

THE EFFECT OF EATING BREAKFAST ON SOME PHYSIOLOGICAL INDICATORS AND DEFENSIVE SKILLS IN VOLLEYBALL

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Abstract

The purpose of this paper is to know the effect of breakfast on some physiological indicators in athletes, identify the effect of breakfast on the performance of defensive skills in volleyball for athletes, and comparing the effect of breakfast on some physiological and skill indicators between the two research groups. The researcher used the descriptive approach in the survey style, which suits the researcher's study and is appropriate to the nature of the problem. The research community was chosen by the intentional method, which is the students of the College of Physical Education and the Sports Sciences / University of Baghdad, the fourth stage, and they are (380) students. group (10 players) they were named group (A) who eat breakfast and group (B) who do not eat breakfast, where the researcher emphasized on a group of things, the most important of which is agreement on balanced and similar meals in types of food, quantity, One of the most important conclusions reached by the researcher is that eating breakfast in the morning has a positive effect on improving physiological indicators and defensive skill performance in volleyball, and one of the most important recommendations is to urge students or any group to eat breakfast to obtain the necessary energy to improve skillful and functional performance.

Keywords: Physiological indicators. Defensive Skills in Volleyball

Introduction

Many individuals, especially employees and students working in various fields, go out from the house to their work daily, and carry out their work and duties in a routine manner, and some of these individuals go out in the morning without eating breakfast. It is normal during the day and the body is in dire need of this meal in order for the individual to obtain the necessary energy to continue his daily work and tasks without complications that the individual may be exposed to because the body has spent a long period after seeing dinner or without this meal and then sleeps the night, especially in the winter because The night is long.

Since breakfast is one of the important meals that help the individual to carry out daily activities actively without feeling burdened and tired or other symptoms that may be exposed to such as headache, nausea, desire for the body, inability to engage in work or sports performance and the inability to focus.

And also the possibility of a weak pulse, feeling dizzy and feeling tired early during any physical effort, and because food is an essential thing for humans and is the main source of energy and it is similar to fuel for a car, it does not work if it runs out, and this is what happens to a person as well, he cannot continue his life in a way

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Natural if he feels hungry and lacks food and energy.

Food, as it contains vitamins, fiber and energy, is the main funder of the human body, from which it derives the necessary energy. A person who does not get good, balanced and sufficient food cannot continue to work and live in a better way, and the food, whenever it is balanced and healthy, at appropriate times and in sufficient quantities, will enjoy good health and obtain the necessary energy to continue working and to continue with good and accurate athletic performance.

And because the unhealthy and unbalanced food has negative effects on the individual, especially the athlete, which is reflected in his performance in the opposite way, the inability to perform well and the feeling of violence and early fatigue as a result of the decrease in energy in the human body, especially the athlete, as a result of continuous sports performance from early morning and for several hours, especially students of the Faculty of Physical Education and sports sciences.

Hence the importance of the research, emphasizes that students eat breakfast before coming to the university or even to the university, in order to obtain the energy necessary to perform the necessary vital tasks and perform well. Therefore, the researcher decided to study this topic and learn about the effect of breakfast on physiological indicators and the performance of defensive skills in volleyball.

Research problem

A problem appeared in the researcher's mind as a result of his work as a teacher in the College of Physical Education and Sports Sciences, and he noticed that the first and second lectures, which are (8:30 and 10:30) in the morning, and until the rest of the lectures after that, the students fall in the ability to continue the lecture, with full energy or at the same pace, Where the researcher noticed that many students show signs of fatigue and pallor in the face or some cases of fainting or extreme fatigue or abnormally high heartbeat or trembling of the arms or the body. Which:

1. Does breakfast have an effect on some physiological indicators?

2. Does breakfast have an effect on the performance of defensive skills in volleyball?

Research objective

- To know the effect of breakfast on some physiological indicators in athletes.
- To identify the effect of breakfast on the performance of defensive skills in volleyball for athletes.
- Comparing the effect of breakfast on some physiological and skill indicators between the two research groups.

