THE EFFECT OF LOADING ENERGY SOURCES ON SOME BIOCHEMICAL INDICATORS AND THE ACHIEVEMENT OF A 10,000-METER RUN

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ABSTRACT:
The research aims to identify the effect of loading energy sources and the achievement of running 10,000 meters among the members of the research sample, to identify the effect of some biochemical indicators and the achievement of running 10,000 meters among the members of the research sample, and the imposition of the research was that there were statistically significant differences between the two tests, the pre and post tests in the loading of energy sources and some The biochemical indicators and the achievement of 10,000 meters ran among the members of the research sample. The experimental method used by the researchers in this study is the appropriate approach to solve the research problem, as it is “the most accurate and most sufficient types of approaches to reach accurate and reliable results. The research sample was chosen deliberately, which included 10 runners.” From the National Centers for the Care of Sports Talent, the young men specialized in long-distance running, they were distributed randomly (by lottery) into two control and experimental groups, each group consisting of (5) runners, as the control group implemented the training curriculum followed by the coach, either the experimental group So we used the nutritional program prepared by us, and the research tests were conducted, a test to measure the level of activity of the enzyme (CPK) in the blood, a test to measure the proportion of glucose in the blood, 3 to measure the percentage of glucose Uric acid “U. A” in the blood, and an achievement test of 10,000 meters on the individuals of the research sample, and the researcher reached the following results, that nutritional supplements, especially glucose, have a great effect in enhancing the athlete’s ability and increasing his energy, thus improving his performance level. The nutritional supplements have significantly increased the percentage of CPK enzyme in the players’ body Which enhances their ability to produce energy and the ability to perform better, nutritional supplements work to reduce the concentration of uric acid in the body, thus the ability of the athlete's body to continue performing for longer periods and with higher efficiency.

Keywords: Load, Energy Sources and 10000 meters Running.

I. INTRODUCTION:
Sports games all over the world and in all local and international championships or the Olympiad are witnessing a new achievement in all games, namely long-distance running. These achievements did not come from a mere coincidence, but rather a concert of fields and great efforts based on targeted scientific foundations, training and recreational programs, and physiological laboratories regulated and programmed in various sciences Sports and its supporting sciences, and at the forefront of which comes the science of sports nutrition, physiological tests, biochemistry, sports physiology, biomechanics, etc. The study of these sports sciences plays a large role in sports training as it gives us complete connotations of the changes that occur inside the body that appear as a result of training, and thus raising the level of achievement and achieving its goal.

The researchers seek to discover problems and obstacles and find solutions that help the coach develop the athlete’s ability by relying on the correct scientific foundations and knowledge of biochemical changes such as the reactions of the production of adenosine triphosphate “ATP”, as well as the chemical elements present inside the body, their amount and effect in the body during physical effort and the effect of effort on And the relationship of some of these variables to energy production, such as phosphate and creatine, and the relationship of the other section to muscle contractions, such as calcium, potassium, sodium and other mineral elements. Educational and pedagogical
objectives, as well as improving physical efficiency, thus contributing to improving performance in various sporting events, and on this basis it is considered one of the measures of nations’ progress and advancement.

Research problem:

Reaching athletic achievement in all sports requires keeping pace with the progress made in the science of training, especially in athletics activities (long runs) that require physical capabilities and high physiological and chemical changes, and monitoring the type of food the athlete eats and the possibility of giving nutritional supplements because they have a major role in Provide the body with the missing essential nutrients it needs in order to improve muscle work, obtain the necessary energy before and after physical exertion, speed up recovery processes and speed up the disposal of energy waste. The training process is accompanied by laboratory tests that help the coach evaluate the athlete’s condition physiologically and chemically to identify the amount of development in the achievement of 10000 meters as a result of sports training, since glycogen is necessary in the process of obtaining glucose, especially in endurance sports, so it is necessary to increase the loading of this element before the competition to obtain the necessary energy. Therefore, the researchers decided to increase the loading of the necessary energy sources before the competition to raise the value of achievement for 10,000 meters runners and study biochemical indicators to find out The reasons and problems facing the decline in achievement in this run.

Research Aims:

1- Recognizing the effect of loading energy sources and the achievement of 10,000 meters ran among the research sample members.

2- Recognizing the effect of some biochemical indicators and the achievement of 10,000 meters running among the research sample members.

Hypotheses:

There are statistically significant differences between the pre and post tests in the loading of energy sources and some biochemical indicators and the achievement of running 10,000 meters among the research sample members.

