

FOUR WAYS TO BETTER SLEEP

1. GET SOME RHYTHM

To sleep well, we need to be in sync with our circadian rhythm. This is a naturally-occurring cycle that runs at around 24 hours, and helps to signal when we should be awake and when we should be asleep. Trying to sleep (apart from napping) during the 'awake' phase of our rhythm is nearly impossible — as we can experience in jetlag. Our circadian rhythm has a natural tendency to either run a bit shorter or longer than 24 hours, a pattern which is genetically inherited and determines our chronotype, meaning that we are either larks (preferring to rise early) or owls (preferring to stay up late). We reset our circadian rhythms every day when light signals hit our suprachiasmatic nucleus (SCN) and a cycle begins again of ideally 16 hours of wakefulness followed by 8 hours of sleep. Timing of mealtimes also entrain our circadian clock. For optimal health and sleep, therefore, we should get up and go to bed at exactly the same time every day, and stick to regular routines during the day. This impacts not just our sleep but every aspect of our health, as every cell in our body, and even the bacteria in our gut, operate according to a circadian clock.

2. EMBRACE THE DARK SIDE

Our bodies are designed for extremes of light (during the day) and darkness (during the night), but in modern life we rarely get enough light during the day (we tend to be indoors under dim light) and we get too much on an evening (with artificial lighting). This has a major impact on our sleep. Sunlight enables us to synthesise vitamin D, which is essential for positive mood, and also to produce melatonin. Daylight is rich in light from the blue end of the spectrum and signals to our brains to produce a protein called melanopsin, which increases alertness and wakefulness. But on an evening, LED lamps and screen-based gadgets also emit blue-wavelength light. This continues to produce melanopsin, keeping us awake. At the same time, melanopsin delays the release of the day's build-up of melatonin, which is a hormone that signals to the brain and the body that it is time to sleep. Not only does melatonin help to initiate sleep, but it is also a powerful antioxidant and anti-inflammatory and one of the body's best defences against cancer. Too little light during the day and too much at night therefore has serious consequences not just for our sleep, but for our overall health.



3. PUT THE PRESSURE ON

We fall asleep at the intersection between greatest sleep rhythm (when our circadian clock is signalling the right time) and greatest sleep pressure. Sleep pressure involves the build-up of a molecule called adenosine, which increases the longer we have gone without sleep. Ideally sleep pressure peaks after around 16 hours of wakefulness, initiating 8 hours of sleep during which adenosine is flushed from the brain. Getting up at the same time every morning ensures that our sleep pressure is at a maximum by bedtime — which should also be at the same time every night. We can reduce sleep pressure, at least temporarily, with caffeine, which blocks adenosine receptors in the brain. Caffeine has a half-life of 5-7 hours, so any consumption after midday may significantly reduce sleep pressure come bedtime and make it much harder to fall asleep, especially if we miss the magic 'intersection' point of sleep pressure and sleep rhythm. Exercise and mental stimulation, especially involving novelty, also increase sleep pressure, so a day out and about exploring new places or social contexts will leave us feeling more sleepy come bedtime compared to a quiet day in at home.

4. TRAIN THE BRAIN TO SLEEP

As newborn babies, we are not very good at falling asleep — over many months we have to be helped and trained to go to sleep. Trauma can disrupt this learning in many ways, and our brains can simply get out of the habit of knowing how to fall asleep. Nobody then trains adults to sleep again. But that is exactly what we need to happen. Just as with infants, a bedtime routine is key, to signal to the brain that it is now time to sleep. This simple, repeated behaviour initiates a cascade of release of neurotransmitters and hormones that prepare our brains and bodies for sleep. We can help the transition by cooling the body (keeping the bedroom at 17-18°C), diffusing the aroma of lavender, only using the bedroom for sleep and sex and in particular ridding it of devices such as TVs and phones which emit disruptive electronic waves, and making it so dark that we cannot see our hand in front of our face. There should also be a gap of several hours between our last meal and bedtime, as food is a strong signal to the brain that it is time to be awake.