Research hypotheses

- There are statistically significant differences between the two research groups in the effect of breakfast on some physiological indicators and in favor of the group that ate breakfast.
- There are statistically significant differences between the two research groups in the effect of a meal on the performance of defensive skills in volleyball and in favor of the group that ate breakfast.

Research Methodology and Field Procedures

Research methodology

The researcher used the descriptive approach in the survey style, which suits the researcher's study and is appropriate to the nature of the problem.

Community and sample research

The research community was chosen by the intentional method, which is the students of the College of Physical Education and the Sports Sciences / University of Baghdad, the fourth stage, and they are (380) students. group (10 players) they were named group (A) who eat breakfast and group (B) who do not eat breakfast, where the researcher emphasized on a group of things, the most important of which is agreement on balanced and similar meals in types of food, quantity, time and table 1 between the homogeneity of the sample

members in the variables weight, height and age (Table 1).

The table shows the homogeneity of the research sample in terms of length, weight and age, and it is confined between (+3), and this indicates that it is normally distributed.

Search tools:

- Personal interviews.
- Special physiological and skill tests.
- Information collection form.
- Normal balance.
- Syringes.
- Natural cotton with sterile and medical tape.
- Special ampoules for preserving blood.
- A portfolio to save blood.
- Blood analysis machine (centrifuge)
- Larcometric bike.
- A device for forced respiration of exhaled air.
- Volleyball court.
- Flying balls (10).
- Whistle.
- Laptop (computer) (HP)
- colored tape + scissors
- Pens.

Search procedures:

- The sample was divided into two groups (A) and (B), group (A) eating breakfast and group (B) not eating breakfast.
- It was agreed with the research sample, group A, on (3/11/2021), corresponding to (Wednesday), that at seven o'clock in the morning breakfast was eaten with the same meal for all (20) players.
- On the same date, it was agreed with Group B not to eat breakfast in the morning.
- The tests were conducted at eleven o'clock in the morning on the same day for both groups as follows:
- Blood samples were drawn from the research sample for the two groups (A and B) and kept in a special folder.
- The skill tests (defending the playing court and defensive blocking, receiving and recovering the ball from the net, serving) were conducted in volleyball for the two groups (A, B) to recover the ball from the net.
- After completing blood sampling and performing skill tests, the evidence was collected and processed statistically.

Blood Pressure

Through the pressure index, it is possible to infer the efficiency of the athlete, because the pressure depends on the work of the heart and blood vessels, and the flow of blood in the veins and arteries. The heart, especially the left abdominal muscle) (Fathi and Al-Ali. 2009)

It may have different readings among athletes, and this was confirmed by Bahaa Salama, who stated that (the blood pressure on the walls of the arteries is not stable during one cardiac cycle, so we find it fluctuating between a

high level during the contraction of the abdomen and a low level during the relaxation of the ventricle). (Salameh. 1988).

Blood sugar level

Blood sugar is the main source of energy production through anaerobic and aerobic oxidation, and this energy is used to accomplish vital activities in the body. (Allawi and Abul-Ela Ahmed. 2000)

Stress and skills have a significant impact on the level of blood sugar when performing them, especially when not eating enough food or meals, due to the lack of sufficient energy to supply the body with it, as the blood sugar level reaches (80-120) mg litre/blood and this percentage drops to the average Natural when training, so the body depends on the glycogen found in the liver. (Kammash and Saleh Bshri. 2011).

