

Ben Pope

Into the Night Shift

Everything that you wanted to know about
Apple's Night Shift



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When Apple released iOS 9.3 in 2016, it introduced Night Shift, a feature said to improve the quality of sleep users are receiving, through prevention of artificial blue light emitted from the display, in exchange for something easier on the eyes. We'll see firsthand the research behind the impact of blue-light, and whether Apple's new feature really works as a counter to it.

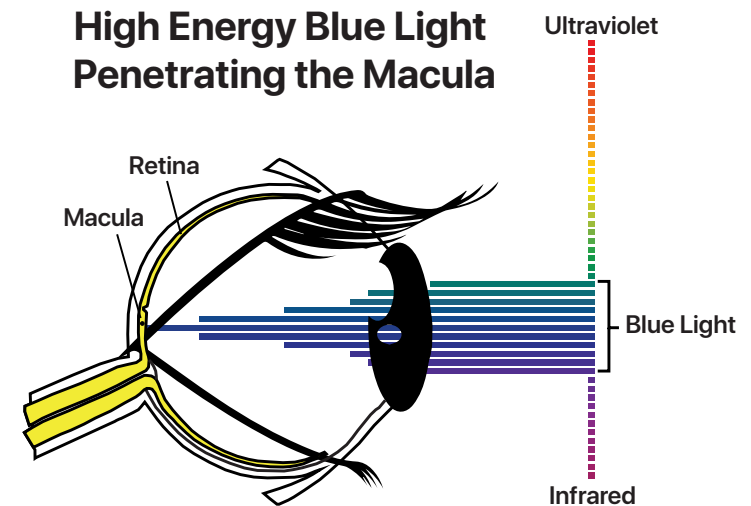
Body clocks have circadian rhythms – internal cycles that last about 24 hours (*circa diem*, Latin for around a day.) The rhythm can be adjusted by external stimulus – sunlight is the most effective. Light enters the eye, resulting in stimulation to the brain and then releases **melatonin** – a hormone in the blood, telling your cells it's time to sleep.

However, melatonin can be destroyed by sunlight. Thus, melatonin can significantly alter your behaviour and physiological health, be it blood pressure or even general alertness.

There are receptors in the retina in our eyes that are designed to detect light that are especially sensitive to the "cool" blue-green wavelengths. However, they are not stimulated by the "warm" red-orange light at the opposite end of the visible spectrum of colour.

Modern technology (such as that found within your iPhone) uses **light-emitting diodes** (more commonly known as LEDs) that project a bluer light. Unfortunately, LEDs are considered bad for the body because they trick your brain into thinking it's daytime, suppressing melatonin production.

"Blue light harms our vision by damaging the eye's retina," observed *University of Toledo's, Ajith Karunaratne PhD*. Cells behind light sensitive tissue inside the eye, breaks down (known as **Macular Degeneration**); eliminating removal of waste and transfer of nutrients, this results in the death of the retina, showing up as a growing blind spot and eventually blindness. Blue to ultraviolet light aggravate this process.



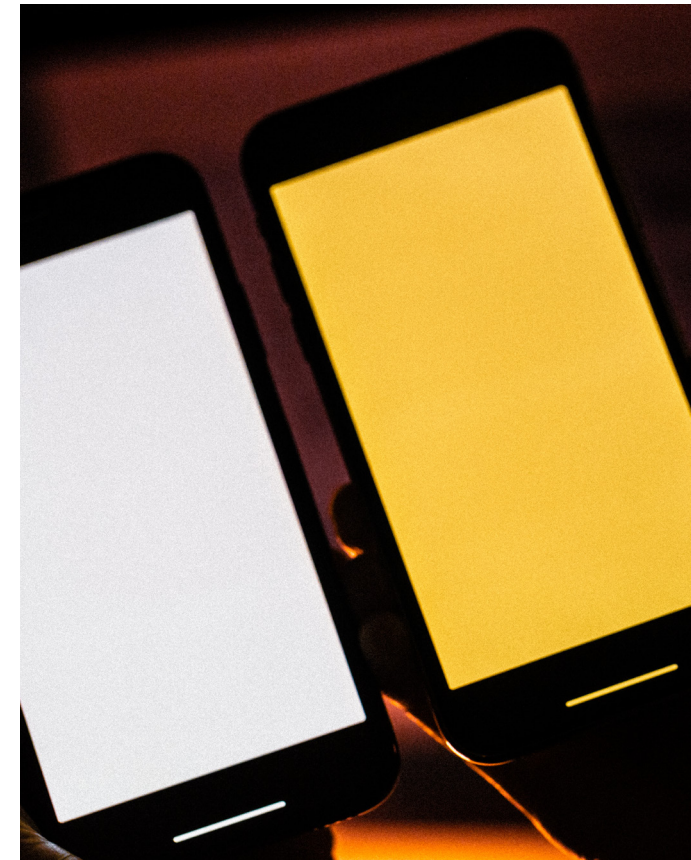
Paul Gringras, Professor of Sleep Medicine at London Children's Hospital, led a study in 2015 comparing light emitted from various devices, in particular the iPhone 5S. It confirmed modern screens give off blue-wavelengths. Using the iPhone 5S, they compared the default settings of the screen display to an application called "*Kids Sleep Dr.*" The application used a colour palette featuring warmer colours of the colour spectrum. The results proved the app reduced short-wavelength (blue) emissions.

