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COMMENTARY

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Important Role of Antioxidant Supplementation in Athletes

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Description

Aside from protein powders, one of the most common supplements that serious athletes are drawn to is antioxidants. The reason for this lies in their suspected ability to reduce recovery time, meaning an athlete can spend less time resting and more time training at a high level, increasing their speed, endurance, power and overall skill. To briefly dive into the science behind this, intense physical exercise can stimulate free radicals, which can damage cells and increase recovery time.

Antioxidants, on the other hand, reduce free radicals. So, theoretically, by consuming antioxidants that fight these free radicals, an athlete can shorten the time it takes to recover. Ruscigno found that athletes who eat plant-based diets, which are inherently high in naturally occurring antioxidants, report a dramatic reduction in their recovery times compared to diets containing animal products.

Nutritional surveys in the United States show that athletes generally consume adequate amounts of vitamin C. In fact, male athletes consume 95 to 520 mg/day of vitamin C and female athletes 55 to 230 mg/day; the current Dietary Reference Intakes (DRI) of vitamin C are 75 to 90 mg/day for men and 65 to 75 mg/day for women of different ages, however, some athletic groups may have inadequate vitamin C intakes and physiological stressors such as infection, cigarette smoking, altitude and extreme ambient temperatures increase vitamin C requirements. However, until now there is no conclusive evidence that regular exercise increases the need for vitamin C in athletes. In addition, the plasma vitamin C levels of athletes are usually within the normal range, only a small proportion of athletes have borderline or slightly reduced vitamin C concentrations in the blood plasma.

Similar to vitamin C intake, dietary surveys show that physically active people generally consume vitamin E within the DRI limits or higher. In addition, the intake of vitamin E in athletes is higher than in people with a sedentary lifestyle. However, a small group of athletes, including teenage ballerinas, gymnasts, long-distance runners, and wrestlers, may have inadequate intakes of vitamin E and other micronutrients because they restrict their food intake for aesthetic reasons or competitive limitations. Although vitamin E deficiency is rare in humans, physical activity and increased intake of polyunsaturated fatty acids can induce oxidative stress and vitamin E requirements. In the elderly or physically active people with insufficient dietary intake of vitamin E, a minor deficiency can occur without developing clinical symptoms. In this context, it is important to note that vitamin E refers to a family of eight natural molecules. The only form of vitamin E that has been tested under conditions of exercise is alpha-tocopherol. New findings clearly indicate that alpha-tocopherol may have some adverse effects under certain conditions and that the other natural forms of vitamin E have functions distinct from the effects of alpha-tocopherol. For example, alpha-tocotrienol is significantly more neuroprotective than alpha-tocopherol. It's time to consider forms of vitamin E other than alpha-tocopherol for studies looking at physical activity. When considering the cellular mechanisms, current knowledge supports the role of antioxidant nutrients in the intracellular management of excess ROS. Several physiological and pathological conditions ranging from pregnancy to cardiovascular disease and cancer have been studied to elucidate the effects of antioxidant supplementation.

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