

Nutritional Support for the Winter Sports Athlete

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Winter sports encompass numerous endurance, power, and technical disciplines, each imposing distinct metabolic and physiological demands that require tailored nutritional strategies. Despite this diversity, athletes competing in cold environments encounter several shared nutritional challenges that should be addressed to optimise performance, recovery, and overall health.

Cold exposure elevates total energy expenditure through thermoregulatory processes, shivering thermogenesis, and the added effort of heavier clothing, often accompanied by altitude exposure and/or prolonged outdoor training. Meeting these increased energy requirements can be challenging due to appetite suppression in the cold, restricted food availability, and logistical barriers during training and competition. Inadequate energy and carbohydrate intake not only impair performance but also increase susceptibility to illness, injury, and the development of relative energy deficiency in sport (REDs).

Maintaining immune competence is a key concern during the winter season, as cold stress, frequent travel, and repeated high-intensity training heighten vulnerability to upper respiratory tract infections. Nutritional strategies to support immune function include ensuring sufficient energy and carbohydrate availability—particularly around exercise—along with adequate, high-quality protein intake and nutrient-rich whole foods. Certain supplements may further enhance immune resilience, including vitamin D, omega-3 fatty acids, probiotics, and polyphenols. Vitamin D deficiency remains prevalent among winter athletes due to limited sunlight exposure and suboptimal dietary intake, emphasising the importance of regular monitoring and targeted supplementation.

Hydration is another frequently underestimated challenge in cold environments, where low sweat perception and reduced thirst can contribute to chronic hypohydration, impairing thermoregulation and performance. Adequate hydration is also essential for maintaining the integrity of mucosal surfaces, providing a first line of defence against respiratory pathogens.

As winter athletes prepare for upcoming major competitions, including the 2026 Winter Olympic Games, the need for evidence-based and individualised nutritional support is increasingly recognised. Through targeted interventions, sports nutritionists play a critical role in addressing these challenges to support health and maximise athletic performance in cold-weather conditions.