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the impact of the simulation method according to the difficulty of the training unit on some physiological and biochemical indicators of young riders

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The importance of raising the level of functional adaptation of cyclists in terms of raising the physiological and biochemical aspect using the appropriate training, which is the simulation training method, is that the pregnancy is formed according to the difficulty of the training units in order to suit the external physical load and have an impact on the internal physical load and suitable for the young people. The research problem was for each game that has special training that helps to create functional adaptations for the purpose of achieving a functional level that produces a physical aspect that helps to achieve sports achievements. Therefore, using the correct and appropriate method will achieve sports achievements. While the most important

Research Objective: - Identifying the impact of the simulation method according to the difficulty of the training unit in the variables under study for young riders.

Accordingly, the **conclusions were drawn** :- The simulation method, according to the difficulty of the training unit , achieved the training objectives by raising the level of some of the variables under study for young riders.

It was recommended to adopt **the** simulation method according tothe difficulty of the training unit because it achieved the training objectives by raising the level of some physiological and biochemical indicators for young riders.

1- Introducing the research

1-1 Introduction to the research and its importance:

The prosperity and development experienced by civilized and developed peoples was not born of chance, but stemmed from scientific progress and the scientific sciences provided by scientists of various specializations that help to flourish and develop .

This development and prosperity also included the sports aspect, which scientists seek to raise the sports level and achieve various sports achievements through their scientific research on the sports aspect in various sciences supporting training, including research on the physiological, biochemical and other important sciences that study the player's condition and help to know the extent of his functional adaptation and how to develop it and provided using specialized training methods appropriate to the quality of sports events.

The simulation training method is important and essential in the training of events that require training to be identical to the atmosphere of competition and works to adapt the player to the important physiological and functional aspect, such as the game of grades, which is an individual game and requires adaptation to the distances of races and also has the specificity of training that is not done using a bicycle during training, so simulation training is the most appropriate for it.

Therefore, (Ahmed Fathi Al-Najjar , 2016) believes that this type of training " encourages the creation of generations of leaders and is one of the most important training means that support creativity , and through which advanced theories can be applied in a way that includes the availability of

opportunities for success at the highest levels and mastery when practicing work " (1 : 44).

While (Nayef Elham Al-Rajhi , 2021) " represents the simulation in which the situation in which the participant practices the work he is trained on , and other situations that may appear during the practice of this work , and also means the preparation of the site and the environment for training so that the real environment is similar to the subject of training " (11:85) .

Therefore, simulation training using a bicycle helps with physiological and biochemical changes due to the long distance of the race, and this is important for the adaptation of the player and the achievement of results. Here, (Amal Swaidan, Mona Al-Jazzar , 2007) "Sports technology is the technical tools and devices that are used to evaluate and examine the physical, physiological and mechanical aspects, as well as the development of performance aspects and so on in the field of education and training" (4 : 8).

Hence, the importance of research to raise the level of functional adaptation of cyclists in terms of raising the physiological and biochemical aspect using the appropriate training, which is the simulation training method, that the load is built according to the difficulty of the training units in order to suit the external physical load and have an impact on the internal physical load and suitable for the age group.

Research problem:

Each game has a special training that helps to create functional adaptations for the purpose of achieving a functional level that produces a physical aspect that helps to achieve sports achievements. Therefore, the use of the correct and appropriate method will achieve sports achievements. Therefore, the game of bicycles within individual games has special advantages and needs the difficulty of the training unit as it needs various speed exercises and during periods ranging from (3-4) hours without

rest for the purpose of covering distances up to (60-100) km. Therefore, it is considered a game of high physical effort and needs large and varied functional changes that help to adapt to pregnancy and high intensity. All these reasons are considered a research problem discovered by the researcher through the researcher's modest experience in the physiology of sports training as well as the game of bicycles. It was found that there is a fluctuating level in achieving sports achievements in cycling resulting from the lack of correct functional adaptation and oscillation of the physiological and biochemical level necessary to adapt to the atmosphere of competition, which made researchers use experimentation to train simulations .

1.4 Research Objective:

1- Identifying the impact of the simulation method according to the difficulty of the training unit in some physiological and biochemical indicators for young riders.

4. Research hypothesis

1-The presence of a simulation effect according to the difficulty of the training unit in some physiological and biochemical indicators for young riders.

1-5 Areas :

1-5-1 Human : Young cyclists of the club ...

