

## WHAT IS BLUE LIGHT?

Visible light consists of red, orange, yellow, green and blue light rays and the shades of colour between them. Light rays that have relatively long wavelengths contain less energy, and those with short wavelengths have more energy. The red end of the visible light spectrum has a longer wavelength and therefore, less energy. Rays on the blue end of the spectrum have shorter wavelengths and more energy are sometimes called blue-violet or violet light.

Ultraviolet radiation, in moderation, also has beneficial effects, such as helping the body manufacture adequate amounts of vitamin D.

### What does blue light do to your body?

#### *Sleep and blue light*

Light exposure at night is linked to several illnesses. The theory is that exposure to light suppresses the secretion of melatonin. The production of melatonin follows a very distinct pattern, which is very closely linked to the individual's circadian rhythm. Following light exposure during the day, almost no melatonin is produced, whereas during the night, when it is dark, almost all melatonin is produced. If a person is intermittently exposed to light at night, a profound melatonin reduction was observed in humans after 2 weeks. Melatonin is a pineal

hormone that is involved in circadian regulation, facilitation of sleep, inhibition of cancer development and growth, and enhancement of immune function. It is recommended to refrain yourself from using blue-enriched light from screens about 4 hours before bedtime. In fact, increase more natural sunlight or bright light during the day to help keep the circadian rhythm healthy.

#### *Eye and blue light*

There are several studies that show that prolonged exposure to high intensity blue light is photo-toxic to the retina. However, most of the experiments performed are not applicable to our daily life. The amount of blue light emitted by smartphones is minimal and the duration of exposure is also short. The sun is actually the largest source of blue light as opposed to digital screens which emit only a tiny fraction in comparison.

#### *Digital Eye Strain*

In the recent years, the new term "Digital eye strain" has been used widely to describe symptoms such as red, dry or irritated eyes, blurred vision and eye fatigue which is quite common and bothers most people in the digital era nowadays. This is a result of extended use of

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computers and other digital devices. People who look at digital screens for two or more hours in a row every day have the greatest risk of this condition.

Digital device (such as computers, handphones and TV) usage strains the eyes more than reading print material because people tend to blink less as they concentrate on a screen. Furthermore, many view digital screens at less than ideal distances or angles (causing postural problems). Digital devices also suffer from glare or reflection from its surface and sometimes the contrast between the text and the background is poor. All this can be alleviated by shifting your eyes every 20 to 30 minutes or so onto something that's 6 meters away for at least a minute. If the symptoms persist, artificial tears is recommended.

Almost all the smartphones today are capable of twitching to a "Blue light filter mode". What is being done is really to shift the colour tone of the screen of the smartphone. Blue hues are converted to orange, red and yellow ones and the screen brightness reduces overall thus reducing the amount of blue light exposure. The other option is to use a 'blue-light protective' filter.

### Blue light filtering glasses, Is it necessary?

Blue light filtering glasses are basically lenses that block blue light but look normal. There is no doubt that these sorts of lenses are a new trend

and the market for blue-light filtering glasses is expanding. People continue to purchase them as they are willing to spend on any means possible to help reduce digital strain. To date however, there isn't enough research to confirm that blue light filtering glasses do help in digital eye strain. As there is no evidence to show that blue light causes any form of permanent damage to the eye and hence there is no special recommendation to use any special eye wear for computer use. Some suggest that these glasses may be of placebo effect and do not really help with eye strain.

### References

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**DR CHAN JAN BOND**

Consultant Ophthalmologist and Refractive Surgeon  
International Specialist Eye Centre, Kuala Lumpur



**DR TAN CHAI KEONG**

Ophthalmologist  
Hospital Sultan Haji Ahmad Shah, Temerloh, Pahang