
Calculating Fat Needs

Fat provides a dense energy source—each gram of dietary fat contains 9 kcal, and 1 pound of body fat stores 3,500 kcal. In a marathon, a 68-kg (150-pound) runner running at a pace of 8 minutes per mile burns about 3,245 kcal—slightly less energy than is stored in 1 pound of fat. Of course, fat is not used exclusively as fuel in exercise, but the example demonstrates the tremendous energy reserves found in adipocytes.

Body fat also protects the body from injury by acting as insulation around organs and under the skin (1). Dietary fat is a source of energy, provides two essential fatty acids (linoleic acid and alpha-linolenic acid), and aids in the absorption of fat-soluble vitamins and carotenoids. In addition, fat makes food more palatable through its sensory characteristics of odor, mouth feel, and texture (1).

Key Points about Fats

- Athletes should not follow a fat-free diet. According to current guidelines, individuals should get 20% to 35% of total energy intake from fat, or at least 1 g of fat per kilogram of body weight per day. Athletes who drastically restrict fat intake may become deficient in essential fatty acids and fat-soluble vitamins. In females, very-low-fat intake has been associated with menstrual irregularities and higher injury rates (1).
- All fats are not created equal, although they all contain 9 kcal/g. Polyunsaturated fats (n-3 and n-6 fatty acids) and monounsaturated fats (n-9 fatty acids) are more healthful than saturated fat and *trans* fatty acids.
- Although body fat stores are plentiful, fat oxidation is limited at high exercise intensity (70% to 80% of maximum oxygen consumption [VO_{2max}]), and fatty acid oxidation requires more oxygen than carbohydrate oxidation (1).
- “Fat loading”—the practice of consuming a high-fat, low-carbohydrate diet—does not improve exercise ability or performance. Current scientific evidence does not support a high-fat diet for athletes (1).
- It has been theorized that fish oil supplements (EPA and DHA) improve blood flow and enhance vasodilation. Some athletes use these supplements to thin the blood. Research on the benefits of fish oil supplementation for athletes is lacking, but consuming as little as one fatty fish meal per week can reduce the risk for heart attack (2). The risks associated with taking fish oil supplements include increased bleeding tendencies and easy bruising (3).

Daily Fat Intake Recommendations for Athletes

Recommendation	Example for a 48-kg (106-lb) Female Gymnast Who Consumes 1600 kcal/d	Example for 68-kg (150-lb) Male Runner Who Consumes 2600 kcal/d
20%-35% of total energy intake	36-62 g fat	58-100 g fat
1.0 g/kg	48 g fat (27% of kcal)	68 g fat (24% of kcal)
Linoleic acid (n-6 fatty acid)	12 g (AI)	17 g (AI)
Alpha-linolenic acid (n-3 fatty acid)	1.1 g (AI)	1.6 g (AI)

Abbreviation: AI, Adequate Intake.

Source: Data are from references 1, 4, and 5

Food Sources of Dietary Fat

Type of Fat	Food Sources*
Polyunsaturated fats (n-6 fatty acids)	Corn oil Corn oil margarine Cottonseed oil Pumpkin seeds Sesame seeds Safflower oil Soybean oil Walnuts
Polyunsaturated fats (n-3 fatty acids)	Anchovies Catfish “Designer” eggs [†] Flax seed/flax oil Herring Mackerel Salmon Sardines Shrimp Tuna
Monounsaturated fats (n-9 fatty acids)	Almonds Avocados Canola oil Cashews Peanut butter Peanut oil

Food Sources of Dietary Fat (continued)

Type of Fat	Food Sources*
Monounsaturated fats (n-9 fatty acids)	Peanuts Olive oil Olives
Saturated fats	Bacon Butter Cheesecake Cheese Cream Cream cheese Coconut Coconut oil Half and half Highly marbled steaks Ice cream Palm kernel oil Ribs Sausage
<i>Trans</i> fatty acid	Commercially prepared baked goods (cookies, cakes, pies) Frozen, breaded foods (chicken nuggets, fish sticks) Frozen french fries Shortening Snack crackers and chips Stick margarines

*Foods contain a mixture of fatty acids. This table shows the predominant fatty acid in each food.

† “Designer” eggs refers to eggs with higher levels of n-3-fatty acids than regular eggs. Chicken feed is altered to produce eggs with varying amounts of n-3 fatty acids.

Source: Data are from references 6 and 7.

References

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