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The effect of using magnesium lactate on the activation of the motor neurotransmitter speed for the work of the arms of the swimmers 50 m chest for the applicants

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Abstract

The real role in the development of athletic achievement is to know the effects that the variables have on the athlete's body, which is one of the basics in the progression of the athlete towards the better. From this, the researcher used in this study an important supplement, which is (magnesium lactate), where specialists in the physiology of sports training are looking to develop physical abilities and functional, which raises the level of their achievements, especially if the games are of a digital competition nature, which often makes it difficult for the athlete to provide the required level. Supplementation in the speed of contraction and diastole of the muscles of the arms in chest swimming and on the activation of motor neuron stimuli that are issued to the swimmer in this swimming. By dividing them into two groups, control and experimental, where this supplement was given to the experimental group, through which it was found that the presence of Significant differences between the two groups in favor of the experimental group in the variables of the research, which aimed at identifying the effect of magnesium lactate on activating the motor neurotransmitter speed for the work of the arms in chest swimming, as well as identifying the effect of magnesium lactate on the completion of 50 meters swimming on the chest and after collecting data on the results of the research appeared The experimental group excelled in the variables investigated in the work of the arms for swimming 50 m chest (Medium nerve speed/radial nerve speed/characteristic strength speed/completion of 50 m breaststroke swimming). Distinguished by the speed of the arms and the achievement of this effectiveness.

Keywords: physiology of sports training/swimming

1. Introduction

1.1. Introduction and importance of the research

There is a remarkable and rapid development in the world in all sciences, including the physiology of sports training, where we always see that athletes are looking for what might enable them to increase their physical and functional capabilities and raise the level of their achievements in competitions. Given the role that nutritional supplements play and the role of mineral salts, including magnesium, broad attention must be paid to them In research and studies, according to the needs of the athlete's body and the nature of the effectiveness, which gives us a more accurate and objective picture of the activation of the motor neurotransmitter, as there are many physiological processes that affect the level of performance related to the ability of the nervous system to regulate and control the activity of the various organs and organs of the body such as muscle contraction and relaxation during performance Therefore, attention to its functions and its development is important and necessary for both coaches and athletes. Magnesium 24:9 plays a vital role in the work of the muscular and nervous systems, as it helps in the process of muscle relaxation and has a counteracting role to the role of calcium, which acts as an assistant factor in its contraction as well as in the transmission of nerve signals. From cell to cell in cooperation with both sodium and potassium" and given the role of this important mineral in The athlete's body and its importance in swimming, especially chest swimming, and the motor transfer of the work of the arms in it, which requires the rapid transmission of nerve stimuli to the process of contraction and diastole of the arms and their impact on the speed of swimming and the importance of these supplements Magnesium lactate in the work of the nervous and muscular systems and has an active role in the process of diastole and contraction as well as in the process of The transmission of nerve signals and the active cycle in protein synthesis and converting food into energy was also noted.

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It was found important to know that it enters into the biological reactions that take place inside cells and works to activate some enzymes necessary for energy production, so magnesium lactate has a positive role in transmitting nerve signals Through which you can benefit from it in the formation of the speed of instructing the arms in the chest swimming, which leads to reaching the speed of the technical performance of the swimmer. Thus, the importance of the research lies in the effect of the use of magnesium lactate on the activation of the motor neurotransmitter for the work of the arms of the swimmer 50 m chest for the applicants. Thus, this study is an attempt From the researcher to support scientific efforts and support swimmers and coaches in achieving a better level of performance For the 50m breaststroke swim for this category

1.2. Research problem

The coaches are constantly looking for ways to raise the level of swimmers’ performance to the extent that improves their individual abilities in order to achieve sporting achievements and reach advanced positions at all levels, as the increase in training loads and their doses no longer meet the aspirations of the athletes, so the sports community is witnessing great competition in obtaining Means that secure the desired development and with the least possible side effects. Therefore, swimming requires well-studied scientific approaches, especially with regard to the nutrition system, as swimmers need high physical abilities that match the work and effort exerted. So the researcher went to give a nutritional supplement necessary for the swimmer's body, especially in breaststroke, which is magnesium lactate. Because of the effect of this supplement on the neurotransmitter and also on muscle contraction and relaxation, in order to know the effect of this supplement on the speed of contraction and relaxation of the muscles of the arms in chest swimming, and on activating the motor neuron stimuli that are issued to the swimmer in this swimming, in the belief of the researcher in this study, the participation of the national teams coaches in swimming Olympic development of the digital level in the 50m breaststroke swimming for the advanced category