Pulse rate (heart rate)

The pulse is one of the important indicators that the researcher relies on to determine the extent of the athlete's health, and it is an indicator of effort and comfort and giving training units, which the coach depends on to know the player's physiological and physical efficiency, through the changes that occur to the heartbeat, the number of strokes, and the heartbeat is defined as (Vibrations of the walls of the arteries, occur as a result of the constriction of the heart, which returns blood to the arteries). (Al-Ali and et al., 2002)

Lactic acid

Lactic acid is defined as a product of anaerobic glycolysis. When oxygen is not enough to sustain the cell, glycogen and glucose will break down to pyruvic acid and then to lactic acid in the absence of oxygen (CO2) (sports Medicine, 2004) This process is called anaerobic glucose glycolysis. (Blood sugar) that reaches the muscles through the blood or comes to them through the glycogen stored in the muscle. (El-Din. 2000)

Abdel-Fattah states that there are three factors on which the amount of lactic produced by the muscle depends, which is the intensity of the physical load, the volume of physical work and the size of the working muscles. In addition, the concentration of lactic acid in the blood falls under the influence of two factors, namely the rate of disposal of lactic acid in the muscles and blood. (Abu Al-Alaa, 2003).

Defensive skills in volleyball

Defensive skills in volleyball are the basis for receiving balls coming from the opponent, and it is the basis for building attacks on the opposing team. Receiving serve or defending is one of the defensive skills that are important in volleyball, and the success of the team's playing depends on the impressive achievement of this skill, as it is the first touch of the receiving team) (al-Katib and Jabbar. 2002), As for the skill of defending the stadium, it is an important means of defense and repelling the opponent's attack, as it is considered a goal in returning the balls and defending the cube area from the sharp attack of the opponent team and protecting the field behind the team's hunting wall and behind the attackers of his team. or serve and pass it with one arm (it can be performed with both legs according to the latest amendments to the law). (Sira Jamil, 2002)

Statistical methods: The search data was processed through the Statistical Package for the Social Sciences (SPSS).

Presentation and Discussion of the Results

Presentation and discussion of the results of the arithmetic means, standard deviations, (t) value and the level of significance of the physiological research variables for the two research groups

Table 2 shows the calculated (t) value of the physiological measurements under study that showed a value of less than (0.05), which means the significant differences between the measurements by comparing them with the two research groups, as it shows the significant differences between the group that ate breakfast and those that did not eat breakfast in favor of The group that

Table 1: shows the homogeneity of the research sample.

Variables	Measuring unit	Mean	Std. Deviations	Median	Skew ness
Length	Cm	180,8	3,3	180,5	0,272727
Weight	Kg	80,4	2,5	79,5	1,08
Age	Year	22,25	0,96	22	0,78125

ate breakfast, where it showed significant differences in arithmetic means and the value of (t) in the variable blood sugar level before effort and after effort, where it showed significant differences in this variable for a group that ate breakfast and the researcher attributes the significance of these differences to the effect of breakfast on this variable and that Because the percentage of sugar is a variable that is directly affected by the amount of food and the time of eating, and the emergence of a statistical difference in favor of the group that ate breakfast is evidence of the effect of this change, because food, especially breakfast, has a direct impact on the supply of energy to the body after a long period of sleep and the possibility of not eating from evening to morning or Late, which leads to a drop in blood sugar level, and this is what was shown by the results of the circles for the research group that did not eat breakfast and the drop in blood sugar level, especially after taking the tests and because the muscles You need energy during any physical or functional effort, Therefore, these muscles must be supplied with energy, as stated that "Teaching work and physical effort in accordance with the requirements of a healthy pregnancy leads to adaptation, as adaptation passes through four stages: fatigue, recovery, compensation, and overcompensation" (Abd Ali. 2013). This indicates the importance of compensating the blood sugar level to maintain its ratio as much as possible (Table 2).

As for the pulse rate results, they were statistically significant and in favor of the group that ate the morning breakfast. The calculated t-value showed less than (0.05), which is significant, as it showed the mean differences for the group that did not eat breakfast with a pulse rate without breakfast. (17.70) pulse per minute before performing the effort, but after the effort, the pulse increased (176,101) pulse per minute. As for the group that ate breakfast, their pulse increased after conducting the tests (17.9) pulse per minute, where the difference was clear and in favor of the group that They ate breakfast as their pulse did not rise, and it also increased in the second group, and this is evidence of the efficiency of their circulatory system, so that the body obtains sufficient energy to perform the tests and supply the body with this energy, because the lower the pulse during the performance of the tests, the clear evidence that the body is of high fitness. The pulse was good during or after the tests, indicating the efficiency of the respiratory and circulatory system, and this is only done when providing the body with energy, and this energy is the main source of food and healthy food, which in turn provides the necessary energy for the body.

