

The effect of glutamine as a dietary supplement on some of the runner's biochemical, physical and level of achievement responses

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ABSTRACT

The modern programs depend on chemical and physiological indexes received by athlete's bodies as a result various physical activities. Since the athlete nutrition is taking the priority factor and the use of other types of training techniques to upgrade athlete performance. The use of dietary supplement is one of those techniques beside the good training. The researchers were previously an Iraqi national athletics team players of 400 metre sprinting, so they having a strong idea about the effect of nutrition on the physical activity of the athlete. They selected the Glutamine as an energy producer and to find out the biochemical effects on the body and its achievement. We proposed there will be a statistical significance effects as a result of body absorption to Glutamine, especially for 400 m sprinters. The experimental sampling was Professional category of Maysan 400m sprinters team for the season 2017. Laboratories of Physical Education and Sport Science Faculty of Maysan University, was used to approach the experimental work. The research sample was selected randomly from 400- meter racing's players of Maysan team. The candidates are from professional category for sport season 2017 and only 10 were selected. Conclusions shows that the nutritional supplement (Glutamine) used, has led to develop the experimental group's physical endurance. The most of which the researchers recommended is to clarify the importance of nutritional supplement, its types, ways of its implementing to both trainers and workers in the sports areas in a scientific way. **Keywords:** Glutamine, Biochemical, Physical.

Cite this article as:

Mohammed, Z.J., Sadown, H.M. & Humaidi, M.H. (2019). The effect of glutamine as a dietary supplement on some of the runner's biochemical, physical and level of achievement responses. *Journal of Human Sport and Exercise*, 14(5proc), S1884-S1890. doi:<https://doi.org/10.14198/jhse.2019.14.Proc5.08>

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Supplementary Issue: Summer Conferences of Sports Science. Costa Blanca Sports Science Events, 20-21 September 2019.
Alicante, Spain.

JOURNAL OF HUMAN SPORT & EXERCISE ISSN 1988-5202

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doi:10.14198/jhse.2019.14.Proc5.08

INTRODUCTION

Reaching the highest sports levels requires a continues searching for methods to develop athletes' performance to the level beyond their physical endurance. Since increasing training load does not meet the athletes' aspiration in getting the highest performance level in both individual and group competitions. Therefore, athletes compete in acquiring means to suit the scientific development wither in sports exercises or nutrition's type to develop their physical skills and fitness of their functional body system in a high efficiency without any side effects.

Nutrition, therefore, is one of the most important factors affecting the training process and that is why the athletes' nutrition's care has been increased to compensate the consumed energetic resources during the training or the competition. There is a need to increase using nutritional supplements as a mean to augment the energy quantity besides other training activities.

One of the important supplements is the Glutamine, which is an amino acid from a series of non-essential amino acids and the body able to produce it according to its needs. It is considered the most abundant in blood and plays a significant role in enhancing the immunity system. It is also, helps in several metabolism processes, which make it the favourite nutritional supplement to the athletes to get an increase in muscle size and strength. 400- Meter free sprinting is one of the events that require spending high efforts during training and race, which requires a lot of energy to continue training.

Searching in Glutamine important role for training process in terms of promoting the needs for the 400 *m* free sprinting event and its effective role in building the physical and biochemical capabilities, so the researchers decided to study it.

Nutritional supplements play an important role in the training process, as they contain the basic elements that aim at providing the body with enough energy for the purpose of continuing to perform sports activities wither during training or competitions. The Glutamine is one of the supplements that provide the player with the energy it needs when doing physical efforts. From the researchers' point of view and their experiences as players of track and field exercises' national team and their practicing in the event of 400 *m* free sprinting, the researchers opined to use the Glutamine as it is one of the important means in producing the energy and determine the most biochemical, physical and achievement effects.

METHODOLOGY

There is an effect of a statistical significance of using the Glutamine on some biochemical, physical and achievement response for 400- meter springing. Therefore, the researcher used the experimental approach as its relevant to the research case of study. The experimental is defined as a deliberate change and true to the conditions specified for an event and to observe and interpret the resulting changes in the same event.

Participants

The research sample was selected in a deliberate way from the runners of 400 *m* springing from Maysan team. 10 candidates from season 2017, were selected and they are representing 100 % of the original society.

The researcher divided the sample into two groups, systematic and experimental by random way, 5 runners each.

Procedure

One of the important recommendations of scientific research experts to reach an accurate and reliable results is to prepare an exploratory experiment. Therefore, researchers have conducted the exploratory experiment for biochemical and physical tests on 3 runners outside the research sample and for the purpose to verify the used tools and devices' validity, identifying the temporal and spatial circumstances' nature that occur during the experiment.

