



S E A T T L E  
**PERFORMANCE**  
M E D I C I N E

## Nutrition Basics

The importance of nutrition is often overlooked. Following are basics to help navigate the confusion and mystery surrounding food. Everyone can benefit from the positive impact good nutrition has on health, ranging from disease risk reduction to improved quality of life. Nutrition's effect on performance and injury prevention is important to athletes and active individuals.

The basic building blocks of nutrition include three "macronutrient" types; proteins, carbohydrates and fats, each with a specific role in the body.

### The 3 Macronutrients

#### Carbohydrate

Carbohydrates are the primary fuel source for the body, supplying energy to think and move. Adequate carbohydrate prevents the body from excessively burning muscle proteins for energy between meals. Carbohydrates are stored as "glycogen", providing a limited energy reserve when blood levels run low. Carbohydrate intake exceeding the body's capacity for utilization is converted to fat for storage.

Carbohydrates should provide 50-60% of the total daily calories. One gram of carbohydrate produces 4 calories; therefore 1000-1200 carbohydrate calories should be consumed when following a 2000-calorie per day diet plan.

- The following symptoms may indicate an insufficient quantity of carbohydrates in the diet:
  - Headaches
  - Fatigue
  - Irritability, mood swings
  - Cravings for sweets
  - Poor sleep
  - Poor concentration
  - Decreased fitness performance
  - Increased susceptibility to injury and illness

Certain types of carbohydrates are more beneficial than others because they contain high levels of minerals and vitamins and they burn evenly in the body, leading to more stable blood sugar and insulin levels throughout the day.

#### Include these types of carbohydrates:

- All beans & legumes such as lentils and peas.
- Oatmeal, barley and other whole grains
- Fruits and vegetables
- Whole grain breads, cereals, pastas and crackers
- Winter squash, sweet potatoes, yams

Certain types of carbohydrates are not as beneficial as they lack vitamins and minerals and may burn unevenly in the body, leading to unwanted weight gain in some individuals. It's best to limit these types of carbohydrates to small portions and only occasional intake.

#### Limit these types of carbohydrates:

- Sugar containing sodas
- Candy

- Pastries, cookies and cakes
- Breads, cereals and pastas made with refined flours.

## **Protein**

Protein is a primary component of muscles, ligaments and bone. Adequate protein intake allows the body to repair muscular wear and tear and to build new muscle and stronger bones. The immune system depends heavily on proteins to help fight infection and the hormone system requires proteins to carry “chemical messengers” to their target tissues within the body.

Proteins should supply 12-20% of the total daily calories. One gram of protein produces 4 calories when burned; therefore 300-400 calories from protein should be consumed when following a 2000-calorie per day diet plan. This represents 3-4 servings of high quality protein daily. When choosing proteins, pick lean sources that are low in saturated fats. Protein intake exceeding the body's capacity for utilization is converted to fat for storage.

Insufficient dietary protein intake can lead to:

- Poor healing
- Injuries
- Increased susceptibility to infections
- Hair loss
- Muscular weakness
- Inability to build muscle mass

## **Sources**

- Dairy products, such as yogurt, cottage cheese, milk (choose low fat)
- Beans & legumes
- High protein soy products (check labels, not all soy products are high protein)
- Poultry, seafood, lean meats

## **Fat**

Dietary fat provides some of the energy for daily living and energy needed for endurance exercise. Fats are important for the brain and nervous system and for immune and reproductive function. They help keep the skin and hair healthy.

Fats should supply 18-25% of the total daily caloric intake. One gram of fat produces 9 calories when burned; therefore, about 400 calories from fat should be included in a 2000 calorie per day diet. Remember, fat is more than twice as dense as carbohydrates or protein, so pay attention to portion sizes.

Insufficient fat intake can lead to:

- Dry skin or hair
- Poor exercise endurance capacity
- Increased susceptibility to infections

Plant and fish sources of fats are the most beneficial. Animal fats should be limited as they promote cardiovascular disease and can increase the risk for heart attack or stroke.

## **Include these types of fats:**

- Avocado (1/4 avocado = 7 grams of fat)
- Olive, canola, flax oils (1 teaspoon of oil = 5 grams of fat)
- Nuts, nut butters, seeds (1 tablespoon of nut butter = 8 grams of fat)
- Salmon, mackerel (3 oz = 10 grams of fat)

## **Water: The forgotten nutrient**

Water provides a liquid medium to transport nutrients and waste products to and from the body tissues via the circulation. Digestion requires water to break down foods we eat. Fluids cushion our joints and prevent injury. Adequate hydration helps us maintain a normal blood pressure and heart rate.

Water requirements are approximately half our body weight in fluid ounces per day. For example, a 140-pound person requires 70 ounces of water per day. When exercising, add 20-40 ounces per hour of exercise, depending on your perspiration rate.

Insufficient water intake can lead to:

- Headaches
- Dizziness, especially when standing from a laying or seated position
- Reduced exercise capacity
- Rapid heart rate
- Fatigue
- Decreased perspiration
- Overheating

### **Sources**

- Water
- Sports drinks
- Herbal teas
- Diluted juices

## **Vitamins & Minerals**

Vitamins and minerals are important components of a good nutrition plan. They are involved in most chemical reactions that take place in the body, and they protect the body from injury and illness. Choosing nutrient rich foods helps assure that adequate amounts of vitamins and minerals are available to the body.

Sources

- Vegetables, especially dark green or deeply colored
- Fruits
- Beans and legumes
- Whole grains
- Shellfish

## **Daily Nutrition**

Try to consume 3 meals and 2-3 snacks daily, depending on your activity level.

### **Include the following foods in your daily diet:**

- Grains, cereals, breads, crackers (whole grain)
  - 6-11 servings
- Fruit
  - 2-3 servings
- Veggies
  - 3-4 servings
- Healthy fats
  - 2-4 servings
- Beans & Legumes
  - 1-2 servings per week or more
- Dairy, low fat
  - 2-4 servings
- Other lean protein (fish, poultry, lean meats, beans, soy products)
  - 2-3 servings

## Exercise Nutrition

### Before Workout

A carbohydrate snack of 150-250 calories, consumed one hour prior to exercise helps stabilize blood sugar levels to provide consistent energy during the workout.

#### Snack Examples

- Granola or energy bar + fruit
- Whole grain bread + natural peanut butter + jam
- Fruit + yogurt
- Cereal + milk
- Small smoothie

### During Workout

For workouts lasting longer than an hour, carbohydrates help keep energy levels up. The goal should be to consume 200-300 calories per hour, primarily from carbohydrate. You can use a carbohydrate-electrolyte containing sports drink or an energy bar. Fluid intake should provide 20-40 ounces per hour depending on your sweat rate.

### After Workout

After workouts 90 minutes or longer, be sure to re-fuel within the "glycogen window". This is a window of time during which the muscles have a greater capacity to restore their carbohydrate balance in order to prepare for the next long workout. To take advantage of the glycogen window, consume a carbohydrate and protein snack within 30 minutes and at 2 hours post workout.

#### Each post workout snack should contain:

- Carbohydrate 1.5 grams/kg of body weight (1 lb = 2.2 kg)
- Protein 0.4 grams/kg of body weight

#### Examples:

- Crackers + String Cheese + Fruit
- Energy bar + yogurt
- Fruit smoothie with protein supplement
- Turkey sandwich
- Bean burrito

Emily Cooper MD  
Seattle Performance Medicine  
[www.seattleperformancemedicine.com](http://www.seattleperformancemedicine.com)