II. ENERGY:

Energy is considered “the ability to accomplish a certain work” (18:1) (and there are types of energy, which are chemical energy, mechanical energy, thermal energy, light energy, electrical energy, and nuclear energy) (331:2). What we care about here is how to obtain mechanical energy through chemical energy, it is known that the body of an athlete needs energy to be able to carry out its multiple functions through which the energy houses in the cytoplasm of cells (energy factories) can produce the energy supplies required by physical performance as sports training leaves an impact Effective in energy houses in terms of increasing their number and size. And there are sources of energy outside the energy houses in the cytoplasm of cells that produce anaerobic energy. The athlete’s need for energy depends on the intensity of performance, the length of its duration, and the type of sports activity that he exercises. Therefore, we see in throwing activities that the athlete needs energy in large quantities, but in a short period, while racing needs The medium and long sprint to continuous energy for a long time, and there are three methods through which to obtain the compound (ATP) during athletic performance. The first and easiest of the complex in the nature of chemical processes is the (PC-ATP) system or the creatine phosphate system, which includes the cracking of one compound. It is creatine phosphate, and the second of these methods is the mixed anoxyogenic system, lactic acid. The third method is the oxygenic system, and all the sources of energy production for these three systems are closely related to nutrition and its elements.

CPK:

"Its function is to convert creatine phospho to creatine to obtain energy, as creatine is the phosphate of the main energy store in the muscle. The enzyme (CPK) is one of the energy-rich chemical compounds and it is the enzyme for the reverse reaction in the phosphogenic system by which it is carried out. Rebuild (ATP) again, as the muscle contains a small concentration of (ATP) as (2-4) mmol /g, which is sufficient to make eight " (331:3).Therefore, CPK is responsible for providing energy to rebuild ATP by decomposing it into phosphate (pi), creatine (cr), and energy (91: 4).
URIC ACID:
Uric acid is one of the non-protein nitrogenous components of the blood and arises in two ways: the first is internal through the metabolism of nucleic acids, and the second is external through the metabolism of food, especially meat, which is rich in these substances. The uric acid formations reach the liver in the form of adenine and guanine. Which are transformed with the help of the liver enzyme Xanthlne oxidase to uric acid, which is transported by the blood to the kidneys, where it is filtered and then excreted through urine (5: 446-448). The value of uric acid is normal in the normal human body2-7 milligrams/100 milliliters of serum.

III. RESEARCH METHODOLOGY:
The experimental method used by the researcher in this study is considered the appropriate method to solve the research problem, as it is “the most accurate and most sufficient type of method to reach accurate and reliable results (121:6).

The research sample:
The research sample was intentionally chosen, as it included 10 runners from the National Centers for the Care of Sports Talent, the category of young men specialized in long-distance running, and they were distributed randomly (by lot) into two control and experimental groups. The training followed by the trainer, either the experimental group used the nutritional program prepared by the researchers.

Equipment, tools and means used in the research:
1- Arab and foreign sources.
2- Questionnaire form.
3- Statistical means.
4- Medical cotton + plaster + sterilizing liquid.
5- An electronic device to read the percentage of elements in the blood
6- Laboratory water bath device for preserving serum (US-made).
7- Blood serum isolation device (French-made).
8- Glass test tube for blood preservation
9- 3 electronic manual stopwatches.

Tests:
1- CPK Test:
Performance description: The efficacy of CPK was evaluated using ready-made kit (KIT) according to the enzymatic chromatography method and (KIT) device from the Italian company (Gisses diagnostic).

Liquids:
(A): It consists of imidazole buffer + glucose + magnesium citrate.
(B): Amlon consists of adenine di and motophosphine + creatine phosphine + glutathione + difluorase.
(C): hydrochloric acid.
(D): Standard liquid of creatine phosphokinase enzyme.

The method of work:
LiquidThe testMeasurementCompetent
(B) 0.5 ml 0.5 ml 0.5 ml
Incubated for 3 minutes at (37) C
Serum 0.5 ml-
(D)- 0.5 ml-
Incubated for 10 minutes at (37) C

(C) 5 ml 5 ml 5 ml
The absorbance is measured at (500) nanometers.

Calculation method:
The efficacy of creatine phosphokinase enzyme

= Test Absorbance - Efficient Absorbance / Standard Absorbance - Efficient Absorbance + (205) in units/liter

2- Blood glucose test:
Performance description:
The purpose of the test is to know the level of glucose in the blood, The sugar level has been estimated

The ready-made kit (KIT) by a color method supplied by the Italian company (Gisses diagnostic).

Liquids:
(RA): phosphine liquid + glucose oxidase enzyme + phenol + aminoantipyrite.
(RB): standard liquid of glucose

How it works:
Liquid Competent The test Measurement

\[
\begin{array}{ccc}
(RA) & 1ml & 1ml & 1ml \\
(RB) & - & - & 15 MW \\
Serum & - & 15 MW & - \\
\end{array}
\]

The tubes were mixed and incubated for 10 minutes at room temperature, then the absorbance was measured at (500) nm.

calculation method

Blood glucose concentration = test absorbance - efficient absorbance / measured absorbance - efficient absorbance + standard concentration (100) mg / dl

3- Measurement of uric acid concentration in the blood test:
Measurement objective: To know the amount of uric acid in the blood.

