability of the tests used in the research.
- Ensure the suitability of CrossFit training for the level of training status of the sample under study.
- Know the assistant staff on the work mechanism.

Preliminary News:

The researcher conducted the pre-test for the research sample under study in the physical and physiological variables on Monday (7/7/2023 AD) until Thursday (9/14/2023) and in the case of two training units per week.

Post-test:

The post-test was conducted on Friday and Saturday (9/15/2023 AD) at the Youth and Sports Stadium in the capital, Baghdad.

Statistical methods:

The researcher used the statistical package ((Spss in processing the results extracted from the research under study.

Display and analysis of the research results:

Table No. (2) Significance of the differences between the averages of the pre- and post-measurements in the variables under study for the control group

Significance level	(T) calculated	af	f	Post-test f		Post-test		Tests
				a	s	a	s	
Random	**4.66**	**0.865**	**0.196**	**0.966**	**1.96**	**0.986**	**1.98**	Broad Jump with Medicine Ball
Random	**3.965**	**0.768**	**2.845**	**0.756**	**18.210**	**2.536**	**18.100**	20 Second Standing Knee Flexion and Extension Test
Random	**3.889**	**1.769**	**3.856**	**8.99**	**72.110**	**3.01**	**72.100**	Resting Pulse
Random	**4.65**	**1.869**	**5.55**	**10.98**	**170.40**	**10.50**	**170.5**	
Random	**3.661**	**4.588**	**16.201**	**5.88**	**52.50**	**5.85**	**52.48**	Exertion Pulse

Table No. (3)

The significance of the differences between the averages of the pre- and post-measurements in the variables under study for the experimental group

Significance level	(T) calculated	af	f	Post-test f		Post-test		Tests
				a	s	a	s	
spiritual	**5.86**	**1.056**	**0.289**	**1.288**	**2.10**	**1.031**	**1.96**	Broad Jump with Medicine Ball
spiritual	**5.526**	**1.3352**	**4.7568**	**96237.**	**25.2000**	**3.7318**	**17.200**	20 Second Standing Knee Flexion and Extension Test
spiritual	**4.860**	**2.00**	**4.100**	**9.88**	**71.2**	**2.99**	**72.00**	Resting Pulse
spiritual	**5.01**	**2.70**	**6.70**	**11.26**	**170.30**	**10.54**	**171.9**	
spiritual	**4.956**	**4.00**	**15.100**	**6.25**	**50.89**	**5.96**	**52.55**	Exertion Pulse

Table No. (4) The significance of the differences between the averages of the pre- and post-measurements in the variables under study for the experimental and control groups

Significance level	(T) calculated	af	f	Post-test for the control group		Post-test for the experimental group		Tests
				a	s	a	s	
spiritual	**5.86**	**1.056**	**0.289**	**0.966**	**1.96**	**1.288**	**2.10**	Broad Jump with Medicine Ball
spiritual	**5.526**	**1.3352**	**4.7568**	**0.756**	**18.210**	**96237.**	**25.2000**	20 Second Standing Knee Flexion and Extension Test
spiritual	**4.860**	**2.00**	**4.100**	**8.99**	**72.110**	**9.88**	**71.2**	Resting Pulse
spiritual	**5.01**	**2.70**	**6.70**	**10.98**	**170.40**	**11.26**	**170.30**	
spiritual	**4.956**	**4.00**	**15.100**	**5.88**	**52.50**	**6.25**	**50.89**	Exertion Pulse

Discussion of the results:

In light of the results of the statistical analysis and by reviewing the results in the table above, it is clear that there are significant differences between the pre-tests and post-tests in favor of the latter, as there has been a noticeable development in the physical tests, "The training methods are a specific plan that represents how to test and organize the training contents [9]". As the level of explosive strength of the legs has grown as shown in the table, as well as a development in the characteristic of strength characterized by speed as shown in the knee flexion and extension test, which is considered the basis for the effectiveness of the 400-meter freestyle race. At the level of physiological variables, it is clear from the table above that there has been a noticeable development, as there are statistically significant differences between the averages of the pre- and post-tests. The researcher attributes this improvement in the physiological variables and the digital level to the effectiveness of the proposed training using the Cross Fit method, which the researcher adopted in the study, which was according to the standardized scientific foundations: "This type of training is considered to involve the laboratory performing constantly changing functional movements that are implemented with high intensity [10]", as all the methods used in the training unit that are concerned with developing a type or form of training are linked to a clear goal. It is noted that the heart rate level drops at rest, which is evidence of increased heart efficiency among players, as well as a drop in pulses during effort, as this is attributed to the fact that the heart rate of trained people is greater than that of untrained people, during or after the effort [11].

Conclusions and recommendations:

First: Conclusions

1- The proposed training program using the Cross Fit training method has a clear positive effect on developing the physical tests, physiological tests, and digital achievement of 400-meter freestyle runners.

2- The development of explosive strength of the legs, endurance, and respiratory capacity has a clear effect that was reflected in the development of the achievement of the sample members of the 400-meter freestyle runners.

Second: Recommendations

According to the data provided in this research and through accurate statistical analysis and clear scientific foundations, these recommendations are shown:

1- Using Cross Fit training breaks the boredom barrier among runners that appeared when the training volume increased, thus increasing motivation among runners.

2- Using this type of training is considered a good way to develop the special abilities of runners.

3- The necessity of conducting similar studies on different samples.

References

1. Ahmed Yousef Mutab: Sports Training Skills, Amman, 2014, p. 99.
2. Saleh Shafi Al-Aidhi: Sports Training Ideas and Applications, Damascus, Dar Al-Arab, 2011, pp. 21-22.
3. Attia Mohsen. Scientific Research in Education, 1st ed., Dar Al-Manahj for Publishing and Distribution, Amman, Jordan, 2010.
4. Ali Samoum Al-Fartousi and others. Measurement, Testing and Evaluation in the Sports Field, Dar Al-Kutub and Documents, Baghdad, 2014. P. 238.
5. Saeb Al-Obaidi and Abdul Salam Abdul Razzaq. 1200 Exercises, Bayt Al-Hikma, Baghdad, 1998, p. 335.
6. Muhammad Jassim Al-Yasiri. Theoretical Foundations of Physical Education Tests, Dar Al-Kutub and Documents, Baghdad, Dar Al-Diaa for Printing and Design, 2010, p. 39.
7. Abdullah Hussein Al-Lami. Scientific foundations of sports training, Baghdad, Al-Tayf Printing, 2004, p. 303.
8. Abdullah Hassan Al-Lami and others. Introduction to sports training, Baghdad, Al-Rafah Printing Press, 2022, p. 207.
9. Dyson, G. The Mechanism of Athletes, University of London Pres Ltd, 1971, p. 39
10. Greg Glassman.Cross Fit, 2007.P3
11. Steven T. Devor, Journal of Strength and Conditioning Research. National Strength and Conditioning Association.2013.