

## **The Fundamentals of Sleep**

This is a summary of what was found to be the most essential facts regarding sleep, boiled down to simplicity. The hope is that with this information you will understand the importance of sleep, be more equipped to take control of your sleep, and therefore be able to reap all the benefits that good sleep comes with.

The information was gathered from multiple credible sources including Dr. Matthew Walker, author of “Why We Sleep,” as well as Dr. Andrew Huberman, neuroscientist from Stanford School of Medicine and best known for his podcast, “Huberman Lab.”

Getting adequate sleep benefits us in many ways and is crucial for a better quality of life. Some of these benefits include:

- Replenishing your immune system to fight off infection and sickness
- Enhancing memory retention and learning
- Bettering your mood
- Building muscle
- Optimizing energy and alertness
- Lowering blood pressure
- Repairing injuries

Conversely, when you don't get adequate sleep, there are negative effects. The likelihood of these increase the longer you go without adequate rest:

- Increased risk for infection and getting ill
- Lack of energy and focus
- Forgetfulness
- Depression or anxiety
- Weight gain
- Increase of chance of chronic diseases such as cancer or Alzheimer's

When you sleep, you go through four different stages of sleep, usually in 90-minute cycles, over and over throughout the night. These four stages are:

- Stage 1 Light Sleep
- Stage 2 Light Sleep
- Deep Sleep
- REM Sleep

In the early 90-minute cycles, Deep Sleep usually dominates, whereas REM Sleep comes more and more into play in the 90-minute cycles closer to waking up.

Stage 1 Light Sleep is the initial stage and usually lasts a few minutes. In this stage:

- Muscles start to relax and you may experience twitches.
- Breathing and heart rate begin to slow down.
- Brain waves begin to slow.

In Stage 2 Light Sleep, your body moves into a slightly deeper sleep than Stage 1, and it acts as a bridge to the deeper stages of sleep. This is the stage of sleep we typically spend the most time in throughout the night, and here's what happens:

- Heart rate and breathing slow down further
- Body temperature drops, preparing your body for deeper sleep.
- Brain activity continues to slow, but you experience short bursts of electrical activity known as sleep spindles, which help process memories and learning.

Deep Sleep (also called slow-wave sleep) is where your body goes through critical restorative processes, including:

- Tissue repair including rebuilding muscles
- Strengthening your immune system to help fight off infection and illness
- Clearing toxins from your brain, including one that is linked to Alzheimer's disease
- Regulation of your metabolism

In this stage, the following takes place:

- Breathing and heart rate reach their lowest levels as your body is fully relaxed.
- Blood pressure drops, promoting cardiovascular health.
- Muscles relax even more, making it difficult to wake up easily.
- Memories from the previous days strengthen.

REM (Rapid Eye Movement) Sleep is the stage of sleep where most dreaming occurs. This stage is also crucial for:

- Mental and emotional restoration
- Learning new skills or procedures
- Strengthening problem-solving abilities
- Enhancing creativity

Here's what happens during REM sleep:

- Rapid eye movements occur under the eyelids, hence the name.
- Brain activity increases, becoming more similar to wakefulness, but your body remains in a state of paralysis to prevent you from acting out dreams.
- Breathing becomes irregular, and heart rate and blood pressure may rise, similar to waking levels.

How much sleep do we really need for adequate amounts of each of the above stages of sleep?

- Adults need 7-9 hours of sleep per night
- Teens need 8-10 hours of sleep per night
- Children need 10 or more hours of sleep per night

The next logical question would be how do you ensure you get a good night of sleep. Here are some of the best tips known to enhance quantity and quality of sleep, including why they're important:

1. Stick to a sleep schedule. This means you go to bed and wake up at the same time.

Stick to the same sleep schedule. Everyday. That means you go to bed and wake up at the same time. Yep, even on weekends.

Now I know that may sound kind of awful, but here's WHY it's important.

Everyone has an internal clock, and the technical name for it is your "circadian rhythm." This clock manages a lot of processes in your body, including releasing hormones to help you fall asleep and wake up, and it loves to stick to the same schedule.

So when you stay up late or sleep in, it throws that clock off its regular schedule and has to take a day or two to re-adjust. This is why you get jet lag when you change time zones, as well as why it's hard to wake up on Monday morning after a weekend of late nights.

In summary, the more you can stick to the same sleep schedule, the better quality sleep you'll get.

2. Make sure to exercise regularly but no later than two hours before going to bed.

Regular exercise does absolutely help you get great sleep. In fact, it's quite important to getting a good night's sleep. However, if you do a tough workout at night, close to when you're going to bed, it can actually make it more difficult to fall asleep.

The reason for this is because working out raises your core body temperature, increases your heart rate, and releases hormones like adrenaline, which make you more alert.

When you go to sleep, you want your body temperature colder, your heart rate slowed down, and you definitely don't want adrenaline pumping through your system.

So exercise is great, but try to do it earlier in the day or at least a few hours before going to sleep so you can wind down and get a great night's sleep.

### 3. Avoid caffeine later in the afternoon and evening.

While caffeine can be a helpful pick-me-up earlier in the day, consuming it too late can interfere with your ability to fall asleep and stay asleep. Caffeine is a stimulant that works by blocking adenosine, a chemical in your brain that helps you feel sleepy, keeping you alert and awake instead.

Caffeine can stay in your system for hours, meaning even that mid-afternoon coffee could still be affecting your body by bedtime. It can also disrupt the deeper stages of sleep, leaving you feeling less refreshed in the morning.