1-5-2 Spatial : Club Bicycle Racecourse....

1-5-3 Zamani: Duration from 7/4/2024 to 11/6/2024.

Definition of concepts

Simulation training: "A training method based on training according to the maximum capacity of the race by specifying specific distances less than the distance of the race very close to the maximum intensity during official competitions" (2 : 179) .

2-Methodology for research:

2.1 Approach used: The empirical approach is best suited for this research in addressing the problem .

2-2 The research community and its sample: The research community was identified by the bicycle players of the club ..... The athlete is (14) players, while the research sample included (12) players who continue to train and have good competitions and results, and they constitute (85.71%) of the original community. The sample was divided into two equal groups, each group becoming six players . Table (1) shows homogeneity and equivalence.

Table (1) shows the homogeneity of the sample using the coefficient of difference and the equivalence of the control and experimental groups using the test (C) in the research variables

Measurement		Control Group			Experimental group			t-value	Level
		ds.	P...	The Difference	ds.	P...	The Difference		
Length (cm)		.165	1.421	0.859	165.2	1.64	992.	0.206	immaterial
Ağırlık (kg)		62.45	754	1.207	62.44	.865	1.385	.019	immaterial
Physiological variables	Sa02	80.42	1.33	653	80.51	1.54	912	0.09	immaterial
	Systolic blood pressure (mm Hg)	120	1.42	1.183	120	1.53	1.272	0.214	immaterial
	_END|||	78.21	0.86	1.099	78	0.96	1.229	.233	immaterial
	Hemoclobin/g	14.72	0.64	4.34	14.63	0.76	5.19	0.202	immaterial
Biochemical Variables	Calcium/ mg/100ml	9,14	0.76	8.315	9.12	0.44	4.824	0.05	immaterial
	Sodium/ mg/100ml	135.3	1.45	1.071	.135	1.6	1/181	0.113	immaterial
	Chlorine/	120/1	1.23	1.024	120.2	1.4	1.164	0.12	immat

	mg/100ml								erial

- (t) **Tabular = 1.812**

2-3 Means, devices and tools used:

2-3-1 Approved Means:

Referees

2-Tests.

2-3-2 Appliances and tools used:

1-Tools for blood withdrawal (syringe - tubes for keeping blood - centrifuge- cold box for keeping blood samples).

2-A device for measuring pressure.

3- 2 hobby bicycles

4-Training Racecourse

5-Tape to measure length.

Weighing scale big

2-4 Procedures used:

2-4-1 Research variables used :

The variables listed below related to the research and addressing a problem have been adopted and are necessary for bicycle players, namely :

-Physiological variables : (oxygen saturation – diastolic blood pressure – systolic blood pressure – hemoclobin)

- Biochemical variables .

2 - 4-2 Measurements used :

2-4-2-1 Measurement of physiological and biochemical variables:

For the research requirements in knowing the results of the variables, blood must be withdrawn from the players, which was conducted in the afternoon at (5,000) and analyzed in a laboratory for medical examination after being withdrawn by (5 cc) and placed in bottles and then in a special portfolio for the purpose of transferring it to the laboratory and analyzing it and knowing the required measurements.

2-4-2-2 Pressure Measurement :

A pressure gauge was used, which is a Japanese device that works on an electric battery that connects the belt to the upper arm and is turned on after the player sits in a chair with his hand on a table and the pressure gauge is read by a medical assistant specialist.

2 - 4-3 The exploratory experiment:

On 7/4/20 24, a pilot experiment was conducted on a group of players of the experimental group . The required training was applied for the purpose of rationing the training used (simulation) and the training load according to the difficulty of the training unit. The purpose of the experiment was to find out the difficulties, tools and how the devices work and ration the load.

2-5 Main Experiment :

2-5-1 Tribal procedures and measurements: done on 14/4/2024.

2-5-2 Simulation training method:

Exercises for the bicycle and dividing the distance of the former were developed for the purpose of knowing the time of each distance and in light of which the training is done in the simulation method with increased difficulty by calculating a special equation that is graded by the load by increasing the speed with the stability of the distance .

