

VIZION EDGE

BASEBALL



Inside the Mind of a Hitter

A look at how quickly a hitter must assess and react to a 90-mph fastball.



'In the blink of an eye'

A voluntary blink—such as one caused by the flash of a light—takes about 150 milliseconds. A 90-mile-per-hour fastball will cross the plate in under three blinks

The wind-up

Hitter attempts to get first insight on the type of pitch by watching the pitcher's hand as he releases the ball.

75-100 milliseconds

After the pitcher releases his pitch, the ball travels about 9 feet before the batter is able to process the entire image of the pitcher's wind-up and release.

175

Hitter assesses the type of pitch, extracting meaningful information about velocity, spin and trajectory.

225

Decision time—to swing or not to swing? It takes around 150 milliseconds from the start of a swing to the time it makes contact with the ball, but the decision must be made around 25 milliseconds earlier, to allow time for the brain signals to reach the various muscles involved.

350

At this point only exceptional hitters can make small adjustments. The bat is traveling at about three-fourths of its final velocity.

400

The ball crosses the front of home plate.

Experience helps the hitter 'pattern' the type of throw the pitcher is known for to speed up his thought process. Is the pitcher a known fireballer? If yes, the fastball will be at the top of the list when the batter gets his first visual clue from the ball.

Having decided the character of pitch, the hitter selects a **swing pattern** that was established through countless hours of practice and experience. For this pitch he may choose 'upward swing to send the ball over the fence.'

If the swing is as little as seven milliseconds late, his squarely hit ball will go foul.

Source: 'The Physics of Baseball,' by Robert K. Adair; 2002 edition

<https://blogs.fangraphs.com/what-can-hitters-actually-see-out-of-a-pitchers-hand/>

Mike Sudal/The Wall Street Journal

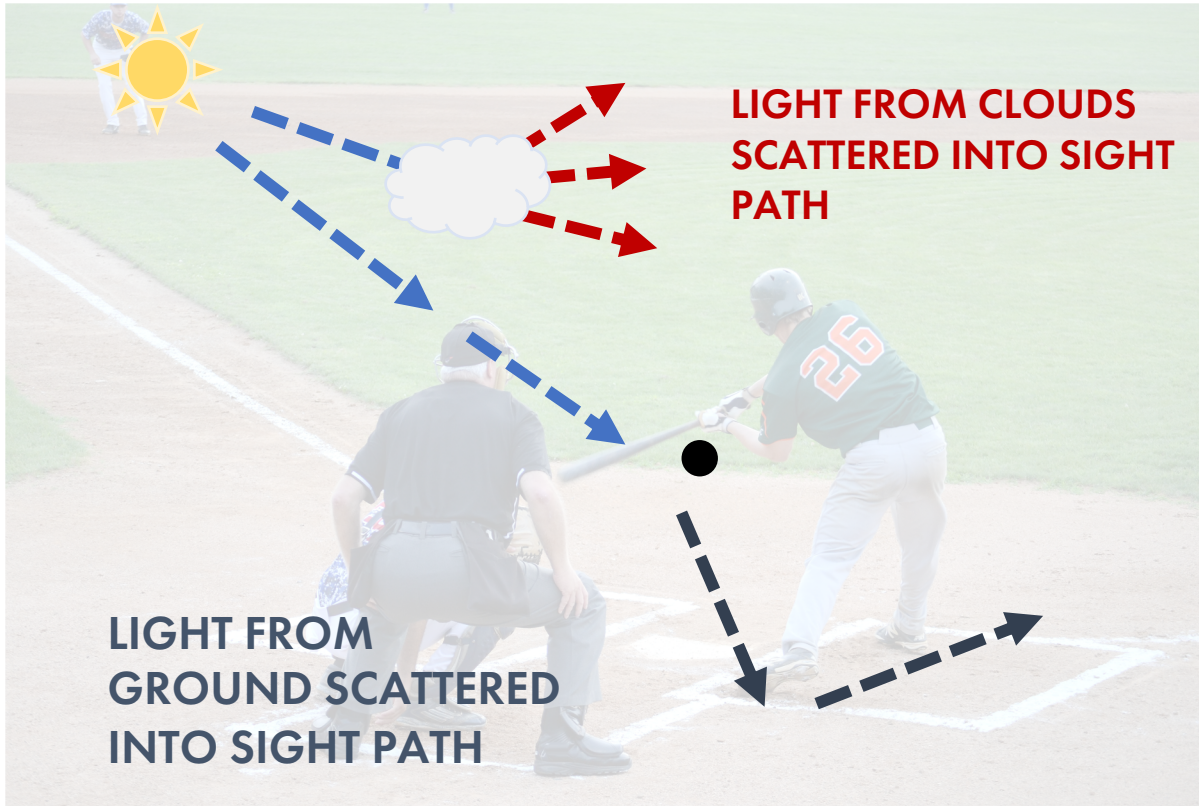


GAME FACTS

- Distance to Plate 60'6"
- A fastball reaches home plate in .4"
- Hitter cannot see the ball last 1/3 of its trajectory (.13")
- Hitter needs .25" to see the ball & react