Measurement method: A blood serum of 0.02 ml is taken and treated with uric acid, after waiting 5 minutes at a temperature of 037 degrees Celsius. The solution is read on the spectro photo meter at a wavelength of (510 nm).

Recordings: Take the result of reading the device and then treat it statistically according to the following equation:

\[
\text{A sample} = \text{Uric AcidCons} \times 6 \text{ Mg} / 100 \text{ ml} \\
\text{A standard}
\]
And we record the final result of this equation in the form of measurements, which is used as a basis for the percentage of uric acid concentration in the blood and is measured in units of \( \text{mg} / 100 \text{ ml serum} \)

### 4- Run (10,000m) Test (Achievement):

The objective of the test: to measure the achievement of a runner running (10000m).

**Equipment:**

- shooting pistol
- stopwatch (10 pcs)

**Performance method:**

Runners stand behind a starting line (10,000). And when he hears a word on the line by the absolute, the runner stands and stands while he is in the position of leaning the trunk forward and down a little and is at the top of the readiness to start, and when the absolute launches the starting shot, all the runners start running on the track whose distance is (400 m) twenty-five rounds. According to the tactic in which each runner is racing, which aims to reach the finish line in the shortest possible time.


Recording: The time taken by each runner to travel a distance of (10000m) is calculated to the nearest (1%) of a second.

**Pretests:**

The researcher carried out the tribal test without making any change to the daily rhythm of the research samples in terms of waking up time or eating food. The venous blood was drawn for all sample members by specialists in the field of chemical analysis, and then a tribal achievement test, which includes running (10000 m), was carried out.

**Food program:**

Since the body of a runner, especially long distances, needs (4600-6000 calories per day), the need to load energy sources into the body before and after physical exertion to compensate for the shortfall as a result of training and after consulting a sports nutritionist, the level of the nutritional program was determined in loading energy sources in programmed and regulated proportions Some of them are natural, and some are chemically manufactured according to the plan and the goal that was set for the food program to achieve what the researcher wants. Doses and quantities of the food program have been put in place and under the supervision of a committee of nutrition competence to avoid errors or excessive nutrition that may negatively affect the members and body of the athlete. To deliver the percentage of glycogen in the muscles, blood and natural and chemically manufactured energy sources to high levels, but not to the stages of excessive according to the standardizing program.

**Posttests:**

Under somewhat similar conditions to the conditions of the tribal tests procedures, the biochemical post tests were conducted first, and then the achievement tests were conducted, which included running (10000m).

**Statistical means:**

The statistical data was processed using the ready-made software system (SPSS).
IV. RESULT:

Table 1

<table>
<thead>
<tr>
<th>#No</th>
<th>Tests</th>
<th>measuring unit</th>
<th>Groupe</th>
<th>Mean</th>
<th>S.D</th>
<th>difference of means</th>
<th>difference of deviations</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CPK</td>
<td>units/liter</td>
<td>Pre</td>
<td>262.10</td>
<td>5.705</td>
<td>9.600</td>
<td>3.273</td>
<td>9.276</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post</td>
<td>271.70</td>
<td>5.143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Blood glucose</td>
<td>mg/dl</td>
<td>Pre</td>
<td>88.00</td>
<td>5.850</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post</td>
<td>95.20</td>
<td>6.015</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Uric acid concentration in</td>
<td>Mg/100 ml</td>
<td>Pre</td>
<td>5.140</td>
<td>0.206</td>
<td>7.200</td>
<td>2.394</td>
<td>9.509</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>the blood</td>
<td></td>
<td>Post</td>
<td>4.830</td>
<td>0.231</td>
<td>0.310</td>
<td>0.087</td>
<td>11.196</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>10,000 Run</td>
<td>M/S</td>
<td>Pre</td>
<td>35.524</td>
<td>0.522</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post</td>
<td>35.247</td>
<td>0.152</td>
<td>0.277</td>
<td>0.327</td>
<td>2.676</td>
<td>0.025</td>
</tr>
</tbody>
</table>

* Under indication level 0.05 & 9 free degree.

