

A New Era of Athletic Performance Enhancement

Natural, Safe and Legal Sports Vision Nutrients May Be a Game-Changer for Athletes

By Robert J. Weaver

Today's dedicated athletes are on a perpetual quest to achieve peak performance. Striving towards this goal is typically done with various forms of training. This includes advanced programs that focus on strength, flexibility and endurance. Typically, athletic training focuses on purely physical performance.

Athletes also seek out nutritional supplements to help them gain that elusive physical performance edge. Unfortunately, steroids and tainted supplements intended to increase mass and physical strength have diminished or destroyed many sports careers.

Today's athletes are seeking new ways to boost their performance. One increasingly popular method of performance enhancement among athletes involves improving and sharpening sports vision. The purpose of this paper is to: (1) Provide a basic definition of various aspects of sports vision; (2) Discuss the well-known vision booster lutein and outline lesser-known nutrients for sports vision enhancement; and (3) Provide a solution to the issue of achieving ideal athletic eyesight via supplementation without testing positive due to an unknown banned substance.

Athletic Vision Boosters

The idea of boosting sports vision to help with athletic performance is nothing new. Eye black, the under-eye "war paint" smudging, was introduced in 1942 and remains popular today. In the 1980s, Kareem Abdul-Jabbar and Reggie Jackson advocated goggles and sports glasses. More recently, tinted contact lenses, LASIK surgeries, and high-performance sunglasses have further advanced sports vision.

Nutritional supplementation for sports vision, however, is a relatively new area of performance enhancement. This field holds great promise because it involves compounds that are organic, rooted in nature and often backed by strong clinical research.

Sharp eyesight is needed for elite-level performance across practically all sports. Vision enhancement may be a universal sports performance booster. With natural nutrients that boost eyesight in many ways, athletes may finally have a safe, legal way to gain an edge.

Aspects of Sports Vision

The various components of sports vision are too numerous to list. A few aspects of sports vision that can be improved by supplementing with natural compounds include:

Visual Acuity: The ability to accurately see details of an object (such as a baseball) including movement, contrast, color, spin and more.

Dark Adaptation: The eyes' ability to adjust from a brightly lit setting to a darker setting. This helps athletes deal with on-field shadows and shade.

Retinal Transmission Speed: Accelerated transmission of visual data across the eye's retina associated with faster athletic reflexes.

Depth Perception: The eyes' ability to see in three dimensions, as well as to gauge and visually track moving objects with accuracy and precision.

Dark Adaptation: Temporary retinal bleaching is caused by exposure to bright sun or stadium lights. Dark Adaptation refers to how quickly athletes regain full eyesight after retinal bleaching.

Glare Reduction: The sun's "veiling glare" casts a bright haze on objects like baseballs, footballs, tennis balls, etc. Glare reduction helps athletes compensate for the haze.

Eye Energy: In late innings and final minutes, eye fatigue can set in – slowing and diminishing all aspects of sports vision.

When these sports vision components are functioning optimally, athletes may be primed for peak performance. They may have better hand-eye coordination, faster reflexes, greater ball-tracking ability, sharper depth perception, more energized and active eyes, and an enhanced ability to gauge ball spin, speed and trajectory. Let's examine how natural compounds might help to achieve this state of superhuman sports vision.

Sports Vision Nutrients

Lutein

Many athletes are already aware of lutein as a standout sports-vision nutrient. Sourced from the marigold flower, lutein is an antioxidant compound that is found abundantly in the eye's retina, which is all-important to both central and peripheral vision.

Scientific research has shown that lutein appears to have a very real effect on the eyes: It increases macular pigment, which is a protective layer that covers the eye's retina.¹ Greater macular pigment is associated with sharper "high-resolution" vision. In addition, lutein has been shown to help the eyes perform better under the changing light conditions that all athletes contend with. Lutein reduces the effects of glare, promotes visual recovery from overexposure to light, and even improves vision in low-light conditions. In other words, lutein seems to help athletes to recognize and track moving objects, especially in dim light. All of these qualities have made lutein a "secret weapon" among athletes who focus on nutritional performance enhancement.

While lutein is a breakthrough, it may be just the beginning. Many other highly specialized natural compounds are now being investigated

for their potential for optimizing athletic performance by boosting multiple aspects of sports vision.

