Aivoliitto
Finnish Brain Association

SLEEP IS YOUR BRAIN'S TIME TO SHINE

National Brain Health Programme

Sleep – your most precious treasure

Just one night of bad sleep, and your thoughts begin to wander. Your memory plays tricks on you, and you are easily irritated.

We all know how it feels when you sleep badly – but don't worry! Occasional lack of sleep does not have a lasting impact. When your everyday life is more or less shipshape, it is a good idea to think about your sleep skills: what are the essential elements and what could be improved? Ask yourself whether you go to bed early enough or whether you sacrifice sleep time in favour of other everyday activities.

Cherish your sleep because a good night's sleep can have an unexpectedly large effect on your health. As we sleep, our brains recharge, our bodies recover from stress and strain, and our immune response strengthens.

Sleep really is quality time. That is why we should cherish it like our most precious treasure.

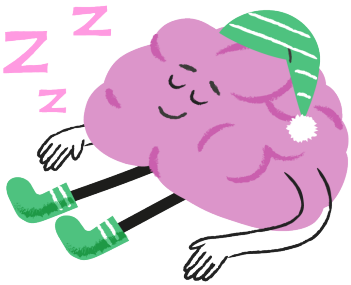
Sleep well – wake up refreshed

Humans spend up to a third of their lifetimes asleep. So, it would be strange if bad sleep had no effect at all on our wellbeing. Countless studies indicate that 7–9 hours of sleep per day would be best for our health throughout our adult lives.

However, not everyone's sleep falls within this range – the amount of sleep each of us needs is unique to the individual. While one person may glide through the day effortlessly on just four or five hours of sleep, another may slumber for ten hours a night.

Why is this? The answer is largely down to genetics, and although you can influence your sleeping habits to some extent, the fight against your genes will be a losing battle.

So how can you know how much sleep is enough? There is a simple way to find out: you have slept enough if you wake up feeling refreshed the next morning.



Body clock sets the pace

Sleep is an essential part of our circadian rhythm. In our brains, our body clocks determine how much we sleep and how long we are awake by telling us when it is time to sleep and when we should wake up.

Do your body clock a favour and listen to it carefully. It will let you know when you are getting tired, and if you go to bed at that time, your brain will open a window for sleep. This individual window usually opens at the same time every evening. If you put off going to sleep, your window will close, and it may take you a long time to get to sleep – perhaps even several hours.

Of course, there are some situations in life where we simply cannot keep to our usual bedtime. However, people who value their sleep go to bed at about the same time every night, even on weekends and holidays.

> ***"Do your body clock a favour and listen to it carefully.***

Our sleep goes in cycles

Sleep is not a uniform event: we go from one phase to another during a night's sleep. The first phase of light sleep begins as soon as we fall asleep. At that point, you are on the borderline between being asleep and awake, but your body and muscles are starting to relax.

This brief phase at the beginning of sleep only lasts up to five minutes, after which you enter a different phase of light sleep. In this phase, your muscles become more relaxed, your heart rate slows, and your body temperature falls. This is the stage when many people begin snoring or breathing loudly, as the throat muscles become flaccid.

The second phase of light sleep lasts about 20 minutes, followed by the first phase of deep sleep. During this phase, the electrical activity in your brain slows down, but the processes that help your body recover are already working at full speed. If you were awakened during this stage of sleep, you would find it difficult and unpleasant to wake up. The first 30 minutes of this phase of deep sleep is extremely important for both mental and physical health.

The next stop on the roller coaster of sleep is a new phase of sleep known as Rapid Eye Movement (REM). During REM, your eyes begin to move under your eyelids. The eye movements are

a sign that your brain is active, even when you are asleep. This sleep phase, which lasts a few minutes, is when you have dreams.

Non-rapid eye movement (NREM), so called to distinguish it from REM sleep, can be considered basic sleep. There are three phases of basic sleep in the night. You do not remember the dreams you have during NREM phases. The transitions from NREM sleep via REM sleep and back to NREM form the sleep cycle. In deep sleep, your brain activity is at its slowest, and your breathing and blood circulation are at their calmest.

It is easiest to wake up at the end of a sleep cycle, and many of us awaken several times a night. Human evolution can explain occasional wakefulness: it used to be important to check whether there were any threats in the area. So if you wake up feeling concerned in the middle of the night and worry whether you will get back to sleep, tell yourself you were just checking for lions. And when you see there are no lions around, you can drift back to sleep safe and sound.

