

# Sleep Handbook

## The sleep cycle

### Non-REM and REM sleep

Sleep is divided into two broad types: non-rapid eye movement (NREM) sleep and rapid eye movement (REM) sleep.

Non-REM sleep occurs first and after a transitional period is called slow-wave sleep or deep sleep. During this phase, body temperature and heart rate fall, and the brain uses less energy.

REM sleep represents a smaller portion of total sleep time, and is associated with fast brain waves, eye movements, dreaming and loss of muscle tone.

The sleep cycle of NREM and REM sleep takes an average of 90 minutes, occurring 4–6 times in a good night's sleep.

There is a greater amount of deep sleep earlier in the night, while the proportion of REM sleep increases in the two cycles just before natural awakening.

## Why do we sleep?

The need and function of sleep are among the least clearly understood areas in sleep research. When asked, after 50 years of research, what he knew about the reason people sleep, William C. Dement, founder of Stanford University's Sleep Research Centre, answered, "As far as I know, the only reason we need to sleep that is really, really solid is because we get sleepy."

While some functions of sleep are known, others have been proposed but not completely substantiated or understood. Some of the early ideas about sleep function were based on the fact that most (if not all) external activity is stopped during sleep. Initially, it was thought that sleep was simply a way for the body to "take a break" and reduce wear.

With the development of EEG, it was found that the brain has almost continuous internal activity during sleep, leading to the idea that the function could be that of reorganization of neuronal circuits or strengthening of connections. Other proposed functions of sleep include maintaining hormonal balance, temperature regulation and maintaining heart rate.

# How to Sleep Better

## 1. *Regulate your sleep-wake cycle*

Sleep timing depends greatly on hormonal signals from the circadian clock, a complex neurochemical system which uses signals from the environment to recreate an internal day–night rhythm

An organism whose circadian clock exhibits a regular rhythm corresponding to outside signals is said to be *entrained*- the rhythm persists even if the outside signals suddenly disappear. If a person is isolated in a room with constant light or darkness, they will continue to experience rhythmic increases and decreases of body temperature and melatonin, on a period which slightly exceeds 24 hours. Under natural conditions, light signals regularly adjust this period downward, so that it corresponds better with the exact 24 hours of an Earth day.

The clock exerts constant influence on the body. The circadian pacemaker has a direct neural connection to the pineal gland, which releases the hormone melatonin. Melatonin is a hormone controlled by light exposure that helps regulate your sleep-wake cycle. Your brain secretes more in the evening, when it's dark, to make you sleepy, and less during the day when it's light and you want to stay awake and alert. The levels of the stress hormone cortisol typically rise throughout the night, peak in the awakening hours, and diminish during the day.

The internal circadian clock is profoundly influenced by changes in light, since these are its main clues about what time it is.

Spending long days in the house away from natural light, for example, can impact your daytime wakefulness and make your brain sleepy. Then bright lights at night—especially from the TV or computer screen—can suppress your body's production of melatonin and make it harder to sleep. However, there are ways for you to naturally regulate your sleep-wake cycle, boost your body's production of melatonin, and keep your brain on a healthy schedule.

### **Increase light exposure during the day**

- **Spend more time outside during daylight.**
- **Keep curtains and blinds open during the day.**

### **Boost melatonin production at night**

- **Turn off your television and computer.** Many people use the television to fall asleep or relax at the end of the day, and this is a mistake. Not only

does the light suppress melatonin production, but television can actually stimulate the mind, rather than relaxing it. Try listening to music or audio books instead, or practicing relaxation exercises. If your favorite TV show is on late at night, record it for viewing earlier in the day.

