

# Artificial Light Is Wrecking Your Sleep, and It's Time to Do Something About It



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We're collectively staying up later, sleeping less, and enduring a lower quality of sleep thanks to the abundance of electronic distractions and the accompanying bright screens. For your health and happiness, it's time to do something about it.

## How Bright Light Wrecks Your Sleep

In the modern world we do a lot of things to ourselves that, in the context of hundreds of thousands of years of human existence and adaptation, aren't exactly optimum for our bodies. Most of us spend the majority of our days sitting when our bodies are tuned to move and be active. Most of us eat heartily everyday despite having done little to, metabolically speaking, "earn" the calories. In that same vein, we've leveraged technology to give us around-the-clock access to bright light. Collectively, we spend a whole lot of time late in the day basking in the glow of television screens, computer monitors, and handheld gadgets—a state of affairs that's terrible for our quality of sleep and health.

It's a pretty big claim to say that exposure to the light of your gadgets, late night computer use, and exposure to bright light late in the evening is wrecking your sleep and lowering your quality of life—but the argument is well supported by studies dating back to the 1980s. Research over the last thirty years has painted an increasingly clear picture that, in addition to our habit of moving too little and eating too much, we're also stimulating our brains with late night binges watching television, playing with gadgets, and otherwise blasting ourselves with bright light that keeps us far too alert and stimulated for too late into the day.

In the early 1980s Dr. Charles Czeisler, working at the Harvard Medical School, established what had long hypothesized about daylight and the circadian rhythm: exposure to bright light regulates the human body's internal clock. Further research over the ensuing decades both by Dr. Czeisler and other researchers established that not only does light exposure regulate the body's internal clock but also the secretion of critical hormones like serotonin and melatonin. Bright morning light boosts serotonin production and makes us more alert and happy and dim light in the evening increases melatonin production and makes it easier to fall and remain asleep. Further research even found that extended exposure to artificial light even increased incidence of cancer (specifically cancers that were stimulated by hormones produced via light exposure).

In the 2000s, an additional and related body of research emerged: studies indicated that the blue-frequency light was the most detrimental to good sleep and restfulness. While evidence that blue-frequency light disrupted the circadian rhythms of organisms dates all the way back to the 1950s, it wasn't until we started collectively exposing ourselves to blue-frequency light late at night that the effect became apparent (and pressing) in humans.

Or, to break all the research down into a single sentiment: We're happiest and healthiest when we experience crisp blue-white light in the morning and afternoon, dimmer and warmer light in the evening, and sleep in a truly dark room.

So what can you do about it? Rather than feel overwhelmed by how absurd it seems to not be exposed to bright light in the evening, let's break things down into easily accomplished steps that will help you significantly minimize your evening light exposure and get your more restful sleep in the process.

### **What You Can Do About Late Night Light Exposure**

We'll be honest with you. Nothing on this list of tips and strategies we're about to share with you necessarily sounds at all fun. Frankly, it's the technology equivalent of your doctor telling you to do more cardio because it's good for your heart. Your doctor is right, he means well, but there's a good chance neither you nor he is going to do more cardio in the foreseeable future no matter how good it is for your heart.

In the same vein, goofing around playing videos game late into the night after work is fun. Binge watching your favorite show on Netflix is fun. Carrying around a veritable Library of Alexandria on your tablet or ebook reader and reading anything your heart desires well after sun down isn't just fun it's something of technological wonder. Nonetheless, given the prevalence of poor sleep and the very detrimental effects thereof, we'd encourage you to adopt even a few of our suggestions in a bid for better sleep.

### **Banish Light From Your Bedroom**

This one is an easy sell. Even if you're not willing to give up the Netflix binges there's hardly a soul around who wouldn't like a darker and most restful bedroom. Your first order of business is to go for the long hanging fruit of sleep improvement: get rid of all the little but cumulative sources of light pollution in your bedroom.

Blocking light coming in from the outside is the most traditional (and still important) consideration. Blackout shades or curtains are an excellent way to remove light pollution from street lamps, security lighting, and other external light sources. Not sure if it's worth investing in updated window treatments? You can pick up a six pack of 99% light blocking temporary window shades for \$33. If the experiment proved beneficial you can consider more permanent/costly upgrades.

