Visual Performance Products
Published Research Findings
Summaries

More detailed information for each study can be found on the following pages in the Detailed Information section.

A Randomized Placebo-Controlled Study On The Effects Of Lutein And Zeaxanthin On Visual Processing Speed In Young Healthy Subjects.
Supplementing with higher levels of dietary Zeaxanthin daily, improves temporal contrast sensitivity function (visual processing speed) and Macular Pigment Density versus a placebo in young, healthy subjects.

A Double-Blind, Placebo-Controlled Study On The Effects Of Lutein And Zeaxanthin On Neural Processing Speed And Efficiency.
Increasing macular pigment density through supplementation with higher levels of dietary Zeaxanthin daily resulted in significant improvements in visual processing speed, even when testing young, healthy individuals who tend to be at peak efficiency.

A Double-Blind, Placebo-Controlled Study On The Effects Of Lutein And Zeaxanthin On Photostress Recovery, Glare Disability, And Chromatic Contrast.
Daily supplementation with Zeaxanthin and Lutein resulted in significant increase in serum levels and MPOD and improvements in chromatic contrast and recovery from photostress in young, healthy adults. These results are consistent with past studies showing that increasing MPOD leads to improved visual performance.

Macular Pigment And Visual Performance In Glare: Benefits For Photostress Recovery, Disability Glare, And Visual Discomfort.
Higher macular pigment levels, which can be achieved with dietary Zeaxanthin supplementation, correlate with improved photostress recovery time, reduced glare disability, and less visual discomfort.

The Influence Of Dietary Lutein And Zeaxanthin On Visual Performance.
High daily intake of dietary Zeaxanthin and Lutein increases macular pigment levels. Macular pigment acts as a filter of blue light, reducing the visual discomfort associated with indoor and outdoor lights.

The Effects Of Macular Carotenoid Zeaxanthin On Visual Performance And Neural Efficiency In Young, Healthy Subjects And College Athletes.
Supplementing with 20 mg of dietary Zeaxanthin daily increases macular pigment optical density. Denser macular pigment is directly related to improved vision, contrast sensitivity, reduced glare disability, increases in temporal processing (processing of fast moving objects), and improvement in fixed and variable reaction times.
Conclusion:

EyePromise visual performance products are the only nutraceuticals containing 10, 14, or 26 mg of dietary Zeaxanthin in a single dose.

For more information, please visit www.eyepromise.com, contact us via email at support@eyepromise.com, or call toll-free at (866) 833-2800.
Detailed Information

A Randomized Placebo-Controlled Study On The Effects Of Lutein And Zeaxanthin On Visual Processing Speed In Young Healthy Subjects.

Author: Emily R. Bovier Ph.D, Billy R. Hammond, Ph.D.

Journal: Archives of Biochemistry and Biophysics, December, 2014

Institution: Vision Sciences and Human Biofactors Laboratories, Department of Psychology, University of Georgia, Athens, GA

No. of Subjects: 69 young, healthy adults aged 18-32 years

- 54 subjects received either the EyePromise vizual EDGE PRO™ supplement (26mg dietary Zeaxanthin, 8 mg Lutein) or the EyePromise Zeaxanthin (20mg of dietary Zeaxanthin) supplement.
- 15 subjects received placebos.

Duration of Study: 4 months

Assessments:

- Temporal Contrast Sensitivity Function – A means of measuring visual processing speed. This relates to a person’s ability to see and track fine detail and process that information clearly.
- Macular Pigment Optimal Density (MPOD) – a measurable bio-marker for the concentration of Zeaxanthin and Lutein in the retina.

Summary:

- Past study has shown that macular pigment optical density (MPOD) is positively correlated with temporal contrast sensitivity function (a means of measuring visual processing speed).
- Neither MPOD nor temporal contrast sensitivity function changed for the placebo condition, but both improved significantly as a result of supplementation with high levels of dietary Zeaxanthin.

Relevance for Visual Performance

Temporal contrast sensitivity function: Is a means of measuring visual processing speed, or the speed at which our eyes and brain communicate. The ability to process fast moving objects has implications for a number of sports.
A Double-Blind, Placebo-Controlled Study On The Effects Of Lutein And Zeaxanthin On Neural Processing Speed And Efficiency.