- **Change your bright light bulbs.** Avoid bright lights before bed, use low-wattage bulbs instead.
- **When it's time to sleep, make sure the room is dark.** The darker it is, the better you'll sleep. Cover electrical displays, use heavy curtains or shades to block light from windows

## ***2. Keep a regular sleep schedule***

- **Set a regular bedtime.** Go to bed at the same time every night. Choose a time when you normally feel tired, so that you don't toss and turn. Try not to break this routine on weekends when it may be tempting to stay up late.
- **Wake up at the same time every day.** If you're getting enough sleep, you should wake up naturally without an alarm. If you need an alarm clock to wake up on time, you may need to set an earlier bedtime. As with your bedtime, try to maintain your regular wake-time even on weekends.
- **Be careful about napping.** While taking a nap can be a great way to recharge, it can make insomnia worse. If insomnia is a problem for you, consider eliminating napping. If you must nap, do it in the early afternoon, and limit it to thirty minutes.
- **Fight drowsiness.** If you find yourself getting sleepy way before your bedtime, get off the couch and do something mildly stimulating to avoid falling asleep, such as washing the dishes, calling a friend, or getting clothes ready for the next day. If you give in to the drowsiness, you may wake up later in the night and have trouble getting back to sleep.

## ***3. Create a relaxing bedtime routine***

If you make a consistent effort to relax and unwind before bed, you will sleep easier and more deeply. A peaceful bedtime routine sends a powerful signal to your brain that it's time to wind down and let go of the day's stresses.

### **Make your bedroom more sleep friendly**

- **Keep the noise down.** If you can't avoid or eliminate noise from barking dogs, loud neighbors, city traffic, or other people in your household, try masking it with soothing music.

- **Keep your room cool.** The temperature of your bedroom also affects sleep. Most people sleep best in a slightly cool room (around 65° F or 18° C) with adequate ventilation. A bedroom that is too hot or too cold can interfere with quality sleep.
- **Make sure your bed is comfortable.** You should have enough room to stretch and turn comfortably. If you often wake up with a sore back or an aching neck, you may need to invest in a new mattress or try a different pillow. Experiment with different levels of mattress firmness, mattress toppers, and pillows that provide more or less support.

### **Reserve your bed for sleeping and sex**

If you associate your bed with events like work or errands, it will be harder to wind down at night. Use your bed only for sleep and sex. That way, when you go to bed, your body gets a powerful cue: it's time to either nod off or be romantic.

### **Relaxing bedtime rituals to try**

- Read a book or magazine by a soft light
- Take a warm bath
- Listen to soft music
- Do some easy stretches
- Wind down with a favorite hobby
- Listen to books on tape
- Make simple preparations for the next day

### **4. *Eat right and get regular exercise***

Your daytime eating and exercise habits play a role in how well you sleep. It's particularly important to watch what you put in your body in the hours leading up to your bedtime.

- **Stay away from big meals at night.** Try to make teatime earlier in the evening, and avoid heavy, rich foods within two hours of bed. Fatty foods take a lot of work for your stomach to digest and may keep you up. Also be cautious when it comes to spicy or acidic foods in the evening, as they can cause stomach trouble and heartburn.
- **Avoid alcohol before bed.** Many people think that a nightcap before bed will help them sleep, but while it may make you fall asleep faster, alcohol reduces your sleep quality, waking you up later in the night. To avoid this effect, stay away from alcohol in the hours before bed.
- **Cut down on caffeine.** You might be surprised to know that caffeine can cause sleep problems up to ten to twelve hours after drinking it!

Consider eliminating caffeine after dinner or cutting back your overall intake.

- **Avoid drinking too many liquids in the evening.** Drinking lots of water, juice, tea, or other fluids may result in frequent bathroom trips throughout the night. Caffeinated drinks, which act as diuretics, only make things worse.
- **Quit smoking.** Smoking causes sleep troubles in numerous ways. Nicotine is a stimulant, which disrupts sleep, plus smokers experience nicotine withdrawal as the night progresses, making it hard to sleep.
- **Exercise regularly.** You'll also sleep more deeply if you exercise regularly. You don't have to be a star athlete to reap the benefits—as little as 20 to 30 minutes of daily activity helps. And you don't need to do all 30 minutes in one session. You can break it up into five minutes here, 10 minutes there, and still get the benefits. Try a brisk walk, a bicycle ride, or even gardening or housework.

Some people prefer to schedule exercise in the morning or early afternoon as exercising too late in the day can stimulate the body, raising its temperature. Even if you prefer not to exercise vigorously at night, don't feel glued to the couch, though. Relaxing exercises such as gentle stretching can help promote sleep.

