

## The effect of using a nutritional solution on the balance of some biochemical elements in the blood after completing the weight stage for advanced wrestlers

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### Abstract

The process of rapid weight loss that occurs in most combat games and wrestling is one of these sports is of great importance. As the wrestler's resort to a rapid weight loss process in the last day or two for the purpose of competing for a lower weight category, and thus he may get an advantage in strength against a competitor who is less powerful than him and for the purpose of delusions. Entering competitions and this process has side effects due to intentional starvation and thirst and participation in more than two training units during one day in order to reach the lowest weight category. Among these effects is blood imbalance due to the amount of water and mineral salts lost during the weight loss process. There is no doubt that the scientific progress in Sports sciences, including the physiology of sports training and nutrition, which clarified the importance of fluids and mineral salts for the athlete, how to replace lost fluids and salts, and maintain fluid balance in the body. Therefore, the importance of research lies in recognizing the importance of eating a fast-absorbing nutritional solution that depends in proportion on what was lost during the experiment and its impact on some physiological indicators and on some physical abilities, this is what distinguishes this study as a collection between water only, sugar solutions, and sodium and chloride solutions in one study. As for the research problem, it lies in the fact that the researcher is an international wrestler, as he noticed a lack of interest in the fluids that wrestlers eat after the weight loss process, because of their effective role in returning the body to its natural state, i.e., preparing a nutritional solution that works to compensate for the lost fluids from the body, as is the case in developed countries. As wrestlers often rely on water intake only to compensate for lost fluids from the body as a result of losing weight before entering competitions.

### Introduction

Wrestling is considered one of the oldest competitive sports, and it is now part of the Olympic Games. It represents more than 30% of the medals in combat sports in the Olympics. Wrestlers are classified in competitions according to categories including gender, age, and weight. The competition is for the wrestlers after completing the weight stage for a category according to the weight categories specified by the International Federation. Therefore, wrestlers undergo a process of losing their natural weights to obtain the advantage of increasing the size of muscle masses larger than their competitors, so many wrestlers lose weight a day or two before the competition despite the harmful effects of rapid weight loss and that the process of rapid weight loss is an important factor that can It affects physical strength, the internal body systems, and the functions of these systems during competitions, or determines his participation before competitions, and this process is one of the peculiarities of the sport of wrestling, and its purpose is illusions for the opponent and competition with a less powerful weight category, which will give the wrestler an advantage (gafar, 2018, p. 8) and it is through Reducing water intake, cutting meals for a day or two, and conducting more than one training unit during the last day before the competitions, which causes dehydration and rapid weight loss. And the loss of components may cause diseases, physical injuries, and a

significant psychological impact, which is a factor that hinders the wrestler during competitions (Davenne, Lehorgne, C., & Duché, 2020, pp. 1551–1562)The wrestler may resort to unhealthy and incorrect means to avoid this weakness and deficiency, such as intravenous injections of medical nutrients that have negative physical effects that hinder during competitions, which the International Federation has prevented and warned against. Therefore, the researchers decided to delve into this important problem and find healthy ways and means that reduce The damage of this rapid loss works to quickly compensate for the energy components that were lost during weight loss. (Ozkan & Huseyin , 2018, p. 19) Maintaining an adequate supply of water in the athlete's body is very important for the functioning of the body's internal systems, such as the functions of the cardiovascular system, the respiratory system, and regulating the body temperature of the athlete, and that water represents approximately (70%) of body weight (Hussein and Al-Anbuge, 1988, page 28) and because the researcher is an international wrestler and has undergone a process of rapid weight loss many times, he noticed that this loss has physiological conditions that are clear on the wrestler after rapid weight loss, such as irregular heartbeat, muscle spasms during movement, and height Body temperature, severe headache, fatigue, nausea, and a breakdown in muscle strength. And a great