THE PROBLEM

BLUE LIGHT DISTORTION



THERE IS NO NEED FOR POOR PERFORMANCE ANYMORE

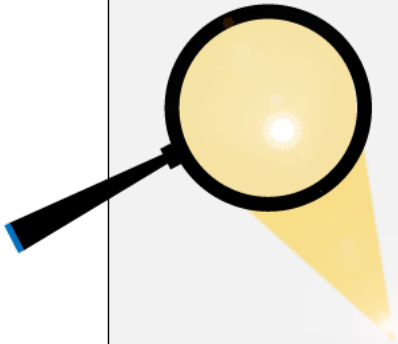
Blurriness, late detection of the baseball, blurriness, and late execution

FILTRATING LENSES ARE ONLY A PATCH



LENSES FOCUS

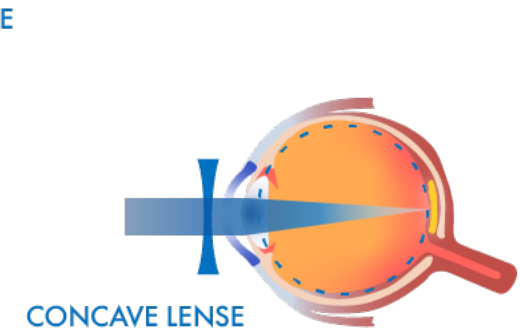
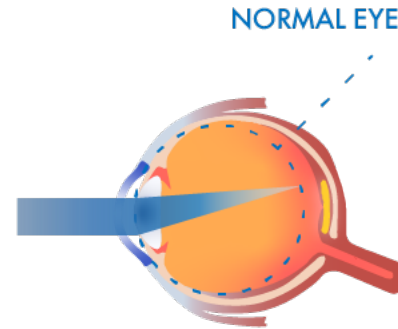
Oxidative Blue Light on the fovea, and magnify energy.



$I=(r/0.1\text{mm})^2 \text{ 1kW/M}^2$
250,000 x increase in energy of the blue light

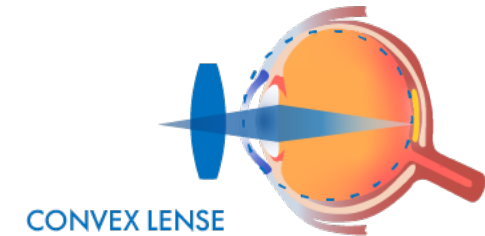
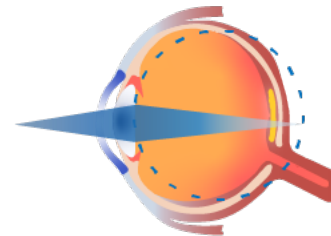
A. Nearsightedness

Long eyeball; light rays focus in the front of retina when viewing objects far away



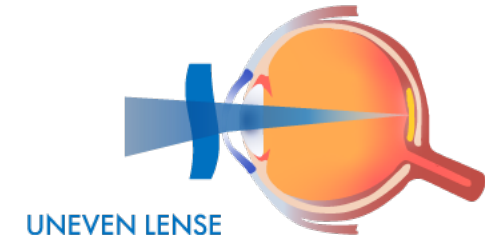
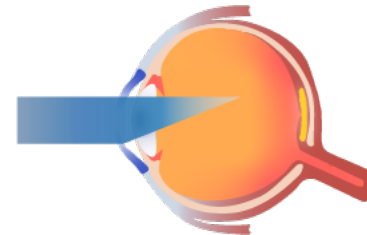
B. Farsightedness

Short eyeball; light rays focus behind the retina when viewing objects nearby.



