

Nutrient Adequacy in Endurance Athletes

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ABSTRACT

Adequate nutrition is critical to optimal performance in endurance athletes. However, it remains unclear if endurance athletes are consuming enough energy, macronutrients, and micronutrients. **PURPOSE:** The purpose of this study was to determine if endurance athletes are meeting their nutritional requirements and whether it varies by gender. **METHODS:** Endurance athletes (n=44), 39.0±14.2 y, participated in the study. Dietary intake was assessed using the five-step multiple-pass 24-hour recall method, a validated measure, that involved asking the participants to recall in detail the type and amount of foods and beverages they consumed the previous day. Energy, macronutrient, and micronutrient intakes were computed from the recalls using the ESHA Food Processor Diet Analysis Software. Nutritional adequacy was calculated by comparing the nutrient intakes of the participants with nutrient standards set by the Food and Nutrition Board, Institute of Medicine, the American College of Sports Medicine (ACSM), the Dietary Guidelines for Americans, and the American Heart Association (AHA). Fisher's Exact test was used to compare the proportion of male and female endurance athletes that did not meet the requirements for energy, macronutrient, and micronutrient intakes. **RESULTS:** Over 50% of male athletes did not consume enough water, protein, carbohydrates, dietary fiber, linoleic acid, α -linolenic acid, eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), vitamins D, E, and K, pantothenic acid, biotin, manganese, chromium, zinc, molybdenum, choline, potassium, and magnesium. More than 50% of female athletes did not consume enough protein, carbohydrates, linoleic acid, α -linolenic acid, EPA, DHA, vitamins D, E, and B₁₂, pantothenic acid, thiamine, biotin, manganese, chromium, zinc, molybdenum, choline, and potassium. About 50% of male and female athletes consumed more than the recommended amount of total fat, saturated fat, cholesterol, and sodium. Many athletes (male: 20%; female: 8%) did not meet the energy requirements. A significantly higher portion of male athletes compared to female athletes did not meet the nutrient requirements for dietary fiber (70.0% and 24.0%, respectively; $p \leq 0.001$), α -linolenic acid (90.0% and 60.0%, respectively; $p = 0.04$), and total water (75.0% and 40.0%, respectively; $p = 0.03$). **CONCLUSION:** Many endurance athletes are not meeting the nutrient requirements for energy, water, and several macronutrients and micronutrients, with some differences by gender. These results need to be confirmed by a larger study. Endurance athletes would benefit from dietary counseling by a registered dietitian.