Responding to the negative findings on the effects of blue light, Apple introduced Night Shift, claiming it "uses your iOS device's clock and geolocation to determine when it's sunset. Then shifts the colours in your display to the warmer end of the spectrum, making it easier on your eyes. In the morning, it then returns the display to its regular settings."

So, what do the experts think? Unfortunately, there hasn't been a significant amount of research into the benefits of Night Shift.

However in 2018, the *Lighting Research Centre (LRC) at Rensselaer Polytechnic Institute*, investigated the effectiveness of Night Shift for lessening the impacts of night-time device usage on melatonin suppression. This study used an iPad with the Night Shift feature enabled. They studied 12 young adults testing 3 variables - Night Shift disabled, Night Shift with the colour temperature adjusted to "Less Warm" and Night Shift with the colour temperature adjusted to "More Warm." The results observed after 2 hour using the iPad, that melatonin was suppressed 23% on regular settings, 19% suppression with Night Shift "Less Warm" mode and 12% with Night Shift "More Warm" mode.

Night Shift is of benefit in suppressing melatonin – however it is still up for discussion as to whether or not Night Shift alone can solve sleep problems, or if there are other more stress-inducing activities that can result in an irregular sleep pattern. Having a device in your hand, as of current, is looking to not be beneficial for your sleep but using Night Shift will at least help take some of the edge off.



References:

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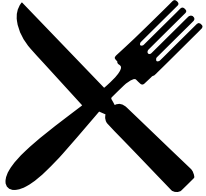
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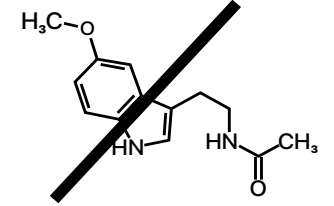
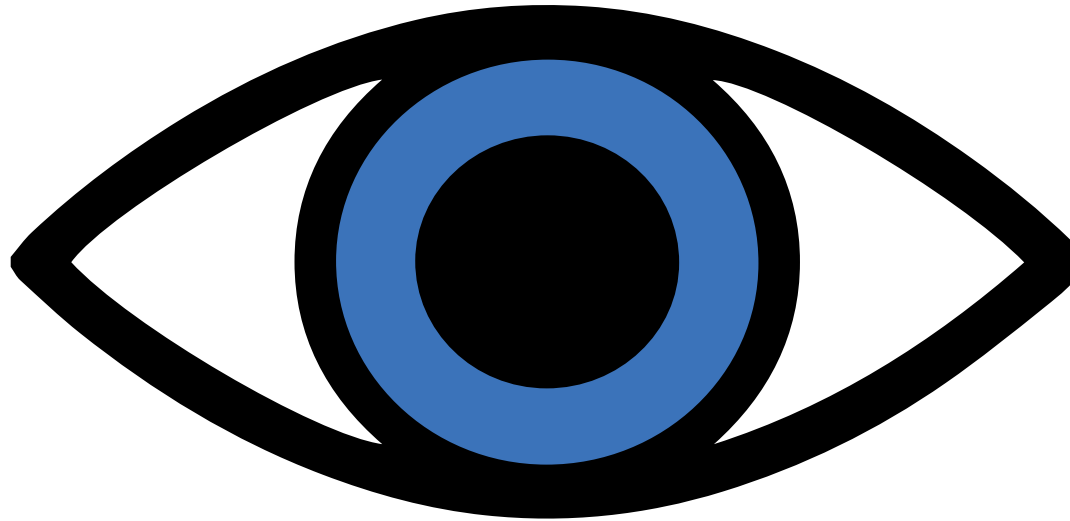
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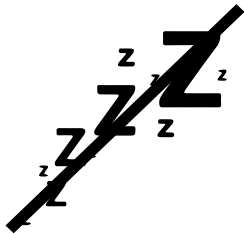
The Harmful Effects of Blue Light



