



Sports Nutrition

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What is Sports Nutrition?

It can be defined as the application of nutrition knowledge to a practical daily eating plan focused on providing the fuel for physical activity, facilitating the repair and rebuilding process following hard physical work, and optimizing athletic performance in competitive events, while also promoting overall health and wellness.



The Nutrient Trio: Carbs, Proteins, Fats – A Dietary Dance

Carbohydrates, proteins, fats, vitamins, minerals, and water are recognized as essential nutrients. Within the body, carbohydrates are metabolized into glucose, serving as the primary energy source for all forms of physical exertion. These

nutrients are abundant in a diverse range of foods, encompassing grains, fruits, vegetables, as well as various milk substitutes such as soy, rice, and nut-based beverages. Proteins, composed of amino acids, play a crucial role in the development, growth, and repair of muscles and other bodily tissues, making them vital for recovery following intense physical exercise. While proteins are present in many foods including grains and vegetables, they are predominantly found in dairy and dairy alternatives, along with meat and plant-based protein sources such as soy products, nuts, seeds, and legumes. Pre-workout meals should be high in carbohydrates and moderate in protein to provide energy and support muscle function. Post-workout meals should include protein to aid in muscle recovery and repair.

Fats, also referred to as lipids, are derived from both plant and animal sources in our diet. Triglycerides represent the most prevalent form of fat. Other types include cholesterol and phospholipids. Fats play a vital role in providing structural integrity to cell membranes, supporting hormone production, forming the insulating sheath around nerve cells, and aiding in the absorption of fat-soluble vitamins. Fat primarily serves as an energy source during periods of rest and during low- to moderate-intensity physical activities. Chronic inflammation can lead to tissue damage and elevate the risk of injuries. Consuming certain foods, particularly those high in omega-3 fatty acids (such as fatty fish, flaxseeds, and walnuts) and antioxidants (such as fruits, vegetables, and nuts), can help mitigate inflammation due to their anti-inflammatory properties.

The Nutrient Superstars: Exploring the Vital Roles of Vitamins, Minerals, and Water

Vitamins play a crucial role in a multitude of bodily functions and processes essential for maintaining health and preventing disease. They are categorized based on their solubility: water-soluble (including B vitamins and vitamin C) and fat-soluble (comprising vitamins A, D, E, and K), which influences their absorption, transportation, and storage within the body. Carbohydrates, fats, and proteins, are also known as energy nutrients, provide the body with energy. This energy is stored in the chemical bonds of these nutrients and released during metabolic processes that break them down into carbon dioxide and water. Some of this released energy is captured to form adenosine triphosphate (ATP), the body's immediate energy source for cellular functions. The remaining energy is dissipated as heat. ATP is essential for muscle contraction and, without it, athletes could not perform physical activities. Vitamins are abundant in the diet, present across nearly all food groups such as fruits, vegetables, grains, meat and plant-based proteins, dairy and its alternatives, as well as certain fats. Collagen, a protein that provides the structural foundation for tendons, ligaments, and other connective tissues, relies on nutrients that support its synthesis. Foods high in collagen-boosting nutrients, like vitamin C found in citrus fruits, bell peppers, and strawberries, are beneficial for maintaining the health and integrity of these tissues, thereby reducing the risk of injuries such as tendonitis and ligament strains.

Minerals are essential for tissue development and the regulation of bodily processes. Physical activity stresses muscles and bones, increases the demand for oxygen transport in the blood, and results in sweat and electrolyte loss, necessitating sufficient mineral intake and replenishment. Minerals are divided into major minerals such as calcium, sodium, potassium, chloride, phosphorus, magnesium, and sulfur and trace minerals, including iron, zinc, copper, selenium, iodine, fluoride, molybdenum, and manganese. These minerals are predominantly found in meat, beans, and dairy products.

The body consists of 55–60% water, integral to nearly all tissues and fluids. In sports, water is crucial for regulating temperature, lubricating joints, and transporting nutrients to active tissues. Besides plain water, hydration can be maintained through beverages like juices, milk, coffee, tea, and water-rich foods such as fruits, vegetables, and soups. Dehydration can impair performance and increase the risk of injuries like muscle cramps and heat-related illnesses. Athletes should ensure adequate fluid and electrolyte intake before, during, and after exercise. Additionally, sufficient calcium and vitamin D are vital for bone health, reducing the risk of fractures and stress injuries. Athletes should consume calcium-rich foods, such as dairy products, leafy greens and obtain adequate vitamin D from sunlight and supplements if necessary.



Food pyramid for balanced diet for 2000 kcal (Image source: ICMR-NIN, Dietary guidelines for Indians)

Nutritional Navigation: Navigating Dietary Guidelines for Optimal Health

The Indian Council of Medical Research (ICMR) has updated its dietary guidelines for Indians, developed by a multidisciplinary committee of experts led by Dr. Hemalatha R, Director of ICMR-NIN. The revised Dietary Guidelines for Indians (DGIs) list seventeen specific recommendations, including consuming a variety of foods for a balanced diet, eating plenty of vegetables and legumes, and sourcing proteins from food items rather than commercial supplements. For a balanced diet of 2000 kcal, the guidelines recommend 500 grams of vegetables and fruits, 250 grams of cereals, along with pulses, legumes, fish or meat, and milk. The National Institute of Nutrition (NIN) in Hyderabad warns that prolonged consumption of large amounts of protein powders or high-protein concentrates can lead to bone mineral loss and kidney damage. The guidelines also recommend that sugar intake should be less than 5% of total energy, with no more than 45% of calories from cereals and millets, and up to 15% from pulses, beans, and meat. The remaining calories should come from nuts, vegetables, fruits, and milk, with total fat intake not exceeding 30% of energy. Insufficient intake of essential nutrients can disrupt metabolism and increase the risk of insulin resistance and related disorders from an early age. The rise in consumption of highly processed foods high in sugars and fats, along with reduced physical activity and limited access to diverse foods, has exacerbated micronutrient deficiencies and obesity. The guidelines emphasize that ultra-processed foods like noodles, breakfast cereals, soup mixes, and cake mixes are unhealthy, even if enriched or fortified with nutrients.

It is estimated that 56.4% of India's total disease burden is due to unhealthy diets. Adopting healthy diets and physical activity can significantly reduce the risk of coronary heart disease, hypertension, and up to 80% of type 2 diabetes.

References:

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