> ***Promote your glymphatic system by sleeping well.***

Sleep cleans the brain out

Cerebrospinal fluid gives our brains a deep clean. We have about enough of this fluid in our bodies to fill one coffee cup, and its job is to carry waste substances out of the brain and into our bloodstream. For example, it removes excess proteins and other smaller molecules we no longer need.

If the glymphatic system does not function properly, waste substances can accumulate in the brain, elevating the risk of degenerative brain diseases such as Alzheimer's disease.

When you are awake, the glymphatic system ticks over quietly. But when you fall asleep, your brain's cleaners rush to work. Good sleep plays a crucial role in maintaining your brain health.

How much sleep do we need?

Babies

A newborn baby's cycle of sleep and wakefulness is controlled by hunger and the need for a lot of sleep. Babies sleep a lot in their first few months of life – so much that they usually only wake up to feed. A young baby can sleep as much as 14–20 hours a day.

Babies have three sleep states: active sleep, quiet sleep, and indeterminate (or transitional) sleep. One sleep cycle lasts about 45–50 minutes, and the baby wakes up between each cycle.

Some babies can get back to sleep on their own, but others need to be comforted first. It is recommended that babies sleep on their backs.

Parents should not stress about the "sleep skills" of very young babies. Although babies sleep a lot, their sleep rhythms may differ substantially. As long as your baby is growing and developing normally, there is usually no need to wake them up at regular intervals to feed in the night.

Children and adolescents

Sufficient sleep is essential for the brain development of a growing child. The child's cognitive and motor skills continue to develop while they sleep, and their bodies produce the hormones needed for growth.

Sleep plays a significant role in the emotional lives of children and adolescents: it is the time when their brains process the day's events and handle disappointments, among other things. Good sleep promotes creativity and concentration in children and adolescents, normalises their moods and develops their self-esteem. When a child or adolescent sleeps well, they are lively and able to contribute to school work and other everyday activities.

A child's sleep needs change as they grow up. A two-year-old may need more than 12 hours of sleep a day, but ten-year-olds sleep two hours less on average. Teenagers need eight to ten hours of sleep a day.

Parents should be aware that they set an example for their children to follow when it comes to sleep. If a child or adolescent has trouble sleeping, it is worth looking at the whole family's sleeping habits. When children see their parents staring at a phone or computer screen until late in the evening, they begin to feel it is OK to compromise on sleep. The sleep rhythms and quality of sleep of a child or adolescent can be hard to fix later on if they pick up bad habits early in life.

Adults, older people and seniors

Adequate sleep is vital for the health of the brain and the whole body throughout life. By adulthood, we have usually discovered our individual need for sleep.

Most adults need seven to nine hours of sleep a night to feel refreshed by sleep. If they do not get enough sleep, the risk of various health problems increases. Studies have shown that adults who sleep too little – and those who sleep too much – perform worse in tasks designed to measure memory and problem-solving abilities.

In adulthood, each sleep cycle lasts 80–110 minutes. The older we get, the more our sleep structure changes. As we advance in age, the amount of deep sleep decreases from around 15–20 per cent in early middle age to just a few per cent in our seventies, replaced by light sleep. During light sleep, older sleepers react more readily to various stimuli in the environment and wake up several times a night.

In old age, we may endure broken sleep throughout the night, but we can and should make up for low-quality sleep at night by taking naps during the day. For example, you could go to bed earlier, and you should not be too worried about waking in the night.

Read more about how different age groups sleep: *kansallinenaivopesu.fi*

Sleep underpins our health

While we sleep, our bodies recover and our minds rest. At the same time, very important things occur at a cellular level in our brains and elsewhere in our bodies, with major impacts on our physical and mental health.

Sleep is so essential to our health that if our sleep is disrupted for a long period, the health risks begin to pile up. The risks of long-term sleep disorders include elevated blood pressure and cholesterol levels, type 2 diabetes and other cardiovascular diseases, chronic pain and susceptibility to various inflammatory diseases.

Research has identified a biological link between excessive weight and insufficient sleep. The connection between sleep deprivation and obesity is probably explained by the tendency to binge eat when tired. As tiredness sets in, we begin to crave sweet, fatty foods. And when we are tired, we feel less inclined to get enough exercise, so it is no wonder that people who sleep badly tend to put on weight.

Insufficient or unrefreshing sleep can also cause mental symptoms. The most common mood problems among people who sleep badly are irritability and sudden mood swings. If sleep issues persist, mood problems can lead to anxiety and even depression. The outcome can be a downward spiral: depressed people can find it difficult to fall asleep and are easily awoken, especially in the hours just before dawn.

Sleep hones the memory

You know how it feels: perhaps you woke up in the middle of the night and could not get back to sleep. Or maybe you went to bed too late and woke up in the morning feeling groggy.