Authors: Emily R. Bovier Ph.D, Lisa M. Renzi Ph.D, Billy T. Hammond Ph.D

Journal: Public Library of Science (PLOS ONE), September 2014

Institution: Vision Sciences and Human Biofactors Laboratories, Department of Psychology, University of Georgia, Athens, GA

No. of Subjects: 64 young, healthy adults aged 18-32 years

Arms: 3 arm study

- 29 subjects received EyePromise Zeaxanthin (20 mg)
- 25 subjects received EyePromise vizual EDGE PRO™ supplement (26mg zeaxanthin, 8 mg lutein)
- 10 subjects received placebos

Duration of Study: 4 months

Assessments:

- Temporal Contrast Sensitivity Function – a means of measuring visual processing speed. This relates to a person’s ability to see and track fine detail and process that information clearly.
- Critical Flicker Fusion Threshold – relates to the speed and accuracy of interactions between the eye and the brain.
- Visual Motor Reaction Time – refers to the amount of time that elapses between the initiation of a visual stimulus, the processing of that information by the eyes and the brain and the completion of a motor response to that stimulus.
- Macular Pigment Optimal Density (MPOD) – a measurable bio-marker for the concentration of Zeaxanthin and Lutein in the retina.

Scope of Work:

The purpose of the study was to test the hypothesis that improving MPOD via EyePromise Zeaxanthin (20 mg) or mixed carotenoid (EyePromise vizual EDGE PRO) supplementation can improve visual processing speed in young, healthy adults.
Result Summary:

Subjects in the EyePromise Zeaxanthin and EyePromise vizual EDGE PRO arms experienced significant improvements in visual processing speed and reaction time, each P < 0.005:

- A 14% improvement in Temporal Contrast Sensitivity Function translates to a person being able to see fine detail against a background and track its movement 14% more efficiently.

- A 12% improvement in Critical Flicker Fusion Threshold means that the brain is able to identify something 12% faster and make a better judgment on trajectory, speed and direction of a moving stimulus.

- A 10% improvement in Visual Motor Reaction Time equals the ability to physically react to a fast moving object 10% faster than before.

- A 20% increase in Macular Pigment Optimal Density (MPOD) over four months means participants who were already young and healthy were able to significantly optimize their visual performance through EyePromise dietary zeaxanthin supplementation.

Insights:

Zeaxanthin and lutein supplementation improves visual processing speed, even among young, healthy adults. Subjects showed improvements in visual performance bio-markers and in their ability to process information faster and react faster.
A Double-Blind, Placebo-Controlled Study On The Effects Of Lutein And Zeaxanthin On Photostress Recovery, Glare Disability, And Chromatic Contrast.

Author: Billy R. Hammond Jr, Ph.D, Laura M. Fletcher, Franz Roos, Jonas Wittzer, Wolfgang Schalch


Institution: Vision Sciences and Human Biofactors Laboratories, Department of Psychology, University of Georgia, Athens, GA

No. of Subjects: 115 young, healthy adults (avg age: 22.7)

Summary:

- Macular pigment optical density increased significantly in the Zeaxanthin and Lutein arm versus placebo at all eccentricities (10, 30, 60, and 105 minutes from the center of the macula).
- Serum Zeaxanthin and Lutein also increased significantly by the first follow-up visit (at 3 months), and remained elevated throughout the intervention period of 1 year.
- Chromatic contrast and photostress recovery time improved significantly versus placebo.
- Glare disability was correlated with macular pigment density throughout the study period.
- Daily supplementation with Zeaxanthin and Lutein resulted in significant increase in serum levels and MPOD and improvements in chromatic contrast and recovery from photostress.

Relevance for Visual Performance

Supplementation of dietary Zeaxanthin and Lutein resulted in improved:

Photostress recovery:

If one has lower macular pigment density (MPOD – the concentration of Zeaxanthin and Lutein in the retina) and levels of Zeaxanthin and Lutein in the serum, photostress recovery time is much slower. Photostress recovery is the time it takes to regain your vision after being exposed to a bright light. This is relevant to indoor and outdoor
conditions.