1.3. Research objectives

1. To identify the effect of magnesium lactate on activating the speed of the motor neurotransmitter for the work of the arms in chest swimming
2. To identify the effect of magnesium lactate on the completion of 50 meters swimming on the chest

1.4. Research assignments

1. There are significant differences in the effect of magnesium lactate on the motor neurotransmitter for the work of the arms in breaststroke
2. There are significant differences on the achievement in the 50-meter breaststroke swimming for the applicants

1.5. Research Areas

1.5.1 The human field: the swimmers of the national Olympic swimming team in breaststroke for the advanced category.

1.5.2 Spatial domain: The Olympic Indoor Swimming Pool.

1.5.3 Time range: from 10/12/2021 to 11/14/2021

2.1 Research Methodology

The researcher adopted the experimental method, which is defined as “the method in which we treat and control an independent variable to see its effect on a dependent variable while noting the resulting changes and doing their interpretation, whether the experiment includes an independent variable and a dependent variable or more than one independent variable or more than one dependent variable” 214:10 This approach is in agreement with the accuracy of its results. The researcher followed the design of the experimental and control groups with pre and post tests for the purpose of comparing the variables that affect this group.

2.2 The research community and its sample

The available research community is defined as “the community that refers to the available number of the target research community that the researcher can refer to directly in withdrawing the sample vocabulary from it.” 18:5 This community available in Olympic swimming is represented in the breaststroke swimming for the advanced category, which numbered (10) swimmers were selected The research sample in a deliberate manner, who represent (100%) of the community of origin, and one of the reasons for the researcher to go to this community was to ensure their presence by virtue of their commitment to regular training and also to ensure that similar experimental studies were not conducted on them throughout the period of application of the experiment and also the cooperation of trainers of this category to facilitate the task of the researcher as deliberately The researcher pointed to the homogeneity of the research sample in some extraneous variables that may constitute an extremism in the test results as shown in Table (1).

Table (1): shows the homogeneity of all sample members in terms of age, height, weight and training age

Number	Variables	s	Mediator	+p	Skew Modulus
10	Chronological age (year)	20	20.01	0.755	0.000
	Length (meter)	172.60	173	1.597	0.302
	Weight (kg)	69.25	69	1.669	0.461
	Training age (Year)	6.125	6	0.834	0.277

2.3 Research devices and tools and means of collecting information

2.3.1 Means of collecting information

Tests, measurements, modern technical devices and scientific sources have been used as means of collecting information

2.3.2 Research devices and tools

- A device (NCV) to measure the speed of transmission of nerve signals, number (1).
- HP type computer.
- Closed legal swimming pool.
- Electronic stopwatch number (6). Fox type whistle (1)
- Electronic scale for measuring weight and height

2.4 Tests of biochemical indicators of the efficiency of cellular regulation

2.4.1 Electrical Nerve Conduction Test Using a Device (NCV) 37:16

The objective of the test: to measure the speed of the motor neurotransmitter in the arms of the research sample

Test performance method

In this test, the motor and sensory nerve fibers are measured, especially in the extreme terminal ends of the hands. The skin above the nerve under test receives electrical stimulation by a pair of electrodes, and by another pair of electrodes, the planning of the motor examination is carried out on top of the muscle that receives commands from the nerve. The stimulus, the strength of the stimulus is gradually increased until we reach the maximum reaction after which there is no change, in this way we make sure that all the nerve fibers are activated and ensure that they are connected to the stimulus. The time period from the moment of stimulation until the appearance of the reaction on the corresponding muscle or nerve is called "Distal latency", the excitation of the most proximal point, causes a reaction with a longer "latency", called the "minimum latency", the difference between maximum and minimum latency refers to the time required for the nerve to deliver the signal between the two points of excitation (stimulation), the distance between the two points and the electrical conduction velocity of the motor nerves are calculated based on the following equation (delivery speed = difference between the two potentials / distance). Through this method, only the nerve fibers covered with myelin, which have a high conduction velocity, are examined. If all sides are tested, it takes more than an hour and the doctor may want to do the test in more than one location. The test is done along the nerve pathway in the arm, depending on the condition being examined.