Disrupts the Hormones
that Control Hunger



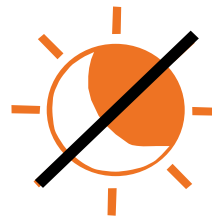
Melatonin is Suppressed



A Poor Night's Sleep

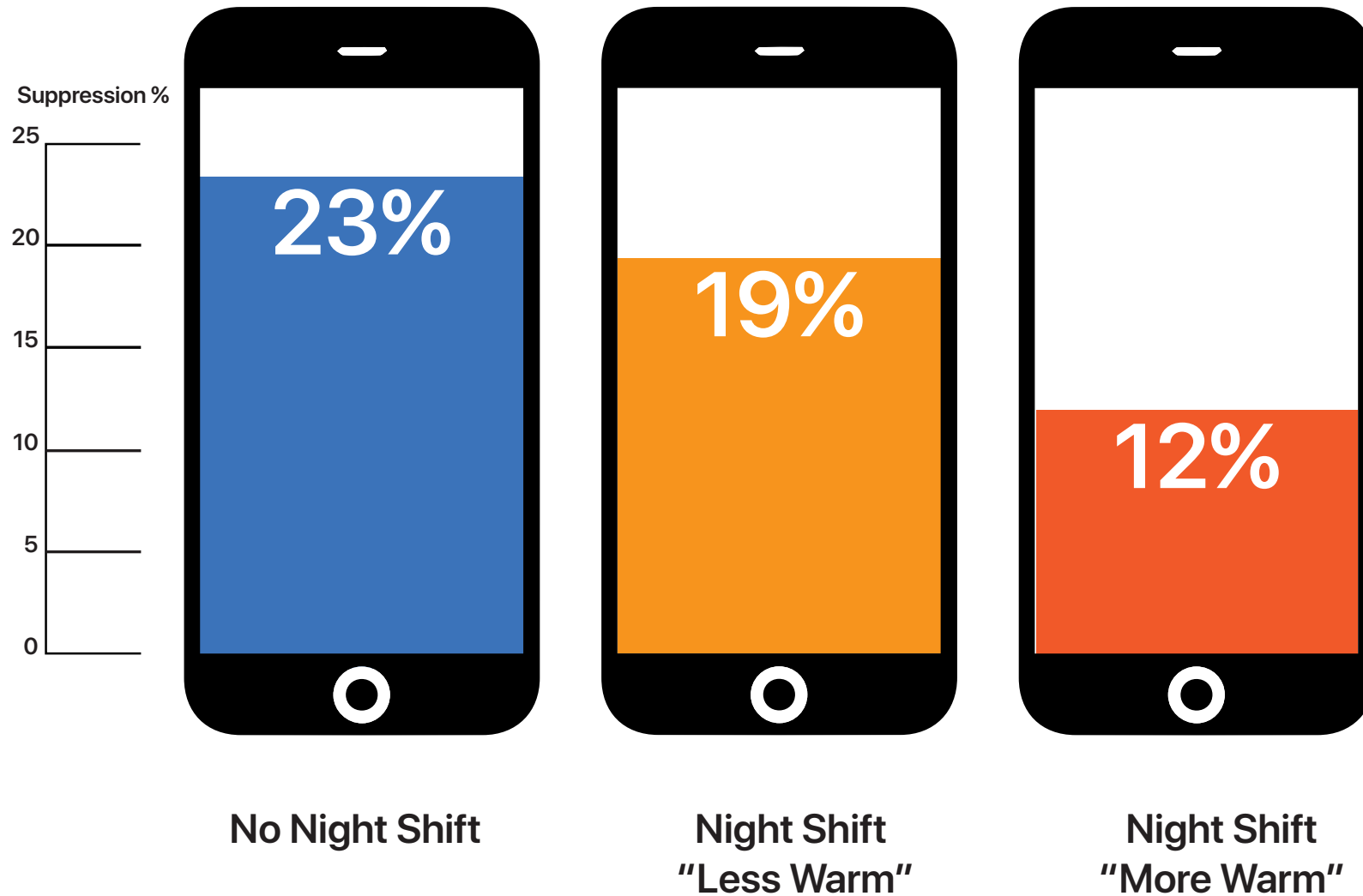


Damages the Macula

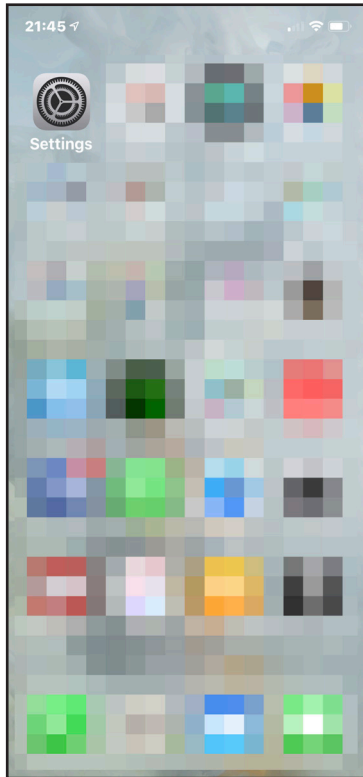


Affects the Circadian Rhythm

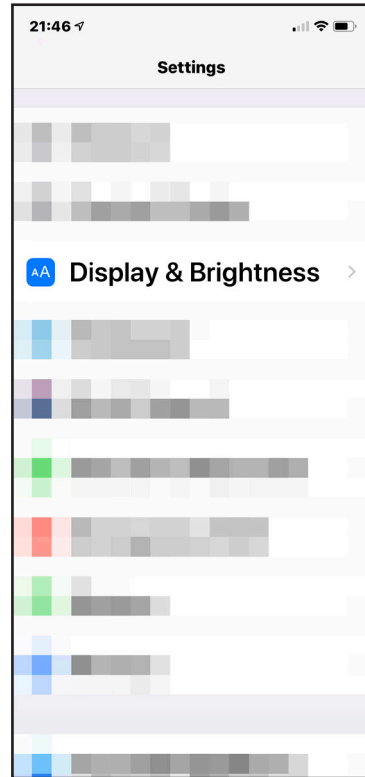