Primary Tests

Biochemical examinations were performed prior to the commencement of the research for the purpose to determine the changes that will occur after the tests. Blood sampling has been initiated by medical specialized staff before starting to take the Glutamine. 5 cc blood test samples from each player were drawn to be analysed by (Auto Analyzer). The 5 cc is to determine the biochemical level of Creatinine Urea and Sugar. Blood test results were saved and kept to the end of the program to find out Glutamine level.

Experimental boundary conditions were fixed; the test sequences and modality were also controlled. Afterward, the physical tests took place to be achieved in one data.

Measures

The research variables were identified, and tests were determined after it has been presented and discussed with some experts in the area of Physiology, Nutrition and Athletics. The biochemical tests were, measurement of blood Creatinine, Urea level and blood glucose level. Taking into consideration is to determine the following response:

- 30 m ran test from flying mode.
- 300 m ran test from the high start position. 3- 200 m ran with jogging jumping.
- 4- 400 m ran test from sitting mode.

Nutrition (Glutamine) and training programme

Using a special diet programme for the experimental group and for two months, the sampling player been given three doses of 10 grams per does each day. to each player. Glutamine does to be taken one in the morning, another does after the exercise and the last one is before bedtime. Except Friday, where no does be given, the it is the rest day.

However, the systematic group has not followed the dosages of Glutamine for the aim of making a comparison between the two groups. The researchers have not intervened in training plan prepared by the coach.

From interviewing him and getting acquainted with the training plan.

The researchers have noticed that the training plan was the same for all individuals of the group as their achievement levels were close to each other. The period during which the researchers conducted their experiment was the preparation special preparation period.

Secondary Tests

After completion of the main experiment and the end of the determined period for taking Glutamine, three tests were started for a period of three days with a gap of 24 hours apart. The first is the biochemical test and the second is the physical tests, followed by 400 *m* free running. All tests were performed in the same circumstance of which the primary tests were measured.

The statistical Means

The statistical programme was used SPSS-v16 in a relation to calculate arithmetical mean (AM), standard deviation (SD), the percentage (%) and T-test for symmetrical sampling. This is one of the best ways to analyse the results. Using the statistical programme give very accurate results and can rely on them in the final and compromised analysis.

DISCUSSION

Table 1 it is shown that the significance differences between the primary and secondary tests for the control group systematic group samples are not significant. This means that there is no development to the systematic group sample due to the variable's analysis.

The simple analysis of Table 1 shows clearly the significance between primary and secondary tests of the systematic sample group.

Table 2 shows the significance between primary and secondary tests of the experimental research group.

Table 1. Systematic group samples results.

Variables	Measuring Unit	Primary		Secondary		Calculated Value	Sig	Significance
		AM	SD	AM	SD			
Glucose in Blood	ml	123.76	0.61	130.08	1.59	9.22	0.00	Significant
Creatinine in Blood	ml	1.04	0.02	1.36	0.09	7.00	0.00	Significant
Urea in Blood	ml	21.42	0.22	28.36	1.34	11.37	0.00	Significant
30 m	m/s	3.57	0.05	3.40	0.02	6.39	0.00	Significant
300 m	m/s	38.34	0.13	36.65	0.30	4.70	0.00	Significant
300 m jumping	m/s	38.78	0.19	38.11	0.07	7.11	0.00	Significant

Table 2. Experimental group samples results.

Variables	Measuring Unit	Primary		Secondary		Calculated Value	Sig	Significance
		AM	SD	AM	SD			
Glucose in Blood	ml	124.01	0.11	123.09	0.41	1.16	0.87	Non--Significant
Creatinine in Blood	ml	1.04	0.01	1.04	0.01	0.36	0.72	Non--Significant
Urea in Blood	ml	21.58	0.36	21.60	0.20	0.10	0.91	Non--Significant
30 m	m/s	3.62	0.07	3.61	0.06	0.63	0.72	Non--Significant
300 m	m/s	38.15	0.24	37.42	0.32	0.33	0.74	Non--Significant
200 m jumping	m/s	38.91	0.24	38.83	0.21	0.49	0.63	Non--Significant
Achievement	m/s	52.16	0.13	52.13	0.14	0.33	0.74	Non--Significant

From the observation of Table 2 we find a positive significant development through the differences between the arithmetic values of the secondary tests for all the variables to the benefit of the experimental group. The differences are significant for the experimental group as T calculated values for the symmetrical samples in comparison with the (sig) value of 0,05 significance level and 8 degree of freedom. The researchers noticed a rise in the biochemical responses (glucous, creatinine and urea in the blood), they attributed the cause to the Glutamine as a nutritional supplement, which the group was taking it throughout the research period.