2.4.2. Arms Speed Strength Test (Front Lean 10 Seconds) 259:2

Objective of the test: To measure the speed characteristic of the two arms.

Instruments: stopwatch, whistle.

How to perform the test: From the inclined prone position, bend the arms and extend them as many as possible within 10 seconds.

Conditions:

- a. The body took the correct prone position.

- b. Taking into account the touch of the chest to the ground while bending the arms and then fully extending them.

Orientation and Recording: Record to the laboratory the number of times the flexion and extension is performed in 10 seconds.

2.4.3 50m breaststroke test:

The objective of the test: to measure the time taken from the moment the swimmer starts to the moment he arrives

How to perform the test

The swimmer stands on the launching pad, and when he hears the whistle, he jumps into the water to swim 50m on the chest. When he reaches the distance of the basin, the timer stops the stopwatch and records the time completed for this distance and then records it in a form specially designed for this purpose.

3.1 pilot experiment

The exploratory experiment is one of the tasks on which the researcher depends, as the exploratory experiment was conducted on a sample of (3) swimmers from the research sample. On 12/10/2021, the researcher conducted an exploratory experiment, which lasted for two days.

Day 1: NCV Test at the Future Center for Clinical and Therapeutic Neurophysiology in Baghdad. Which took place on 10/12/2021 at 12 noon

Day 2: He was in the closed Olympic swimming pool, which took place on 10/13/2021 by conducting physical tests. The purpose of the reconnaissance experiment was to ensure the safety of devices and tools, how to perform the tests, the time taken for the tests, and to inform the assistant staff on how to perform the tests

3.2 Tribal tests

The researcher deliberately conducted tribal tests on 14-15/10/2021 before he gave the nutritional supplement (magnesium lactate) with both the NCV test and the physical tests on the members of the research sample for the experimental and control groups, as the tests were distributed according to the exploratory experiment and the scientific rules and foundations included in the first day The NCV test and the second day are physical tests in order to know the true level of the swimmers before carrying out the main experiment.

Table 2: Shows the equivalence of the research sample for the two groups in the tests

T	The exams	Experimental group		Control Group		t value V (t)	Sig	Indication
		- Q	±	- Q	±			
1	Median nerve conduction velocity m/ s	53.50	3.000	52.75	2.500	0.384	0.714	Insignificant
2	Radial nerve conduction velocity m/ s	61.625	1.701	60.500	1.290	1.053	0.333	Insignificant
3	The force characteristic of speed (for the arms) forward support/10 seconds.	13.50	1.000	13.75	0.957	0.361	0.730	Insignificant
4	Completion of 50m breaststroke/ second swim	36.241	1,506	36,855	1.536	0.771	0.458	Insignificant

3.3 main experience

The researcher implemented the research method prepared on the research sample on/in the closed Olympic swimming pool in Baghdad by dividing the research sample into two groups, experimental and control, and the number of

swimmers in one group was (5) swimmers. Units) training weekly, as the number of training units reached (24) training units, where each unit takes (100-120) minutes. A lecture to swimmers for the experimental group on how to take doses of (magnesium lactate) in consultation with specialized

doctors, and the amount of (DOSE) given to each swimmer, if the doses were determined by the principle of regular dosage by specialists. This principle also depends on taking regular doses of (136 mg) based on Two doses per day The first dose is (68mg) to be given an hour before starting the training unit, while the second dose is also (68mg) given (12) hours after taking the first dose as one of the advantages of this supplement works slowly in the body and for a period of 12 hours per dose As for the program Reby was the program followed by the trainer and for the two experimental groups and the control group during the experiment, as the control group only relied on the training program followed by the trainer without using (magnesium lactate).