Even if its pretty dark outside, many of us have bedrooms that are now a veritable carnival of lights. The LED lights on TV sets, cellphone chargers, and all manner of electronics can easily brighten a room better than even a bright night light. If your bedroom is packed with LEDs you can easily dim them with inexpensive stickers or electrical tape.

### **Turn Off Your Screens**

We know it's a tough sell. Screens are our primary form of entertainment and recommending they be turned off hours before bedtime is akin to telling people to stop enjoying themselves. None the less the crisp blue-white light blasting at us from our televisions, tablets, and smartphones might be keeping us entertained but it's also keeping us awake.

Ideally, you should treat exposure to the blue light of your screens like you would treat a cup of coffee. Most people would not pour themselves a big hot cup of coffee at 9PM if they wanted to be sleepy and ready for bed at 10PM and, in the same vein, you shouldn't sunbathe, so to speak, in the glow of screen right before bed if you want quick and restful sleep. Have trouble resisting the allure of your gadgets? Set up your charging station in the kitchen or home office to keep them away from your nightstand.

Many of you are likely curious if that includes ebook readers, especially in light of recent (and rather sensationalist) news articles about how ebook readers are just as bad as tablets and smartphones when it comes to light exposure. There was, in fact, a study published in 2015 regarding the impact of ebook readers on the circadian rhythm (note, even, that previously mentioned circadian rhythm research pioneer Dr. Czeisler is one of the authors).

What a lot of news outlets overlooked in their rush to report on the matter, however, is that the ebook readers used in the study were light emitting and more akin to tablets than the e-ink readers you're likely more familiar with. The take away? Don't read books on your iPad or Kindle Fire at bedtime. Read books on your regular Kindle or other e-ink reader under the same conditions you would read a traditional paper book.

### **Warm Your Screens**

If your reaction to the previous suggestion that you turn off all your screens before bed is akin to us suggesting that you just solve your sleep problems by stapling your eyelids closed, well then perhaps a compromise is in order.

Although the evidence is very strong that any light exposure in the evening has the potential to throw our internal clock off, blue-spectrum light is likely the biggest problem. In that regard, you can tame the effects of blue light on your body by warming the color temperature of the screens around you.

On your computer, we can't recommend f.lux enough—the application shifts the color temperature so everything appears warmer (or redder). That's not so great for photo editing, where colors need to be accurate, but it's great for decreasing your blue light exposure. Android users will find the Twilight app performs on Android much like f.lux does on computers (though f.lux was recently released for rooted Android phones as well). F.lux is available on iOS if you're jailbroken, but soon enough, all iOS users will be getting a built-in solution. iOS 9.3 includes "Night Shift" mode which supports color temperature shifting.

All of the above apps, including the forthcoming feature in iOS 9.3, include scheduling so you can set your screens to automatically shift from blue to red tone light each evening.

Even if some or all of your devices don't support color-shifting (like, say, your HDTV set) you can circumvent the whole thing with a pair of yellow-tinted glasses to cut out blue-spectrum light. Increasing concern over blue-light exposure means such glasses are inexpensive and readily available—the current best selling reading glasses on Amazon, for example, are an \$18 pair of blue-light filtering glasses.

### **Warm Your Lights**

A final, and distinctly traditional, solution you may want to consider is simply warming up the tone of your lighting. This may mean replacing your full-spectrum bedroom bulbs with "warm white" bulbs (they'll be labeled as 2700K color temperature).

It also means avoiding very bright blue-white lights like crisp task lighting and fluorescent overhead lighting. If you spend a lot of time in your basement rec room every evening, for example, and that room has bright office-style fluorescent lights then you may want to consider adding some floor and table lamps to the room to dial down both the intensity of the light and warm it up with warm white bulbs.

For those of you thinking about getting into smart bulbs, we absolutely love our color-changing Hue bulbs for exactly this reason. In the morning when we want to be awake and alert the bulbs are set to a crisp blue-white light.

At night when we want to relax and get sleepy they are set to a warm-white light. Even better, the you can use your smart bulb system as a sunrise-simulating alarm clock—perfect for keeping your circadian rhythm fine tuned on the other side of your sleep cycle.

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While *not* playing on your gadgets all night or catching up on your favorite shows until midnight doesn't sound like the most fun in the world, neither does being constantly sleep deprived and in poor health as a result. With a little bedroom and gadget tweaking as well as putting your gadgets to bed long before you head there yourself, you can get a good night's sleep.