As the day goes on, you notice the negative consequences of a bad night's sleep. Your memory plays tricks on you, and you find it hard to recall the name of the far acquaintance you just bumped into. Your concentration wanders, and when you are trying to perform tasks, you often have to go back to square one and start afresh. Learning new things feels more difficult than usual after a bad night's sleep. Your creativity and work efficiency suffer, and you feel like you are not accomplishing anything.

When you are deprived of sleep, you are also not as social as usual. The sofa suddenly seems more tempting than an evening out with your friends. Lots of things annoy you, and you may get grumpy with your partner at home.

That is why sleep is so fundamental for our brains. While we sleep, we strengthen the traces of memories from the previous day, categorise what we have learned into important and less important things, and eliminate unnecessary ones entirely. The memories that are important to you are reinforced. This keeps your mind in order and stops the chaotic influx of surrounding stimuli from overloading your brain.

In other words, restless sleep makes for restless waking hours. But do not worry too much, as the occasional lack of sleep only temporarily affects your intellectual and artistic capacities. The next time you sleep well, it will improve your memory and restore your concentration, learning and social skills.

> ***"The social, cognitive and emotional harm of sleep deprivation is scientifically proven.***

If you cannot sleep

One of the most common problems is delayed sleep. This means going to sleep late – generally after midnight. Waking up the next morning to go to work or school is difficult, as the established rhythm of society does not suit the individual's delayed sleep rhythm.

The various temptations of the digital world, such as social media and addictive computer games, fuel the problem of delayed sleep. The solution is to change the daily rhythm: go to sleep earlier and allow more space for relaxation in the evening.

Insomnia is a complicated nuisance. For example, a sleepless person may have recurring difficulties falling asleep or suffer from continuously waking up in the night. People who wake up in the middle of the night may also find it difficult to fall asleep again.

The sleepless body goes into overdrive, and the sleepless person is in a constant state of alertness. They have too many hormones that raise the stress level, such as cortisol, adrenaline and noradrenaline, circulating in the blood.

At the same time, the frontal lobe – the part of the brain that deals with memory and learning – slows down, and the sleepless person's information-processing skills suffer.

Insomnia is common in people with depression or anxiety. One sleep disorder is that depressed people sleep too much, and their sleep does not feel refreshing.

> ***The amount of sleep you need may change if you suffer a brain event. In this case, you will need to relearn your personal rhythm.***

You should not put up with insomnia for more than a month. If it persists for longer than this and your sleep is broken up at least three times a week, see a doctor. The doctor can determine whether you have sleep apnoea, for example.

Sleep apnoea causes your breathing to repeatedly stop and start tens or even hundreds of times a night. Your sleep is not refreshing, and you wake up feeling tired. During the day, you may feel so drowsy that you doze off involuntarily.

Sleep apnoea is a dangerous disease because it predisposes you to cerebral circulation disorders and other cardiovascular diseases. Sleep apnoea is treated using a continuous positive airway pressure (CPAP) machine.

Occasional sleep problems are not the same as insomnia. For example, if you need to go to the toilet several times a night, there is no need to see a doctor if you are able to fall asleep again right away. It is also natural to have trouble sleeping if you are going through sorrow or grief.

Make an effort for your sleep

Sleep is worth looking after. Good sleep hygiene requires a sufficiently cool bedroom, a clean bed, a suitable pillow, and a duvet or blanket with a pleasant weight. You can also take care of your sleep by sticking to consistent evening rhythms, such as brushing your teeth or showering at the same time every day.

Do not go to bed hungry but avoid large and otherwise heavy evening meals. Do not consume stimulants, such as coffee and energy drinks, in the evening. Alcohol reduces sleep quality, even in small amounts, and makes you more likely to wake up in the night. Smoking raises blood pressure and heart rate, making falling asleep harder.

Exercise is an excellent way of looking after your sleep, but more intensive activities that increase your heart rate should be scheduled earlier in the day. It is a good idea to give your body several hours to recover before you go to sleep.

Of course, you can read a book or listen to calming music in bed, but if you do

not fall asleep within half an hour, it is a good idea to get back on your feet for a while. You can go back to bed when you get tired again.

Break the cycle of negative thoughts

A sleepless night is often filled with fear and worry. When you sleep badly, you may start to fear the day ahead and wonder how you will get through it. You wonder whether others will notice that you have not slept properly. You may even feel ashamed of your sleep problems.

It is possible to break the vicious cycle of harmful thought patterns and sleeplessness. Unpacking the feelings that affect your sleep can help you unwind.