It is important to note that Glutamine is the most amino acid present in the human body since it represents 61% of muscles construction.

It has also seen that the biochemical response levels at the experimental sample individuals have raised. However, it is within normal ratio, that does not affect the body negatively. Since the glucose level ratio in the blood is between (80– 140 *mg/100ml*) and the creatinine level in blood is between (0.5– 1.5*mg/100 ml*).

The urea level in the blood ranges between (20-40 *mg/ 100ml*) and the period during which the experimental group took the Glutamine was very useful to the players during the training period. It is very active, dynamic and more endurable physically. Glutamine benefits is making and creating protein in the body. It is also a source of the nitrogen and carbon for the cells, providing ammonia inside the blood as well as supports and organizes the immunity system.

Table 2 confirmed that all physical test produced significant functional differences statistically and toward the benefit of the 30-m race secondary tests. The researchers see the occurred development of experimental group as a result of taking the Glutamine supplement nutritional, which let to developing the speed achievement of 30-m race.

This is because of the nutritional supplements and its positive effects in developing the active muscles, contribute to the strength's increase in this test. Consequently, let to the maximum speed's increase of the runners. this is based, primarily on the proteins' values of the plan prepared by the researchers and implemented on the experimental research sample and was capable in creating the muscular adaptation to perform the required physical ability. The development is attributed to the planning advantage, which has a positive effect in raising the private physical capacity level, which represent one of the major components of the physical strength.

The researchers look at the occurred development in the experimental group speed endurance because of the protein led to the strength to increase. This is due to significant differences in existence and for the benefit of the experimental group in the second test, which gives positive results in developing the speed endurance. This is clearly asserting on adaptation presence of the muscular groups that were influenced by the taking this protein. Itis asserted on the runner of 400 m characterized with private physical elements distinct him of others as it is required to endure the maximum speed and muscular strength besides the rapid strength.

The method used by the researchers for their study has fundamentally and significantly contributed to the development and the raise of the strength achievement value of the rapid strength of the research sample individuals. The method was implemented according to the protein plan intake, which determined by the researcher and in measured way.

The running test through 200 *m* distance jumping depends on the muscular ability to achieve work through regular exchange between tension and looseness. Mohammed at el. indicted the link between muscular

strength and kinetic speed in muscles, required for sports action high levels performance. This is one of the most important factors, which characterised the outstanding athletes as they possess a great amount of strength and speed and ability to link between them in an integrated way to create speed and strong movement for achieving the optimum performance.

Researchers attribute this development to the fact that the proteins used on the experimental group have had a great effect in improving the ability of rapid strength. They asserted of the necessity of using nutrition mean besides the non-traditional training process to increase the effect of these abilities and promote the athlete functional performance. Anita declared the strong correlation between the needs to exercise the muscular building training and strength increase through the extra amount of proteins as it represents the stimulus that functions the building muscular process.

From analysing the data in Table 2, we find significant values in the 400 *m* running event's achievement of the experimental group's individuals as a result of feeding the proteins.

Proteins considered to be one of the fundamental nutritional requirements for exercise. Many research papers were carried out on the sports body's needs of the proteins not only on the protein increase needed by the athlete but also regarding the amino acids are useful for performance.

Therefore, athletics' players have been recommended to consume around 1.6 to 1.7 gram to build up their muscle' mass and improve their strength. Researchers attribute that to the effect of the amino acid doses, which are nutritional supplements and are the basic units of proteins. The amino acids are reconstructed, to produce protein and contribute to the compensation to the damaged tissues (damaged during the training). Thus, they contribute to improve the physiological section of muscular tissues. The body reconstructs the amino acids to build up the tissue protein to replace the weary tissues. In addition, amino acids build up enzymes and hormones, which are the origin of the protein.

CONCLUSIONS

Conclusion can be summarized as follow:

- The nutritional supplement, (Glutamine), used by the researchers has led to the physical abilities' improvement with good achievement level.
- Biochemical blood levels of (creatinine, urea and glucose) were higher in experimental group blood test than the systematic group.
- The test results for the physical variables were in favour of the second test and the experimental group.

We also recommended the following depending on this study conclusions:

- Giving an explanation to the coaches and workers in the sports field about the importance of the nutritional supplements, types and how to be used in a such a scientific way.
- Priorities the biochemical indicators when addressing nutritional supplements topics.
- Consuming of 40-gram Glutamine a day, causes side effects.
- Carrying out similar studies using other types of nutritional supplements.

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