FCS3-626

Cooperative Extension Service

Vitamins, Minerals, and Athletic Performance

Kyle D. Flack, PhD, RD, Harry Michael Hays, BS, BA, and Jack E. Moreland, BS, Dietetics and Human Nutrition

There are many sources of vitamins and minerals in our diet from both animal and plant sources. Certain vitamins and minerals are especially important for athletic performance. These include B-vitamins, iron, zinc, selenium, and electrolytes—sodium, potassium, chloride, calcium, magnesium, and phosphorus. We are going to focus on the vitamins and minerals present in fruits and vegetables and their impact on athletic performance.

What are vitamins?

Vitamins are nutrients that are essential to maintain normal body functions. There are two different categories of vitamins, water-soluble and fat-soluble. This means that certain vitamins need a water or fat source to be absorbed and used by the body.

How can vitamins help my athletic performance?

Water-soluble vitamins, such as the B-vitamins, are important for energy production. This does not mean they are used as energy, but they assist in getting energy out of carbohydrates and fat. This can help you perform at a higher intensity for a longer period. Plant sources of B-vitamins include whole and enriched grains, beans, dark leafy green vegetables, oranges, and bananas. Vitamin C is another water-soluble vitamin and can be found in high amounts in citrus fruits, bell peppers, and cruciferous vegetables. Vitamin C is an antioxidant that can help in recovery from exercise and supports a healthy immune system.

Although fat-soluble vitamins aren't directly important for energy production, they are important for other functions such as vision, bone health, and skin health. Vitamin A, D, E, and K are fat-soluble vitamins. Some good plant sources of fat-soluble vitamins include carrots, dark leafy green vegetables, nuts and seeds, and avocados.

Maximize vitamin intake by:

- Eating a wide variety of colorful fruits and vegetables
- Not overcooking vegetables (longer cooking time lowers vitamin content)
- Steaming or microwaving your vegetables instead of boiling them (when boiling vegetables, many of the vita- mins are lost in the water)

What are minerals?

Minerals are similar to vitamins in that they are needed to maintain several bodily functions. They can be found in a variety of food choices. Minerals can be categorized into major and trace minerals. Major minerals are needed in larger amounts compared to trace minerals. Major minerals include calcium, phosphorus, magnesium, sodium, chloride, and potassium. These are also known as electrolytes. Some important trace minerals for athletic performance are iron, zinc, and selenium.

How can minerals help my athletic performance?

Electrolytes are important for water balance and nerve function. This can increase your athletic performance by preventing dehydration, which can cause fatigue, cramping, and dizziness during athletic activity. Good sources of electrolytes include sports drinks and dark leafy green vegetables. Consumption of sport drinks should be limited to during or immediately after athletic performance.

Calcium is important for bone health and muscle contraction. Having enough calcium can help prevent bone fractures or other serious injuries. Fruit and vegetable sources of calcium include legumes and dark green vegetables. Some foods have calcium added to them such as orange juice, almond milk and soy milk.

Trace minerals are still necessary, just in lesser amounts. These include iron, zinc, selenium, copper, and iodine just to name a few. Iron is important for delivering oxygen to the muscles. This decreases fatigue and improves endurance. Iron is the most common deficiency that athletes experience. Good fruit and vegetable sources of iron are beans, dark leafy greens, and dried fruit. To increase absorption of iron, eat these with a good source of vitamin C.

Zinc and selenium, both trace minerals, are important for energy production and wound healing. Adequate intake of these minerals can help decrease recovery from intense exercise. Good plant sources of zinc and selenium include whole grains and nuts.

Why are fruits and vegetables important?

Fruits and vegetables provide essential vitamins and minerals that are needed to maintain normal bodily functions. Consuming a variety of vitamins and minerals on a daily basis can increase athletic performance and provide many benefits for your overall health.

How many fruits and vegetables should I eat?

Current recommendations are to consume at least five servings of fruits and vegetables daily. Athletes may require increased consumption due to the demands of rigorous training. Consider treating the five per day recommendation as a minimum.

References

Marie Dunford, J. A. D. (2008). Nutrition for Sport and Exercise. Belmont, CA, Wadsworth Cengage Learning.

USDA (2015). Dietary guidelines for Americans 2015-2020. USDA. Washington DC.

Cooperative Extension Service

Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

MARTIN-GATTON COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

Lexington, KY 40506 Revised 12-2023