Where stated, "The phenomenon of slow heart rate is the most changing indicator of the high functional state of the heart". (Fattah. 2003).

As for the test results for pressure indicators, the value of this indicator between the two groups that ate breakfast and those who did not eat breakfast was in the case of systolic and diastolic pressure. The results showed significant differences in favor of the group that ate the morning breakfast. 13.05) mm/Hg and the diastolic (8.80) mm/Hg. As for the group that did not eat breakfast, the results appeared with an arithmetic mean of the systolic pressure (14.30) mm/Hg and diastolic (9.25) mm/Hg. The value of (t) was (0.00), and this indicates the significance of the differences, and in favor of the group that ate breakfast, the level of pressure increased significantly according to the results of breakfast and the deviations for the group that did not eat breakfast. As for the second group, the pressure increased, but at a lower level than the other group, and this is clear evidence confirming that The effect of breakfast on the ratio of the level of pressure in the body, not this indicator is directly affected by the level of effort and severity that the individual is exposed to during the performance of the effort, and it is a direct indicator of the respiratory system and the state

of the body, as this good indicator and improvement in The blood pressure index of the group that ate the morning breakfast, evidence of the importance of this meal for the human being. The researcher attributes this difference to the direct proportionality between the heart and the arteries of the individual, and since the results showed significant differences in the pulse rate, this indicator works to improve the level of the pressure indicator, and because God Almighty created everything as much, and this confirms that every organ in the body complements one another. . The better the pulse, the faster the blood flow in the body and the arteries, the better, which contributes to the delivery of the largest amount of oxygen to all parts of the body and muscles. A decrease in the blood pressure than normal, dizziness and fainting as a result of the brain's inability to receive enough blood, and this can become life-threatening, and may cause side effects." (<https://www.webteb.com>).

As for the results of the lactic acid test, it was insignificant before the effort, and this is an obvious thing for the human body because the amount of lactic acid is a normal rate present in the body for each person, but this indicator changes according to the individual's effort and the time spent in performing the effort, and since the sample for the two groups, measure this The indicator before the effort did not show significant differences between the two groups and it was as follows, with mean (0.2900) and (0.280) for the first group without breakfast and for the third that ate breakfast. The mean was after effort with (0.4800) and (0.2560) for the first two groups without breakfast And the second with breakfast, and the mean differences for (t) calculated were significant in the differences and in favor of the group that ate breakfast. On lactic anaerobic energy, is an activity that occurs when there is no oxygen available to the working muscles and the performance of rapid muscle contractions, and when this indicator increases, it is evidence of the athlete's ability. The blood of the players after the performance is an indication that they are able to bear the pain resulting from that increase, and this indicates the improvement of the physiological condition of the athlete and their ability to continue performing despite the high level of lactic acid in the blood. (Khouribet and Turki. 2002).

Presentation and discussion of the differences between the tests of the first two groups that ate breakfast and the second that did not eat breakfast for the volleyball skill tests.

Table 3 shows the results of the differences in the arithmetic means of the two groups. The results showed significant differences in all defensive skills in volleyball, as shown in Table 3. The researcher attributes this morale, which was in favor of the individuals who ate breakfast, as shown in the values of the average differences between the two groups. , that these skills require high energy and speed in performance and speed in (reaction, speed of response, and explosive power of the legs and arms, and all these abilities need energy that is present and stored in the muscles) and since the results showed significant differences in the skill performance of the group who ate a meal Breakfast, the researcher attributes to the importance of breakfast because the person, especially the athlete, needs energy to perform physical effort and training, because muscles and blood store this energy represented by (ATP), which is the energy center of the human being and even the nervous system, which must provide the amount of energy needed to supply the brain with blood and oxygen Sufficient to work to deliver nerve impulses faster and more accurately, and you must also eat the morning breakfast and in order for the body to adapt to the process of metabolism, food digestion and energy storage, and this is what he mentioned Muhammad Samir, where he stated, "The metabolic adaptation achieves physiological adaptations that benefit the athletes and are technically reflected on the technical (tactical) aspects in the

Table 2: Shows the arithmetic means, standard deviations, (t) value and the level of significance of the physiological variables for the two research groups that ate breakfast and that did not eat breakfast.