3.4 post-tests

After the researcher completed the implementation of its experimental program, he conducted post-tests for the research sample for the experimental and control groups on 11/13/2021, as the tests were distributed according to the tribal experience in terms of time and place, the tools used

in the tests, the method of implementation and the auxiliary team, in order to move away Regarding the variables that may affect the results of the tests, the aim of these tests is to identify the level reached by the swimmers after taking (magnesium lactate), and their application of the training curriculum followed by the coach for the experimental group and the application of the training curriculum followed by the coach himself only for the control group

3-5 Statistical means

The researcher verified the results using the statistical bag system (Spss) version (v26).

- Arithmetic mean
- Standard deviation
- T-test for uncorrelated samples
- t-test of interconnected samples

4. Presentation and discussion of the results

4.1 Presentation, analysis and discussion of the results of tests of the variables of the research sample.

Table 3: Shows the statistical values of the experimental group in the variables of the research sample

The exams	Pre-test		Post-test		mf	Magh ² h	value (t)	Sig	Indication
	s	p	s	p					
Median nerve conduction velocity m/ s	53.50	3.000	60.25	3.862	-8.720	1.345	6.644	0.007	Moral
Radial nerve conduction velocity m/ s	60.625	1.710	68.675	0.535	-8.040	0.626	12.833	0.001	Moral
The force characteristic of speed (for the arms) forward support / 10 seconds.	13.50	1.000	15.460	0.501	-1.740	0.460	7.012	0.006	Moral
Completion of 50m breaststroke/ second swim	36.241	1.506	35.125	0.359	1,800	0.308	5,840	0,010	Moral

From the above table of the statistical values of the experimental group, it was found that there were significant differences in the median nerve conduction velocity test, where the arithmetic mean was (53.50), standard deviation (3.000), and the mean of the post-test (60,25) and standard deviation (3,862). The sum of the mean differences reached (8,720_) and the total deviation differences (1,345) and the value of (t) (6,644), which has a significance level (Sig) of (0.007) which is smaller than the value of the approved significance level (0.05), which indicates the existence of significant differences between the pre-test and the post-test in favor of the post-test. As for the radial nerve conduction velocity test, the arithmetic mean of the pre-test was (60,625), with a standard deviation of (1,710), and the mean of the post-test (68.675) and with a standard deviation of (0.535), and the sum of the mean differences reached (-8,040) and the total deviations were (0.626).) and the value of (t) (12.833) and it has a significance level of (Sig) of (0.001) which is smaller than the value of the approved significance level (0.05), which indicates the existence of

significant differences between the pre-test and the post-test in favor of the post-test either in the strength test Characteristic of the speed of the atom eyes where the arithmetic mean of the pre-test was (13,50), standard deviation (1,000), and the mean of the post-test (15,460) and standard deviation (0.501), and the sum of the mean differences reached (-1,740), the sum of the differences of deviations was (0.460) and the value (t) (7,012) which has The significance level (Sig) is (0.006), which is smaller than the value of the approved significance level (0.05), which indicates that there are significant differences between the pre-test and the post-test and in favor of the post-test. With a standard deviation of (1,506) and the mean of the post-test (35,125) and with a standard deviation of (0.359), the sum of the mean differences reached (1,800), the sum of the deviations was (0.308) and the value (t) (5,840), which has a significance level (Sig) of (0.010), which is smaller than The value of the approved significance level (0.05), which indicates the existence of significant differences between the pre-test and the post-test and in favor of the post-test

Table 4: Shows the statistical values of the control group in the variables of the research sample

The exams	Pre-test		Post-test		mf	Magh ² h	value (t)	Sig	Indication
	s	p	s	p					
Median nerve conduction velocity m/ s	52.75	2.500	53.10	2.160	-0.250	0.250	1.000	0.391	Insignificant
Radial nerve conduction velocity m/ s	60.500	1.290	60,675	1.247	-0.175	0.444	0.94	0.720	Insignificant
The force characteristic of speed (for the arms) forward support / 10 seconds.	13.75	0.957	14,50	1.291	-0.750	0.250	3.000	0.040	Moral
Completion of 50m breaststroke/ second swim	36,855	1.536	36.375	0.434	0,975	0.383	2.540	0,030	Moral

