

Nature's Rustoleum...Carotenoids!

So far, in our discussions about nutrition for the junior tennis player, we have covered the importance of basic sports nutrition to keep your junior tennis player healthy and competitive, and Omega 3 fatty acid's role in controlling the inflammatory response. In this article, we are going to discuss one of the athlete's biggest needs and worst enemy...oxygen!

The tennis player's need for oxygen is a double-edged sword, without adequate intake of oxygen you can bet you will not be out on the court for very long. At the same time, this consumption of oxygen creates a chain of events that can cause harm to the junior tennis player...oxidation. Metal can rust over time when exposed to the elements without adequate protection. We too have the potential to rust, so to speak, from the inside out.

Cells require oxygen to survive. The byproduct of the cells use of oxygen is free radical formation. Free radicals attack healthy tissue and can create long-term damage. The athlete creates even more of these highly charged molecules simply because they process more oxygen than the average person does. This leaves them more susceptible to tissue damage, which could impair training progress and possibly lead to illnesses associated with a depleted immune system. According to findings in the *Journal of Sports Science*, January 22, 2004, strenuous bouts of prolonged exercise are associated with depressed immune cell function.

The answer to this problem can be found in nature. Do you remember your mother teaching you to squeeze a lemon or orange over cut up apples so they would not turn brown? It works, and the reason it does is they are high in antioxidants. These antioxidants are the body's defense mechanism against free radical damage.

What are nature's best choices for this antioxidant protection? Colorful fruits and vegetables are. Their power is in the beautiful red, orange, yellow, and green coloring. The color pigments are carotenoids. Carotenoids are the major reason why everybody, who is anybody, says you should eat five to nine brightly colored fruits and vegetables a day. Who is everybody? Well, your mother for one as well as the National Academy of Science, the U.S. Department of Agriculture, the Department of Human Services and the National Cancer Institute. These carotenoids protect fruits and vegetables from oxidation and in turn are powerful cellular warriors for us.

In a recently published study in *Free Radical Biology and Medicine*, Volume 36, Issue

10, researchers found that marathon runners given daily supplements of 1,400 mg of antioxidants greatly diminished the damage normally associated with this intense aerobic activity. Runners, who did not supplement, displayed oxidative damage similar to someone who had suffered a heart attack or stroke.

For most people and especially the athlete, the challenge is to get enough antioxidants in the diet to fight these daily attacks from free radicals. To increase antioxidant protection the athlete should consume carotenoid rich fruits and vegetables such as peaches, strawberries, spinach, broccoli, blueberries, apricots, and red bell peppers.

How do you think you are doing with adequate carotenoid intake? Take a quick test. First, do you think you are eating your five to nine a day? It is not likely - most people are not. In fact, studies show that only 9% of the population eats as much as the minimum five servings a day. Secondly, if your servings consist of the most commonly consumed fruits and vegetables – apples, bananas, iceberg lettuce and potatoes – your score is zero. None of those fruits and vegetables has any carotenoids.

The smart athlete knows that training is only half of the equation that leads to success - the second half is proper nutrition. The body is an amazing machine and can function on less than adequate nutrition for a time, but it will catch up and especially will affect the hard-training junior tennis player. Addressing the need for carotenoids should be high on your priority list to achieve this success.

In conclusion, do what your mom says and eat your fruits and vegetables. Just as metal needs painting when exposed to the elements to protect it from rusting, the athlete needs to paint himself, so to speak, with antioxidants to keep from rusting on the inside. Moreover, if you find yourself in the 91% that are not even consuming even the minimum five servings a day, supplement the gap!