

Should Athletes Supplement Good Nutrition with Extra Antioxidants

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How does exercise effect the body?

Exercise increases the body's metabolic rate and consumption of oxygen. When the body uses more oxygen, the byproduct is an increase in reactive oxygen species (ROS). ROS are highly unstable free radicals that promote oxidation. ROS can have both positive and negative effects in the body and must be kept in balance.(12,15) Antioxidants prevent oxidation and can be made within the body (endogenous) or can be obtained from an outside source including food and dietary supplements (exogenous).(12,15) Exercise promotes a higher rate of ROS production, but it also causes the body to become more efficient in neutralizing free radicals and, therefore yields an increase in endogenous antioxidants. (2) However, with unaccustomed exercise often seen in "weekend warriors" or exhaustive exercise in endurance athletes, there is often an accumulation of ROS that leads to increased oxidative stress.(2) Oxidative damage occurs when homeostasis is lost and the body is no longer able to counter or detoxify the ROS species through the availability of endogenous or exogenous antioxidants leading to inflammation, muscle fatigue, tissue damage, increased susceptibility to injury, prolonged recovery times, and temporary immune suppression.(1,2,3,8) In endurance athletes, antioxidants may be the key to reducing oxidative stress and promoting faster recovery times with fewer episodes of injury and illness.

Are supplements helpful in reducing free radicals?

Growing evidence regarding the association between oxidative stress and impaired muscle recovery and performance, has led to an increase in research on the role of exogenous antioxidants in the form of supplements and their effects on athletic individuals.(2) Free radicals react quickly and therefore are very difficult to measure; consequently, research studies attempt to measure the biomarkers of oxidative stress such as oxidized proteins and lipids in the body that lead to muscle tissue damage.(12) There are conflicting research studies on antioxidant supplements.(2) Some studies show that high doses of supplemental antioxidants, specifically vitamin C and E, can reduce the body's adaptive response to make more endogenous antioxidants and delay recovery after exercise.(12,2) Other studies examined phytonutrients such as polyphenols which showed a protective, anti-inflammatory effect and improved exercise performance.(2,1) Therefore, natural exogenous supplements should be considered in endurance athletes especially those whose diets lack the recommended amount of fruits and vegetables (FV) to ensure an adequate amount of phytonutrients.(1,3)

The Safest most reliable source of exogenous antioxidants is from fruits and vegetables.

Athletes may have trouble getting the recommended "5-13" servings of fruits and vegetables daily due to taste preferences, access, and GI discomfort. (3,6) Several studies have been completed on the

bioavailability of FV in a capsule and their effects on biomarkers to determine the potential benefits of reducing oxidative stress and inflammatory markers. (3)

FV in a capsule contain phytonutrients with polyphenolic compounds. In 2017, a study was conducted to determine the absorption profile from a plant based food supplement Juice Plus+® Vineyard, Juice Plus+® Fruit Blend, and Juice Plus+®Vegetable Blend.(4) <http://miagente.juiceplus.com/> Subjects elected abstained from all supplementation for 2 weeks and ate a poor polyphenol diet 48 hours before testing. Blood samples collected were compared to baseline, and twenty quantifiable metabolites from different polyphenolic agents were present in the plasma. (4) A literature review of studies examining the effects of FV in a capsule demonstrated that with supplementation, micronutrient levels increased, markers of oxidative stress were reduced, and overall immunity was improved without any noticeable reduction in endogenous antioxidant enzymes. (3,6,8,11) Specifically, levels of oxidized proteins were reduced, circulating T cells were increased, and a reduction in DNA damage of lymphocytes was noted in the group taking an encapsulated fruit and vegetable powder compared to the placebo group. (8,9)

A diet high in fruits and vegetables is the best way to obtain vitamins, minerals, and phytonutrients that are essential to maintain health and immune function. (9) Numerous studies have shown that FV in a capsule are an effective way to obtain phytonutrients that reduce exercise related oxidative stress and positively influence immune markers. (6)

As a Certified nurse practitioner, Boston Marathon finisher, and All World Ironman 70.3 athlete, I have found supplementation with Juice Plus+® to be an effective agent in promoting reduced muscle fatigue and preventative against illness. Comparing seasons of training with and without supplementation and markers such as homocysteine and CRP, I find the scientific and practical evidence supports the investment of taking Juice Plus+® capsules daily. Encapsulated FV supplementation should not completely replace fruits & vegetables in the diet, because dietary fiber remains essential to overall health, but it seems to be an advantageous addition to the typical American diet. Especially, to the many that are following ketogenic diet plans that are low in antioxidants from FV. Even if you are not an athlete looking for an extra competitive “edge,” adequate consumption of FV is associated with a decreased risk of heart disease, diabetes, stroke, cancer, illness, and accelerated aging. (3,4) For more information about Juice Plus+® or to order follow this link to my website.

<http://miagente.juiceplus.com/>

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