C3G (Cyanidin-3-glucoside)

Sports Vision Benefits: Speeds visual recovery from bright light. Reduces eyestrain. Improves contrast sensitivity. Accelerates retinal electrical transmission speed.

CG3 (Cyanidin-3-glucoside) is a natural flavonoid compound that is extracted from black currants, a kind of berry grown abundantly in the United Kingdom. Most famously, black currants were added to the diets of British World War II fighter pilots to promote better night vision and razor-sharp visual acuity. CG3 is one of the key "active ingredients" that is responsible for black currant's legendary vision benefits.

C3G appears to boost electrical retinal transmission speed. C3G's ability to "accelerate" this transmission may translate to faster athletic reflexes and enhanced split-second timing. C3G also improves contrast sensitivity, helping athletes to distinguish between subtler shades of light and dark.

Most significantly of all, C3G helps our eyes adjust faster. Have you ever noticed how long it takes for your eyes to adjust when you walk from a sunny beach into a darkened room? This aspect of vision is called "dark adaptation." C3G regenerates a substance in the retina called Rhodopsin, which absorbs light and accelerates dark adaptation.² With C3G, the eyes recover from bright light faster.³ In sports played "under the lights" or in blazing sun, C3G's dark adaptation properties may provide a significant athletic edge.

Saffron

Sports Vision Benefits: Enhances retinal flicker sensitivity, which boosts athletes' ability to pick up on subtle and rapid visual stimuli.

One of the world's most esteemed spices, saffron is a bright yellowish-orange compound sourced from a flowering plant. Saffron is rich with many vision-supportive antioxidants, but two in particular

– crocin and crocetin – are generating a buzz among athletes who want to improve their sports vision. That’s because saffron’s crocin and crocetin have been shown to improve an aspect of vision called retinal flicker sensitivity.⁴ By priming the eye’s delicate photoreceptor cells for greater flicker sensitivity, saffron enables athletes to detect fine movements with greater speed and accuracy.

Additional sports vision benefits associated with saffron include glare reduction and retinal protection from the harmful blue light spectrum emitted by the sun.⁵

Zeaxanthin

Sports Vision Benefits: Sharpens the most important aspect of athletic vision performance: Central, “high resolution” eyesight.

Zeaxanthin is a prized antioxidant compound extracted from marigold flowers. Like its “sister compound” lutein, zeaxanthin is found in the eye’s retina. However, zeaxanthin is especially valuable because it is absorbed into the macula – the part of the retina that processes central vision – far more easily and completely than lutein. In addition to being the major pigment found in the macula, zeaxanthin is concentrated in the retina’s fovea, the spot responsible for the sharpest, most detail-oriented “high-resolution” eyesight.⁶

One recent investigation of zeaxanthin revealed that the carotenoid supports various aspects of optimal visual performance in baseball players, including recovery from bright glare, contrast enhancement and enhanced anticipation timing.⁷ In addition to promoting razor-sharp sports vision, zeaxanthin protects and maintains lens clarity.⁸ Notably, some research has suggested that zeaxanthin works hand-in-hand with lutein: When both compounds are present in sufficient quantities, they appear to synergistically boost overall sports vision performance.

Astaxanthin

Sports Vision Benefits: Reduces visual fatigue. Promotes energized and active eyes. Sharpens depth perception. Accelerates eye focus speed.

Like lutein, astaxanthin is a xanthophyll carotenoid with significant antioxidant activity. In the wild, this pigment is responsible for the bold pinkish-red color of salmon and trout, along with various crustaceans such as shrimp and krill.

Research has shown that astaxanthin enhances blood flow to the retina.⁹ This increase in circulation to the eye is a biological action that enables astaxanthin to minimize visual fatigue.¹⁰ Astaxanthin has also been shown to promote ideal eye-focusing speed and depth perception, qualities that are important in any sport. Finally, by promoting blood flow to the retina, astaxanthin may help to deliver other sight-sharpening nutrients – optimizing their sports vision benefits, as well.

Banned Substances in Supplements

In 2007, the Mitchell Report named 89 professional baseball players alleged to have used performance-enhancing drugs or steroids. Since that time, at least 15 Major League Baseball players have had drug suspensions, derailing their hard-won momentum and all but negating their past accomplishments on the field.

