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Blue light filters: do they really work?

Most of us spend several hours looking at digital screens every day, all of which emit varying levels of blue light. There's debate about the damage and effects blue light has on our vision and health, and if blue light filters help. We investigate if they really work.

What is blue light?

Around one-third of all the light we see is blue light, with sunlight being the main source. Blue light is also known as high-energy visible (HEV) light. Unlike other types of light, our eyes cannot filter it on their own. This means blue light can reach the retina without restriction.

The most common sources of artificial blue light are:

- Flat-screen LED televisions.
- Fluorescent lights.
- LEDs.
- Compact fluorescent light (CFL) bulbs.
- Smartphones.
- Computer screens.
- Tablets.

What is a blue light filter?

A blue light filter is designed to protect our eyes from any harmful effects of blue lights.

People spend around seven hours a day [looking at digital screens](#). As this has raised safety concerns, blue light filters are now commonplace across a range of products to increase safety for long-term use - they can be used on everything from phones to [blue light blocking sunglasses](#).

How does blue light affect the eyes?

There is debate as to whether blue light damages our eyes. Studies show that high levels of blue light, over prolonged periods, have the potential to damage the retina - and that [blue light blocking glasses](#) could help prevent up to 80% of this damage¹. An injured retina can lead to [vision loss](#) and distortion.

But when it comes to a smaller amount of blue light, it's less about eye damage and more about how it affects your body.

One of the most common issues people have with looking at screens a lot is [digital eye strain](#). This occurs because you blink less when looking at screens, which reduces the amount of moisture in your eyes. Symptoms of digital eye strain include dry eyes, [headaches](#), [nausea](#), [neck pain](#), and more. This is often mistaken for the effects of blue light. At present, there's no evidence that blue light filters can help prevent or ease digital eye strain².

If you experience symptoms of digital eye strain, the following may help:

- Adjust your screen's brightness.
- Eliminate screen glare.
- Ensure your screen isn't brighter than the other lighting in the room.
- Use filters to adjust colour warmth throughout the day, as this reduces eye strain in the evening.
- Don't sit too close to the screen.

Benefits of blue light filters

Eye damage

Blue light can cause retinal damage, but the evidence for this involves extreme exposure over consistent and long periods³. In truth, the effects of day-to-day blue light exposure are not yet fully understood – and we don't yet know how beneficial blue light filters are.

Bhavin Shah is a behavioural optometrist at [Central Vision Opticians](#). He says that the evidence for blue light filters is inconclusive, and instead opts for a spectral filter on his personal [sunglasses](#). "This filters out more than blue in the spectrum of light and makes my eyes more comfortable when i'm driving in overcast weather."

Sleep

Blue light exposure affects your circadian rhythm, the body's internal clock³. Light is critical for how it behaves and adjusts to environmental factors – such as day and night. This is why too much exposure to artificial light before bedtime – such as blue light from a screen – can make it hard to [fall asleep](#).

Blue light stimulates your eyes and brain, sending signals to your body's internal clock. This in turn affects how your body produces melatonin, the sleep-inducing hormone. So, if you find yourself scrolling through your phone or watch TV before bed to wind down at bedtime, you're actually making your body more alert.

Reducing or cutting out screen time before bed is beneficial for improved sleep and a [healthy sleep pattern](#). For screen-time you do have, blue light filters can help limit blue light exposure.

Further reading

1. [Theruveethi et al: Blue light-induced retinal neuronal Injury and amelioration by commercially available blue light-blocking lenses.](#)
2. [Singh et al: Do blue-blocking lenses reduce eye strain from extended screen time?](#)

3. [Touitou et al: Effects and mechanisms of action of light-emitting diodes on the human retina and internal clock.](#)

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