Variables	Measuring unit	Tests	Mean	standard deviation	arithmetic mean difference	deviation of differences	T value	Level sig	Type sig
Blocking	Degree	Without breakfast	4,00	816	-3,30	496	-6,659	0,77	Non sig
		With breakfast	7,40	1,337					
cover the ball	Degree	Without breakfast	52,20	5,633	-18,90	2,446	-7,72	0,00	sig
		With breakfast	71,10	5,301					
Receiving serve	Degree	Without breakfast	6,40	1,714	-1,300	619	-2,100	0,05	sig
		With breakfast	7,70	949					
Defensive for the court	Degree	Without breakfast	5,80	1,135	-2,00	508	-3,939	0,01	sig
		With breakfast	7,80	1,135					

The degree of freedom n-2=18 is below 0.05 . significance level

specialized sports fields." (Saad El-Din. 2000) (Table 3).

Presentation and discussion of the results of the tests for the first and second groups of research variables before and after the stress.

Table 4 shows the arithmetic mean, standard deviation, (t) value and the level of significance of the physiological variables before the effort performance and after the effort under the significance level (0.05) and the degree of freedom (n - 9:1).

From Table (4) in the physiological tests, significant differences in the post tests were in favor of the group that ate breakfast, where the average differences were higher than the percentage of the mean differences for the group that ate breakfast, and this appeared in the value of (t) where the results showed significant differences in the physiological tests which are (The ratio of sugar, heart rate, systolic and diastolic pressure and the proportion of lactic acid in the blood), where the researcher attributes this significance in the differences after effort to the presence of energy stored in the body as a result of taking breakfast, and this provided the body with the energy it needs to perform the intuitive good and not The level decreased significantly after the performance of the effort and the performance of the skill and physiological tests, where the results showed that the percentage of sugar before the performance of the effort was similar to some extent between the two groups, but after the effort the blood sugar level decreased significantly in the research sample that did not eat breakfast, and this is evidence of the depletion of energy stores In the body, due to the lack of the necessary food for the skill, and the superiority of the group that ate breakfast, as the blood sugar level is one of the indicators that directly affect the food. Whereas, "Physical effort leads to an increase in the concentration of sugar in the blood to compensate for the lost and consumed, which leads to its decrease after the completion of the effort to compensate for it at rest." also mentioned that "physical effort leads to an increase in the number of insulin receptors present on the surface of muscle cells, which it leads to the regulation of its work during physical exertion, and its melting, as sugar enters the cells, which leads to a decrease in its percentage in the blood (Al Kaabi. 2007) and this confirms the importance of food on the level of sugar in the blood (Table 4).

As for the pulse rate variable, the results of the research showed that the differences were random before performing the tests between the two groups and this is self-evident, as the pulse rate was similar for the two groups before the effort at a rate of (71,700) as an arithmetic mean. 171,900) and a deviation (1,01972) and a value (t) (0.00), and this confirms this significance to the activity of the circulatory system, the flow of blood, and the delivery of oxygen to all parts of the body, and since the heart rate index is one of the important indicators on which it is relied to judge health and fitness The person or the

athlete in my case before the effort and after the effort, and the lower the pulse during or after the exercise of the effort, it was a good indicator of the health of the athlete and clear evidence of the activity of the heart, and since the pulse rate increased clearly after the performance of the effort in the hands of a group that did not eat breakfast, as a result of the increase Physical exertion, which led to an increase in the number of heartbeats, which is not a good indicator, as it leads to the emergence of early fatigue and stress during physical exertion. It causes a decrease in the supply of energy to the body and a drop in blood sugar, which leads to an increase in the number of heartbeats. In contrast to the group that ate breakfast, their pulse rate increased within the specified and reasonable rates after exertion, which indicates the efficiency of the body and the activity of the respiratory system.