### ***5. Get anxiety and stress in check***

Do you find yourself unable to sleep or waking up night after night? Residual stress, worry, and anger from your day can make it very difficult to sleep well.

If stress is keeping you awake, you may need help with stress management. By learning how to manage your time effectively, handle stress in a productive way, and maintain a calm, positive outlook, you'll be able to sleep better at night.

#### **Relaxation techniques for better sleep**

Relaxation is beneficial for everyone, but especially for those struggling with sleep. Practicing relaxation techniques before bed is a great way to wind down, calm the mind, and prepare for sleep. Some simple relaxation techniques include:

- **Deep breathing.** Close your eyes, and try taking deep, slow breaths, making each breath even deeper than the last.
- **Progressive muscle relaxation.** Starting with your toes, tense all the muscles as tightly as you can, then completely relax. Work your way up (feet, calves, thighs etc) from your feet to the top of your head.







- **Visualizing a peaceful, restful place.** Close your eyes and imagine a place or activity that is calming and peaceful for you. Concentrate on how relaxed this place or activity makes you feel.
- **Consider joining the Mind Your Head sessions** available at all the hubs at Forward Leeds. Although not specifically a stress management treatment developing mindfulness skills and practicing mindfulness meditations on a daily basis can help tremendously.

## ***6. Getting back to sleep***

It's normal to wake briefly during the night. In fact, a good sleeper won't even remember it. But if you're waking up during the night and having trouble falling back asleep, the following tips may help.

- **Stay out of your head.** The key to getting back to sleep is continuing to cue your body for sleep, so remain in bed in a relaxed position. Hard as it may be, try not to stress over the fact that you're awake or you can't fall asleep again, because that very stress and anxiety encourages your body to stay awake. A good way to stay out of your head is to focus on the feelings and sensations in your body, or follow the rhythm of your breathing.
- **Make relaxation your goal, not sleep.** If you find it hard to fall back asleep, try a relaxation technique such as visualization, deep breathing, or meditation, which can be done without even getting out of bed. Remind yourself that although they're not a replacement for sleep, rest and relaxation still help rejuvenate your body.
- **Do a quiet, non-stimulating activity.** If you've been awake for more than 30 minutes, try getting out of bed and doing a quiet, non-stimulating activity, such as reading a book. Keep the lights dim so as not to cue your body clock that it's time to wake up, and avoid standing on cold floors with bare feet. Also avoid screens of any kind—computers, TV, phones, iPads—as the type of light they emit is stimulating to the brain. A light snack might help relax you.
- **Postpone worrying.** If you wake during the night feeling anxious about something, make a brief note of it on paper and postpone worrying about it until the next day when you are fresh and it will be easier to resolve.

## GOOD THINGS TO EAT AND DRINK IN THE EVENING

<p><b>Bananas.</b> In addition to a bit of soothing melatonin and serotonin, bananas contain magnesium, a muscle relaxant.</p>	
<p><b>Warm milk.</b> Milk has tryptophan – an amino acid that has a sedative – like effect – and calcium, which helps the brain use tryptophan. Plus there’s the psychological throw-back to infancy, when a warm bottle meant “relax, everything’s fine.”</p>	
<p><b>Chamomile/Sleep tea.</b> The reason chamomile is such a staple of bedtime tea blends is its mild sedating effect – it’s the perfect natural antidote for restless minds/bodies.</p>	
<p><b>Honey.</b> Drizzle a little in your warm milk, herb tea, on your wholemeal toast or porridge. Lots of sugar is stimulating, but a little glucose tells your brain to turn off orexin, a recently discovered neurotransmitter that’s linked to alertness</p>	
<p><b>Potatoes.</b> A small baked spud won’t overwhelm stomach, and it clears away acids that can interfere with yawn-inducing tryptophan. To up the soothing effects, mash it with warm milk.</p>	
<p><b>Oats.</b> Oats are a rich source of sleep – inviting melatonin, and a small bowl of warm cereal with a splash of honey makes you feel relaxed and cosy</p>	
<p><b>Whole-wheat bread.</b> A slice of toast with your tea and honey will release insulin, which helps tryptophan get to your brain, where it’s converted to serotonin and quietly murmurs “time to sleep.”</p>	