Many of these disgraced athletes plead ignorance – attributing their failed drug tests to tainted nutritional supplements that they had assumed were safe and natural.

These unfortunate events have made it even clearer that serious athletes must be very careful when choosing supplements, and look for products that are proven safe, pure and natural. Third-party anti-doping agencies, such as the Banned Substances Control Group (BSCG), play an important role in this quest. BSCG provides pre-market verification that dietary supplements are free of anabolic agents, stimulants, beta-2-agonists, diuretics, synthetic drugs, masking agents and any other contaminants. When the BSCG certifies a supplement, such as a sports vision supplement, athletes can use it without any concern of violating any form of collegiate, amateur or professional banned-substances rules.

Athletes should take note, however, that different sports organizations have different anti-doping policies. Ultimately, sports organizations hold athletes accountable for what they ingest. Athletes should always educate themselves on their sports organization's rules, policies and procedures, and train and supplement accordingly

Summary

Individually, each of the nutritional ingredients discussed in this paper supplies eyesight-supporting biological activities that appear to be ideally suited for enhancing sports vision. Each nutrient is both found in nature and validated by scientific research.

For edge-driven athletes, these natural compounds may be nothing short of full-blown performance-enhancing game-changers. Why? Because they signal a notably different approach to overall athletic performance. Attention has long rested on muscle development, endurance and physical strength; obvious contributors to competitive success. Sight-enhancing nutrients, however, focus on aspects of sports performance that are subtler, but equally as important.

Sports vision enhancement is likely to continue rising in popularity as more competitive athletes seek safe, natural and legal methods of enhancing their overall performance. With careful selection of natural sports vision enhancers that are certified pure and banned substance free, athletes can pursue better performance without risking their safety or their future in sports.

References:

1. Richer S, Stiles W, Statkute L, et al. Double-masked, placebo-controlled, randomized trial of lutein and antioxidant supplementation the intervention of atrophic Age-Related Macular Degeneration: the Veterans LAST study (Lutein Antioxidant Supplementation Trial), *Optometry* 2004; 75: 216-230.

2. Matsumoto H., et al. Stimulatory Effect of Cyanidin 3-Glycosides on the Regeneration of Rhodopsin. *J. Agric. Food Chem.* 2003, 51, 3560-3563.
3. Hitoshi Nakaishi, MD, DMSC, Hitoshi Matsumoto, MS, Shigeru Tominaga, MS, and Masao Hirayama, PhD. Effects of Black Currant Anthocyanoside Intake on Dark Adaptation and VDT Work-induced Transient Refractive Alteration in Healthy Humans. *Alternative Medicine Review*, Volume 5, Number 6, 2000, Page 553.
4. Falsini B, et al. Influence of Saffron Supplementation of Retinal Flicker Sensitivity in Early Age-Related Macular Degeneration. *IOVS*, December 2010, Vol. 51, No. 12.
5. Maccarone R, et al. Saffron Supplement Maintains Morphology and Function after Exposure to Damaging Light in Mammalian Retina. *IOVS*, March 2008, Vol. 49, No. 3.
6. Schalch W, William Cohn W, et al. Xanthophyll accumulation in the human retina during supplementation with lutein or zeaxanthin - the LUXEA (LUtein Xanthophyll Eye Accumulation) study. *Arch Biochem Biophys*, Feb 2007: Vol. 458, Issue 2, 128-35.
7. Bovier E, et al. Static and Dynamic Measures of Visual Performance in Athletes. *Journal of Vision*, Dec. 2011, Vol. 11, No. 15, Article 27.
8. Gao S, et al. Lutein and zeaxanthin supplementation reduces H₂O₂-induced oxidative damage in human lens epithelial cells. *Mol Vis*. 2011;17:3180-90. Epub 2011 Dec 7.
9. Yasunori N, et al. The Effect of Astaxanthin on Retinal Capillary Blood Flow in Normal Volunteers. *Journal of Clinical Therapeutics & Medicines* VOL.21;NO.5;PAGE.537-542(2005).
10. Yasunori N, et al. The supplementation effect of Astaxanthin on Accommodation and Asthenopia. *Journal of Clinical Therapeutics & Medicines* VOL.22;NO.1;PAGE.41-54(2006).