psychological effect is a factor that hinders the wrestler before entering the competitions, such as high mood and excessive nervousness. He decided to delve into solving this problem that occurred as a result of the rapid weight loss. The importance of research lies in preparing a fast-absorbing food solution that is taken orally and contains a percentage of what was lost from the blood elements, that is, lost during the process of weight loss, which will be determined after conducting a blood test experiment. Three measurements on a group One and it accompanies the physical strength tests. The two researchers conducted an experiment to examine some mineral salts such as chloride and magnesium in the blood, and physical tests to withstand the strength accompanying the blood test with the help of a field laboratory staff to examine the blood and a medical staff specializing in

nutrition on a group of 9 wrestlers. At the same time, physical exams, and after losing weight, that is, a day after the first examination, and their reaching the target weight through the process of rapid weight loss, by reducing the amounts of water intake, cutting meals for 24 hours, and their participation in more than one training unit. Another blood sample was taken from them, and it was examined, and at the same time they tested the explosive power And bear the force, and then the researchers gave the wrestlers the nutritional solution prepared by the researchers, and after two hours of the second examination, a third blood sample was taken from the wrestlers to know the amount of what the solution replaced by restoring the percentage of some salts in the blood.

### Method and tools

The problem of the research imposed on the researcher the use of the experimental method in a way (pre-examination, inter-examination and post-examination) with the design of one experimental group. ) A player from the advanced wrestlers for three weight categories (74 kg - 65 kg - 61 kg) who will participate in the Iraqi championship for applicants and in the rapid weight loss process, which takes place 30 hours before the competitions. Return the wrestlers to their natural state after completing the weigh-in. The researcher has identified conditions by which the sample is selected, which are as follows:

- Availability of desire by the research sample members who will perform the weight loss process to participate in an experiment.
- Commitment to the vocabulary of the experiment prepared by the researcher with Ashraf, the professor supervising the research, in consultation with and with the participation of the medical staff specialized in drawing and examining blood samples.
- The amount given of the nutritional solution after the completion of the weigh-in is as much as regulated by a nutritionist and a specialized pharmacist

- The process of formulating nutrients at a rate determined by the participating medical staff.

The researcher, under the supervision of the supervising professor, and with the participation of the assistant work team, on 12/25/2022 in the wrestling hall (of Al-Sulaikh Sports Club), conducted a test to examine some elements and components of blood.

Immediately after the completion of the weighing process, the researcher, under the supervision of the supervising professor, gave the sample a nutritional solution to be taken orally, after the participation and consultation of the medical staff, after informing them of the difference level of the measured elements of the nutrients that were in the exploratory experiment of examining the blood of the sample, i.e. what were the concentrations of the salts group minerals, glucose and vitamin B12 in the blood. The percentage of substances added to a liter of water consisted of glucose 13.5 grams / liter (Kristin L, Shannon E, Richard J, & Craig A, 2010), sodium 2.9 grams / liter, potassium 1.5 grams / liter and chloride 2.6 grams / liter - liter and magnesium 0.2 g/l (David S, et al., 2015) and vitamin B12 0.5 mg/l (Andrew R, Patrick S, Grant M, Chad M, & Adam M, 2022) and take in the form of two liters per hour, one liter of nutrient solution. (Rojek, Małgorzata, Justyna , Piotr , & Magdalena, 2022, pp. 11-40)

### Results

Table (1) shows the arithmetic mean, standard deviation, and q-value calculated for the level of chloride (CL) in blood in pre, median, and post tests

variables	measuring unit	Arithmetic mean	standard deviation	Mean squares between tests	Variable error	Calculated (q) value	The standard error level	Morale	Significance
Pretest	MEq/L	100.6	1.671	144.3	2.435	59.27	0.000	0.000	moral
Intermediate test		96.89	1.267						

Post-test		104.9	2.739						
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Significant > (0.05) at the degree of freedom (16:2), and below the significance level (0.05).

In order to find out the differences between the tests, the Bonferroni test was used.

