



Training Tips for Vegetarian Athletes

One runner's personal testimony that you can be a vegetarian and still keep up with the competition.



Like many athletes, I was recently looking for a leg up on the competition. I was preparing for a fall marathon and already working hard on my running and speed work, but I wondered if by tweaking my diet, I could gain an edge. As a registered dietitian and sports nutrition coach, I was aware of several successful elite athletes who practiced vegetarianism. I had also read the latest research on the topic, which determined that there are no significant changes in physical performance when athletes avoid animal products, as long as they eat a vegetarian diet that is balanced, varied and adequate.

Okay, I was up for the challenge of adopting a vegetarian diet. But what exactly is a "balanced, varied and adequate" vegetarian diet, and how hard would it be to follow and maintain such a pattern of eating?

What Kind of Vegetarian Am I?

According to a position paper by the American Dietetic Association (ADA), Dietitians of Canada (DC) and the American College of Sports Medicine (ACSM), as many as 4.8 million Americans currently follow some kind of vegetarian diet (ADA, DC & ACSM 2000). Obviously, I wouldn't be alone if I attempted this new way of eating. First and foremost, though, I had to decide what *type* of vegetarian diet I should follow.

Those who call themselves "vegetarians" run the gamut from **vegans**, who avoid all animal products, to much more

liberal **semivegetarians**, who avoid some, but not all, animal-derived foods. For a detailed look at these and other categories, see the sidebar "Various Vegetarian Diets."

After considering all of the different types, I knew in my heart that I could not bear to eliminate carbohydrate-rich chocolate milk, calcium-rich yogurt and protein-rich eggs. Therefore, I chose to follow a **lacto-ovo-vegetarian diet**, which allows dairy products and eggs but limits other animal products.

What I didn't realize at the time was this: while a well-balanced vegetarian diet *can* provide ample energy to prevent premature fatigue and muscle breakdown, *endurance* athletes like myself still need extra calories and the correct balance of macro- and micronutrients to fuel their workouts and to promote recovery. This fact was lost on me at first, even as I struggled with fatigue, low iron levels and moderate muscle breakdown. Wanting to minimize the risk of injury that accompanies any strenuous training, I began to calculate the exact nutrition needs of a vegetarian athlete.

Protein Needs of Veggie Athletes

To begin with, I focused on the vegetarian athlete's macronutrient needs, namely protein. Protein is involved in numerous physiologic processes, including building lean muscle, supporting the immune system and maintaining nitrogen balance. The most recent position statement by



the ADA, DC and ACSM confirms what previous research found: the protein needs of athletes are higher than those of most other people. This is probably because of exercise-induced muscle breakdown and the resultant need for repair; the training body's energy needs; and the additional protein needed to support gains in lean muscle mass (ADA, DC & ACSM 2000). As a result, vegetarian and vegan athletes need to pay close attention to their protein choices and serving sizes.

The good news is that it is uncommon for vegetarians who consume adequate amounts of plant and vegetable proteins to experience a severe protein deficiency. However, *vegan* athletes may benefit from the use of protein supplements and nutritional shakes to meet their need for essential amino acids (those that are not made in the body and must be consumed in the diet). To decrease their risk for protein deficiency, vegan athletes should vary their sources of protein and rely heavily on legumes and beans. In general, a modest 10% increase in protein intake over the Acceptable Macronutrient Distribution Range of 10%–35% may be beneficial to all vegetarian athletes, to allow for the incomplete digestion of plant proteins (ADA 2006).

For adults the recommended daily allowance (RDA) for protein is 0.8 gram per kilogram of body weight per day (g/kg/day), or 0.36 g per pound of body weight per day (g/lb/day). The protein recommendation for endurance athletes ranges from 1.2 to 1.4 g/kg/day (0.55–0.64 g/lb/day) (Venderley & Campbell 2006).

During times of intense training, including resistance exercise, the recommendation increases to 1.6–1.7 g/kg/day (0.73–0.77 g/lb/day) (Venderley & Campbell 2006). Regardless of whether they follow an omnivore or a well-balanced herbivore diet, most athletes do not experience much difficulty in achieving these recommended intakes (Venderley & Campbell 2006).

Fat Needs of Veggie Athletes

An indispensable part of any athlete's diet, fat provides necessary fuel and essential fatty acids; it is also vital for the absorption of fat-soluble vitamins. Athletes should aim to obtain 20%–25% of their total calories from fat (ADA, DC & ACSM 2000).

This range is appropriate for vegetarian and vegan athletes as well as omnivores. However, the focus of the vegetarian athlete's diet should be on foods that are high in mono- and polyunsaturated fats, such as nuts and nut butters; seeds; tahini; olives; avocados; and plant oils, such as olive oil (ADA, DC & ACSM 2000).

Carbohydrate Needs of Veggie Athletes

Athletes need higher carbohydrate intakes than their sedentary counterparts because carbs are the working body's preferred source of fuel. An athlete's carbohydrate requirements depend on the *type* of exercise practiced, be it endurance activities or resistance training. In general, smaller athletes and those in light training should consume carbohydrates at the low end of

the range, whereas larger athletes, those in heavy training or those looking to gain weight should aim for the higher end of the range. For specific amounts, see the sidebar "Recommended Carbohydrate Intake for Athletes."

Fortunately, a diet based on plant sources and high in fruit and grains is naturally rich in carbohydrate. Studies have found that among the general public, the carbohydrate intake of vegans ranges from 50% to 65% of total energy intake, while the carb intake for lacto-ovo-vegetarians ranges from 50% to 55% (Messina & Messina 1996). >>

Various Vegetarian Diets

Here's a snapshot of the different categories of vegetarian diets.

