

Redefining Sports Nutrition for Immune Health and Recovery

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DESCRIPTION

Nutrition plays a significant role in the performance, recovery and overall health of athletes, yet its influence on immune function and injury recovery is often underappreciated. In this opinion article, we will discuss about the sports nutrition strategies must go beyond fueling and hydration, placing equal emphasis on supporting immune resilience and accelerating tissue repair. As the demands on elite and recreational athletes continue to intensify, so too must our understanding of how targeted nutrition can protect against illness, reduce downtime from injuries and promote long-term physical resilience.

The immune system is highly responsive to the stressors of intense physical activity. While moderate exercise has immunoprotective effects, prolonged or high-intensity training, especially without adequate recovery, can transiently suppress immune function. This leaves athletes vulnerable to infections, particularly upper respiratory tract infections, which are common during peak training periods and competitions. Strategic nutritional support during these times can make the difference between maintaining performance and experiencing disruptive illness.

Among the most critical nutrients for immune health in athletes are vitamins C and D, zinc, iron and protein. Vitamin D, for instance, plays a dual role by modulating immune responses and contributing to musculoskeletal health. Its deficiency is common among indoor athletes and those in regions with limited sun exposure. In my view, routine screening and appropriate supplementation of vitamin D should be standard in athlete care protocols. Similarly, adequate intake of protein, especially from high-quality sources rich in leucine and other essential amino acids, is vital not only for muscle repair but also for supporting the synthesis of immune-related proteins and cells.

Antioxidants and polyphenols found in fruits, vegetables, teas and spices also warrant greater attention. These compounds can mitigate exercise-induced oxidative stress and inflammation, both of which are closely linked to immune suppression and delayed recovery. However, the timing and dose of antioxidant intake matter. Over-supplementation may blunt training

adaptations, so athletes should aim to obtain these nutrients primarily through a diverse, plant-rich diet rather than relying excessively on supplements.

When it comes to injury recovery, the nutritional focus must shift toward supporting tissue healing, managing inflammation and preventing muscle atrophy during periods of immobilization or reduced activity. In my opinion, this is where sports nutrition often falls short. Too often, the post-injury diet remains static or is restricted due to reduced energy expenditure, despite an increased demand for specific nutrients that support the healing process. Protein needs may actually rise during injury recovery, particularly collagen-rich proteins and those providing glycine, proline and hydroxyproline, which are crucial for tendon, ligament and skin repair.

Emerging evidence also supports the use of creatine, omega-3 fatty acids and gelatin or collagen peptides during injury rehabilitation. Omega-3s, in particular, offer anti-inflammatory benefits and may help preserve muscle mass and function. Moreover, the timing of nutritional interventions can influence recovery outcomes. Consuming protein and specific nutrients shortly after rehabilitation sessions may enhance tissue remodeling and functional gains.

Gut health is another area I believe deserves more focus in athlete nutrition. The gut is not only essential for nutrient absorption but also houses a large portion of the immune system. Stress, travel, altered sleep and dietary shifts common in athletic routines can disrupt gut microbial balance, potentially affecting immune response and recovery. Prebiotic and probiotic interventions tailored to the athlete's needs could help stabilize gut health and reduce susceptibility to illness, although more targeted research is needed in this area.

In conclusion, the integration of immune-supportive and recovery-enhancing nutrition into athletic programs is not a luxury it is a necessity. As sports science evolves, so too must our nutritional paradigms, moving beyond calories and macros to encompass the complex interplay between nutrients, immunity and healing. Nutrition has the power not only to fuel

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performance but also to protect and restore the athlete's most vital asset their body. We must continue to refine and prioritize this aspect of care if we are to support athletes at every stage of their physical stage.