Table (2) shows the Bonferroni test shows the differences between the three measurements of the level of chloride (CL) in the blood

the exams	measuring unit	medial difference	standard deviation	standard error level	Significance
Cardiac test - the median test	MEq/L	3.706	0.389	0.000	moral
Intermediate test - post test		8.001	0.942	0.000	moral
Pre-test - Post-test		4.296	0.765	0.002	moral

Significant > (0.05) at the degree of freedom (16:2), and below the significance level (0.05).

Table (3) shows the arithmetic mean, standard deviation, and p-value calculated for the level of magnesium (Mg) in blood in pre-, median, and post-tests

variables	measuring unit	Arithmetic mean	standard deviation	Mean squares between tests	Variable error	Calculated (q) value	The standard error level	Morale	Significance
Pretest	Mg/dL	2.250	0.107	0.148	0.005	31.09	0.000	0.000	moral
Intermediate test		1.994	0.128						
Post-test		2.141	0.113						

Significant > (0.05) at the degree of freedom (16:2), and below the significance level (0.05).

In order to find out the differences between the tests, the Bonferroni test was used.

Table (4) shows the Bonferroni test shows the differences between the three measurements of the level of magnesium (Mg) in the blood

the exams	measuring unit	medial difference	standard deviation	standard error level	Significance
Cardiac test - the median test	Mg/dL	0.256	0.038	0.000	moral
Intermediate test - post test		0.147	0.039	0.016	moral
Pre-test - Post-test		0.109	0.016	0.000	moral

Significant > (0.05) at the degree of freedom (16:2), and below the significance level (0.05).

Table (5) shows the arithmetic mean, the standard deviation, and the (q) value calculated for the blood force tolerance level in the pre, median, and post tests

variables	measuring unit	Arithmetic mean	standard deviation	Mean squares between tests	Variable error	Calculated (q) value	The standard error level	Morale	Significance
Pretest	Once/30 sec	25.88	1.763	56.33	0.375	150.2	0.000	0.000	moral
Intermediate test		20.88	1.691						

Post-test		23.22	1.563					
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Significant > (0.05) at the degree of freedom (16:2), and below the significance level (0.05).

In order to find out the differences between the tests, the Bonferroni test was used.

Table (6) shows the Bonferroni test shows the differences between the three measures of force tolerance

the exams	measuring unit	medial difference	standard deviation	standard error level	Significance
Cardiac test - the median test	Once/30 sec	5.000	0.373	0.000	moral
Intermediate test - post test		2.333	0.167	0.000	moral
Pre-test - Post-test		2.667	0.299	0.000	moral

Significant > (0.05) at the degree of freedom (16:2), and below the significance level (0.05).

### Discussion

By looking at the results tables numbered (1) (2), it was found that there were significant differences between the three tests, so the arithmetic mean of the sample in the first (pre) test was (100.6) milliequivalents / liter, and after 30 hours of cutting meals by two units Training in (30) hours for the purpose of losing weight to reach the target weight, and completing the weighing stage for the sample. The level of chloride (CL) in the blood decreased, so the arithmetic mean in the second test (average) was (96.89) milliequivalent / liter, and this is an indicator of a decrease in the level of chloride ( CL) in the blood, and after giving the nutritional solution by taking two liters per hour, a liter of nutritional solution, the arithmetic mean of the chloride level (CL) of the sample increased, so the third (post) test was (104.9) mEq/L, and the researcher attributes this to the presence of an appropriate percentage of Chloride (CL) in the nutritional solution prepared by the researcher and the supervisor. Cutting meals and dehydrating the body from fluids through sweating during the training units during the weight loss phase had a negative effect, as the level of chloride in the blood decreased from the second test to the test. The first with a value of (3.706) milliequivalent / liter, then after consuming the nutritional solution, the level of chloride in the blood increased in the third test from the second with a value of (8.001) milliequivalent / liter, i.e. within the normal concentration level of chloride in the blood. Chloride decreases in the blood after long exertion, especially in hot weather, or by training in weight-loss suits, i.e., the greater the percentage of body fluid loss through sweating. (L, C. J, S. , & H. A. M. , 2021) The most effective method of thermoregulation during exercise is sweating. However, excessive loss of water, mineral salts, especially sodium, and chloride leads to muscle spasms, and an imbalance (ph) of the blood, i.e., the blood is acidic, and can contribute to dehydration, and an electrolyte imbalance in the body. muscle. (Choi, Kitchen, Stewart, & Searson, 2020, p. 8) (Kazar, 2014).