**Contrast Sensitivity:**

Daily supplementation increased MPOD and levels of Zeaxanthin and Lutein in the serum which in turn improved chromatic contrast. Chromatic contrast is our ability to discern fine detail and objects that may not be outlined or stand-out clearly against a background. For example, a hitter would see the red seams of the baseball more clearly against the white of the ball.

**Glare Disability:**

A higher macular pigment density (MPOD) reduces glare, a solution to issues currently addressed by things such as eye black or baseball caps.
Macular Pigment And Visual Performance In Glare: Benefits For Photostress Recovery, Disability Glare, And Visual Discomfort.

Author: James M. Stringham PhD, Paul V. Garcia, Peter A. Smith, Leon N. McLin, Brian K. Foutch


Institution: Air Force Research Laboratory, Brooks City-Base, Texas

Number of Subjects: 26 (21 men, 5 women) – average of 31.7 years of age

Summary:

- Higher macular pigment levels correlated with all outcome measures (improved photostress recovery time, less glare, and less visual discomfort).
- Higher macular pigment levels resulted in faster photostress recovery, lower disability glare contrast thresholds, and lower visual discomfort.

Relevance for Visual Performance

- Reduced Glare: A higher macular pigment density reduces glare, a solution to issues currently addressed by things such as eye black or baseball caps.
- Photostress Recovery: If one has a lower macular pigment density, photostress recovery time is much slower. Photostress recovery is the time it takes to regain your vision after being exposed to a bright light. This is relevant to indoor and outdoor conditions.
- MPOD can be increased through supplementation of dietary Zeaxanthin daily.
The Influence Of Dietary Lutein And Zeaxanthin On Visual Performance.

Author: Dr. James Stringham, Emily R. Bovier, Jennifer C. Wong, and Billy R. Hammond

Journal: JFS R: Concise Reviews in Food Science

Institution: Institute of Food Technology, 2009

Summary:
- High-intensity discharge lamps (for example, stadium lights) often cause adverse visual reactions due to discomfort.
- Macular Pigment acts as a filter of blue light and visual discomfort was strongly attenuated for much of the blue region of the visible light spectrum. This suggests that the filtering properties of macular pigment serve to reduce the visual discomfort associated with central viewing of any light containing short wavelengths.
- Findings suggest that small increases in macular pigment density could potentially have disproportionately positive benefits in terms of discomfort.
- There was a significant inverse relation between photostress recovery and macular pigment density. Higher macular pigment values led to shorter photostress recovery times.

Relevance for Visual Performance
- Shape discrimination and contrast sensitivity: The ability to discern fine detail and objects that may not be outlined or stand-out clearly against background.
- Eye comfort: Indoor and Outdoor light conditions often cause eye fatigue. Increased MPOD can minimize this cause of visual fatigue.
- Photostress Recovery: Increased MPOD decreases photostress recovery time.
The Effects Of Macular Carotenoid Zeaxanthin On Visual Performance And Neural Efficiency In Young, Healthy Subjects And College Athletes.

Author: Dr. Lisa M. Renzi Ph.D, Emily R. Bovier M.S, Wendy D. Shon, Phillip Biegler, Callie A. Kennedy, Billy R. Hammond Jr, Ph.D


Institution: Visual Sciences Laboratory; University of Georgia; Athens, GA 30602-3013

No. of Subjects: 7 college baseball players (7 male), average age of 20.3 years.

Summary:

Players supplementing with 20 mg per day of dietary Zeaxanthin experienced:

- MPOD increase
- Improvements in photostress recovery time
- Improvements in glare
- Improvements in contrast enhancement
- Improved fixed and variable reaction times
- Improved coincidence anticipation timing accuracy at the highest frequency
- Improved temporal processing speed

Relevance for Visual Performance

- Supplementing with dietary zeaxanthin will increase macular pigment density. Denser macular pigment is directly related to improved vision, contrast sensitivity, reduced glare disability, increases in temporal processing (processing the fast moving objects), and improvement in fixed and variable reaction times.