Through the above table of the statistical values of the control group, it was found that there were no significant differences in the median nerve conduction velocity test, where the arithmetic mean was pre-test (52.75), standard

deviation (2.500), and the mean of the post-test was (53.10) and standard deviation was (2.160), and the total mean differences were (-0.250_) and the sum of the deviations differences (0.250) and the value of (t) (1.000), which has a

significance level (Sig) of (0.391), which is greater than the value of the approved significance level (0.05), which indicates that there are no significant differences. There was a difference between the pre-test and the post-test, either in the radial nerve conduction speed test, where the arithmetic mean was (60.500) and standard deviation (1.290), and the mean of the post-test was (60.675) and standard deviation (1.247) and the sum of the mean differences was (-0.175) and the sum of the differences of deviations was (0.444) and the value of (t) (0.94) and it has a significance level (Sig) of (0.720), which is greater than the value of the approved significance level (0.05), which indicates that there are no significant differences between the pre-test and the post-test. The arithmetic mean reached the test The pre-test (13.75) with a standard deviation of (0.957) and the mean of the post-test (14.50) and with a standard deviation (1.291). Z means (-0.750), the sum of the differences of deviations (0.250) and the value of (t) (3.000), which has a significance level (Sig) of (0.040), which is smaller than the value of the approved significance level (0.05), which indicates the existence of significant differences. Between the pre-test and the post-test in favor of the post-test, either in the 50m breaststroke test, where the arithmetic mean of the pre-test was (36.855) and with a standard deviation of (1.536), and the mean of the post-test (36.375) and with a standard deviation of (0.434), the sum of the mean differences reached (0.975) and the sum of the differences of deviations (0.383) and the value of (t) (2.540), which has a significance level (Sig) of (0.030), which is smaller than the value of the approved significance level (0.05), which indicates that there are significant differences between the pre-test and the post-test in favor of the post-test

Discuss the results

Through the results of the statistical values of Table (3) (4) in the tribal and remote tests of the experimental and control groups, these values and results showed significant differences for the experimental group in all the results of the post tests. This led to positive changes for both arms in (the median nerve conduction speed and the radial nerve conduction speed) and this was confirmed by (Issam bin Hassan Hussein Owaidah) 8:84 that one of the importance of magnesium for the athlete is the transfer of nerve stimuli from one cell to another along the nerves and muscles and for this it works 11:4 Magnesium is necessary for the nervous system to function normally, as magnesium supplements such as magnesium lactate help improve cognitive function, and Gordon 415:14 indicated that magnesium plays a vital role in the functioning of the nervous system. The muscular and nervous systems, as it helps in the process of muscle relaxation by activating the enzymes (Actomyacin ATP-ase) and (Myosin ATP-ase), which are necessary for muscle relaxation and contraction,