C. Astigmatism

Uneven cornea; light rays do not focus properly

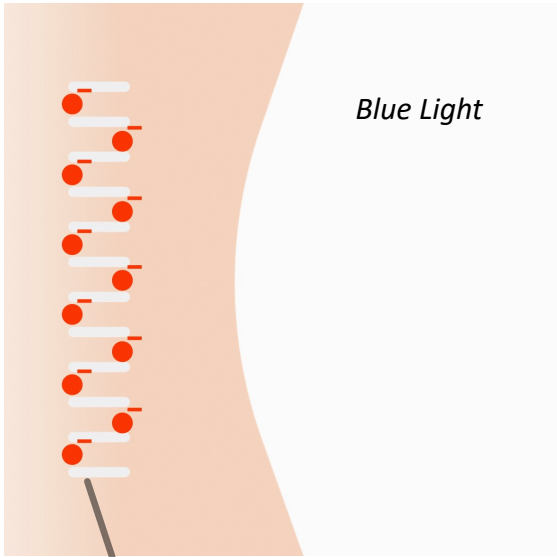


BLUE LIGHT FILTRATION

THE MECHANISM

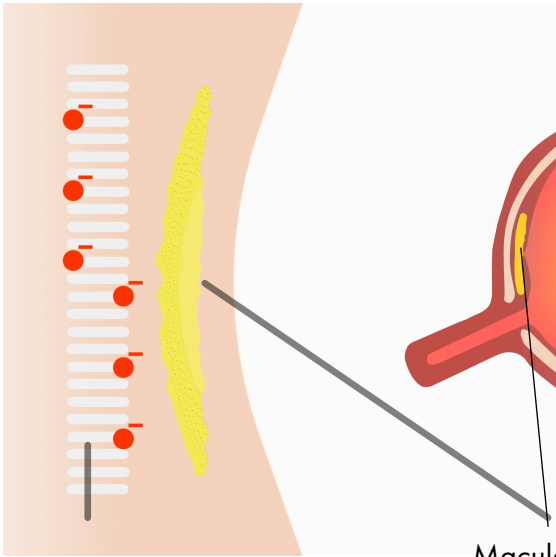
MACULA AFFECTS 90% OF
YOUR TOTAL VISUAL PERFORMANCE

Macula without Macular pigment



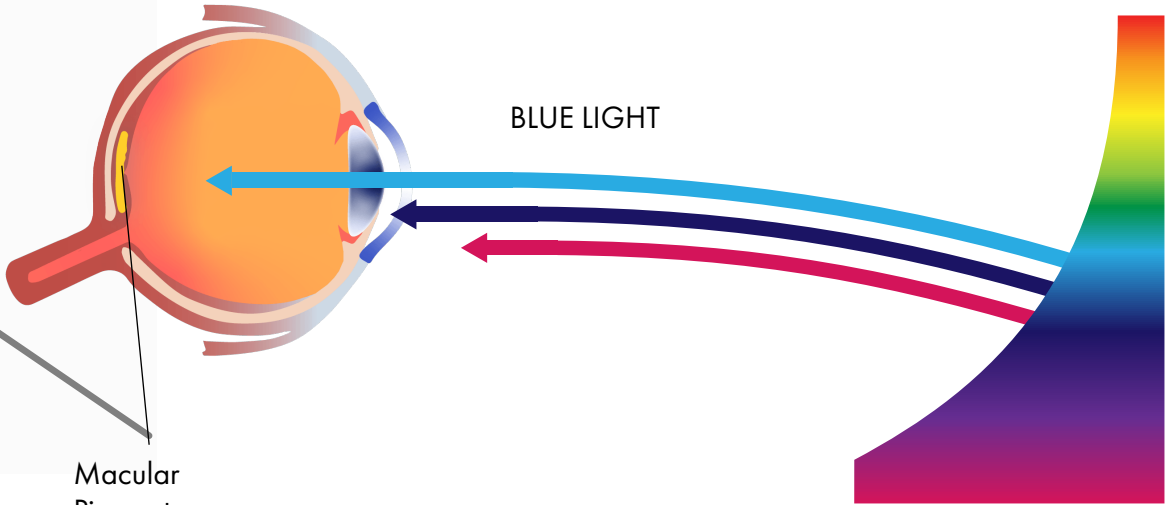
Free Radicals

Macula with Macular pigment



Healthy Photo Receptors

Macular Pigment



BLUE LIGHT

VISIBLE LIGHT

THE ULTIMATE PERFORMANCE

Increased Macular Pigment levels in the eyes and brain can lead to improvement with visual and cognitive functions.
Which affects real world performance



THE VIZION EDGE ADVANTAGE

- Improve Object Detection & Identification
- Optimize Vision in Low Light, Fog or Glare Conditions
- Reduce Photostress Recovery Time
- Protect Retinal Tissues from HEV
- Enhance Neuronal Communication