So, if you find yourself worrying about whether you will get any sleep again the next night, try these things:

Spend a moment with your worries and write a sleep diary

Write down your worries and unresolved issues on paper well before you go to bed. Consider which of them you could influence the outcome of and write the possible solutions down after them.

When you wake up, write your most important memories in your sleep diary. For example, record the time you went to bed and how long you spent tossing and turning.

Record how many times you woke up, how often you went to the toilet, and approximately how long you were able to sleep. The idea behind spending time with your worries and keeping a sleep diary is to help you structure your everyday life and identify the problems that are harming your sleep.

Give yourself some words of comfort

If you cannot sleep, try putting yourself in the shoes of an outside observer. The observer will remind you that the negative thoughts affecting your sleep are just assumptions or impressions, not facts set in stone.

Give yourself some words of comfort on a sleepless night: "I may feel bad at the moment, but everything will work out fine. I have nothing to fear. I can face the coming day, even if I am tired and have slept badly. And I cannot predict what will happen the next day – I may also do surprisingly well."

Try to relax

There are many ways to relax. If one does not work, search the internet for others and try them out. To begin with, try some exercises where you tense a group of muscles, such as your calves, and then relax them. Go through all the muscle groups in your body one by one.

You could buy a warming pillow containing grains to help you relax – heat it up in the microwave for a minute and put it on your shoulders or belly when you go to bed. The warmth and scent of grain will help your body relax. Warming pillows are available at department stores and health shops. You could put woolly socks on.

The third way to calm down when you go to bed is to listen to the sounds of nature, such as the lapping of water or the rustling of a forest. You will subconsciously associate the sounds with a pleasing landscape, helping you to fall asleep. You can find downloadable playlists and CDs of natural sounds.

> ***"The primary treatment for sleep disorders is always non-medical treatment. Sleep-inducing drugs are only intended for short-term use.***

Doctor's referral for sleep studies

You should seek medical help if insomnia has robbed you of your sleep, your day-to-day life has become more complicated, and sleeplessness is eating away at your functional capacity. The doctor will examine the causes of your sleep problems.

Some health centres can refer you to a sleep nurse who will help you practice various self-care methods to break the cycle of insomnia.

After diagnostic examinations for sleep problems, your doctor may refer you for more detailed sleep studies or prescribe medicine.

Is there a support group for insomniacs?

For example, the Finnish Association for Sleep Disorders (Uniliitto) offers remote support with various group meetings. More information (only in Finnish): *uniliitto.fi*.

It is also worth asking your health centre about the support and help your municipality provides for people with insomnia.

Start building good sleep

Take some small steps to improve your sleep.
Choose one thing from this list and try it in your everyday life. Keep the experiment up for at least four weeks.

- [ ] Eat regularly throughout the day (every four or five hours).
- [ ] Eat breakfast soon after waking up.
- [ ] Get more exercise during the day.
- [ ] Go for a walk after lunch.
- [ ] Start regular physical exercise that suits you.
- [ ] Go to bed when tired.
- [ ] Wake up at the same time every day, even at weekends.
- [ ] Try to get enough sleep.
- [ ] Do not take phones or other digital devices into the bedroom.
- [ ] Allow space for your own thoughts during the day, including your worries.

Aivoliitto
Finnish Brain Association

Suvilinnantie 2, 20900 Turku
tel. 02 2138 200
aivoliitto.fi

Brain health is capital that we all share in Finland. The brain regulates the activity of the entire body. The brain is responsible for behaviour, feelings, information processing, and regulating all of this. No more and no less. Luckily, we can all promote our brain health in normal everyday life.

The Finnish Brain Association (Aivoliitto) works nationwide, promoting the wellbeing of all the brains in Finland.

The long-term effectiveness goal of the National Brain Health Programme, coordinated by the Finnish Brain Association in cooperation with the Central Union for Child Welfare, the Age Institute, Tampere University of Applied Sciences, the Finnish Institute of Occupational Health and Folkhälsan, is a humanely sustainable society that supports brain health. One of its most tangible goals is that everyone has the opportunity for refreshing and restorative sleep.

The voluntary brain health experts trained by the Finnish Brain Association also contribute to the dissemination of brain health knowledge at local events.

This brochure was created with the expert help of Timo Partonen, a Research Professor at the Finnish Institute for Health and Welfare.

A further source was *uniliitto.fi*.

Make brain health a part of your everyday life:

aivoterveys.fi

kansallinenaivoterveysohjelma.fi

tunnepulssisi.fi

verenpaineesta.fi

aivoliitto.fi/paaosassapaa