Total (Partial Intensity x Exercises)

Equation for calculating the difficulty of the training unit = (8 : 709)

Total Exercise Volume

The exercises were applied in the main section of the trainer's training unit for the experimental group at a rate of (3) units per week for a period of (24) training units. The period of special preparation and the intensity of the exercises, which ranged between (90% - 100%), was adopted. The size of the exercises was the measure in raising the intensity by increasing the number used. As for the rest between the

repetitions and the totals, the researcher relied on the pulse as an indicator , and the application began on 15/4/2024 and ended 10/6/20 24

2-5-3 Tests andmeasurements : Conducted on 11/6/20 24 .

2-6 Statistical means: Using the spss system in statistical treatments .

3-Presentation, analysis and discussion of the results:

Table (2)

Shows the values of (t) the differences between the results of the tests and the pre and post measurements

For the control group in the search variables

Measurements		Tribal		Dimension		Standard Error	t-value	level
		ds.	P...	ds.	P...			
Physiological variables	**Sa02**	**80.42**	**1.33**	.81	785.	**0.321**	**866**	**Legal**
	Systolic blood pressure (mm Hg)	**120**	**1.42**	119.23	1.33	**0.314**	**484**	**Legal**
	|||UNTRANSLATED_CONTENT_START|||ضغط الانبساطي الدم (مم/زئبق)|||UNTRANSLATED_CONTENT_END|||	**78.21**	**0.86**	77%	0.74	**.347**	**.507**	**Legal**
	Hemoclobin/g	14.72	**0.64**	15.74	**0.56**	441	**2.312**	**Legal**
Biochemical	Calcium/ mg/100ml	**9,14**	**0.76**	10.12	**0.78**	412.	**378.**	**Legal**

Variables	Sodium/ mg/100ml	**135.3**	**1.45**	136.41	**1.36**	0.531	**2.09**	**Legal**
	Chlorine/ mg/100ml	**120/1**	**1.23**	122	**1.42**	0.886	**.607**	**Legal**

Tabular (t) value = 2.015

Table (3)

Shows the values of (t) the differences between the results of the tests and the pre and post measurements

for the experimental group in the research variables

Measurements		Pre-Application		Post-Application		Standard Error	Calculated t-value	Significance level
		Q	W	s	W			
Physiological variables	**Sa02**	**80.51**	**1.54**	83.14	**1.52**	**0.995**	**643**	**Legal**
	Systolic blood pressure (mm Hg)	**120**	**1.53**	117	**1.34**	**867**	**3.667**	**Legal**
	|||UNTRANSLATED_CONTENT_START|||ضغط	**78**	**0.96**	44-76...	**0.75**	**0.774**	**2.571**	**Legal**

	الانبساطي الدم/مم)|||UNTRANSLATED_CONTENT_END|||(زئبق							
	Hemoclobin/g	**14.63**	**0.76**	647	**0.67**	1.22	**2.472**	**Legal**
Biochemical Variables	Calcium/ mg/100ml	**9.12**	**0.44**	11.86	**0.532**	0.868	**3.156**	**Legal**
	Sodium/ mg/100ml	**.135**	**1.6**	138–45	**1.41**	775	**3.92**	**Legal**
	Chlorine/ mg/100ml	**120.2**	**1.4**	124.85	**1.52**	1.345	**3.457**	**Legal**

Value (t) =2.015

Table (4)

Shows the values of (t) for differences in tests and post measurements **between the control and experimental groups in the research variables**

Measurements	**Control Group**		**Experimental group**		Calculated t–value	**Significance level**
	Q	W	Q	W		

Physiological variables	**Sa02**	.81	785.	83.14	**1.52**	352.	Legal
	Systolic blood pressure (mm Hg)	119.23	1.33	117	**1.34**	2.606	Legal
	|||UNTRANSLATED_CONTENT_START|||الدم ضغط الانبساطي/مم)زئبق)|||UNTRANSLATED_CONTENT_END|||	77%	0.74	44–76…	**0.75**	2.59	Legal
	Hemoclobin/g	15.74	**0.56**	647	**0.67**	889	Legal
Biochemical Variables	Calcium/ mg/100ml	10.12	**0.78**	11.86	**0.532**	4:123)	Legal
	Sodium/ mg/100ml	136.41	**1.36**	138–45	**1.41**	2.328	Legal
	Chlorine/ mg/100ml	122	**1.42**	124.85	**1.52**	2, 623.	Legal

Value (t) = 1.812

By observing Table (2) and (3), we found that there are significant differences in the research variables, and this is evidence of the existence of functional adaptations in the variables under study, as training has an impact due to repetition and uninterrupted continuation, and this is one of the basics and rules of training, as confirmed by (Marwan Abdul Majeed Ibrahim and Muhammad Jassim Al-Yasiri 2010) " The purpose and basic rule of training is to achieve the highest level of athletic achievement in the event or activity in which the player specialized" (10:22).

