

# Rehabilitation Nutrition for Injury Recovery

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Contributor: Sousana K. Papadopoulou

Rehabilitation nutrition aims, combined with training, to an adequate long-term nutritional status of the athlete and also in physical condition improvement, in terms of endurance and resistance. The aim of this paper is to define the proper nutrition of the athletes in order to hasten their return to the sports after surgery or injury.

injury

sarcopenia

sport nutrition

## 1. Introduction

Sport injury and fear of injury are important barriers to participation in sport, despite the health benefits of sports activities. The incidence, prevalence and type of sport injuries vary from male to female as well as between age groups [1]. In general, the direct cost of an injury is determined by calculating the expense of using health-care services to avoid, diagnose, and treat injury and its complications [1]. A 52-week prospective analysis in elite adolescent athletes by Rosen et al. found that the prevalence of 1-year injury rate was 91.6%. The overall rate of injury was 4.1 for every 1000 h of sport exposure, and on average 3 out of 10 (30.8%) elite teenage athletes reported injuries per week [2]. A recent study by Polinder et al. estimated that the annual cost of sport injuries in patients visiting an emergency department in the Netherlands was 413 million euros every year [3]. There are 40 thousand football-related accidents in a year in Switzerland, which leads to a loss of 500 thousand working days. According to 2003 data from national insurance companies, the cost for the health system is about 19 million euros in the financial dimension [4]. Sport injuries cause health-related costs in excess of \$1 billion dollars worldwide [4]. It is estimated that 3–5 million sports injuries occur in a year, according to data from the United Nations [4]. Football clubs suffer significant losses from success-related and financial factors when players, for whom huge sums of money have been paid, get injured [4].

Nutrition has a multi-dimensional effect on athletes' physical and mental health and well-being [5][6][7][8]. An adequate and balanced diet is of utmost importance in recovery and rehabilitation. The human body requires energy and especially protein and unsaturated fatty acids to compensate for inflammation as well as a plethora of micronutrients, which contribute in healing.

Athletes should enjoy both nutritious and palatable food during rehabilitation phase. Therefore, their food selection should be in accordance to their personal habits and preferences, in addition to their needs.

Having a compromised post-surgical nutritional status may result in poor outcomes, including complications, infections, and long hospital stay; hence, the aim of an optimized diet is to maximize the response of injury/surgical

treatment, to maintain the recommended body weight and body fat status according to their sport and to ensure fast return to their training schedule and performance ability.

## **2. Rehabilitation Nutrition for Injury Recovery of Athletes**

Rehabilitation nutrition is used in International Classification of Functioning, Disability, and Health guidelines combining both rehabilitation and nutrition, in order to improve mental and physical function facilitating the daily activities <sup>[9]</sup>. During rehabilitation, the primary goal is to achieve the fastest healing and to return to competition, using the most effective resources, where nutrition is an important component. After injury or surgery, it is the critical time to improve athletes' eating attitudes and behaviors, which lead towards the healing process and/or enhance performance afterwards <sup>[10]</sup>. According to Wakabayashi and Sakuma <sup>[9]</sup> "rehabilitation nutrition" is similar to sports nutrition. Of course, the term also includes the assessment of the risk or presence of sarcopenia, malnutrition, or dysphagia. For the purposes of this review, there is an extensive overview of specific nutritional intervention techniques, especially focused on the macronutrients needed in the rehabilitation phase of an athlete that has suffered injury or/and surgery. In such cases nutritional intervention also aims, combined with training, to an adequate long-term nutritional status of the athlete and also in physical condition improvement, in terms of endurance and resistance.

## **3. Conclusions**

Conclusively, both during exercise and rehabilitation, adequate intakes of macronutrients can play a major role supporting athletes' anabolism. Future research is warranted to clarify the underlying mechanisms of nutrients, especially regarding injury treatment, as their efficacy has not yet been assessed satisfactorily. Dietary protocols should consider doses, timing, rehabilitation time, type and quality of nutrients, as well as the type of injury, and the injured body part. Monitored evaluation should follow, in order to assess nutrient indicators and to avoid levels above sufficiency. High-quality nutrient-rich mixed diets are suggested. Biomedical indices and vitamin and mineral levels should be assessed and monitored, in order to avoid unnecessary supplementation.

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