As for the pressure variable (systolic and diastolic), the results showed random differences in the differences before the physical effort, and this was a normal thing because the eye was homogeneous and had not exerted physical effort, so it was within the normal limit before the effort, but after the effort, the results showed significant differences between the two groups and in favor of the group that dealt Breakfast, where the rise in blood pressure after exertion was good and at a reasonable level. As for the group that did not eat breakfast, it was higher, and this indicates that the pulse rate is responsible for the high blood pressure, as the relationship between them is positive. The higher the pulse rate, the higher the pressure in the individual. Since the pulse rate of the group that did not eat breakfast was higher, it was obvious that the pressure level was also higher. This was confirmed, who stated: "When blood is pushed with successive beats to the body's organs, it creates a certain pressure on the walls of blood vessels called blood pressure, which is mainly affected by the force of the heart pushing blood, as the increase in blood volume through an increase in heart rate Thus, the increased production of the heart will lead to an increase in pressure on the blood vessels, and eventually, high blood pressure (Al-Hazza. 2009).

As for the results of the variable lactic acid ratio, it showed random differences in the pre-test, a close similarity between the two groups in the arithmetic circles. Where the percentage of lactic acid increase in the group that did not eat breakfast was higher than in the group that ate breakfast and the researcher attributes these differences to the amount of deficiency in the muscles for the energy needed for oxygen to reach them, as the amount of energy was insufficient in the muscles to produce (ATP), which is The main source of energy in it, which led to the formation of lactic acid and an increase in its percentage, as the source of this energy is mostly anaerobic energy, and the greater the intensity, the greater the lactic acid, and this indicator is one of the indicators that give a clear judgment on the work of the athlete and his physical functional indicated, "The body resorts to releasing glycogen or

Table 3: Shows the differences in arithmetic means, standard deviations, (t) value and the level of significance of the skill tests of the two groups that ate breakfast and those who did not eat breakfast.