To promote better sleep, try to limit caffeine intake to the morning hours and switch to non-caffeinated beverages later in the day, giving your body time to relax and prepare for restful sleep.

### 4. Stay away from nicotine.

Nicotine is a stimulant, which means it can make you feel more alert and awake—exactly what you don't want when you're trying to wind down for the night. Whether it's from cigarettes, vaping, or other tobacco products, nicotine can disrupt your ability to fall asleep and stay asleep.

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It works by stimulating the release of chemicals in your brain, like adrenaline, which can increase your heart rate and keep your mind active. Additionally, nicotine withdrawal during the night can lead to restless sleep or even wake you up.

To improve your sleep quality, avoiding nicotine altogether is best, especially in the evening. It's one more way to help your body relax and prepare for a deep, restful sleep.

### 5. Don't drink alcohol to excess and don't drink any alcohol before going to bed.

You might think that having a drink before bed helps you sleep, but in reality, alcohol significantly disrupts the quality of your sleep.

First, alcohol may make you feel drowsy and help you fall asleep faster, but don't be fooled—it's a sedative, not a natural sleep aid. Instead of experiencing restorative sleep, alcohol fragments your sleep throughout the night, causing you to wake up more often, even if you don't remember it.

One of the biggest impacts of alcohol is on REM sleep, the stage of sleep crucial for memory, learning, and emotional processing. Alcohol suppresses REM sleep, leaving your brain less refreshed and making it harder to manage emotions or retain new information the next day.

Alcohol also interferes with deep sleep, which is essential for physical restoration and immune function. Without adequate deep sleep, your body doesn't fully recover, leaving you feeling physically drained—even after a full night in bed.

Alcohol acts as a diuretic, increasing urination and causing dehydration. This can lead to more frequent awakenings during the night, further disrupting your sleep.

Over time, regular alcohol consumption before bed can lead to more serious sleep problems, like chronic insomnia or a long-term reduction in REM sleep. These issues can affect your mood, memory, and overall health.

The bottom line? Drinking alcohol close to bedtime is one of the fastest ways to derail your sleep. If you want to wake up feeling refreshed and alert, it's best to skip the nightcap and let your body experience the natural stages of sleep uninterrupted.

### 6. Avoid large meals and beverages late at night.

Eating a heavy meal or drinking too much liquid close to bedtime can disrupt your sleep. Large meals can make your body work harder to digest, potentially causing discomfort or even heartburn as you lie down. Similarly, consuming lots of beverages increases the likelihood of waking up in the middle of the night to use the bathroom, interrupting your sleep cycle.

To avoid these issues, aim to finish eating at least two to three hours before bed and keep evening snacks light. This allows your body to focus on rest instead of digestion, helping you sleep more soundly.

7. Don't take naps after 3pm.

While naps can be a great way to recharge during the day, taking one too late can interfere with your ability to fall asleep at night. Naps close to bedtime can confuse your internal clock, making you feel less tired when it's time to sleep.

If you need a nap, try to keep it short (20-30 minutes) and take it earlier in the afternoon. This way, you can still reap the benefits of rest without disrupting your nighttime sleep.

8. Unwind before bed with a relaxing activity, such as reading or listening to music.

Engaging in calming activities before bed helps signal to your body that it's time to wind down. Relaxing activities like reading, listening to soothing music, or meditating can lower stress levels and prepare your mind and body for sleep.

The key is to choose activities that are low-stimulation—avoid anything too exciting or mentally demanding. By making relaxation a part of your bedtime routine, you create a smooth transition into restful sleep.

9. Take a hot bath before going to sleep.

Taking a hot bath before bed helps your body prepare for sleep by promoting a natural cooling process. When you step out of the bath, the warm water causes blood vessels near your skin to dilate, allowing heat to escape. This rapid heat release leads to a drop in your core body temperature, which is a key signal to your brain that it's time to sleep.

To get the most benefit, take a bath 1-2 hours before bed. This not only relaxes your muscles and eases tension but also helps your body achieve the ideal temperature for restful, uninterrupted sleep.

10. Keep your bedroom super dark and very cool (between 65-68 degrees if you can).

A dark and cool bedroom creates the perfect conditions for quality sleep. Your body naturally lowers its core temperature as part of the sleep process, and keeping your bedroom between 65-68°F helps support this cooling. A cooler environment also promotes deeper sleep and better overall rest.

Darkness is just as important, as even small amounts of light can interfere with your body's production of melatonin, the hormone that helps regulate sleep. Use blackout curtains, remove electronic light sources, and keep your room comfortably cool to enhance your sleep environment and wake up feeling refreshed.

11. Get off your phones, computers and TV at least an hour before bed.

Screens emit blue light, which can interfere with your body's production of melatonin, the hormone that helps you feel sleepy. Additionally, the content on your devices—whether it's emails, social media, or TV shows—can be overstimulating and keep your mind active when you should be winding down.

To protect your sleep, power down all screens at least an hour before bedtime and opt for more relaxing, screen-free activities instead. This will help your body prepare for sleep more naturally.

12. Don't lie in bed awake. If you can't fall asleep, rather than lie there feeling anxious, get up and do some sort of relaxing activity until you feel sleepy again.

Lying awake in bed can create an association between your bed and wakefulness, which makes falling asleep even harder. If you've been awake for 20 minutes or more, it's better to get up and do something relaxing, like reading or listening to calming music, until you feel tired again.

The idea is to reset your mind and avoid associating your bed with frustration. Once you feel sleepy, return to bed and try again. Over time, this habit helps reinforce that your bed is a place for rest, not worry.