HEALTH BASICS

Nutrition and athletic performance

How food and fluids provide energy, support recovery, and affect physical performance

WHAT IT IS
Using food and fluids to support activity and recovery

WHERE IT COMES UP
Training, competition, recovery, travel, and food choices

WHY IT MATTERS
Influences energy, adaptation, concentration, and recovery

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Sports dietitian, primary care clinician, or sports medicine service

HOW IT IS CHECKED
Food, training, health, and relevant blood-test review

Overview

Nutrition and athletic performance describes how food and fluids affect exercise, training, competition, and recovery. It is not a disease or a diagnosis.

Your nutritional needs are shaped by the type, length, and intensity of activity you do. Your body size, age, health, training schedule, environment, and goals also matter. An endurance runner, a recreational weightlifter, and a team-sport athlete may need different approaches.

A useful plan supplies enough overall energy and includes carbohydrates, protein, fats, vitamins, minerals, and fluids. Timing can matter, especially when training sessions are long, intense, or close together. However, no single food, supplement, or meal guarantees better performance.

Sports nutrition is not only for elite athletes. It can also help people who exercise for fitness, train for an event, have demanding jobs, or take part in recreational sport.

How it works

Your body turns nutrients from food into energy and materials for growth and repair.

Carbohydrates are broken down into glucose, a form of sugar used by working muscles and the brain. Some glucose is stored in the muscles and liver as glycogen. Longer or harder activity can reduce these stores, so carbohydrate-containing meals and snacks can support training and recovery.

Protein provides amino acids, which the body uses to build and repair muscle and other tissues. Regular protein-containing meals are generally more useful than relying on one very large serving. Foods such as dairy products, eggs, fish, meat, soy, beans, lentils, nuts, and seeds can contribute protein.

Dietary fats provide energy, help absorb certain vitamins, and support normal cell and hormone function. Very restrictive low-fat eating may make it harder to meet overall energy and nutrient needs.

Vitamins and minerals help with processes such as oxygen transport, bone maintenance, muscle contraction, and energy release. Iron helps red blood cells carry oxygen. Calcium and vitamin D support bones. Deficiencies can affect health and training, but taking extra amounts does not automatically improve performance when your levels are already adequate.

Fluid allows blood to circulate, helps control body temperature, and replaces water lost through sweat. Sweat also contains electrolytes, including sodium. Fluid needs are influenced by temperature, humidity, clothing, exercise intensity, duration, and your personal sweat rate.

Eating and drinking around exercise may make activity more comfortable and support recovery. A meal that is easy for one person to tolerate may cause stomach discomfort for another. Training sessions are a safer time to test food and fluid choices than an important competition.

Why it matters for your health

Consistently eating enough helps your body meet the combined demands of everyday life and exercise. Adequate nutrition supports training quality, concentration, immune function, bone health, recovery, and normal body processes.

The goal is not always to change body weight or appearance. Performance goals based only on becoming lighter or leaner can encourage under-fuelling. Body weight also does not show whether you have enough energy, nutrients, muscle, or fluid.

Food can have social, cultural, financial, ethical, and practical importance. A sound plan should fit your preferences and resources rather than require unusual products. Vegetarian and vegan eating patterns can support athletic activity, but careful food selection may be needed for nutrients such as protein, iron, vitamin B12, calcium, and vitamin D.

Sleep, training design, medical conditions, and mental health also affect performance. Nutrition cannot make up for inadequate rest, unsafe training, or untreated illness.

What can go wrong

A mismatch between food intake and training demands can contribute to several health problems.

Low energy availability means too little dietary energy remains for normal body functions after exercise demands are considered. When this becomes prolonged or severe, it may be part of relative energy deficiency in sport, known as RED-S. This condition can affect bones, hormones, menstrual function, sexual health, immunity, mood, and performance. It can occur in people of any sex and at any body size.

Disordered eating describes harmful or rigid eating behaviours that may not meet the criteria for an eating disorder. Eating disorders are diagnosed mental health conditions. Warning signs can include intense fear around food, repeated compensatory exercise, frequent meal skipping, binge eating, vomiting, or increasing social withdrawal around meals.

Iron deficiency can reduce the iron available for making healthy red blood cells. It may occur with blood loss, low intake, reduced absorption, or increased needs. A clinician may use blood tests, including a full blood count and ferritin, when there is a reason to suspect it. Iron supplements should not be started solely because performance has declined.

