v. 2, n. 61, 2022

International Journal of Health Science

THE ADMINISTRATION OF CREATINE AS A SUPPLEMENTATION TO CROSSFIT PRACTITIONERS AS A PHYSICAL ACTIVITY

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Abstract: The present study seeks to address the consequences of creatine supplementation on the body composition of physical exercise practitioners, more specifically, crossfit. To this end, a literature review was carried out in which the works addressed the analysis of the administration of creatine and placebo in practitioners of the activity. At the end of this analysis, it will be possible to observe that the administration of creatine demonstrates positive results in anaerobic performance, increase in the percentages of maximum strength, decrease in fatigue and increase in lean mass. Its use appears to be most effective in high-intensity, short-duration exercises with short intervals between sets.
Keywords: Creatine. Physical performance. supplementation.

INTRODUCTION

Aiming at a better physical performance, countless practitioners of physical activities resort to the administration of ergogenic resources. These can be classified as mechanical, physiological, pharmacological, psychological or nutritional. Most of the time, these are adopted by patients who practice exercises with weights, being often consumed indiscriminately without the prescription of nutritionists or nutrologists.

One of the most used is creatine, which promotes an increase in physical performance, improves the distribution of lean mass and delays the process of muscle fatigue. Given its benefits, consumption among athletes and people active in physical activity grows exponentially.

The prescription of food supplementation is exclusive to professional nutritionists or nutritionists, as well as control of the ideal amount to be consumed and to which foods this supplementation must be associated. Thus, the professional will enable the development of a balanced and nutritious

diet, reaching the goal in a healthy and supervised way.

METHODOLOGY

The present work consists of a qualitative review of literature that sought to address results found in research on the work of sports medicine and nutrology in the face of adherence to dietary supplementation, whether in a comprehensive, orderly or systematic way. To carry out the work, the following steps were followed:

1) Selection of the corresponding themes;
2) Selection of samples found and used;
3) Analysis of the characteristics of the original research;
4) Analysis of the results obtained;
5) Conducting the review.

The databases of scientific literature and techniques used in carrying out the review were Google Scholar, Scientific Electronic Library Online (SciELO), Virtual Health Library, Latin American and Caribbean Literature on Health Sciences (LILACS), MedLine, Lilacs, Scielo, Periodicals Capes, Anvisa using the search engines: creatine, hypertrophy, strength, supplementation, creatine, hypertrophy, force and supplementation, creatine, la hipertrofia, la strength, and la suplementación.

Thus, the present work seeks not only to analyze the supplementation interface, but also to highlight the various contents on the subject in question, aiming to shed light on an educational path, clarifying possible ways to develop creatine supplementation strategies in athletes and sportsmen, respecting the principles of nutrology, sports medicine and nutrition.

RESULTS AND DISCUSSIONS

α-methyl guanidino acetic acid, also called creatine, is a substance naturally produced by the human body, mainly kidneys, pancreas and liver, a process made possible through the amino acids glycine and arginine. Via food, it can be found in protein foods, such as fish and red meat.

The functions that must be pointed out of creatine include the provision of temporary energy, the transport of energy between the production site and the consumption site, as well as the maintenance of the ATP/ADP resynthesis rate. Creatine also stimulates the supply of hydrogen protons and regulates glycolysis, in addition to being essential in the process of ATP molecule formation and the process of resynthesizing phosphocreatine phosphorylates disphosphate adenosine.

Currently, creatine is found in monohydrate, micronized, alkaline, ethyl ester and phosphate forms, and can be in powder, gel, liquids, bars and gum. Phosphate creatine is the least used due to its high production cost, but it has the same ergogenic effects on muscle mass.

Alkaline creatine is the least adhered when compared to other types of creatine, having a higher pH than the others. This way, the molecule becomes more stable coming into contact with a liquid substance. The higher the pH, the lower the conversion of creatine to creatinine.

Creatine monohydrate is a water-soluble white powder being the most common, cheapest and most studied in articles, being composed of 88% creatine and 12% water having a weaker absorption. Due to its low cost and greater ease of finding it, most athletes and sportspeople make use of it. Creatine ethyl ester is a subtype very similar to the monohydrate type, however, it may have advantages over the monohydrate form, as its absorption efficiency in the body is almost maximum.

The supplemental use of creatine aimed at athletes was allowed a decade ago by ANVISA, through Resolution n. 18/2010, which provides for food for athletes. These products

must meet the following requirements:

- must be used in the formulation of the creatine monohydrate product with a minimum degree of purity of 99.9%;
- this product cannot contain dietary fiber;
- This product can be added with carbohydrates.

In addition to the provisions of art. 21, on the labels of creatine supplements for athletes, the following warnings must be highlighted and bolded:

- "The consumption of creatine above 3g a day can be harmful to health";
- "This product must not be consumed by children, pregnant women, the elderly and people with illnesses".

Single paragraph. The amount of creatine in the serving must be stated on the product label.

Creatine supplements for athletes must contain 1.5 to 3 g of creatine in the portion defined by the manufacturer.

For many years, it has been believed that lean mass gain through creatine supplementation is due to water retention caused by creatine. However, it is now known that contractile proteins have been influenced by changes in intracellular water contents. Likewise, the reduction in degradation and the increase in protein synthesis can explain the gain in muscle mass, so that the cellular edema caused by water retention increases the rate of protein degradation by reducing the release of branched-chain amino acids. By establishing physiologically normal conditions of functioning, returning to normal, thus suggesting that creatine reduces muscle proteolysis.

There are several indications that the amount of creatine phosphate stored in the muscles is a factor in physical exercise performance. Therefore, with creatine supplementation, there may be an increase in the supply of creatine phosphate. Consequently, it increases the resynthesis of adenosine triphosphate (ATP).

When performing the administration of supplementation, there is an increase in body creatine, facilitating a greater formation in the amount of creatine phosphate, thus developing a specific ergogenic effect for high-intensity, repetitive, short-duration exercises with a short recovery period. In addition to the fact that creatine has the ability to raise ATP levels during maximum physical effort. This hypothesis is reinforced as the practitioners who have no effect with creatine supplementation is because they had their stores full before use, since the uptake of creatine by the muscle fiber is limited, so the ergogenic effect is caused by the increased concentration of this, when their stocks are reduced.

Ideally, creatine supplementation must be done in association with a simple carbohydrate. This way, there is an increase in the transport of creatine into the muscles. This process seems to be mediated by insulin, which would stimulate the ATPase enzyme of the Na+/K+ pump, which, in turn, would promote a simultaneous transport of Na+/ Creatine (two molecules of sodium for each one of creatine) to maintain or restore normal Na+ gradient and membrane potential.

Few literatures found showed that creatine may pose health risks to healthy men. However, there are numerous cases in the literature indicating that creatine can impair kidney function when consumed indiscriminately. In order not to offer health risks, it is suggested to healthy patients who regularly consume this supplement that they do not exceed the amount of 5g/day, given that scientific evidence is not sufficient to guarantee the safety of ingestion above this dosage, if carried out in the long term.

CONCLUSION

It becomes clear that there is an increase in lean mass levels with the use of creatine supplementation, demonstrating its effectiveness in high intensity exercises, short duration and with small intervals between sets.

However, despite the numerous benefits presented, clear in the face of various scientific evidence presented, the controversy regarding the possible weight gain remains. The question that remains is whether there is really an increase in protein synthesis or water retention.

Therefore, it is of fundamental importance to emphasize that supplementation must be prescribed by a qualified professional, taking into account the type of physical activity, duration and physiological conditions of the same, as well as the objectives established with the patient.

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