respectively. R counter to the role of calcium, which acts as a cofactor in its constriction, as well as in the transmission of nerve signals from one cell to another in cooperation with both sodium and potassium. For the arms of the experimental group in the post test to the effect of magnesium lactate on the speed and lethargy of the working muscles of the arms, as 137:12 “The high level of magnesium in the blood improves neuromuscular work and increases the effectiveness and coordination of motor units in the muscles, and this means that performance can be improved By ensuring an adequate supply of this important mineral, and this was also evident the effect of magnesium lactate on the improvement that occurred in the completion of the 50-meter swim appeared because this effectiveness requires a great neuromuscular compatibility as well as the speed of muscle contraction and relaxation, as magnesium enters into the composition of all 33 cells: 6 "As a coenzyme in chemical reactions inside cells, it also has a role in muscle contraction, nerve transmission and protein formation." Thus, the researcher believes that this important element M plays a major role in the activities that depend on the nervous system, the most important of which is the motor response and motor coordination. In the control group, we note that there are no significant differences between the pre and post tests for the variables (medium nerve speed and radial nerve speed) for the two arms despite the improvement as shown by the statistical values in these two variables, and the researcher attributes In addition, this sample did not take magnesium lactate and adhered to the training curriculum prepared by the trainer, which also had an impact on the variables, and this was indicated by 548:11 (Mohammed Reda Al-Madamgha, 2008), quoting from (De Vries 1980) that quick exercises increase kinetic ability It increases the ability to organize a good neuromuscular coordination, all of which leads to the performance of a high motor frequency by increasing the speed and intensity of the frequency of nerve signals, which is in fact specific factors for the achievement of high-speed movements and this is confirmed by 33:3 (Theodore Bomba) as (The various exercises develop the nervous muscular system, so the nervous system responds with the fastest speed to lengthen the muscle, and the ability to shorten (contraction) will develop quickly and with maximum force, as confirms 1:33 (Abu Al-Ela Ahmed Abdelfatt) H, 2003), in the principle of physiological adaptation to training exercises in general, where “physiological responses improve by repetition of training in a specialized manner, and with each repetition, the athlete masters the performance better and the degree of its difficulty decreases, and the muscles and various body systems become accustomed to the nature of performance, and the physiological effort that he was making to the same level decreases.” This enables the athlete to perform at a higher level.

Table 5: Shows the arithmetic means, standard deviations, and the (t) value calculated between the two groups (experimental and control) in the post-tests in the research variables.

T	The exams	Experimental group		Control group		Value (t)	Sig	Indication
		s	p	s	p			
1	Median nerve conduction velocity m/ s	60.25	3.862	53.10	2.160	4.181	0.006	Moral
2	Radial nerve conduction velocity m/ s	68.675	0.535	60.675	1.247	13.252	0.000	Moral
3	The force characteristic of speed (for the arms) forward support / 10 seconds.	15,460	0,501	14,50	1,291	1,083	0,041	Moral
4	Completion of 50m breaststroke/ second swim	35,125	0,359	36,375	0,434	4,431	0,004	Moral

Through the above table, it shows the statistical values of the dimensional tests for the experimental and control groups, where the arithmetic mean of the median nerve conduction velocity test for the experimental group was (60.25), with a standard deviation of (3.862), and the arithmetic mean for the control group was (53.10) and with a standard deviation of (2.160) and the calculated (t) value was (4.181), which has a significance level (Sig) of (0.006), which is smaller than the value of the approved significance level (0.05), which indicates that there are significant differences in the post test in favor of the experimental group. The experimental group had an arithmetic mean (68.675) and a standard deviation (0.535), and the arithmetic mean of the control group amounted to (60.675) and a standard deviation (1.247), and the calculated t-value reached (13.252), which has a significance level (Sig) of (0.000) which is smaller than the value of The approved significance level is (0.05), which indicates that there are significant differences in the post test in favor of the experimental group. As for the speed-distinguishing force test for the two arms, it was lost for the experimental group. The arithmetic mean reached (15,460) with a standard deviation of (0.501) and The arithmetic mean of the control group was (14.50), with a standard deviation of (1,291), and the calculated (t) value was (1,083), which has a significance level (Sig) of (0.041), which is smaller than the value of the approved significance level (0.05), which indicates that There were significant differences in the post-test in favor of the experimental group. In the 50m breaststroke test, the experimental group lost the arithmetic mean (35,125) with a standard deviation of (0.359), and the arithmetic mean of the control group was (36.375) with a standard deviation (0.434) and the value of Calculated (t) (4,431) and it has a significance level (Sig) of (0.004) which is smaller than the value of the approved significance level (0.05), which indicates the existence of significant differences in the post test in favor of the experimental group.