Dehydration can affect comfort, temperature control, and performance. Drinking excessive amounts can also be harmful. Exercise-associated hyponatraemia occurs when blood sodium becomes too low, often in connection with drinking more fluid than the body can remove during prolonged activity.

Some sports supplements contain undeclared, contaminated, or inaccurately labelled ingredients. This can cause health effects or a positive result in drug-tested sport. "Natural" does not mean safe or effective.

Seek emergency help for collapse, confusion, a seizure, loss of consciousness, chest pain, severe breathing difficulty, or signs of severe heat illness. These are not routine nutrition questions.

Arrange routine medical follow-up for persistent fatigue, repeated injuries, unexplained performance decline, frequent dizziness, ongoing digestive problems, significant unplanned weight change, or menstrual changes. These concerns have several possible causes and should not be assumed to come from nutrition alone.

What you can do

Base regular eating on a range of familiar foods. Meals can include a carbohydrate source, a protein source, vegetables or fruit, and a source of fat. Exact portions and timing should reflect your appetite, training load, health, and goals.

Practical steps include:

There is no single blood test that measures "sports nutrition." Testing should answer a specific health question. A clinician may consider tests for anaemia, iron status, vitamin deficiencies, or another condition based on your history and examination. Broad testing without a clear reason can produce results that are difficult to interpret.

A registered dietitian with sports expertise can help if you have high training demands, dietary restrictions, digestive difficulties, a history of disordered eating, or a health condition that affects food or fluid needs. A primary care or sports medicine clinician can assess symptoms, injuries, menstrual changes, or possible deficiencies.

If your current eating pattern supports your activity, health, and recovery, you may not need to change anything.

- Keep a short record of training, meals, fluids, sleep, and digestive problems
- Plan food and drink for long sessions, travel, and limited food access
- Test competition-day choices during training
- Notice whether urine, thirst, weather, and sweat losses suggest more fluid is needed
- Check supplement labels and avoid products making extreme promises
- Ask whether a supplement has reliable evidence and independent quality testing

Common questions

Do I need a special sports diet?

Usually not. Many people can meet their needs with ordinary foods and a regular meal pattern. Special planning becomes more useful when sessions are prolonged, intense, frequent, or held in challenging conditions.

Do I need protein immediately after exercise?

Recovery nutrition can be helpful, but there is rarely a need to panic about a narrow "window." Your total intake and the distribution of protein-containing meals across the day are important. Closely spaced training sessions may make prompt eating more practical.

Are sports drinks necessary?

Not for every activity. Water may be enough for shorter or easier sessions. Drinks containing carbohydrate and electrolytes may be useful during prolonged activity, heavy sweating, or when eating is difficult. They can also contain sugar and may not be needed as an everyday drink.

Can supplements improve performance?

A small number of supplements have evidence for specific uses, but the likely benefit, dose, safety, and sporting rules differ by product and person. Supplements cannot replace adequate food, training, and recovery. Discuss them with a sports dietitian, pharmacist, or sports medicine clinician, especially if you take medicines or compete under anti-doping rules.

Should I lose weight to perform better?

Lower body weight does not always improve performance, and intentional weight loss can reduce energy availability or lean tissue. If body composition is relevant to your sport, ask for advice that considers health, performance, and your relationship with food.

Sources

- Thomas DT, Erdman KA, Burke LM. Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and athletic performance . Medicine & Science in Sports & Exercise . 2016;48(3):543-568.
- Mountjoy M, Ackerman KE, Bailey DM, et al. 2023 International Olympic Committee consensus statement on Relative Energy Deficiency in Sport . British Journal of Sports Medicine . 2023;57:1073-1097.
- McDermott BP, Anderson SA, Armstrong LE, et al. National Athletic Trainers' Association position statement: Fluid replacement for the physically active . Journal of Athletic Training . 2017;52(9):877-895.
- Maughan RJ, Burke LM, Dvorak J, et al. IOC consensus statement: Dietary supplements and the high-performance athlete . British Journal of Sports Medicine . 2018;52:439-455.
- US National Institutes of Health, Office of Dietary Supplements. Dietary Supplements for Exercise and Athletic Performance: Fact Sheet for Health Professionals . Accessed August 24, 2026.