While (Muhammad Ali Al-Qod, 1999) believes that "the success of the training curriculum is measured by the progress of the player and the achievement of results by the type of sports activity practiced and through the skill, physical and functional

level achieved and this depends on the adaptation achieved by the athlete with the training curriculum that he applied" (9 : 12).

By observing Table (4), raising the level of the physiological and biochemical variables of the experimental group and the occurrence of good adaptation for the bicycle players. This is certainly due to the simulation training method and the use of difficulty in the training unit, as it sees (Muhammad Rida Ibrahim , 2008) "The success of the training is measured by the level of development of its components as the level of achievement increases according to the needs of the race " (8 : 164).

Physiologically, the training used has a major role in regulating blood functions and pressure, as it confirms (Qais Al-Douri and Tariq Al-Amin , 1989) that "the permeation of fluids between capillary vessels and spaces between tissue cells takes place through the walls of capillary vessels. This permeation depends on permeate pressure (osmotic) and water pressure, where permeate pressure works to pull and attract fluids from the spaces between cells to blood vessels" (7: 69).

In order to demonstrate the importance of hemoglobin, it plays a major role in maintaining the interaction of blood and relieving the increased acidity in athletes. It is necessary to measure it and indicate its development, as he believes (Editor & Granan 1988) that "hemoglobin has the power to unite and attract oxygen molecules and put them in an easily absorbed chemical form to be used in the oxidation of energy substances during athletic achievement" (12: 103) .

In terms of biochemical variables, including calcium, they are due to the training used and the simulation method, as (Fawzia Abdullah , 1983) indicates that"the trainee muscle is characterized by an increase in the amount of calcium and magnesium, which are necessary to activate the action of enzymes in the muscle, if calcium activates the adenosine triphosphate (ATP) surrounding the myosin in the muscle "(6 : 122).

With regard to sodium, the increase or decrease in the level of its concentration remains within the normal range of this important element and ranges between (136-155 mmol). The increase is not considered a pathological condition, but its decrease leads to a pathological condition, and this is in line with what Ahmed Ali Hussein mentioned in their studies and research. They reached an increase in the percentage of sodium in the volume of plasma after high intensity training (3:66).

As for chlorine, the high intensity of the difficulty of the training unit on the research sample was a reason for the increase in the percentage of chlorine, and that this increase in the level of chlorine is a state of adaptation to do muscle work, especially in high intensity exercises, and this is consistent with what was mentioned by (Talha Hussam Al-Din et al., 1997) "When training with high intensity, the body loses large amounts of water and ionized salts, and the most important of these ionized salts is sodium and chlorine and their concentration in sweat is about half of what it is in plasma" (5: 146) .

Conclusions and recommendations:

4.1. Conclusions

1-The simulation method according to the difficulty of the training unit achieved the training objectives by raising the level of some physiological and biochemical indicators for young riders.

2-Using the difficulty in the training module for cyclists helps to adapt to the conditions of the race and makes physiological and biochemical changes for the players .

|||UNTRANSLATED_CONTENT_START|||4-2 التوصيات

:|||UNTRANSLATED_CONTENT_END|||

1- Adopting the simulation method according to the difficulty of the training unit because it achieved the training objectives by raising the level of some physiological and biochemical indicators for young riders.

2- Emphasizing the use of difficulty in the training unit for cyclists as it helps to adapt to the conditions of the race and makes physiological and biochemical changes for the players .

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ANNEX

Sample training modules

Week : 1 **Severity: 90%**

Module : 1-2-3 **Total Time: 40-42 minutes**

Section	Time: In 1min	Exercises	Size	Comfort	
				Between duplicates	Between Totals
Chairman	2.42 3.24 4.23 6.23	- First Distance Race (400 meters) - 2nd Distance Race (800m) - Third Distance Race (1200 meters) - Fourth Distance Race (3000 meters)	Two. Three. Two. Three. 2X / 2 2X / 2	Pulse return 120-130 z/min E time 3D	RESP 110-120 z/min E time 4.-Dr