

## THE EFFECT OF USING A SUGGESTED TRAINING PROGRAM ON DELAYING TIREDNESS AND ACHIEVING 100M BACKSTROKE SWIMMING

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### Abstract

The purpose of this paper is to developing a training curriculum for 100m backstroke swimmers, and identifying the effect of the prepared training curriculum on the special variables for delaying tiredness and achieving the 100m backstroke swimming. The researchers used the experimental method to suit the nature of this research. The research sample was determined by the intentional method, and they are the swimmers of the national backstroke team, among the applicants, who numbered (5) swimmers, so the study relied on one experimental group only. One of the most important results reached by the researchers is that: The researchers concluded that the prepared curriculum had a positive impact on the development of the selected biochemical variables, as well as the development of the 100-meter backstroke completion time. One of the most important recommendations recommended by the researchers is that: The researchers recommend the necessity of studying other biochemical variables and functional variables that have an impact on the development of achievement and applying these variables to other age groups.

**Keywords:** Training. Sports. Backstroke swimming

### Introduction

Swimming occupies a distinguished position among other sports, and being dependent on achievement, and as we know that achievement cannot happen unless it includes special and scientific training that is codified in the implementation of training loads of intensity, size and intensity in order to reach the physical and physiological adaptation of the swimmer's body, and backstroke is one of the types of swimming that needs To its own physical capabilities, especially the 100m backstroke event, which requires training with a high intensity that exceeds 80%, and as a result of tiredness and oxygen consumption, changes will occur in the muscle and lactic acid will accumulate. Therefore, the researchers resorted to using a prepared training program and knowing the extent of its effect on some biochemical variables, including the LDH enzyme, and knowing its importance in accelerating recovery time to delay tiredness among 100-meter backstroke event swimmers.

### Research objective

- Developing a training curriculum for 100m backstroke swimmers.
- Identifying the effect of the prepared training curriculum on the special variables for delaying

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tiredness and achieving the 100m backstroke swimming.

### Research hypotheses

- There is a statistically significant relationship between the pre and post-tests for the variables of delaying tiredness and completing the 100m backstroke swimming.

### Research Methodology and Field Procedures

#### Research methodology

The researchers used the experimental method to suit the nature of this research. It is that intellectual organization overlapping in scientific studies, or it is the intellectual steps taken by the researchers to solve a specific problem (Ali Malik Hameed Al-Shouk . 2008).

#### Community and sample research

The research sample was determined by the intentional method, and they are the swimmers of the national backstroke team, among the applicants, who numbered (5) swimmers, so the study relied on one experimental group only.

#### Means of collecting information, the researchers used the following methods

- Sources and references.
- Tests and measurements.
- International information network.
- SPSS statistical program.

#### Used equipment's

- Stopwatch (2).
- Bowler's watch.
- Anticoagulant (heparin).
- Sterile plastic syringes.
- Antiseptic materials - cotton - plaster.

- Special glass tubes for placing blood.
- Ice box.
- O<sub>2</sub> meter.

The researchers used the following variables to indicate tiredness delay

- Resting pulse.
- Pulse after exertion.
- The percentage of oxygen saturation O<sub>2</sub> in the blood.
- Recovery time.
- LDH enzyme.
- Swimming 100m backstroke.

#### Research Tests

Tests are one of the scientific methods that can show the validity of any training program, as they are "a means that requires methods of research, measurement, observation, experimentation, investigation, interpretation, and design." (Jawad. 2017).

- Measuring the pulse at rest and after stress (Polar watch) it is done by wearing a Polar watch that measures the pulse and gives the required number
- Measurement of oxygen saturation. It is done by placing an oxygen-measuring device with the index finger.
- Measuring the recovery time (Polar watch) and is done by wearing a Polar watch that measures the recovery time and gives the required number.
- Measuring the concentration of the enzyme lactate dehydrogenase (LDH) in the blood, and it is done by drawing blood from the swimmer, after wrapping the rubber band on the upper arm, then the needle is inserted accurately into the vein, and the necessary blood for measurement is drawn.

**Table 1:** Shows the statistical results of the pre and post- tests of the research variables Significant at 4 degrees of freedom and 0.05 level of significance.

Variables	Pre-test		Post-test		arithmetic mean of difference	standard deviation of differences	T value	level Sig	Type Sig
	Mean	standard deviation	Mean	standard deviation					
backstroke achievement 100m	593,40	3,286	465.20	49.70	2,21	0.50	9,88	0.001	Sig
Pulse at the rest	71.40	0,89	67.20	0,83	14,40	5,17	6,22	0,003	Sig
Pulse after effort	185.40	10,28	171	15,16	4.20	0.44	21	0,000	Sig
Oxygen saturation rate	95	1,87	96,80	1,48	1,80	1,09	3,67	0,011	Sig
LDH	593,40	3,28	465,20	49.70	128.20	52,51	5,45	0,005	Sig
recovery time	7,20	1,48	5,40	0,54	1,80	1,09	3,67	0,011	Sig

### Test of backstroke achievement 100m.

- The purpose of the test: measuring the time of covering a distance of 100 meters at full speed.
- Tools used: stopwatch, whistle, registration form.
- Description of the performance: The swimmer stands on the start board while taking the stand-by for that, and when the whistle is heard, the swimmer jumps into the water, trying to cover the distance at maximum speed until reaching the final edge of the mentioned distance.
- Laboratory degree: minute, second and their parts, as well as the length of the distance traveled.