- **Semivegetarians** avoid some, but not all, animal-derived products; many semivegetarians commonly avoid or limit their intake of red meat.
- **Lacto-vegetarians** consume dairy products but limit intake of other animal products.
- **Ovo-vegetarians** include eggs in their diet but avoid other animal products.
- **Pesco-vegetarians** eat fish (and possibly other seafood) and may eat eggs and dairy, but avoid meat and poultry.
- **Followers of a macrobiotic diet** avoid most animal-derived foods and focus on eating unprocessed, organic foods.
- **Vegans** are the strictest type of vegetarians; they avoid every sort of animal-derived food. Some vegan diets are very restrictive, prohibiting consumption of all commercially available foods that contain *any* ingredient that is animal derived or processed with an animal derivative (e.g., gelatin).

Recommended Carbohydrate Intake for Athletes

Type of Training	Amount of Carbohydrate Needed	Estimated Needs for a 59 kg (130 lb) Athlete	Estimated Needs for an 80 kg (175 lb) Athlete
light: <1 hour/day light intensity	5–7 g/kg (2.3–3.2 g/lb)	~300–415 g of carb/day	~400–560 g of carb/day
heavy: 1–4 hours/day, moderate intensity	7–10 g/kg (3.2–4.5 g/lb)	~415–590 g of carb/day	~560–800 g of carb/day
very heavy: 4+ hours/day, high intensity	≥ 10–12 g/kg (≥ 4.5–5.5 g/lb)	~590–710 g of carb/day	~800–960 g of carb/day

Source: Burke et al. 2001.



Recommended Nutrient Intakes for Athletes

Nutrient	Recommended Intake for Omnivorous Adult Athletes	Recommended Intake for Vegetarian and Vegan Athletes	Reason for Increased Needs	Why Athletes Should Be Concerned
iron	8 milligrams (mg) per day for adult men; 18 mg/day for nonpregnant, nonlactating, premenopausal adult women.	14 mg/day for adult men; 32 mg/day for premenopausal women. Food sources include enriched cereals, whole grains and legumes.	Vegetarian and vegan diets are typically low in heme iron, the most readily absorbed type, but high in compounds that can inhibit iron absorption.	Iron is critical to athletic performance; it's used to help transport oxygen to muscles.
vitamin B ₁₂	2.4 micrograms per day for adult men and women. Some people over 50 years old can't digest vitamin B ₁₂ found in animal products; all older adults should supplement with vitamin B ₁₂ or fortified foods.	Same as for omnivorous adult athletes, except vegan athletes need to include synthetic vitamin B ₁₂ or fortified foods in their diet.	Vegetarians who avoid all foods from animal sources (including supplements) do not have a reliable source of vitamin B ₁₂ in their diet and should eat foods that are fortified with active vitamin B ₁₂ .	Over time, inadequate vitamin B ₁₂ intake can lead to a form of anemia linked to lower oxygen transport and reduced athletic performance.
zinc	11 mg/day for adult men; 8 mg/day for nonpregnant, nonlactating adult women.	Vegetarians can meet their zinc needs by including legumes, whole grains, nuts, seeds and soy in their daily intake.	The best sources of zinc are animal products; certain compounds may inhibit zinc absorption from plant foods.	Zinc plays a role in immune function, protein synthesis and blood formation. Up to 79% of absorbed zinc can be lost after strenuous exercise.

Sources: Barr & Rideout 2004; Campbell & Anderson 1987; Venderley & Campbell 2006.

Micronutrient Needs of Veggie Athletes

Common micronutrients that should be closely monitored and possibly supplemented in vegetarian and vegan athletes include vitamin D, riboflavin, calcium, vitamin B₁₂, iron and zinc. Animal products are the most potent sources of these nutrients. Deficiencies can lead to impaired performance; fatigue; low bone density; and poor muscle growth and repair (Barr & Rideout 2004; Campbell & Anderson 1987; ADA, DC & ACSM 2000; Venderley & Campbell 2006).

By consuming a diet rich in whole grains, fortified foods and complete proteins, athletes can greatly reduce their risk for vitamin and other micronutrient deficiencies. For most athletes with adequate energy intakes, the RDAs or Dietary Reference Intakes (DRIs) should suffice. However, vegetarian athletes—who have excessive losses of micronutrients in the urine, sweat and feces—may require supplementation. For specifics, see the sidebar “Recommended Nutrient Intakes for Athletes.”

Tips for Vegetarian Athletes

Here are a few more tips to help your vegetarian athlete clients perform their best while keeping energy levels high and minimizing the risk for malnutrition and fatigue.

- Supplement the diet with high-energy foods, such as nuts, heart-healthy oils, dried fruit and other nutrient-dense foods.
- Try to eat small, frequent, nutrient-packed meals throughout the day to keep energy and blood glucose levels stable.
- Monitor protein intake in order to avoid protein deficiencies.
- Maintain a healthy body weight to prevent excessive weight and nutrient loss.
- Consume adequate calories to recover the energy burned during training.

How I Fared as a Veggie Athlete

So what did all my research and my personal observations teach me? In general, there is no reason why vegetarian and even vegan athletes can't reach their full potential as long as they maintain a healthy body weight and follow sound nutrition practices. And for those of you wondering how I fared in that fall marathon after completing my lacto-ovo-vegetarian diet trial, I have this to report: my finish time was less than 20 seconds different from my spring marathon time—a mere 17 seconds more! Consider this as further evidence that a well-balanced vegetarian diet doesn't hinder performance! ■

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