Examination of the tables in the results tables numbered (3) (4) showed that there were differences in the first (pre) test (2.250) milligrams / deciliter, and after 30 hours of cutting food with two round units of weight (30 mg) in the blood, and after Giving the nutritional solution by eating food, the arithmetic mean of the magnesium (Mg) level of the sample rose, so the third test was (2.141) milligrams / deciliter, and the researcher attributes this to the presence of an appropriate percentage of magnesium (Mg) intake in the number prepared by the researcher and the supervisor, to appear Cases of fatigue after losing weight through dehydration The link of mineral salts that work in the balance (PH) of the blood due to the high percentage of lactic acid work in impeding work. Low level Magnesium level decrease in high level High blood level by ignoring causing slowing of enzymes that work in energy liberation, and that the need for magnesium manifests itself in high-volume training, and engineering is needed in liberating energy and energy for vital reactions in the body. This is what I agree on (Shakir and Hassan, 2022, pp. 64-65) (Alfredo, Ayuso, Enrique, García, & Lázaro, 2019, p. 29), and the test marks, and the first test is scheduled to start in the next chart, and after 30 An hour into the test, the test was third in the magnesium chart (2.141). Exhibit to reflection in physiological, physical, and psychological state.

By looking at the results tables numbered (5) (6), it was found that there were significant differences between the three tests. The arithmetic mean of the sample in the first (pre-test) test was (25.88) times / 30 seconds, and after 30 hours of cutting meals, and liquids in two training units in (30) hours for the purpose of losing weight, and losing fluids through sweating as a result of participating in the training units to reach the target weight, and completing the weighing stage for the sample. Again, this is an indication of a decrease in the level of strength endurance for the arms due to the physical effort that occurred in the phase of rapid weight loss, which included cutting, meals, and the physical effort that occurred for the purpose of weight loss, i.e. a decrease in

vital processes that negatively affected the level of strength endurance for the arms, so the third (post) test was ) (23.22) times / 30 seconds, and the researcher attributes this increase in the level of strength endurance to the intake of the nutritional solution, which had a positive cause in the level of physical fitness elements, especially the level of strength endurance, and that food has an effect on motor performance, and that the physical condition is a reflection of the state Physiology, that is, whenever the internal organs of the body are functioning at a high level, this condition will be reflected in the motor performance, or the physical condition. (Fathi Al-Kubaisi, Mahdi Al-Yasiri, and Kazem Al-Hassani, 2021, pages 11-12), and the strength endurance test was a test of flexing and extending the arms from the position of support that was used in many studies for the purpose of measuring the strength endurance of the arms, including

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- (Shaghati, Hafez , and Fakher, 2017, pg. 94) (Metab and Mataib, 2007, pg. 163), and strength endurance is one of the aspects of muscular strength used in martial arts games, and essential in motor performance. All sports activities are among the aspects of muscular strength used in martial arts games. All sports activities require performance with high efficiency, and for a relatively long period, and overcoming fatigue that the athlete faces, and it is also defined as the ability of the body's systems to resist fatigue during continuous physical effort, and he believes that strength endurance tests and training are similar to performance. The movement of the practiced game in terms of performance, pushing, pulling, and pulling with the two arms are among the movements that are practiced during the movement performance in the competitions in the wrestling game. (Sakhy and Aziz, 2018, p. 61).
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