### Search procedures

The pre-tests were applied on 28/12/2022 after which the training program prepared (Appendix 1) by the researchers was implemented using the high-intensity interval training method, relying on her experience and training and physiological resources. Abu El-Ela said that most of the changes resulting from the training occur during (6-8) weeks. Each week contained (3) training units, with a total of (24) units, and they were in the period from (2/1/2023 until 25/2/2023). Moreover, the method of raising the training intensity was used in the first, second and third weeks to be reduced in the fourth week and raised in the fifth, sixth and seventh week and lowered in the eighth week and the approved intensity was from 80-95% of the maximum intensity performed by the swimmer.

The curriculum was adopted on dividing the swimming distance into a quarter, a half, and three quarters, and rest was adopted on the return of the pulse to (110-120) pulse / minute according to the system of the interval training method for rest, after which the post-tests were applied on 27/2/2023.

### Results and Discussion

After obtaining the results, they were processed statistically, as shown in table (Table 1).

It is clear to us from table 1 that there are significant differences in all research variables, and the researchers attributes this to the effect of the prepared training program that was implemented by the research sample for a period of 8 weeks, and this is consistent with Abu Al-Ela quoting from "Wilmore" It occurs during the first period of application of the exercises, about 6-8 weeks (Ahmed. 1996) Also, " mention that "the effectiveness of stomach exercises appears by continuing training on them for two months" (Muhammad and Abd al-Hadi). Also, Devereux mentioned that the heart muscle responds quickly to training loads, so regular sports training for a period leads to morphological and physiological changes in the circulatory system, and this depends on the type of exercises performed (Derereux RB , Reichech MD. 1997). Also, training using exercises or distances that are more difficult than general exercises and easier than competition exercises helps to improve motor performance and achievement (Habib. 2017). Through our observation of Table (1), we note the significant differences in the pulse at rest This is confirmed by "it is mentioned that "the regular and rationed training program leads to a decrease in the resting heart rate and after the effort, so repeating the work for a period of weeks helps the players to perform more easily, as adaptation occurs in the body and the training is less energy." (Ibrahim Salama.2000).

Also, with regard to the results of the pulse after the effort, the researchers attributes the significant relationship to the prepared program, as the pulse rises after the effort, and this is confirmed by "as they mention that the heart rate increases during the physical effort, and that this increase is directly proportional to the intensity of the exerted effort". (Wilmore, J.H, costill, D.L. 2005). In addition, "The increase in the number of heart beats is evidence of an increase in the efficiency of the respiratory and cardiac circulatory system

under high intensity without feeling tired."( Ali.2017). We note from the table the section of moral oxygen as a result of training, and this is consistent with, "The standardized training increases the ability to extract more oxygen from the blood." (Abdel-Wahhab .1995)

Also "mention that training develops vital organs such as the heart and lungs, which affect the player's performance" (Mukhtar and Hammad 1989). This is confirmed by " who mentions that the pulse rate is one of the most important factors for regulating the size of the cardiac impulse during the different levels of training load, so that the better the training condition of the player, the lower the pulse rate and the more economical the performance with effort, and this helps the coach to determine the intensity of the appropriate load, as the heart rate correlates with the rate of oxygen consumption and the anaerobic sample" (Ali Fahmy Al-Beik. 1997). As for the LDH enzyme, whose result was also significant, the researchers saw that the prepared approach had a clear effect on the positive effect of this enzyme, as the adaptation that occurred in the athlete's body, increased his activity, fitness, and the ability to continue performing this is thanks to the development of the LDH enzyme, which works to get rid of lactic acid and convert it to Profit, increasing the elimination of lactic acid improves the speed of recovery time, as anaerobic energy is the main energy in short-distance swimming and the 100-meter backstroke swimming is one of these swimmers. This is consistent with the study of " who concluded that accuracy is necessary in selecting training items" (Peter Maud and Carl Foster 2004). In addition, using the interval training method that improves anaerobic capacity.

And also, " mentions (that continuous physical activity increases the elasticity of the muscles and surrounding tissues, and that the performance of exercises of gradual difficulty in the physical elements improves the player's recovery time and enables him to resist tiredness during competitions" (Foran, Bill 2002).