Variables	Measuring unit	Tests	Arithmetic mean	Standard deviation	T value	Level sig	Type sig																																																																																														
Sugar level without breakfast	mg/dL	before the stress	83,30	2,003	13,686	0,00	sig																																																																																														
		after the stress	69,90	2,234				Sugar level with breakfast	mg/dL	before the stress	83,50	1,650	7,550	0,00	sig	after the stress	74,00	3,621	Heart rate without breakfast	pulse per minute	before the stress	71,700	2,0028	-109,1	0,00	sig	after the stress	176,100	2,0790	Heart rate with breakfast	pulse per minute	before the stress	71,700	1,3375	-155,0	0,00	sig	after the stress	171,900	1,1972	Systolic pressure without breakfast	mm/Hg	before the stress	12,100	5678	-8,124	0,00	sig	after the stress	14,300	6749	systolic pressure with breakfast	mm/Hg	before the stress	12,400	6992	-2,327	0,45	sig	after the stress	13,050	3689	Diastolic pressure without breakfast	mm/Hg	before the stress	8,050	4972	-7,060	0,00	sig	after the stress	9,0250	4249	diastolic pressure with breakfast	mm/Hg	before the stress	7,850	6258	-3,943	0,03	sig	after the stress	8,800	2582	Lactic acid percentage without breakfast	mg/mmol	before the stress	2900	07379	-7,092	0,00	sig	after the stress	4800	055333	Lactic acid ratio with breakfast	mg/mmol	before the stress	2800	07888	675
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		after the stress	14,300	6749				systolic pressure with breakfast	mm/Hg	before the stress	12,400	6992	-2,327	0,45	sig	after the stress	13,050	3689	Diastolic pressure without breakfast	mm/Hg	before the stress	8,050	4972	-7,060	0,00	sig	after the stress	9,0250	4249	diastolic pressure with breakfast	mm/Hg	before the stress	7,850	6258	-3,943	0,03	sig	after the stress	8,800	2582	Lactic acid percentage without breakfast	mg/mmol	before the stress	2900	07379	-7,092	0,00	sig	after the stress	4800	055333	Lactic acid ratio with breakfast	mg/mmol	before the stress	2800	07888	675	0,007	sig	after the stress	2560	04971																																							
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		after the stress	13,050	3689				Diastolic pressure without breakfast	mm/Hg	before the stress	8,050	4972	-7,060	0,00	sig	after the stress	9,0250	4249	diastolic pressure with breakfast	mm/Hg	before the stress	7,850	6258	-3,943	0,03	sig	after the stress	8,800	2582	Lactic acid percentage without breakfast	mg/mmol	before the stress	2900	07379	-7,092	0,00	sig	after the stress	4800	055333	Lactic acid ratio with breakfast	mg/mmol	before the stress	2800	07888	675	0,007	sig	after the stress	2560	04971																																																		
Diastolic pressure without breakfast	mm/Hg	before the stress	8,050	4972	-7,060	0,00	sig																																																																																														
		after the stress	9,0250	4249				diastolic pressure with breakfast	mm/Hg	before the stress	7,850	6258	-3,943	0,03	sig	after the stress	8,800	2582	Lactic acid percentage without breakfast	mg/mmol	before the stress	2900	07379	-7,092	0,00	sig	after the stress	4800	055333	Lactic acid ratio with breakfast	mg/mmol	before the stress	2800	07888	675	0,007	sig	after the stress	2560	04971																																																													
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		after the stress	8,800	2582				Lactic acid percentage without breakfast	mg/mmol	before the stress	2900	07379	-7,092	0,00	sig	after the stress	4800	055333	Lactic acid ratio with breakfast	mg/mmol	before the stress	2800	07888	675	0,007	sig	after the stress	2560	04971																																																																								
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		after the stress	4800	055333				Lactic acid ratio with breakfast	mg/mmol	before the stress	2800	07888	675	0,007	sig	after the stress	2560	04971																																																																																			
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		after the stress	2560	04971																																																																																																	

Table 4: Shows the arithmetic mean, standard deviation, (t) value and the level of significance of the physiological variables before the effort performance and after the effort under the significance level (0.05) and the degree of freedom (n - 9:1).

