

THE EYES

And Screen Time

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BLUE LIGHT: SHOULD YOU BE CONCERNED?



What is blue light?

- Blue light is that portion of the visible light spectrum that has more energy than any other rays of visible light. The shorter the wavelength, the more energy the light ray has. Wavelengths are measured in units called nanometers.
- High-energy visible blue light includes wavelengths between 380 and 500 nanometers. These wavelengths are emitted from LED light sources, televisions, smart phones and monitors.

The good news about blue light

- Blue light exposure is essential for visual perception, night vision, and internal body regulation (circadian rhythm, melatonin secretion, cognitive performance, mood and mental activity).

The bad news about blue light

- Blue light exposure has been linked to retinal damage (peaking at 440 nanometers) and macular degeneration.
- Exposure to blue light at night can suppress melatonin secretion. This adversely affects the circadian rhythm, which is associated with mood disorders, breast cancer, obesity, heart disease and cardiovascular problems.
- Conversely, reduction in blue light during the daytime hours, can increase daytime melatonin levels, which can lead to sleepiness, mood and cognitive deficits.
- Children are increasingly spending more time than ever in front of digital screens and face higher overall life-time exposure levels.

So, what is the bottom line about blue light?

- We still need exposure to blue light, BUT, not too much and exposure needs to occur at the right times of the day.

What are blue blocking lenses?

- Yellow lenses block a majority of blue wavelength light and are the most protective. Wearing yellow lenses has been shown to treat insomnia and mood disorders. They are also used to increase contrast sensitivity with shooting. However, yellow lenses are not good for daytime use, as they increase sleepiness. Also, pure yellow lenses may be dangerous for night-time driving. This is due to the lenses blocking blue light that is needed for night vision, alertness, cognitive performance and color perception.
- As a result of these issues, several ophthalmic lens manufacturers have developed blue-blocking lenses (BBL's) to offer the much-needed high visible light transmission, reduce the most harmful wavelengths of blue light, and still have cosmetically acceptable lenses that are mostly transparent.
- Studies have shown that not all BBL's block blue light equally. One recent study reported a reduction in blue light from 6-43%, depending on the brand and power of the lens. You may want to discuss with your eye doctor which brand of blue blocking lens is right for you or your child.
- If you or your child spend more than 7 hours a day in screen time, blue blocking lenses are an effective way to mitigate potential short and long-term issues caused from high energy blue light.

What are other options to block blue light?

- Some monitors, tablets and smart phones have the ability for you to adjust the amount of blue light emitted from the screen.

COMPUTER VISION SYNDROME

What is Computer Vision Syndrome?

- Computer vision syndrome, (CVS) also referred to as digital eye strain, describes a group of eye and vision related problems that result from prolonged computer, tablet, or smart phone use.
- Viewing a computer or digital screen is different than reading a printed page. Often the letters on the screen are not as sharply defined and the presence of glare and reflections may make viewing difficult. Short wavelength blue light tends to be slightly defocused compared with other visible light. This creates a violet-blue “blur circle” attributed to a phenomenon called chromatic aberration. Chromatic aberration is believed to be a factor in digital eye strain.
- Uncorrected or under corrected vision problems can be major contributing factors to computer related eyestrain.
- Changes in posture while at a computer can cause discomfort in the neck, shoulder or back.
- Risk of developing CVS is greatest for those who spend two or more continuous hours at a computer or digital screen everyday.

What are the Symptoms of Computer Vision Syndrome?

- Eyestrain, headaches, blurred vision, dry eyes and neck/shoulder pain

How is CVS or digital eyestrain be diagnosed?

- A comprehensive eye examination will check for any uncorrected farsightedness, nearsightedness, astigmatism or presbyopia. Also, the exam will test how the eyes focus, move and work together binocularly.

What is the treatment for Computer Vision Syndrome?

- Treatments are varied
- Can include prescription eyeglasses with special lens designs, powers, tints or coatings.
- Blue blocking lenses or anti-reflective lens coatings may also be recommended.
- The American Optometric Association recommends the 20-20-20 Rule. Take a 20 second break, every 20 minutes to look at something 20 feet away.
- Change the location of your computer screen. Optimally, the computer screen should be 15-20 degrees below eye level (about 5 inches) as measured from the center of the screen and 20-28 inches from the eyes.
- Blink frequently or use artificial tears to minimize dry eyes.