From table 1, we note the development that took place in the achievement of the 100m backstroke swimming, and the researchers attributes this to the program prepared and subject in a correct scientific manner, which led to the development of the physical and functional capabilities of the research sample, which affected the development of the achievement of the 100m backstroke. In this regard, mentions. "The training curriculum inevitably leads to the development of achievement"(Ismail. 1996), this agrees with "A that "the direct use of the interval training method during the training of researchers leads to an improvement in blood circulation, breathing and speed endurance" (Fahmy and Al-Beik. (1984). And also, according to that "regular and programmed training, the use of rationed types of intensity in training, and the use of optimal rest between repetitions lead to the development of achievement."( Majeed. 1997).

### Conclusions and Recommendations

#### Conclusions

From the aforementioned, the researchers concluded that the prepared curriculum had a positive impact on the development of the selected biochemical variables, as well as the development of the 100-meter backstroke completion time.

#### Recommendations

The researchers recommend the necessity of studying other biochemical variables and functional variables that have an impact on the development of achievement and applying these variables to other age groups.

#### References

- Ali Malik Hameed Al-Shouk (2008). The Effect of Special Exercises on Developing Speed Endurance and Its Relation to the Achievement of (200)m Freestyle Swimming, Journal of the College of Physical Education, Volume 20, Number 2.

- Baida Abd al-Razzaq Jawad. (2017). The Effect of Speed Endurance in the Circular Style on Some Physiological Indicators and the Achievement of Running (400m) Freestyle for Juniors, *Journal of Physical Education*, Volume 39, Issue 2, p. 357.
- Abu El-Ela Ahmed. (1996). *Training Load and Athletes' Health*, (Cairo, Dar Al-Fikr Al-Arabi), p. 32.
- Harith Mushir Muhammad and Muhannad Abd al-Sattar Abd al-Hadi. (2021). The effect of special exercises using the modified (xtra-man) device in developing the speed of motor response for advanced basketball players, *Journal of Physical Education*, Volume 33, Issue 2, p. 159.
- Derereux RB, Reichech MD. (1997). Echocardiographic entricular mass in men Anatomical Validation of the method of circulation, p.8.
- Haider Abdel-Amir Habib. (2017). The Effect of Special Exercises for Developing the Accuracy of the Operating Arm and the Skill of the Front Straight Strike for Table Tennis Beginners, *Journal of Physical Education*, Volume 39, Issue 2, p. 388.
- Ibrahim Salama. (2000). *Applied Applied Measurement in Physical Fitness* (Alexandria), Knowledge facility.
- Wilmore, J.H, Costill, D, L. (2005). *Physiology of sport and exercise*, 3rd ed, Champaign IL, Human kinetics.
- Iyad Abdel-Latif Ali. (2017). The Effect of Using the Model Breathing Mechanism in Developing the Shoveling Performance to Restore Healing among the Junior Team Rowing Players, *Journal of Physical Education*, Volume 39, Issue 3, p. 321.
- Farouk Al-Sayed Abdel-Wahhab. (1995). *Sports, Health and Physical Fitness*, Cairo, Dar Al-Shorouk.
- Hanafi Mahmoud Mukhtar and Mufti Ibrahim Hammad (1989) *Physical Preparation in Football*, Cairo, Zahran Publishing House.
- Ali Fahmy Al-Beik. (1997). *Foundations and Training Programs for Referees*, Alexandria, Knowledge Manshaat.
- Peter Maud, Carl Foster (2004): *Physiological Assessment of human fitness* University of Texas Elbas.
- Foran, Bill (2002): *High performance sport conditioning*, Human Kinetics, USA.
- Saad Mohsen Ismail. (1996). The Effect of Training Methods for Developing the Explosive Power of the Legs and Arms in the Accuracy of Long Shooting by Jumping High in Handball, PhD thesis, College of Physical Education, University of Baghdad, p. 98.
- Ali Fahmy and Muhammad Al-Beik. (1984). *Training Campaign*, 1st edition, Alexandria, p. 20.
- Risan Khraibet Majeed. (1997). *Applications in Physiology and Sports Training*, 2nd Edition, Amman, Dar Al-Shorouk for Publishing and Distribution, p. 481.

Weeks	Weekly training volume	Training unit	unit training volume	training area	intensity	Rest
Second	2.500m	1	750m	2× (7×25) 15minute Rest 2 × (4×50)	%85	Rest between repetitions, return the pulse to 120 pulse / minute and between sets
		2	900m	2× (6×75)		
		3	850	4×100Rest 3×150		
Six	2350m	16	700m	2× (3×10) 5minute Rest 2×50	%90	Rest between repetitions, return the pulse to 120 pulse / minute and between sets
		17	950m	2× (4×100) 5minute Rest 2×75		
		17	950m	2× (4×100) 5minute Rest 2×75		

**Appendix 1:** Shows some of the vocabulary of the training units prepared for the prepared training program.