Variables	Measuring unit	Tests	Arithmetic mean	Standard deviation	Difference between arithmetic mean	Difference between standard deviations	T value	Level sig	Type sig																																																																																																														
Sugar ratio before stress	mg/dL	Without breakfast	83,3	2,00	-200	8205	-244-	810	Non sig																																																																																																														
		With breakfast	83,5	1,64						Sugar ratio after stress	mg/dL	Without breakfast	69,9	2,23	-4,10	1,345	-3,048	007	sig	With breakfast	74,0	3,62	Heart rate before stress	pulse per minute	Without breakfast	71,7	2,00	000	7615	000	1,000	Non sig	With breakfast	71,7	1,33	Heart rate after stress	pulse per minute	Without breakfast	176,10	2,07	4,20	6586	5,536	000	sig	With breakfast	171,90	1,19	systolic pressure before stress	mm/Hg	Without breakfast	12,1	567	300-	2948	-1,053	306	Non sig	With breakfast	12,4	699	systolic pressure after stress	mm/Hg	Without breakfast	14,30	67	1,25	2432	5,139	000	sig	With breakfast	13,05	36	diastolic pressure before stress	mm/Hg	Without breakfast	8,05	49	200	2527	791	439	Non sig	With breakfast	7,85	62	diastolic pressure after stress	mm/Hg	Without breakfast			450	1572	2,862	010	sig	With breakfast			Lactic acid ratio before stress	mg/mmol	Without breakfast			010	0341	293	773	Non sig	With breakfast			Lactic acid ratio after stress	mg/mmol	Without breakfast			224
Sugar ratio after stress	mg/dL	Without breakfast	69,9	2,23	-4,10	1,345	-3,048	007	sig																																																																																																														
		With breakfast	74,0	3,62						Heart rate before stress	pulse per minute	Without breakfast	71,7	2,00	000	7615	000	1,000	Non sig	With breakfast	71,7	1,33	Heart rate after stress	pulse per minute	Without breakfast	176,10	2,07	4,20	6586	5,536	000	sig	With breakfast	171,90	1,19	systolic pressure before stress	mm/Hg	Without breakfast	12,1	567	300-	2948	-1,053	306	Non sig	With breakfast	12,4	699	systolic pressure after stress	mm/Hg	Without breakfast	14,30	67	1,25	2432	5,139	000	sig	With breakfast	13,05	36	diastolic pressure before stress	mm/Hg	Without breakfast	8,05	49	200	2527	791	439	Non sig	With breakfast	7,85	62	diastolic pressure after stress	mm/Hg	Without breakfast			450	1572	2,862	010	sig	With breakfast			Lactic acid ratio before stress	mg/mmol	Without breakfast			010	0341	293	773	Non sig	With breakfast			Lactic acid ratio after stress	mg/mmol	Without breakfast			224	0230	9,716	000	sig	With breakfast								
Heart rate before stress	pulse per minute	Without breakfast	71,7	2,00	000	7615	000	1,000	Non sig																																																																																																														
		With breakfast	71,7	1,33						Heart rate after stress	pulse per minute	Without breakfast	176,10	2,07	4,20	6586	5,536	000	sig	With breakfast	171,90	1,19	systolic pressure before stress	mm/Hg	Without breakfast	12,1	567	300-	2948	-1,053	306	Non sig	With breakfast	12,4	699	systolic pressure after stress	mm/Hg	Without breakfast	14,30	67	1,25	2432	5,139	000	sig	With breakfast	13,05	36	diastolic pressure before stress	mm/Hg	Without breakfast	8,05	49	200	2527	791	439	Non sig	With breakfast	7,85	62	diastolic pressure after stress	mm/Hg	Without breakfast			450	1572	2,862	010	sig	With breakfast			Lactic acid ratio before stress	mg/mmol	Without breakfast			010	0341	293	773	Non sig	With breakfast			Lactic acid ratio after stress	mg/mmol	Without breakfast			224	0230	9,716	000	sig	With breakfast																					
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diastolic pressure before stress	mm/Hg	Without breakfast	8,05	49	200	2527	791	439	Non sig																																																																																																														
		With breakfast	7,85	62						diastolic pressure after stress	mm/Hg	Without breakfast			450	1572	2,862	010	sig	With breakfast			Lactic acid ratio before stress	mg/mmol	Without breakfast			010	0341	293	773	Non sig	With breakfast			Lactic acid ratio after stress	mg/mmol	Without breakfast			224	0230	9,716	000	sig	With breakfast																																																																									
diastolic pressure after stress	mm/Hg	Without breakfast			450	1572	2,862	010	sig																																																																																																														
		With breakfast								Lactic acid ratio before stress	mg/mmol	Without breakfast			010	0341	293	773	Non sig	With breakfast			Lactic acid ratio after stress	mg/mmol	Without breakfast			224	0230	9,716	000	sig	With breakfast																																																																																						
Lactic acid ratio before stress	mg/mmol	Without breakfast			010	0341	293	773	Non sig																																																																																																														
		With breakfast								Lactic acid ratio after stress	mg/mmol	Without breakfast			224	0230	9,716	000	sig	With breakfast																																																																																																			
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		With breakfast																																																																																																																					

glucose stored in the liver and muscles as a source for rebuilding the energy complex (ATP). This takes place in the absence of oxygen, which leads to the accumulation of lactic acid in the muscles and blood, which leads to muscle fatigue when its concentration increases." (Madkour. 2007).

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