Discussion:

The above table shows the importance and usefulness of the nutritional program, which is evident in the statistical data of the tests selected above, as we see that the arithmetic mean of the two tests (2,1) is an increase in the arithmetic mean after the tribal, as these two tests, the higher their value, the better. We see that the values of the post-tests were smaller than the tribal ones, because those tests, the lower their value, the better. Therefore, the nutritional program followed in this study contributed to raising the players’ efficiency and increasing their ability, which shows the extent to which the research samples improved as a result of the followed program. In addition to the moral value, which shows the morale of the tests, after taking the nutritional program, the researcher attributes this nutritional program has had a positive effect that includes increasing the efficiency of special chemical processes in the (CPK) enzyme, which aims to build and increase the production of (ATP) inside the muscles, which is consistent with what Muhammad Ali Al-Qatt said that: Muscle glycogen is the fastest source of energy and phosphate to restore muscle ATP formation. When muscle (CP) decreases (phosphocreatine 165:7), creatine phospho-enzyme works. Kinase is reversed on the energy-releasing enzymes {ATP,CP} of the anaerobic system, as it transfers the “Pi” phosphate group from “ATP” when releasing energy to form the creatine complex and the “ADP” enzyme, and in return it carries a phosphate group to this product to form the energy source “ATP” As for the blood glucose in the remote test, its percentage increased more than it is in the pre-test. This increase gives us a clear indication of the increase in the capabilities of the research samples and then the continuation of physical effort, as it is a clear evidence of the excessive increase in the glycogen stock in the athlete’s body, as the level The normal blood glucose is (70-110 mmol per 100 milliliters of blood) (363:8) and the researcher attributes this increase to the effect of loading energy sources through the food program followed by the researcher and the effect of the enzymes responsible for regulating the level of blood glucose, and this is consistent with what Robert mentioned (Enzymes and coenzymes play an important role in maintaining the blood sugar level through the phosphorylation of food substrates and their translation into {ATP} (358:9).

The test distance (1800 meters) requires aerobic and anaerobic energy sources, so the special endurance exercises used by the researchers tended to develop anaerobic capabilities and as a result of the specific repetitions and intensity of each distance, which led to the body bearing physical burdens as a result of its fatigue in order to create special adaptations for the functional organs that were reflected On the development of the level of performance of this group in the performance of the maximum possible degree of intensity of jogging and for the longest possible period of time, as (Ibrahim Al- Basri) confirms that “experiments have proven that the endurance of the body and its stress in exercise, especially special endurance exercises lead to the imprint of the body on effort gradually and thus affect the ability of the device Heart and Spin (35:8), As for the physiological indicators (concentration of lactic acid, and maximum oxygen consumption Vo2max), it was found that there was a development in both of them in the tests, and the experimental group outperformed the control group. The researchers attributes this result to the proposed exercises that were applied to the experimental group, which were codified repetitions, training stresses, and rest periods based on the runners’ physical and physiological capabilities, which were codified through the coach’s acquaintance with the responses firstly through the time of cutting distances during training, “that the person who He has the ability to adapt metabolic and is characterized by the ability to work for long periods with
low rates of consumption of energy production sources in the body, that is, the availability of what is known as an economy in the consumption of energy stores (9: 170). Imad El-Din Abbas states, “The load given to the player causes excitement to the vital organs and systems of the body from a functional and chemical point of view and change in them, and this appears in the form of an improvement in the adequacy of the various organs and systems; His adaptation to this load begins (10: 126) and Bastawisi Ahmed mentions that “the efficiency of muscular work is related to the presence of a large percentage of oxygen in the muscles or its transfer from the lungs to the muscles of movement through aerobic and anaerobic interactions (11: 86).

As for uric acid, we see that its percentage was lower in the post-test than the pre-test, and the researcher attributes that the decrease in the percentage of this acid is very important, knowing that high-intensity training leads to an increase in uric acid and thus caused some damage to the body, but the nutritional program that the researcher followed with the sample Experimental contributed to the reduction of this acid, so this acid is affected by the metabolism of nutrients entering the body, and the decrease in the percentage of renal filtration increases the concentration of acid in the blood, and thus its deposition in the joints of the body, which leads to the painful disease “GOUT” (10 : 352-361, so it is necessary to monitor the level of concentration of this acid in the blood through regular examinations of the athlete throughout the training period, because an increase in its percentage leads to its deposition in the joints, especially the foot and knee joint, which leads to the formation of the painful symptoms of this disease (265:11). As for the achievement test (10,000) meters, the food program followed gave a clear positive improvement by reducing the completion time and raising the required level and improving the functional work of the internal organs, and this talk is consistent with what Raysan Khribit said that he found some (studies indicate that the increase of carbohydrates in food Under special circumstances, they have an effect on work performance, and their usefulness lies in very strenuous activities and in competitive sports. For hard work, carbohydrates improve the efficiency of persistence by affecting blood glucose and muscle glycogen (110:12).

V. CONCLUSIONS:

1- Nutritional supplements, especially glucose, have a great impact on enhancing the athlete's ability and increasing his energy, thus improving his performance level.

2- Food supplements have significantly increased the CPK enzyme in the players’ body, which enhances their ability to produce energy and the ability to perform better.

3- Food supplements reduce the concentration of uric acid in the body, thus the ability of the athlete's body to continue performance for longer periods and with higher efficiency.

REFERENCES: