

HOW DO YOU SLEEP WITH BIO HACK?





We all know that sleep is incredibly important. Hormones, enzymes and waste products are cleared, gene expression is regulated (1), and our mind and body regenerate (2). Restorative sleep is vital for health and a lack of sleep can enable the manifestation of disease. It is, therefore, imperative that we get quality sleep every night.

So what are some easy ways to bio hack your way to better quality sleep? Here are a few you should try!

Set a sleep schedule

A sleep schedule is when you go to bed and wake up at the same time every day, even on weekends. This ensures that you are not fighting against your natural body clock. Ideally, you need seven to eight hours of sleep a night, although this is not set in stone. If at all possible, go to bed when you are tired and get up when you wake up naturally. You then need to make sure you include the following hacks into your life to help you get the optimum benefit from your time in bed.

Get some natural light during the day

Daily exposure to natural light is one of the best things you can do for your health. Exposure to natural light helps regulate your body's circadian rhythm, which is responsible for many important functions, including the sleep-wake cycle, hormone production, and metabolism (3). Getting daylight, especially first thing in the morning, can help improve your focus and attention span (3). In addition, natural light increases levels of serotonin, a neurotransmitter that plays a role in mood and energy levels (4). Even small amounts of natural light can have a positive impact on our moods, stress levels and productivity.



It is also worth mentioning that sunlight is a source of Vitamin D, which is essential for many aspects of your health (5), but especially to help the body utilise calcium. So next time you're feeling sluggish or having trouble concentrating, take a break and step outside into the sunlight. With daily exposure to sunlight, you can enjoy all of these benefits and more. Your body will thank you for it.

As well as getting enough natural light, it is important that the room you sleep in is dark. This is essential for the sleep hormone, melatonin, to be produced and induce deep, restorative sleep (6). Therefore, during summer or if you live in a country where it is daylight for more than 16 hours, getting black-out blinds or curtains is advisable. Alternatively, you can wear an eye mask.

Reduce screen time before bedtime

Numerous studies have shown that the light emitted by screens can have a negative impact on sleep. The blue light produced by laptops, tablets and mobile phones can inhibit the production of melatonin, a hormone that helps to regulate sleep (7). As a result, staring at a screen in the hours before bed can make it difficult to fall asleep and can lead to poorer quality sleep. In addition, staring at a screen right before bed can keep your mind active and make it harder to wind down and relax. To get the best night's rest, it is recommended to turn off all screens at least 30 minutes before bedtime. This gives the brain a chance to wind down and prepare for sleep. Instead, try reading a book or taking some time to relax in a bath. Or both! You'll sleep better and wake up feeling refreshed and ready to start your day.



If you absolutely must use a screen in the evening, a great hack is to wear blue-light-blocking glasses, with amber lenses (8) and install an app on your computer and phone that filters out blue light. Another beneficial hack app is using an app that reduces the glare on the screen, such as Twilight (9).

Get some red light before you hit the sack

When it comes to getting a good night's sleep, most people are aware of the importance of avoiding blue light before bed. However, red light can also be beneficial in promoting sleep. Unlike blue light, which is stimulating, red light has a calming effect that can help to ease you into sleep. Additionally, red light helps to reduce the production of melatonin, the hormone that makes you sleepy (10). Exposure to red light before bed can therefore help you fall asleep more quickly and get a better night's rest. So if you're having trouble sleeping, try using red light bulbs in the evening. It is also worth putting a red bulb in your bedside light, or in your child's bedroom if they prefer to sleep with the light on.

Bio hack your diet for better sleep

It's well-known that what we eat can have an impact on our physical health, but did you know that diet can also affect our sleep habits (11)? Certain foods and drinks contain compounds that can help to promote sleep, while others can act as stimulants and make it more difficult to fall asleep. If you're looking to get a better night's rest, there are a few dietary changes you can make to support your sleep cycle.



To start, aim to include more foods that contain magnesium and tryptophan in your diet. Magnesium is a natural sedative that can help to relax the muscles and improve sleep (12). Foods that are high in magnesium include dark leafy greens, nuts and seeds, and whole grains.

Tryptophan is an amino acid that is a building block for melatonin, a hormone that helps you sleep. Foods that contain tryptophan include poultry (especially turkey breast), oats, tuna, milk, peanuts and chocolate (13). In addition to including these foods in your diet, you can also try drinking chamomile tea before bed as it contains compounds that have a calming effect on the body (14).

Foods that help you sleep and are well worth including in your diet are those that naturally contain melatonin. Foods that contain melatonin are tomatoes, walnuts (15), strawberries, olive oil (16) and cow's milk (17). Which goes to show that when your mother told you to have a milky drink at bedtime, she knew what she was talking about. Kiwi fruits (18) and tart cherries (19) have also been found to improve sleep quality, reduce insomnia and help regulate sleep. Bring on the fruit salad!

In addition to these bio hacks, try not to eat less than three hours before bedtime to allow your body to digest the food. Reduce alcohol as, although it can make you sleepy, it is alcohol-induced sleep that is not restorative (20). Finally, do not have caffeinated drinks such as tea, coffee or cola after mid-day, as caffeine is a natural stimulant that disturbs sleep (21).

Bio hack your sleep with supplements

Another way to bio hack your way to better sleep is by using supplements. Melatonin is a hormone that helps to regulate the body's sleep-wake cycle (22) and it's available as a supplement in pill form. Just one to three milligrams of a melatonin supplement can help people fall asleep more quickly and improve the quality of their sleep (23). If you're struggling with insomnia, you may want to try taking a melatonin supplement an hour before bedtime. Valerian root is another popular sleep supplement. This herb has been used for centuries to treat sleeping disorders and anxiety. Valerian root can help to improve the quality of sleep and reduce the time it takes to fall asleep (24). If you're interested in trying valerian root, start with a low dose and increase gradually as needed.

Ashwagandha is an herb known as "Indian ginseng", with a long history of use as a medicinal herb. It is best known for its ability to relieve stress and promote relaxation. The herb is thought to work by reducing levels of the stress hormone, cortisol. This ability to reduce anxiety and promote calmness makes it an ideal herbal supplement to improve sleep and as an effective natural remedy for insomnia (25). It has been found to improve the sleep quality of people suffering from insomnia if used continuously for a few weeks (26).

Mindfulness meditation

Meditation is a way to bio hack your mind to help you relax, clear your mind and lower your blood pressure, which can then reduce disturbed sleep, and insomnia. If you struggle to meditate on your own, there are loads of apps to help, such as Headspace, Calm, and Smiling Mind (27). Pzizz and Sleepiest are amongst other mindfulness apps that specifically help you sleep (28).



While discussing technology and how it can help you sleep, it is worth mentioning wearables.

How technology can bio hack your sleep.

Most people are familiar with the concept of a fitness tracker. These devices are worn on the wrist and track things like steps taken, heart rate, and calories burned. However, many people don't realize that there are also devices that can track sleep. These wearables use sensors to monitor things like heart rate and body movement during the night. Unfortunately, this is not entirely accurate as it does not measure brainwaves, which would give more precise data (29). Wearables can be helpful in spotting trends and determining whether or not your sleep is improving.

If you want more accurate data on your sleep quality, there are other devices you can use to bio hack your slumber. These include Apnealink air, Nox T3, Philips Alice PDx and Alice NightOne (30). These are slightly more invasive, less compact and can cause some discomfort. There are even devices that can be sewn into your pyjamas to monitor your sleep more accurately (30).

The Oura ring is another wearable tracking device that monitors sleep and activity (31). It uses sensors to measure heart rate, body temperature, and respiratory rate. The data is then used to estimate sleep stages, including light sleep, deep sleep, and REM sleep. The Oura ring also provides information on the length of time it takes to fall asleep, how often you wake up during the night, and how much time you spend in bed. This information can be used to improve sleep habits and track progress over time. The Oura ring is an effective tool for monitoring sleep and improving sleep quality.



Or you can go even further and buy a bed, with artificial intelligence, that monitors sleep. As you can imagine, these are not cheap, costing nearly two thousand dollars. They have many features, which include raising your head when snoring is sensed, monitoring the temperature and humidity of your bedroom, waking you up when the lightest phase of sleep is identified and a sleep coaching program to help improve your sleep (32). There are even devices that can sense when you get into or out of bed and control the lights and temperature in your bedroom, as appropriate (33). Unfortunately, these devices don't have your coffee ready for you when you wake up; but I am sure that is only a matter of time!

Bio hack your genes to help you sleep better

DNA testing is a quick and easy way to bio hack your sleep patterns. The Home DNA test analyses the genetic links between insomnia and your family, so that you can find out if you have inherited this trait (34).

The genes that are linked to sleep and your body clock are CLOCK, PER, CRY and BMAL1 (35). If you discover that there are genetic variations, called polymorphisms, in your genes, it is even more important to follow the bio hacks described in this article.

As you can see, there are a number of ways that you can bio hack your way to better sleep. Some cost nothing, some are pretty expensive. If you are struggling to sleep, it is worth considering some of these methods and seeing which bio hack works best for you. Sweet dreams!



References

1. Effects of insufficient sleep on circadian rhythmicity and expression amplitude of the human blood transcriptome

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3607048/>

2. What Happens When You Sleep?

<https://www.sleepfoundation.org/how-sleep-works/what-happens-when-you-sleep>

3. Effects of light on human circadian rhythms, sleep and mood

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6751071/>

4. Sunshine, Serotonin, and Skin: A Partial Explanation for Seasonal Patterns in Psychopathology?

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3779905/>

5. Vitamin D's Effect on Immune Function

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7281985/>

6. Melatonin, the Hormone of Darkness: From Sleep Promotion to Ebola Treatment <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4334454/>

7. The inner clock-Blue light sets the human rhythm

<https://pubmed.ncbi.nlm.nih.gov/31433569/>

8. Blocking nocturnal blue light for insomnia: A randomized controlled trial

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5703049/>

9. 9 Best Blue Light Filter App in 2022: The Filter Apps Review

<https://thedroidguy.com/best-blue-light-filter-app-1105174>

10. Red Light and the Sleep Quality and Endurance Performance of Chinese Female Basketball Players

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3499892/>

11. Effects of Diet on Sleep Quality

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5015038/>

12. Association of magnesium intake with sleep duration and sleep quality: findings from the CARDIA study

<https://academic.oup.com/sleep/advance-article-abstract/doi/10.1093/sleep/zsab276/6432454?redirectedFrom=fulltext&login=false>.

13. L-Tryptophan: Basic Metabolic Functions, Behavioral Research and Therapeutic Indications

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2908021/>

14. Chamomile: A herbal medicine of the past with bright future

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2995283/>

15. Melatonin in walnuts: influence on levels of melatonin and total antioxidant capacity of blood

<https://pubmed.ncbi.nlm.nih.gov/15979282/>

16. Functional roles of melatonin in plants, and perspectives in nutritional and agricultural science

<https://pubmed.ncbi.nlm.nih.gov/22016420/>



17. Diurnal pattern of melatonin in blood and milk of dairy cows.

<https://www.cabdirect.org/cabdirect/abstract/20113383002>

18. Effect of kiwifruit consumption on sleep quality in adults with sleep problems <https://pubmed.ncbi.nlm.nih.gov/21669584/>

19. Effect of tart cherry juice (*Prunus cerasus*) on melatonin levels and enhanced sleep quality <https://pubmed.ncbi.nlm.nih.gov/22038497/>

20. Dose-dependent alcohol effects on electroencephalogram: sedation/anaesthesia is qualitatively distinct from sleep
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7678031/>

21. The impact of daily caffeine intake on night-time sleep in young adult men <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7907384/>

22. Melatonin advances the circadian timing of EEG sleep and directly facilitates sleep without altering its duration in extended sleep opportunities in humans <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1665336/>

23. Efficacy of melatonin with behavioural sleep-wake scheduling for delayed sleep-wake phase disorder: A double-blind, randomised clinical trial
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6005466/>

24. How Valerian Root Helps You Relax and Sleep Better
<https://www.healthline.com/nutrition/valerian-root#what-is-valerian>

25. Efficacy and Safety of Ashwagandha (Withania somnifera) Root Extract in Insomnia and Anxiety: A Double-blind, Randomized, Placebo-controlled Study <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6827862/>

26. A randomized, double blind, placebo controlled study to evaluate the effects of ashwagandha (Withania somnifera) extract on sleep quality in healthy adults <https://pubmed.ncbi.nlm.nih.gov/32540634/>

27. Free Mindfulness Apps Worthy of Your Attention <https://www.mindful.org/free-mindfulness-apps-worthy-of-your-attention/>

28. 8 Free Sleep Meditation Apps To Relax Students <https://prestigestudentliving.com/blog/health-and-wellbeing/8-free-sleep-meditation-apps-to-relax-students>

29. Sleep-tracking devices: Dos and don'ts <https://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/sleep-tracking-devices-dos-donts/art-20481371>

30. Continuous Vital Monitoring During Sleep and Light Activity Using Carbon-Black Elastomer Sensors <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7146453/>

31. The Oura Ring <https://get.ouraring.com/overview/>

32. TEMPUR-Ergo® Smart Bases <https://www.tempurpedic.com/bases-and-foundations/power-bases/v/3403/>



33. <https://www.withings.com/us/en/sleep>

34. Can't sleep? Could be down to genetic

<https://www.sciencedaily.com/releases/2018/03/180309095520.htm>

35. How to fix a broken clock

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3856231/>