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The Impact of Nutrient Intake on Sport Rehabilitation

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Editorial

Sports injuries have a huge economic and psychological impact as well as the potential to impair physical ability. Some injuries have little effect on an athlete's future quality of life, while others can, even if just temporarily. At International Championships, the frequency of injury among athletes was 81.1 injuries per 1000 participants. That International Championship includes thirteen top-level championships, including seven outdoor championships (for example, Olympic Games in the summers of 2008 and 2012, as well as the winter of 2010), four indoor championships, one world youth championship (aged 16–17 years) and one world junior championship (16–19 years). These championships featured distance sports (short, medium and long), "jumping," "race walks," "throws," and "combination events" (e.g., pentathlon). Additionally, the World prolonged injury leads to sedentary periods that cause a decrease in muscle mass, muscle strength and function. In addition, muscle atrophy and increased abdominal fat deposition may delay further the return to competition. There is a lack of evidence in the literature about the role of micronutrients and supplements during injury though there is encouraging indirect documentation in muscle recovery and sarcopenia. Sarcopenia is mainly a disease that occurs in the elderly; however, its development may be related to conditions that do not only affect the elderly, such as malnutrition, disuse and cachexia [1-5].

Description

It is believed that one billion individuals worldwide are vitamin D deficient or insufficient. Optimal vitamin D and calcium levels have been recognized for their role to bone mending, which is vital for athlete recovery. Vitamin D appears to promote muscle development and cell differentiation and it may also boost sarcoplasmic calcium absorption, resulting in increased muscular contractility. Vitamin D receptors (VDR) are expressed in muscle stem cells during muscle regeneration following damage, according to in vitro research. A recent study found that vitamin D supplementation from any source had no effect on muscle mass in the elderly, while benefiting cultured muscle fibre cells in vitro.

Vitamin D supplementation has diverse effects depending on the muscle types and functions. A meta-analysis of randomized controlled studies in older people revealed that vitamin D improved muscular strength but had no effect on muscle hypertrophy or power. Similarly, Zhang et al. recently discovered in athletes that vitamin D improved lower-limb muscular strength but not upper-limb muscle strength, total muscle strength, or muscle explosive power. In a meta-analysis of randomized controlled trials, vitamin D supplementation was found to be strongly linked with enhanced upper and lower limb strength in healthy people. The effect of vitamin D supplementation on skeletal muscle hypertrophy and function is debatable and further study is needed.

Vitamins A, E, and C have been dubbed "antioxidants" since a lack of them causes oxidative stress. Their benefits are gaining popularity, particularly during recuperation. Foods high in vitamin C and flavonoids may help in rehabilitation as the body regenerates tissue. Although randomised controlled studies did not support vitamin C supplementation in the general population, it may be useful in surgical patients who have elevated vitamin C requirements. Following spinal cord injury, vitamin E treatment enhanced hind limb locomotor performance and decreased spinal cord morphological damage while lowering inflammation in rats. Belisle et al. discovered that vitamin E supplementation may increase cytokine IL-1, IL-6, TNF- and IFN- production in the elderly, although this relies on each individual's immune defence system condition.

However, supplementation with vitamin C above adequacy is not recommended and there is no solid evidence in general for the need for this specific micronutrient supplementation following injury. While antioxidant intake is required for the greatest results during rehabilitation, excessive consumption is not advised when nutritional indicators are normal. Mega-doses of vitamins A and E may impede gains in areal bone mineral density following strength exercise. Vitamin A is an important fat-soluble vitamin that has been used topically in dermatology for many years to treat disorders like as photo damage, psoriasis and to aid healing after operations such as dermabrasion. It has been discovered that anti-inflammatory effects in open wounds encourage epithelial growth, fibroblasts and ground material.

The evidence supports the use of supplemental vitamin A in the treatment of acute wounds as well as the repair of injuries caused by bones, burns, intestines and radiation. An earlier study by Hunt et al. on the effect of vitamin A on reversing the inhibitory effect of cortisone on healing of open wounds in animals and humans found that topical vitamin A can revert the cortisone-related healing inhibition in open wounds without affecting other open wounds in the same patient or animal that are not treated with vitamin A and that antagonism between vitamin A and cortisone frequently occurs in humans, rabbits and rats. Some vitamins appear to be required for proper nutritional support throughout the recovery period.

Conclusion

High-quality proteins, lipids, vitamins, antioxidants, minerals and other supplements might help athletes increase anabolism throughout various exercise-based rehabilitation regimens. Although there have been numerous studies on the ergogenic effect of nutrients and supplements before, during and after training and competition, there is a research gap on the effectiveness of these nutrients in the rehabilitation of athletes after injury or surgery, in maintaining muscle mass and in reducing rehabilitation time. As a result, thorough recommendations on the use of nutrients and supplements are not possible.

Conflict of Interest

None.

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