Night Shift's Impact on Melatonin Suppression



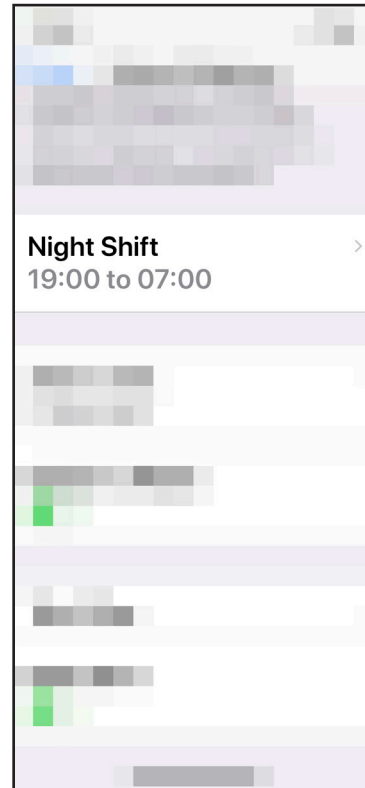
How to Activate Night Shift



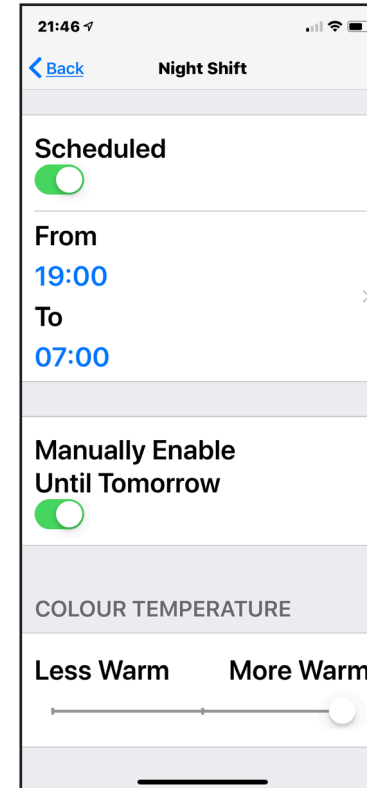
Settings



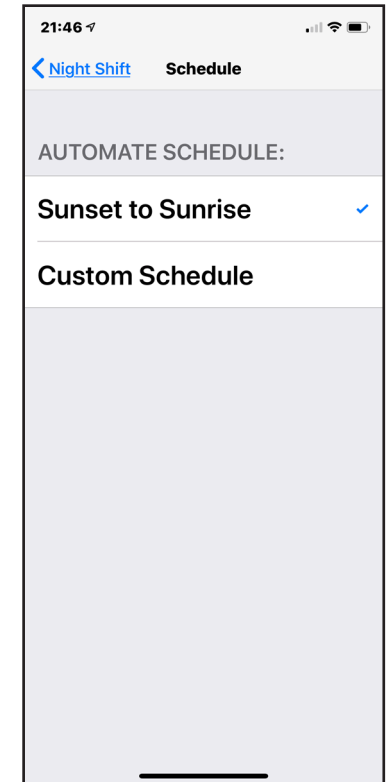
Display
&
Brightness



Night Shift



Customise
Settings



Automate
Schedule