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Research Article

# Nutritional aspects in the sportsman's functional rehabilitation program

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## Abstract

The adoption of a proper dietary regimen is of vital importance in the sports practice of athletes,as it is able to ensure an adequate turn-over of all those substances that are consumed with exercise. Our purpose was to demonstrate how adequate protein intake can favorably influence the post-injury rehabilitation phase. Our work is presented as a case-control study on a group of 16 competitive athletes recovering from sports injuries who were prescribed a balanced diet with, to 8 of them, oral supplementation with a pool of amino acids in optimal composition in the dose of 1g/kg/day. In the two groups, recovery time, muscle strength, and injured limb diameter were taken as variables. It was observed that the group treated with amino acid supplementation had statistically significant benefits compared with the group treated with diet prescription alone.

## Introduction

It is now a well-known fact that the adoption of a correct nutritional scheme by an athlete is of fundamental importance, certainly not because this could guarantee victory, but rather because it makes possible an optimal utilization of the substrates deputed to the function of fuel for the organism (carbohydrates and lipids), which are designated to plastic functions, such as proteins, or also to different but non-caloric functions such as vitamins, mineral salts, trace elements, and water. A well-formulated diet both quantitatively and qualitatively is able to ensure adequate turnover of all substances that, with exercise, especially intense ones, come to be consumed and/or destroyed (approximately 56). Thus, while miracles cannot be expected, on the other hand, a well-nourished athlete can avoid incurring deficiency states from overconsumption or deficient intake. A review of the literature reveals an obvious discrepancy between two different but, in fact, very similar situations. In fact, on the one hand, there is a great proliferation of works aimed at investigating the best ways to feed an athlete in the course of competitive activity, the same cannot be said about the nutritional prescriptions to be implemented in the post-injury rehabilitation phase. This, in our opinion, represents a shortcoming, as it is intuitive that even in the case of a rehabilitative program, nutritional support could favorably influence recovery time and modalities. Particular attention should be paid to protein intake, which is of fundamental importance in all situations in which it is necessary to increase muscle tone-trophism. In this regard, with the understanding that the protein fraction must be introduced through food sources, animal and non-animal, it seemed interesting to evaluate the effects of oral supplementation of a pool of amino acids in optimal composition, essential and non-essential, which previous investigations have revealed to bring a significant improvement at the expense of protein metabolism and muscle structure [1-6].

## Materials and methods

The study was conducted on 16 subjects of both sexes, ages ranging from 22 to 38 years, practicing various sports disciplines at a competitive level, who were afferent to the U.O. of Sports Medicine and Cardiology University d'Annunzio Chieti-Pescara following the occurrence of sports injuries of equal magnitude, affecting the limbs, which required the implementation of a rehabilitation protocol articulated on:

- Hydrokinesitherapy;



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- Proprioceptive exercises;
- Muscle strengthening.

As part of the program, 8 subjects were prescribed a balanced and standardized diet, and the other 8 were given oral supplementation through an optimal composition amino acid pool in the dose of 1g/10kg/day.

The following parameters were considered for each of the athletes:

- Times elapsed between injury and return to sports activity;
- Muscle diameter of the affected limb;
- Muscle strength (measured by Strain Gauge using a Hand Grip as an instrument). The results obtained in supplemented and non-supplemented athletes, respectively, were subjected to statistical comparison [7-11].

## Results

The results are displayed in the following figures. Specifically, Figure 1 shows the comparison between the averages of recovery times measured in the two groups: it can be observed that a clear significance ($p < 001$) can be found in favor of the group of supplemented subjects; Figure 2 shows the comparison regarding the diameters of the affected limb: a significant difference ($p < 005$) is again observed in favor of the group of treated athletes; finally, Figure 3 shows the comparison between the dynamometric values measured in the two groups: once again, the values of the supplemented subjects are significantly higher than those of the untreated ones ($p < 005$).

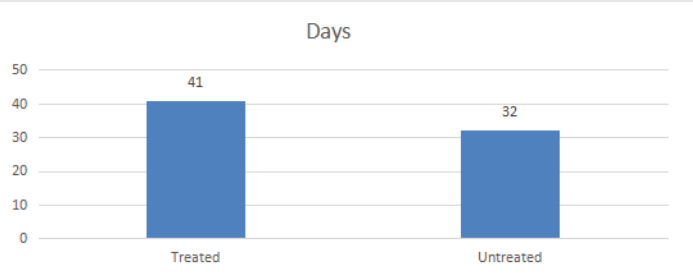


**Figure 1:** Days elapsed between injury and return to sports practice.

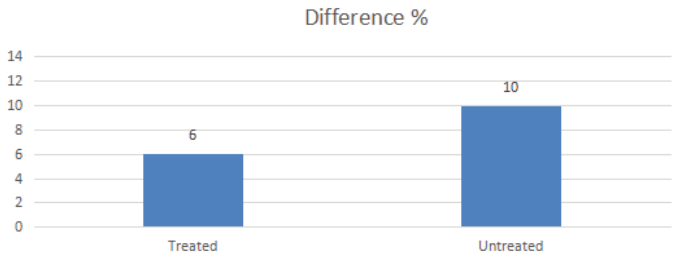


**Figure 2:** Diameter of the affected limb: percentage differences.

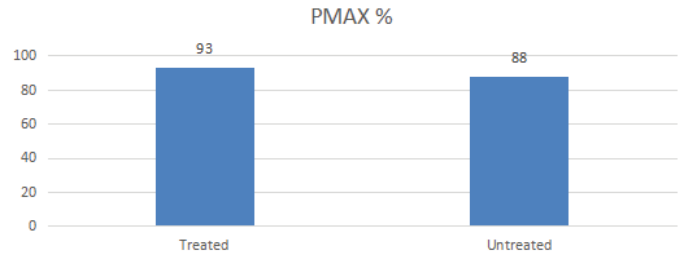


**Figure 3:** Muscle strength.

## Discussion

The study carried out allowed the authors to reiterate the importance of a proper nutritional regimen, both for the athlete in the midst of competitive activity and for the same during post-injury rehabilitation. In agreement with what has been reported by other authors, it seems clear that optimizing the intake of certain nutrients, such as, in particular, amino acids can allow the athlete to limit the intake of fats, even the hidden ones, favoring the preservation, if not the increase, of the lean component essential for the purposes of the complete recovery of muscle mass. In addition, the adoption of dietary rules and calculated supplementation, allows the athlete to adapt more adequately to training exercises, without imposing sacrifices on the athlete [12-17].

## Conclusion

In the light of the results that emerged from the investigation, although considering the small number of cases evaluated, it seems clear that oral supplementation with a selected Pool of amino acids, in optimal composition and administered in proportion to body weight, induced favorable effects on all the parameters taken into consideration, and it, therefore, seems legitimate to propose such a nutritional intervention, in order to optimize the energy response within the rehabilitation pathway.

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