Discuss the results

Through the results of the statistical values of Table (3) (4) in the tribal and remote tests of the experimental and control groups, these values and results showed significant differences for the experimental group in all the results of the post tests. This led to positive changes for both arms in (the median nerve conduction speed and the radial nerve conduction speed) and this was confirmed by (Issam bin Hassan Hussein Owaidah) 8:84 that one of the importance of magnesium for the athlete is the transfer of nerve stimuli from one cell to another along the nerves and muscles and for this it works 11:4 Magnesium is necessary for the nervous system to function normally, as magnesium supplements such as magnesium lactate help improve cognitive function, and Gordon 415:14 indicated that magnesium plays a vital role in the functioning of the nervous system. The muscular and nervous systems, as it helps in the process of muscle relaxation by activating the

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3	The force characteristic of speed (for the arms) forward support/10 seconds.	15,460	0,501	14,50	1,291	1,083	0,041	Moral
4	Completion of 50m breaststroke/ second swim	35,125	0,359	36.375	0,434	4,431	0,004	Moral

Through the above table, it shows the statistical values of the dimensional tests for the experimental and control groups, where the arithmetic mean of the median nerve conduction velocity test for the experimental group was (60.25), with a standard deviation of (3.862), and the arithmetic mean for the control group was (53.10) and with a standard deviation of (2.160) and the calculated (t) value was (4.181), which has a significance level (Sig) of (0.006), which is smaller than the value of the approved significance level (0.05), which indicates that there are significant differences in the post test in favor of the experimental group. The experimental group had an arithmetic mean (68.675) and a standard deviation (0.535), and the arithmetic mean of the control group amounted to (60.675) and a standard deviation (1.247), and the calculated t-value reached (13.252), which has a significance level (Sig) of (0.000) which is smaller than the value of The approved significance level is (0.05), which indicates that there are significant differences in the post test in favor of the experimental group. As for the speed-distinguishing force test for the two arms, it was lost for the experimental group. The arithmetic mean reached (15,460) with a standard deviation of (0.501) and The arithmetic mean of the control group was (14.50), with a standard deviation of (1,291), and the calculated (t) value was (1,083), which has a significance level (Sig) of (0.041), which is smaller than the value of the approved significance level (0.05), which indicates that There were significant differences in the post-test in favor of the experimental group. In the 50m breaststroke test, the experimental group lost the arithmetic mean (35,125) with a standard deviation of (0.359), and the arithmetic mean of the control group was (36.375) with a standard deviation (0.434) and the value of Calculated (t) (4,431) and it has a significance level (Sig) of (0.004) which is smaller than the value of the approved significance level (0.05), which indicates the existence of significant differences in the post test in favor of the experimental group.

Discuss the results

Through the results of the statistical values in Table No. (5), it becomes clear to us the emergence of clear superiority and significant differences between the research sample for the experimental and control groups and in favor of the experimental group and for all study variables. On 7:303 Activation of the choline esterase enzyme, which affects the functions of the nervous system 17:835 The body uses the so-called work effort, which is an electrical means through which electrical signals are transmitted from one end of the nerve cell to the other, and the guarantor of the continuity of transmission of signals is the change that occurs in The cell membrane, and this is done after the transfer of electrically charged atom ions through ion channels that open and close in a certain pattern, "The opening and closing of calcium channels is affected by magnesium ions (Mg²⁺), and this was evident on the completion of a 50m breaststroke and the role of the speed of contraction and relaxation of the working muscles of the arms in the development of The digital level of swimmers is 197:13, as magnesium plays an active role in the process of relaxation or separation of actin filaments

from myosin after their connection. What is an active role in sports performance?

5.1 Conclusions

In light of the foregoing, the researcher concluded the following

- The nutritional supplement (magnesium lactate) had an effect on the speed of the median nerve, the speed of the radial nerve, and the speed characteristic of the two arms.
- The nutritional supplement (magnesium lactate) improved the digital level of the 50m breaststroke swim
- This supplement had a positive role in activating the speed of the neurotransmitter in the arms, which improved the speed and strength of the work of the arms in the 50m breaststroke swim.

5.2 Recommendations

In light of the foregoing, the researcher recommends the following:

- This supplement was given to other samples of different types of swimming and different classes
- Conducting research by taking this supplement and on other indicators of different body functions in swimmers
- Conducting research by taking this supplement on other sports and with different highs, because this supplement has a positive benefit on the athlete's body
- Generalizing the results of this study to coaches and swimmers and benefiting from its results.

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