Challenges to Achieving Nutrient Adequacy on Vegetarian and Vegan Diets

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There is growing global interest in plant-based dietary patterns, particularly vegetarian diets (which exclude meat, poultry, and fish) and vegan diets (which exclude all animal-derived foods) for planetary health. Plant-based diets are generally more environmentally sustainable and are associated with lower greenhouse gas emissions, land and water use and deforestation than meat-centric diets. While vegetarian diets have been followed throughout history by a small proportion of the population, including athletes, for religious, spiritual, ethical, philosophical, aesthetic, environmental and health reasons, *animal rights, environmental concern* and *health* have been reported as primary motivations among physically active populations. In athletes, vegetarian and vegan diets may provide both health and performance benefits encompassing a reduced risk of many chronic and inflammatory diseases and conditions, which include hypertension, hyperlipidemia, cardiovascular disease, type 2 diabetes, dementia, and many cancers. Both vegetarian and vegan diets can be nutritionally adequate to support sports training and athlete health, provided they contain a variety of foods, such as whole or minimally processed grains, fruits, vegetables, legumes, nuts, seeds and for vegetarians who consume them, eggs and dairy products. To meet nutrient needs, vegetarian and vegan athletes must ensure adequate energy intake and select foods rich in nutrients of concern, sometimes referred to as "red flag nutrients", which are less abundant in plant foods, less well absorbed, or both. Red flag nutrients include iron, zinc, calcium, iodine, vitamin B12, and omega-3 fatty acids. Plant-based and vegetarian food sources rich in these nutrients include:

Iron and Zinc: whole & enriched grains, legumes (pulses), nuts, seeds, iron-fortified cereals, green leafy vegetables, eggs
Calcium: low-oxalate vegetables (broccoli, kale, napa cabbage, collards, turnip greens), calcium-set tofu, fortified soymilk, textured vegetable protein, some fortified fruit juices, blackstrap molasses, milk, regular yogurt
Iodine: seaweed, milk, yogurt, iodized salt

Vitamin B12: nutritional yeast (e.g., Engevita B12 yeast flakes, Redstar T6635), B–12–fortified plant–based meat and dairy alternatives, breakfast cereals, dairy, eggs

Omega–3 fatty acids: walnuts, flax seeds, chia seeds, hemp seeds, edamame, seaweed, and algae

Other nutrients, such as magnesium, potassium, folate, and vitamins A, C, E and K, are generally abundant in vegetarian and vegan diets, provided energy intake and dietary variety are adequate.

Like most athletes, those following plant–based diets may benefit from nutrition education to optimize health (as well as performance) while supporting planetary health. This session will explore the potential health benefits of plant–based diets and provide practical strategies for sports dietitians working with athletes who wish to adopt a *more* plant–based dietary pattern or who need assistance meeting their nutrient needs. Strategies will include a game plan for increasing the consumption of foods rich in red flag nutrients, and using food guidance models, such as the Vegetarian and Vegan Athlete's Plate®, as visual tools to help athletes achieve nutrient adequacy. Emphasis will be placed on prioritizing whole or minimally processed foods while minimizing reliance on supplements and ultra–processed foods.